capital [3] or tentative net capital [4] declined below certain threshold amounts. On October 27, 1994, the Exchange submitted to the Commission Amendment No. 1 to the proposed rule change.[5]

The proposed rule change was published for comment in Securities Exchange Act Release No. 34924 (November 1, 1994), 59 FR 55719 (November 8, 1994). No comments were received on the proposal.

Among other matters, the amendments being adopted require all members and member organizations that are subject to the Commission's net capital rule, Rule 15c3–1 under the Act,[6] to notify the Exchange forthwith if such member's net capital, after deduction of all capital withdrawals including maturities, if any, scheduled during the next six months, falls below the applicable percentage indicated below:

1. If the net capital minimum dollar amount requirement is applicable,[7]—150% or such greater percentage as may from time-to-time be designated by the Exchange;

2. If the ratio of aggregate indebtedness to net capital is applicable—10% of aggregate indebtedness; or

3. If the alternative net capital requirement percentage is applicable, the greater of 5% of the aggregate debit items in the Formula for Determination of Reserve Requirements for Brokers and Dealers under Exhibit A to Rule 15c3–3 under the Act,[8] or, if the broker-dealer is registered as a Futures Commission Merchant, 7% of the funds required to be segregated pursuant to the Commodity Exchange Act and the regulations thereunder.

Additionally, the amendments require all members and member organizations to notify the Exchange, in writing, within forty-eight hours whenever such member's tentative net capital (net capital before application of haircuts and undue concentration charges), as computed under the net capital rule, has declined 20% or more from the amount reported in the most recent FOCUS Report filed with the Exchange.[9]

The Commission finds that the proposed rule change is consistent with the requirements of the Act and the rules and regulations thereunder applicable to a national securities exchange, including the requirements of Section 6(b) of the Act.[10] In particular, the Commission believes the proposal is consistent with the Section 6(b)(5) requirements that the rules of an exchange be designed to promote just and equitable principles of trade, to prevent fraudulent and manipulative acts, and, in general, to protect investors and the public.

The Commission believes that this rule will protect investors and the public interest by providing the NYSE with an early warning of potential financial difficulties at members and member organizations and by otherwise enhancing the NYSE's ability to monitor the continued financial well being of such firms. Moreover, the proposed rule will help the NYSE to ensure its members' compliance with the requirements of the Commission's net capital rule.

It is therefore ordered, pursuant to Section 19(b)(2) of the Act,[11] that the proposed rule change (SR–NYSE–94–31) is approved.

For the Commission, by the Division of Market Regulation, pursuant to delegated authority.[12]

Margaret H. McFarland,

Deputy Secretary.

[FR Doc. 94–30711 Filed 12–13–94; 8:45 am]

BILLING CODE 8010–01–M

[3] For purposes of Rule 325, as proposed to be amended, net capital is computed in accordance with Rule 15c3–1 under the Act, 17 CFR 240.15c3–1 (1993). Under Rule 15c3–1, net capital is computed by adding to a broker-dealer's net worth, determined in accordance with generally accepted accounting principles, certain liabilities subordinated to the claims of customers and by deducting from net worth assets not readily convertible into cash and certain percentages (called "haircuts") of the market value of all proprietary positions held by the applicable broker-dealer.

[4] As proposed to be amended, Rule 325 defines "tentative net capital" as net capital before the application of haircuts and undue concentration charges.

[5] *See* letter from James E. Buck, Senior Vice President and Secretary, NYSE, to Glen Barrentine, Senior Counsel, SEC, dated October 26, 1994. Amendment No. 1 clarified the definition of the term "tentative net capital." The amendment also added a reference to Rule 15c3–1 under the Act.

[6] 17 CFR 240.15c3–1 (1993).

[7] There are two methods that a broker-dealer may use to determine its net capital requirement. Under the basic or "aggregate indebtedness" method, a broker-dealer's aggregate indebtedness may not exceed 1,500% of its net capital. In addition to the percentage requirement and regardless of its aggregate indebtedness, a broker-dealer calculating its capital under the basic method must maintain a minimum level of net capital based upon the nature of its business. A broker-dealer that elects to determine its net capital requirement under the "alternative" method must maintain net capital equal to the greater of 2% of aggregate debit items computed in accordance with the Formula for Determination of Reserve Requirements for Brokers and Dealers under Exhibit A to Rule 15c3–3 under the Act, 17 CFR 240.15c3–3a (1933), or $250,000.

[8] 17 CFR 240.15c3–3a (1933).

[9] A FOCUS Report is a combined financial and operational report on Form X–17A–5 that every registered broker-dealer is required to file periodically pursuant to Rule 17a–5 under the Act, 17 CFR 240.17a–5 (1993).

[10] 15 U.S.C. 78f(b) (1988).

[11] 15 U.S.C. 78s(b)(2) (1988).

[12] 17 CFR 200.30–3(a)(12) (1993).

DEPARTMENT OF STATE

[Public Notice 2136]

International Joint Commission Boundary Waters Treaty of 1909

An Invitation to Comment on the second Progress Report of the Canada-United States Air Quality Committee.

The International Joint Commission invites public comment on progress by the United States and Canada in reducing transboundary air pollution under the 1991 Agreement on Air Quality. The Commission will provide a synthesis of the comments to the two governments and the public as directed by the Agreement.

The Governments of the United States and Canada signed an Agreement on Air Quality on March 13, 1991. The purpose of the Agreement was to establish a practical and effective instrument to address shared concerns on transboundary air pollution.

Under the terms of the Agreement, the Governments have established a bilateral Air Quality Committee. This Committee is responsible for reviewing progress made in the implementation of the Agreement, preparing and submitting periodic progress reports to the Governments, referring each progress report to the International Joint Commission, and releasing those reports to the public. The second progress report of the Committee is now available and may be obtained from:

Acid Rain Division, U.S. Environmental Protection Agency, Mail Code: 6204J, 401 M Street, SW, Washington, DC 20460, Acid Rain Hotline: (202) 233–9620

Environment Canada, Enquiry Centre, 351 St. Joseph Blvd., Hull, Quebec, KIA 0H3, (819) 997–2800

Under the Agreement, the Governments have assigned the International Joint Commission the responsibility of inviting comments on each progress report of the Air Quality Committee. A synthesis of comments received will be provided to the Governments and made available to the public.

The International Joint Commission invites comment on any aspect of the second Progress Report of the Air Quality Committee. Please send comments in writing by March 10, 1995 to either address below or contact us by telephone if you have any questions about the comment process.

International Joint Commission, 1250 23rd Street, NW, Suite 100, Washington, DC 20440, Telephone: (202) 736–9000

International Joint Commission, 100 Metcalfe Street, 18th Floor, Ottawa,

ON K1P 5M1, Telephone (613) 995–2984.

Dated: December 5, 1994.

David A. LaRoche,

Secretary, United States Section.

[FR Doc. 94–30600 Filed 12–13–94; 8:45 am]

BILLING CODE 4710–14–M

Sunshine Act Meetings

Federal Register
Vol. 59, No. 239
Wednesday, December 14, 1994

This section of the FEDERAL REGISTER contains notices of meetings published under the "Government in the Sunshine Act" (Pub. L. 94-409) 5 U.S.C. 552b(e)(3).

FEDERAL ELECTION COMMISSION

"FEDERAL REGISTER" NUMBER: 94–30394.

PREVIOUSLY ANNOUNCED DATE AND TIME:
Wednesday, December 14, 1994 at 10:00 a.m. Meeting Open to the Public.

Amendments to the Agenda:

1. Addition: Report of the Audit Division—Clinton for President Committee
2. Continuation: Final Audit Report—Bush-Quayle '92 General Committee, Inc. and Bush-Quayle '92 Compliance Committee, Inc. (continued from meeting of December 8, 1994)

PREVIOUSLY ANNOUNCED DATE AND TIME:
Thursday, December 15, 1994 at 10:00 a.m. Meeting Open to the Public.

The following item was added to the Agenda:

Future Meetings.

The following items are deleted from the Agenda:

Advisory Opinion 1994–33: Mr. Paul E. Sullivan on behalf of VITEL International, Inc.

Advisory Opinion 1994–34: Mr. Peter H. Rodgers and Gregory L. Worthham on behalf of NYMEX Political Action Committee, Inc.

PERSON TO CONTACT FOR INFORMATION:
Mr. Ron Harris, Press Officer, Telephone: (202) 219–4155.

Delores Hardy,

Administrative Assistant.

[FR Doc. 94–30874 Filed 12–12–94; 3:12 pm]

BILLING CODE 6715–01–M

Federal Register

Wednesday
December 14, 1994

Part II

Department of Agriculture

Agricultural Marketing Service

7 CFR Part 1040
Milk Marketing Orders; Southern Michigan; Proposed Rule

DEPARTMENT OF AGRICULTURE

Agricultural Marketing Service

7 CFR Part 1040

[Docket No. AO–225–A45–R01; DA–92–10]

Milk in the Southern Michigan Marketing Area; Revised Recommended Decision and Opportunity to File Written Exceptions on Proposed Amendments to Tentative Marketing Agreement and to Order

AGENCY: Agricultural Marketing Service, USDA.

ACTION: Proposed rule.

SUMMARY: This document recommends incorporating a multiple component pricing system in the Southern Michigan Federal Milk Order. The three components to be priced are butterfat, protein, and a "fluid carrier" residual. The proposed plan includes adjustments to the producer protein price based on the somatic cell count of producer milk. The decision recommends changes in qualifying shipments from pool supply plants and would give the market administrator the authority to adjust the monthly shipping percentage requirements for a cooperative supply plant or unit of supply plants. In addition, the maximum allowable administrative and marketing service assessment rates would be increased to 4 and 7 cents, respectively.

DATES: Comments are due on or before January 13, 1995.

ADDRESSES: Comments (six copies) should be filed with the Hearing Clerk, room 1083, South Building, United States Department of Agriculture, Washington, DC 20250.

FOR FURTHER INFORMATION CONTACT: Constance M. Brenner, Marketing Specialist, USDA/AMS/Dairy Division, Order Formulation Branch, room 2971, South Building, P.O. Box 96456, Washington, DC 20090–6456, (202) 720–7183.

SUPPLEMENTARY INFORMATION: This administrative action is governed by the provisions of Sections 556 and 557 of Title 5 of the United States Code and, therefore, is excluded from the requirements of Executive Order 12866.

The Regulatory Flexibility Act (5 U.S.C. 601–612) requires the Agency to examine the impact of a proposed rule on small entities. Pursuant to 5 U.S.C. 605(b), the Administrator of the Agricultural Marketing Service has certified that this proposed rule will not have a significant economic impact on a substantial number of small entities. The amendments would promote orderly marketing of milk by producers and regulated handlers.

The amendments to the rules proposed herein have been reviewed under Executive Order 12778, Civil Justice Reform. They are not intended to have a retroactive effect. If adopted, the proposed amendments would not preempt any state or local laws, regulations, or policies, unless they present an irreconcilable conflict with this rule.

The Agricultural Marketing Agreement Act of 1937, as amended (7 U.S.C. 601–674), provides that administrative proceedings must be exhausted before parties may file suit in court. Under section 608c(15)(A) of the Act, any handler subject to an order may file with the Secretary a petition stating that the order, any provision of the order, or any obligation imposed in connection with the order is not in accordance with the law and requesting a modification of an order or to be exempted from the order. A handler is afforded the opportunity for a hearing on the petition. After a hearing, the Secretary would rule on the petition. The Act provides that the district court of the United States in any district in which the handler is an inhabitant, or has its principal place of business, has jurisdiction in equity to review the Secretary's ruling on the petition, provided a bill in equity is filed not later than 20 days after the date of the entry of the ruling.

Prior documents in this proceeding:

Notice of Hearing: Issued December 3, 1992; published December 10, 1992 (57 FR 58418).

Supplemental Notice of Hearing: Issued January 19, 1993; published January 29, 1993 (58 FR 6447).

Recommended Decision: Issued November 29, 1993; published December 6, 1993 (58 FR 64176).

Notice of Reopened Hearing: Issued February 18, 1994; published February 24, 1994 (59 FR 8874).

Extension of Time for Filing Briefs: Issued April 6, 1994; published April 13, 1994 (59 FR 17497).

Emergency Partial Final Decision: Issued May 12, 1994; published May 23, 1994 (59 FR 26603).

Final Rule: Issued June 22, 1994; published June 29, 1994 (59 FR 33418).

Preliminary Statement

Notice is hereby given of the filing with the Hearing Clerk of this revised recommended decision with respect to proposed amendments to the tentative marketing agreement and the order regulating the handling of milk in the Southern Michigan marketing area. This notice is issued pursuant to the provisions of the Agricultural Marketing Agreement Act and the applicable rules of practice and procedure governing the formulation of marketing agreements and marketing orders (7 CFR Part 900).

Interested parties may file written exceptions to this decision with the Hearing Clerk, U.S. Department of Agriculture, Washington, DC 20250, by the 30th day after publication of this decision in the **Federal Register**. Six copies of the exceptions should be filed. All written submissions made pursuant to this notice will be made available for public inspection at the office of the Hearing Clerk during regular business hours (7 CFR 1.27(b)).

The proposed amendments set forth below are based on the record of public hearings on February 17–18, 1993, at Novi, Michigan, and on March 1, 1994, at Grand Rapids, Michigan. The February 1993 hearing was held pursuant to a notice of hearing issued December 3, 1992 (57 FR 58418), and a supplemental notice of hearing issued January 19, 1993 (58 FR 6447). The March 1994 reopened hearing was held pursuant to a notice of hearing issued February 18, 1993 (59 FR 8874).

The material issues on the record of the hearings relate to:

1. Pool supply plant definition.
2. Modification of cooperative pool supply plant shipping requirement by market administrator.
3. Multiple component pricing.
4. Somatic cell adjustment.
5. Administrative assessment.
6. Marketing service assessment.
7. Pool distributing plant definition (UHT plant "lock-in").
8. Emergency action with respect to issue 7.
9. Conforming changes.

Issues 1, 5, and 6 were discussed in the initial recommended decision issued in November 1993 and were not addressed in the reopened hearing. No changes have been made in the discussion of these issues in this revised recommended decision.

Issues 7 and 8 were dealt with in an emergency partial final decision issued May 12, 1994, and the resulting final order amendments were made effective for June 1994. The amendments were issued June 22, 1994, and published June 29, 1994 (59 FR 33418).

Issues 2, 3, 4, and 9 were addressed in the reopened hearing on March 1, 1994, and the discussion of Issues 3 and 4 in this revised recommended decision has been revised to reflect the record of that hearing session. Issues 2 and 9 are additions to the original recommended decision.

Findings and Conclusions

The following findings and conclusions on the material issues are based on evidence presented at the hearings and the record thereof:

Background Statement

A public hearing was held February 17–18, 1993, to consider the implementation of multiple component pricing in the Southern Michigan marketing area. On November 29, 1993, the Department issued a recommended decision in this proceeding. The decision proposed a multiple component pricing plan for Order 40. The hearing was reopened at the request of proponents on March 1, 1994, to consider modifications to the pricing plan recommended for the order. An additional proposal considered during the reopened hearing would authorize the market administrator to adjust pool supply plant shipping standards to reflect changes in marketing conditions. A third proposal, to "lock-in" to regulation under the Southern Michigan order a distributing plant processing ultra-high temperature milk, was considered on an emergency basis. The decision and final rule pertaining to the "lock-in" were published on May 23, 1994 (59 FR 26603) and June 29, 1994 (59 FR 33418), respectively.

This recommended decision is revised with respect to the portions dealing with the multiple component pricing issue and somatic cell adjustments (Issues 3 and 4). Portions of the decision dealing with adjustment of cooperative pool supply plant shipping requirements by the market administrator and conforming changes have been added in this revised recommended decision (Issues 2 and 9).

No comments were received in response to the November 1993 recommended decision regarding the pool supply plant definition, administrative assessment, and marketing service assessment provisions that were considered at the initial 1993 hearing. Therefore, this revised recommended decision contains no changes regarding those issues from the decision published December 6, 1993 (58 FR 64176).

1. Pool Supply Plant Definition

A witness for Michigan Milk Producers Association (MMPA) testified during the initial hearing in support of the cooperative's proposal which would amend the pool supply plant definition to include as qualifying shipments transfers of milk to a partially regulated distributing plant. The witness testified that MMPA supplies bulk milk to a local partially regulated distributing plant that has substantial Class I and Class II utilization but receives no credit for such sales toward fulfilling the pool supply plant shipping requirement. The witness explained that the shipment is a bulk transfer from the cooperative (MMPA) to the nonpool plant, with its classification determined during the pooling process. MMPA's post-hearing brief contended that adoption of the proposed amendment would eliminate the inequity caused by such transfers.

According to the cooperative's brief, the current month's marketwide Class I utilization percentage, which includes the portion of the transfer classified as Class I, determines the minimum qualifying shipping requirement for the same month of the following year but does not contribute to the cooperative's Class I use in determining whether pooling standards have been met.

The MMPA witness testified that the partially regulated plant historically had been a pool distributing plant but recently had become involved in the production of extended-life Class II products. As a result, he stated, the plant now has Class I utilization of approximately 40 percent. According to the witness, the partially regulated plant to which MMPA transfers milk is the only such plant to which the proposed amendment would apply. NFO's post-hearing brief supported adoption of the proposed amendment. There was no opposition to the proposal.

Testimony in the record illustrates that the partially regulated distributing plant is indeed satisfying Class I needs in the marketplace through the use of pooled milk, thereby benefitting the pool. Therefore, the proposal to include shipments of producer milk to a partially regulated distributing plant when determining the qualifications of pool supply plants should be adopted.

2. Modification of Pool Supply Plant Shipping Standard by Market Administrator

A proposal to give the market administrator the discretionary authority to administratively change the shipping percentages upward or downward for a supply plant or a unit of supply plants being qualified by a cooperative association should be adopted. The proposed provisions would operate similarly to "call" provisions in other order markets where the market administrator, upon request or upon recognizing a potential problem, notifies the handlers in the order that action may be taken to change the shipping percentage requirements. The percentage change required would be based upon the evidence that the market administrator receives and/or the supply and use data for the market.

The order currently provides that for a cooperative's balancing plant or unit of such plants, the minimum qualifying percentage for each month is established according to the amount of producer milk used in Class I as a percent of total producer milk within the order for the same month of the previous year. The order currently does not provide for any sort of discretionary authority to change pool supply plant shipping requirements. To adjust the shipping percentage requirements, either the requirements must be suspended or permanent changes must be sought through amendments to the order.

The director of bulk milk sales for Michigan Milk Producers Association (MMPA) testified in support of the cooperative's proposal at the reopened hearing. The proponent's intent is to allow for the adjustment of these requirements on a more timely basis than can be done under the current provisions.

The MMPA witness testified that the current order provision is designed to establish a performance standard that reflects the Class I needs of the local market and assures fluid processors that their requirements will be fulfilled. He stated that the provision contains a self adjusting mechanism because the current month's shipping requirements are based on the market requirements from the previous year. He further stated that the provision normally works well. The witness testified, however, that occasions exist in which the market conditions have changed to such an extent that necessary corrections to the self-adjusting mechanism cannot be made on a timely basis.

As an example, the MMPA witness stated that because the minimum shipping percentages are determined by the percentage of producer milk utilized in Class I, the percentage can be influenced by changes in the monthly producer receipts. The witness stated that if milk that normally would be pooled is not, producer receipts and the Class I utilization percentage for the order would change, in turn affecting the following year's shipping requirement. The witness also stated that combining this possible decrease in pool receipts with an increase in bulk milk sales to other markets also may impact the following year's shipping requirements. He said that the shipping percentages established may not reflect the following year's actual fluid requirements from the local and distant markets.

The witness noted that two current options to adjust the shipping

percentage requirements, suspension or permanent amendment to the order provisions, are time-consuming and may require unwarranted drastic action.

In a post-hearing brief, MMPA reiterated support for the proposal. No other support or opposition was expressed at the hearing or in briefs.

The record evidence indicates that empowering the market administrator with the authority to adjust the pool supply plant shipping requirements should result in more timely changes in comparison to current procedures. A more flexible and efficient process would result by authorizing the market administrator to adjust the requirements to either encourage shipments or discourage uneconomic movements of milk as a result of changes in marketing conditions.

It appears that there is a need to provide flexibility of supply plant performance standards when market conditions change from one year to the next. Under such conditions, which could occur at any time, the normal mechanism for change in the order program, which is the hearing process, would not provide a timely response.

Thus, the proposal to give the market administrator discretionary authority to revise the supply plant shipping standards should be adopted. Doing so will provide a means of making appropriate adjustments in this pooling provision as market conditions indicate a need for adjustments. It must be recognized that a more timely response to changed conditions can be provided under such a provision.

There is no apparent reason why restrictions should be imposed to limit the market administrator's authority to change the pooling provisions. It is intended and expected that this authority will be exercised with impartiality and integrity. Moreover, without restrictions more appropriate responses over a broader range of changed conditions may be obtained. Limitations on the authority to revise shipping percentages could result in the market administrator being unable to either increase or decrease the requirements to the full extent necessary in a given situation.

It should be noted that, to the extent appropriate shipping requirements for supply plants can be determined in advance, it would be desirable for the market administrator to revise the requirements for several months at a time, if necessary. If conditions subsequently changed, the market administrator would again review the situation and make further adjustments as necessary. It is hoped that such an arrangement will serve the market well and provide less uncertainty as to what the requirements will be.

There are proprietary supply plants, apparently with no history of pooling problems, thus no need exists to have this type of proposed provision applicable to these plants. Proprietary plants have a fixed qualification percentage of 30 percent each month, with a provision to automatically qualify during the months of March through August based on performance from the previous September through February.

Whenever the market administrator believes that a change in the shipping standards may be needed, whether by request or on his own initiative, he will give written notice that such a change is being considered and invite interested persons to comment. This procedure will assure that all potentially affected persons can have their views and other pertinent information fully considered by the market administrator before a decision is made and announced. Such a procedure now is followed under other orders when a "call" for additional shipments by supply plants is contemplated and also is an appropriate requirement for the new authority provided herein.

3. Multiple Component Pricing

A multiple component pricing plan should be adopted in the Southern Michigan Federal milk marketing order. The pricing plan would be patterned after the multiple component pricing plan initially proposed by Leprino Foods Company and supported by Michigan Milk Producers Association, Independent Cooperative Milk Producers Association, and several other dairy organizations. Producers would be paid on the basis of three components in the milk: butterfat, protein, and the remaining fluid portion that is the "fluid carrier" of the butterfat and protein ingredients. Producers would also share in the value of the pool's Class I and Class II uses. A somatic cell adjustment would apply to the protein prices paid to all producers no matter how the milk was used.

Regulated handlers would pay for the milk they receive on the basis of total butterfat, the protein and fluid carrier used in Classes II and III, skim milk used in Class I, and the hundredweight of milk used in Classes I and II.

At the present time, milk received by handlers is priced according to the pounds of producer milk allocated to each class of use multiplied by the prices per hundredweight of milk testing 3.5 percent butterfat, as determined under the order for each class of use. Adjustments for such items as overage, reclassified inventory, location, and other source milk allocated to Class I are added to or subtracted from the classified use value of the milk. The resulting amount is divided by the total producer milk in the pool to calculate a price per hundredweight for milk testing 3.5 percent butterfat to be paid to producers for the milk they have delivered to handlers. The price paid to each producer is then adjusted according to the specific butterfat test of the producer's milk by means of a butterfat differential. The butterfat differential is computed by multiplying the wholesale selling price of Grade A (92-score) bulk butter per pound on the Chicago Mercantile Exchange, as reported for the month by the U.S. Department of Agriculture, by 0.138 and subtracting the Minnesota-Wisconsin price (the M–W) at test, also as reported by the U.S. Department of Agriculture, multiplied by 0.0028.

The initial hearing in this proceeding was held February 17 and 18, 1993. Michigan Milk Producers Association (MMPA) and Independent Cooperative Milk Producers Association (ICMPA), the two original proponents of multiple component pricing (MCP) under the order, requested reopening the February 1993 proceeding to consider proposals to modify the MCP plan recommended by the U.S. Department of Agriculture (USDA) for the Southern Michigan Order in a decision issued November 29, 1993 (58 FR 64176). MMPA and ICMPA represent approximately 80 percent of producer milk in the Order

The November 1993 recommended decision included a thorough analysis and discussion of the need for MCP pricing and the desirability of including protein as a pricing component based on the record of the proceeding initiated on February 17, 1993. This revised recommended decision includes some of the discussion and basis for adoption of MCP contained in the initial recommended decision, but is based on the entire record of the proceeding which includes the reopened hearing held March 1, 1994.

The MCP plan in the original recommended decision would have priced milk on the basis of its protein and butterfat components. The recommended MCP plan generally was patterned after the plan adopted for the Ohio Valley, Eastern Ohio-Western Pennsylvania, and Indiana orders. Producers would have been paid on the basis of the pounds of milkfat and protein contained in their milk and would have shared in the value of the pool's Class I and Class II uses on a per hundredweight basis. The butterfat

price would have been based on the market value of butter, while the protein price would have been computed by attributing all of the residual value of the M–W, after its butterfat value had been subtracted, to protein. Regulated handlers would have paid for the milk they received on the basis of total milkfat, the protein used in Classes II and III, the skim milk used in Class I, and the hundredweight of total product used in Classes I and II. Protein prices paid to producers on all producer milk would have been adjusted by the somatic cell count of the milk.

MMPA and ICMPA endorsed the recommendation to adopt MCP, but proposed a specific change to the recommended MCP plan. The MMPA and ICMPA (proponent) witness stated in testimony at the reopened hearing that the cooperatives remain committed to the adoption of a MCP plan administered through the Federal order system. Proponents' witness testified that the adopted plan should be equitable to both producers and processors and should send the correct economic signals from the marketplace to the farmer. The witness testified that when the proponents initially proposed a multiple component pricing plan for the Southern Michigan order, their intent was not to create conflicting economic signals for farmers and processors. Proponents' witness stated that the recommended MCP plan could send conflicting signals to handlers and producers by overstating the value of protein in producer milk. The witness stated that such overstatement would create an incentive for processors to purchase low-protein milk while at the same time would encourage farmers to produce high-protein milk.

In the reopened hearing, MMPA and ICMPA specifically requested further consideration of the MCP approach proposed by Leprino Foods Company (Leprino) in the original proceeding. Because other hearing participants had been given insufficient advance notice of Leprino's pricing plan to adequately evaluate the proposal and cross-examine the Leprino witnesses, the Leprino proposal was not considered as a viable alternative in the recommended decision. After having an opportunity for extensive review of the Leprino proposal after the initial hearing, the proponents concluded that the Leprino alternative was a better alternative than the one in the recommended decision.

The Leprino proposal is a three-component pricing system, with the butterfat and protein component prices based on market values for butter and cheese, and a "fluid carrier" component representing the residual value of the M–W price after the protein and butterfat values are subtracted. Proponents' witness testified that because butterfat and protein values can be determined by the butter and cheese markets, respectively, they are reflective of economic conditions with a known degree of precision. Proponents' witness agreed with the original Leprino proposal that the balance of the M–W value should be attributed to a fluid residual price applied to milk volume after the butterfat and protein portions of the M–W price have been accounted for, stating that it is not feasible to assign as precise a value to the other nonfat nonprotein solids in milk as can be assigned to the butterfat and protein components.

Proponents' witness gave two reasons for wanting to consider the Leprino proposal instead of supporting the recommended MCP plan. The first reason involves the method of determining the value of protein. The witness stated that the recommended decision equates the protein value to the skim residual of the M–W price, while the Leprino proposal values protein on the basis of its cheese yield potential.

The proponents' witness stated that the Leprino proposal uses a current market value for cheese and a modified version of the Van Slyke formula, which relates changing protein levels in milk to changes in cheese yield, to calculate the value of protein. The witness stated that the protein price determined through the Van Slyke formula accurately reflects the incremental value of protein in milk and would result in a fair measure of protein value to the dairy producer and handler.

The proponents' witness suggested that the protein price should be derived from the National Cheese Exchange (NCE) price for 40-pound blocks of Cheddar cheese as representing the current market value for cheese. The witness stated that the block cheese price is the most commonly used base price for cheese and is a standard that many cheese manufacturers recognize in pricing their product. The witness testified that the block price better reflects the Southern Michigan commercial market for cheese than the barrel cheese price. He contended that a barrel cheese price would reflect a surplus commodity price, a situation that does not exist in this order.

The second reason that proponents' witness gave for supporting the Leprino proposal is that this plan moderates the impact that component pricing would have on processors of dairy products that have not been scientifically shown to have as direct a relationship between yield and protein content as does cheese. For example, the witness testified, in some instances processors may be unable to recover the same value for protein from products such as packaged fluid cream, condensed milk, and powder in comparison to the value from cheese manufacture.

MMPA's post-hearing brief asserted that under Leprino's proposal, the cost and value of protein is neither too low nor too high. The brief contended that the current butterfat/skim pricing system, in which only the value of butterfat is specifically recognized, places no value on protein. The brief further contended that the recommended decision, in which the entire value of the skim portion of milk is assigned to protein, places too much value on protein, for the true economic value of protein to dairy product processors may bear little resemblance to the skim residual.

A Leprino witness testified again at the reopened hearing in support of Leprino's proposal. Leprino operates two manufacturing plants in the Southern Michigan marketing area that process over 40 percent of the Class III milk and approximately 16 percent of all milk marketed in the Southern Michigan order area. Leprino also manufactures and distributes mozzarella cheese to the food service industry throughout the country.

In testimony at the reopened hearing, the Leprino witness supported the pooling and producer pay price proposals suggested by MMPA and ICMPA. The witness reiterated the characteristics and merits of Leprino's three-component proposal submitted at the original hearing.

The Leprino witness argued at the reopened hearing that one of the major inadequacies of the current butterfat/skim pricing system is that skim is priced without any consideration to the components in this skim milk. The witness said that under the current pricing provisions, the skim value of milk accounts for almost 79 percent of the total Class III (M-W) price; however, the protein or solids-not-fat components included in the skim are not valued. The witness said that producers and handlers receive or pay the same price for milk containing lower or higher levels of protein.

The Leprino witness stated that the original recommended decision in the proceeding would have replaced this current system with another system that inequitably allocates almost 79 percent of the M-W price to only the protein component of skim milk. The witness testified that allocating all of the skim value of milk to the protein component creates a residual protein value which

reflects more than the true value of protein to manufacturers. The witness stated that the recommended decision ignores the value and importance of milk components other than butterfat and protein and places a value on protein that cannot be recovered from the marketplace by most manufacturers of butter, nonfat dry milk, or cheese.

The Leprino witness stated that encouragement needs to be given to producers to produce milk with higher protein content and to manufacturers to utilize these higher levels of protein. He stated that the intent of Leprino's proposal is to send an economic message to producers to produce higher-protein milk while allowing handlers to recover the cost of milk components from the market and cover operating costs. The witness asserted that the concepts offered in its proposal are economically sound, fair to handlers and producers, and in the best interest of long-term stability in milk pricing.

Leprino's post-hearing brief stated that under the original recommended decision, a Cheddar cheese manufacturer's gross margin may decline when paying more for milk with a higher protein content. The brief described Leprino's proposal as achieving the economic balance necessary for processors to pay producers for milk with higher protein levels without reducing processors' profit margins. Leprino's brief stated that consumers also would benefit by receiving dairy products with potentially higher-protein contents without unwarranted inflationary price increases.

The Leprino witness stated that pricing the butterfat component provides producers with an economic incentive to produce the butterfat in raw milk. The witness asserted that a related revenue value for processors exists for butterfat in finished products such as butter, fluid milk, cheese, and other products.

As in the case of butterfat, the witness stated, pricing the protein component gives producers an economic incentive to increase the protein content of their milk. The Leprino witness stated that the protein component's value and related revenue to processors is based on its market value in cheese, with the formula for the protein price based on recognized Cheddar cheese yields using the modified Van Slyke formula.

The Leprino witness suggested that the National Cheese Exchange price reflects the market value of cheese and that the NCE price multiplied by a representative yield factor (calculated via the Van Slyke formula) would establish the value of a pound of protein to a cheese manufacturer. He stated that either the block or the barrel price could be used to represent the Cheddar cheese market price, and stated a preference for the barrel price.

Leprino's exception to the original recommended decision and testimony in the reopened hearing noted that a single component such as protein is not an appropriate means of accounting for all of the value of the skim portion of milk to a handler. Instead, the exception and witness suggested, the value of the protein component should be based on the value of protein in cheese, and the fluid carrier should be used to carry the residual M-W value (M-W price less fat and protein values) which currently cannot be tied specifically to an individual component of milk or derived from a market value for individual components of milk.

A witness for the National Cheese Institute (NCI), the national trade association for manufacturers, processors, and marketers of all varieties of cheese, stated that NCI did not testify at this proceeding's initial hearing because at that time a NCI task force made up of cheese manufacturers and processors was studying the MCP issue. The witness testified that NCI supports the adoption of a single uniform three-component pricing system in all orders where a significant amount of cheese is produced. At the reopened hearing, the NCI witness supported MCP on Class III milk but had no position regarding Class II milk. In a post-hearing brief, NCI asserted that applying MCP to Class I milk would be inappropriate because there exists no measurable or discernable advantage to varying protein levels for milk used as a fluid beverage.

The pricing plan supported by NCI is identical to the proposal advanced by Leprino, MMPA, and ICMPA. NCI's post-hearing brief noted that its proposal (the Leprino plan) allows cheesemakers to break even from processing milk with higher protein contents by seeking out and rewarding producers with higher-protein milk. The NCI witness asserted that any formula which prices protein higher than its value in producing cheese will cut into processor margins and cause cheese manufacturers to seek out lower-protein milk.

As an industry-wide consensus resulting from the NCI task force, the NCI witness suggested that the NCE barrel price should be used to represent the market value of cheese. The witness stated that Cheddar cheese is recognized as an industry standard, and the barrel price was chosen because a significant amount of barrel cheese is traded on the National Cheese Exchange.

Kraft General Foods (Kraft) testified at the initial hearing in this proceeding but not at the reopened hearing. A post-hearing brief filed on behalf of Kraft supported the Leprino proposal. The brief supported using a barrel cheese price to derive a value for protein in milk. The brief also supported maintaining the quality/somatic cell count adjustment included in the recommended decision.

The Kraft brief asserted that the Leprino plan would avoid establishing conflicting economic signals from a protein price which is so high that manufacturers are encouraged to procure low-protein milk. As such, according to the brief, the Leprino proposal represents a positive refinement in the evolution of MCP plans under the Federal order system. The brief stated that the Leprino proposal's protein price tracks the added value of extra protein in added cheese yield and is more closely aligned to the competitive value of milk protein as reflected in many existing industry-sponsored MCP plans than is the plan contained in the recommended decision.

The Kraft brief stated that no proposal at the reopened hearing accounted for handler manufacturing costs when protein is converted from producer milk to finished products. Therefore, the brief noted, all proposals overstate the protein component in raw producer milk.

The Kraft brief noted that the absence of a make allowance causes exaggeration of the component value of protein in raw producer milk and that using the barrel price will tend to moderate any overstatement of the protein value. The brief argued that the price difference between the barrel and the block prices of cheese is due primarily to packaging costs, not milk or cheese value, and concluded that use of the block price instead of the barrel price to calculate a protein price would effectively assign some finished product packaging value to milk protein.

In opposition to one feature of the Leprino plan, a witness for National All-Jersey, Incorporated, (NAJ) argued at the reopened hearing that attributing the residual M-W value to volume does not recognize the value of solids in milk other than protein and fat. The witness asserted that MCP plans that price a portion of the skim milk value on a volume basis would only partially correct the current provisions because all of the solids in skim milk should be priced. The witness stated that increasing returns for milk on a volume basis relative to the price of protein would tend to reduce the producer's

incentive to employ feeding, genetics, and management practices to increase protein.

National All-Jersey, Incorporated, is a national dairy farmer organization that assists members in marketing their milk. The NAJ witness testified that NAJ's primary mission since 1976 has been the promotion of multiple component pricing with the goal of implementing a uniform MCP plan throughout the Federal order system.

In the reopened hearing, the NAJ witness supported the proposal submitted by MMPA and ICMPA, with two modifications. The witness stated that under the NAJ proposal, the protein price is calculated using a different formula than in the proponents' proposal, and the protein price includes a market value for whey. The NAJ witness also stated that the NAJ proposal, after pricing the butterfat and protein components, places the residual value on other nonfat nonprotein solids.

The NAJ witness stated that the major objective of any MCP plan is to provide dairy producers with an economic incentive to produce protein, the most valuable component in milk. The witness stated that because a direct relationship exists between product yields and the level of protein and other solids contained in milk, Class II and III handlers are able to pay for milk in more direct relation to its economic value. The witness stated that an economically and justifiably high protein price is needed to encourage producers to increase the ratio of protein to fat in their milk production.

The NAJ proposal was characterized by the witness as a total solids plan which prices all components in milk. The witness stated that pricing all components in skim milk corrects the inadequacy of the current butterfat/skim pricing system in which a pound of water receives the same price as does a pound of protein or nonfat solids in the skim portion of producer milk. The witness asserted that the NAJ proposal allows handlers to purchase milk more in accordance with its economic return and still gives handlers the incentive to procure and producers to produce higher-protein milk. The NAJ witness supported calculating the same protein and other solids price for both handlers and producers.

The NAJ witness stated that the NAJ proposal includes whey in its protein price calculation in an effort to account for all of the value in milk protein, and described the whey protein concentrate price as the best indicator of the market value of protein in whey. The witness contended that the protein price computed under the NAJ proposal provides more equitable returns to both handlers and producers in comparison to the other proposals presented at the reopened hearing. NAJ's brief asserted that under its proposal, as high a percentage of skim value is allocated to protein as can be economically justified. NAJ maintained that whether or not a cheese plant processes whey should have no bearing on the inclusion of whey in the pricing formula.

For the protein calculation, the NAJ witness said that the NAJ proposal uses the NCE block price for Cheddar cheese because this price is used more widely than other announced cheese prices. Also, the witness stated that the NCE block price is used as a base for pricing other cheeses more than any other cheese price.

The witness stated that the residual under the NAJ proposal represents both the value of other milk solids besides protein and the difference between the value determined by product prices and the competitive M-W price. The NAJ witness testified that the purpose of placing the residual value on other solids is to provide farmers with an incentive to produce something in milk other than water.

Also supporting NAJ's proposal is Tri-State Milk Producers Cooperative, a qualified cooperative with about 640 members marketing milk in several orders, including the Southern Michigan order.

Several participants in the proceeding expressed opposition to portions of the NAJ plan during the hearing and in post-hearing briefs. MMPA's post-hearing brief asserted that placing market values on whey protein and non-fat non-protein solids (principally lactose) assigns values to these solids that are not present in the marketplace.

The Leprino witness opposed including whey in the computation of the protein price for the following reasons: (1) the value of whey is not based on the inherent value of protein or other solids in raw milk; (2) investment in a whey operation is based on a return calculated from the value-added nature of the process and/or the cost of other disposal options rather than the raw ingredient cost; (3) raw unprocessed whey recovered from the cheese making process has no inherent value in the United States; (4) unprocessed whey cannot be sold beyond the factory; (5) raw unprocessed whey is a disposal problem for many cheese operations; and (6) whey returns are excluded from calculation of the cheese support price.

Leprino's brief asserted that the main interest of NAJ is to maximize producer returns for high protein milk and that the NAJ plan achieves this objective by providing for a higher protein component price than can be justified in the marketplace. NCI's brief gave reasons similar to Leprino's for excluding whey in a MCP plan.

The Leprino witness stated that use of a residual solids approach requires a total solids test on milk in addition to a protein test. The witness stated that using a residual fluid approach ascribes all the remaining value to volume, eliminating the need for additional testing, and thus is easier and less costly to administer.

At the initial hearing session, two witnesses testified that protein testing is already widespread in the Southern Michigan market and that testing methods are reliable and accurate. A witness employed in the field of dairy chemistry testified on behalf of MMPA that in the case of protein, the infra-red milk analyzer calibrated with reference to the Kjeldahl test is the method most used by the industry. This method is approved by the Association of Official Analytical Chemists, and the repeatability and accuracy of this method is much better than those of the Babcock test for butterfat.

A MMPA quality control witness testified that protein tests on producer milk in Order 40 are conducted on infra-red test instruments. The witness emphasized that all cooperatives in Order 40 have infra-red instruments and currently are testing producer milk for protein a minimum of five times a month. Therefore, he stated, the inclusion of protein testing would not result in increased cost. The proponent's witness recommended that if the proposal is adopted, the payment to producers should be based on an average of a minimum of five fresh tests per month for both protein and somatic cell count.

The Southern Michigan order should be amended to include multiple component pricing. On the basis of both the initial and reopened records of this proceeding, the proposed multiple component pricing plan would entail pricing milk used in Class II and Class III on the basis of protein and a fluid carrier residual. The Class I and Class II differential prices would be applied to milk used in Classes I and II, and Class I milk would continue to be priced on the basis of volume. Handlers would pay all producers for butterfat directly and would adjust protein prices paid to producers for the somatic cell count of producers' milk. Because milk used for Class III–A purposes is allocated on a pro rata basis with total receipts of Class III milk, MCP is applicable to milk used

in Class III–A in this recommended pricing plan.

The record indicates that a large percentage of the producers pooled under the Southern Michigan order are already eligible for or receive some form of multiple component pricing and that nearly all of these component pricing plans use protein as a pricing component. The record also shows that the diverse component pricing programs that currently exist promote disorderly and inefficient marketing conditions in the procurement of milk supplies by competing handlers. The different programs cause non-uniform bases of payments to producers.

The adoption of multiple component pricing will allow the Order to recognize the additional value in milk with a higher than-average protein content. At the same time, by establishing a residual value based on milk volume, the protein component will not be over-valued, as proponents argue would be the case under the original recommended decision.

Attributing at least a portion of the value of milk to protein in a market such as Southern Michigan, where most of the milk not used for bottling purposes is processed into cheese, is appropriate. Record evidence in this proceeding clearly shows that demand for protein is higher than for other components of milk because of its functional, nutritional, and economic value in the marketplace. The functional characteristics of protein allow it to form the matrix in the production of cheese and yogurt. Protein is also important to the air formation in the manufacture of certain products and provides some required nutrients in the human diet.

Milk containing a higher percentage of protein will result in greater yields of most manufactured products than milk with a lower protein test. Additionally, handlers receiving milk that results in greater volumes of finished products such as cheese and cottage cheese than an equivalent volume of milk testing lower in protein should be required to pay more for the higher-testing milk. At the same time, the dairy farmer producing milk that yields greater amounts of finished products deserves to be paid more for it than a dairy farmer producing the same volume of milk that results in less product yield. Thus, sending an economic signal to dairy farmers will encourage them to maximize the production of those components which have the greatest demand in the marketplace.

Pricing milk on the basis of its protein content also meets the criteria of measurability, intrinsic value, and variability. The evidence in the record shows that protein can be easily measured and, in fact, that the variability in measurement may be less than the variability in butterfat testing because protein does not separate as does butterfat. The record evidence shows that protein has value to the manufacturing sector in the form of improved product yield and product structure. The value to the fluid sector was not quantified in the hearing record; however, testimony indicated some benefit to the fluid sector from higher-protein milk, resulting in a more wholesome and nutritional product. The criterion of variability is necessary to justify pricing a component separately from the product in which it is contained. In the case of protein in milk the record indicates that the level of protein varies from season to season, region to region, and farm to farm. In view of its functional, nutritional, and economic value in dairy products, its widespread use as a pricing component in the Southern Michigan market, and its qualification under the three criteria above, protein appears to be an appropriate component for pricing milk in Federal Order 40.

Hearing evidence from all parties indicates that pricing milk in Order 40 on either the current butterfat/skim basis or the basis of two components—butterfat and either protein or nonfat solids—will not adequately describe, accurately value, or be a sufficiently precise method for classifying and pricing milk used for manufactured products.

As proposed, prices for butterfat and protein should be market-driven. Deriving butterfat and protein values from finished product prices will send the appropriate economic signals to producers and handlers by indicating current market supply and demand conditions for dairy products containing these components of milk.

At issue is the specific design for the revised recommended MCP plan. Two basic MCP plans were proposed in the reopened hearing: The plan proposed by proponents MMPA and ICMPA and supported by Leprino, NCI, and Kraft (the Leprino plan) and the plan proposed by NAJ and supported by Tri-State Milk Producers Cooperative and the American Jersey Cattle Club (the NAJ plan).

The Leprino plan derives a protein price from either the NCE block or barrel cheese price and assigns the residual skim value of the M–W price to a "fluid carrier" component of milk. The NAJ plan derives a protein price from the NCE block cheese and whey protein concentrate prices and assigns the residual skim value of the M–W price to the remaining nonfat nonprotein solids. Each component of the multiple component pricing plan recommended for adoption will be discussed separately.

Butterfat. The value of butterfat in the amended order will be the same as under the current order. There was no proposal or testimony to change the way butterfat currently is valued.

This decision continues the historical relationship of the values of butterfat and butter. Currently the value of butterfat is expressed as a differential; that is, the difference in value between 0.1 pound of butterfat and 0.1 pound of skim milk. The amended order will express the value of butterfat on the basis of a price per pound. Whichever method is used, the value of butterfat in milk is the same. However, by expressing the value on a per pound basis instead of a differential, the objective of demonstrating clearly to producers the value of fat in milk is easily achieved.

As proposed, the butterfat price per pound in the amended order will be determined by multiplying the butterfat differential by 965 and adding the Class III price. The resulting price per hundredweight would then be divided by 100 to give a price per pound of butterfat.

Protein. The protein price for milk pooled under the Southern Michigan Federal milk order should be calculated by multiplying the monthly average of 40-pound block cheese prices on the National Cheese Exchange (NCE) at Green Bay, WI, by 1.32, without including a value for whey protein.

No opposition was expressed at the hearing to pricing protein on the basis of its value in the manufacture of cheese. The differences between participants came in determining the appropriate level of the protein price.

The original Leprino proposal would calculate the protein price by multiplying the monthly average of 40-pound block cheese prices on the NCE by 1.32. Leprino's formula would have resulted in average protein prices, per pound, of $1.6925 in 1992 and $1.6971 in 1993.

The NCI proposal supported by Kraft (modifying the Leprino plan), would calculate the protein price by multiplying the monthly average NCE Cheddar barrel price by 1.32. NCI's formula would have resulted in average protein prices, per pound, of $1.6408 in 1992 and $1.6475 in 1993.

NAJ uses a "justifiably higher protein value" established from block Cheddar (normally higher than barrel) and adds a whey protein concentrate (WPC) price

in order to account for all milk protein and to give farmers an incentive to produce protein rather than to reflect the additional value manufacturers realize from increased protein. The NAJ proposal would calculate the protein price in two parts: (1) multiply the NCE monthly average 40-pound block cheese price by 1.32, and (2) add the monthly average WPC price multiplied by a yield factor of 0.735. The sum of these two values would equal the protein price. NAJ's formula would have resulted in average protein prices, per pound, of $2.0738 in 1992 and $2.1664 in 1993.

Each of the proposals would result in a lower protein value than in the recommended decision or in orders containing MCP plans, such as the Indiana, Ohio Valley, and Eastern Ohio-Western Pennsylvania Federal orders. The handler protein price per pound for these orders would have averaged $2.77 and $2.82 in 1992 and 1993, respectively.

Because the percent of the skim milk value allocated to protein differs under the two proposed plans, the protein price also differs. Under the original recommended MCP plan, 79 percent of the total milk price would be allocated to protein on the basis of 1993 prices. For 1993, the NAJ proposal would allocate 59 percent to protein, and the Leprino proposal would allocate 46 percent of the total M–W price to protein. The Leprino plan assigns less value to protein than the NAJ plan because this plan does not value the protein in whey.

Undisputed by hearing participants was the 1.32 factor, which represents the pounds of 38 percent moisture Cheddar cheese obtained from one pound of protein with 75 percent of the protein going into the cheese as calculated by the modified Van Slyke cheese yield formula. The hearing record indicates that the modified Van Slyke formula accurately measures incremental changes in protein. This accuracy supports the concept that cheese plants would be able to maintain consistent margins from the processing of small increases of protein content in milk. Assuming butterfat is constant, a change of protein by one pound in this formula will change cheese yield by 1.32 pounds. Therefore, the 1.32 factor is appropriate for determining an order protein price based on a market-determined cheese price.

Use of a Cheddar cheese price as a basis for valuation recognizes that, for Cheddar cheese: (1) a well-established national market price exists; (2) standards for manufacture and grading are accepted widely on a national basis; (3) the Van Slyke formula calculates yields that are well-known and verifiable; (4) a majority of other cheese manufactured in the U.S. is traded in relation to Cheddar values with economic differences in costs of manufacturing being reflected in the marketplace; and (5) using Cheddar as a standard significantly simplifies the process.

The question of which cheese price to use in the market protein value calculation, either the NCE block or barrel price, will determine the degree to which the value of the skim portion of milk will be assigned or allocated to protein. For the purpose of reflecting changes in Cheddar cheese market prices (as opposed to the level of such prices), it makes little difference whether the barrel or block price is used because the prices move very similarly, with the barrel price approximately 3 to 4 cents per pound lower than the block price during 1991–93. The difference between the average block and barrel prices from 1992 to 1993 was $0.0383 per pound. Multiplying this difference by the 1.32 factor results in an average difference of $0.0506 per pound of protein between the prices derived from the barrel and the block cheese prices.

The monthly average price for 40-pound block Cheddar cheese on the NCE is the appropriate price to use for determining the protein price. Use of the block price results in producers receiving a higher price for protein than if the barrel price were used, without handlers incurring any significantly higher cost for milk. Use of the block price is also consistent with the Eastern Ohio-Western Pennsylvania, Ohio Valley, and Indiana Federal orders, where the block price is used to adjust the producer pay price for somatic cell count. The Cheddar cheese block price is used as a standard by many cheese manufacturers to price different types of cheese; used in the Coffee, Sugar, and Cocoa Exchange futures price of cheese; in the Class II price calculation; and in California's 4a price.

The price difference between block and barrel cheese may be due to packaging and other nonmilk factors. However, the protein price must be established at a level that best meets the needs of all concerned. The block cheese price should be more effective than the barrel price in establishing a sufficiently high protein price to accomplish the goal of encouraging producers to produce protein without having a detrimental impact on handlers.

The protein formula proposed by NAJ also would include the value of whey protein in the protein price so that all of the protein in the milk would be accounted for. NAJ's inclusion of whey value would increase the protein price computed from the NCE block price by an average of $0.3813 and $0.4690 per pound in 1992 and 1993, respectively.

The whey protein factor should not be included in the computation of the protein price. Hearing evidence shows that the whey protein portion of the NAJ protein price is not necessarily based on a value that a manufacturer can recover from a whey operation. Use of the market price for whey protein concentrate (WPC), the highest-priced whey product, ignores the diversity of whey handling operations and practices that exist throughout the dairy industry.

Whey protein concentrate manufacturing involves sophisticated and expensive technology used by very few manufacturers, and apparently by none in Michigan. Until recently, the dairy industry has treated whey as having negative value, and the production of whey in connection with cheese manufacturing represented a disposal problem involving costs rather than a byproduct opportunity. Inclusion of a whey value in the protein price at this point in the development of whey disposal technology would result in including the potential revenue associated with whey, but none of its actual cost.

Fluid Carrier. The balance of the M–W price, after the values of protein and butterfat are removed, should be priced on the basis of a "fluid carrier" residual. The fluid carrier price per hundredweight will be computed by subtracting from the Class III price the sum of the butterfat price times 3.5 and the protein price times the month's average protein test of the Minnesota-Wisconsin price survey milk. Because the computation of the fluid carrier price is based on a residual value, the fluid carrier price could be negative. In this instance, the fluid carrier price would remain negative, instead of adjusting either the butterfat or protein prices.

Because the M–W price is a competitive pay price rather than a price determined from calculating each component's value, the M–W price reflects factors such as volume premiums, cheese yield premiums, solids-not-fat premiums, butterfat values offered by some manufacturers that exceed the butterfat differential, and pure competition for supply. The fluid carrier residual helps to place a value on these factors that is not accounted for elsewhere. Also, the standards for all finished products require inclusion of some fluid from raw milk; for example, skim milk powder has approximately 4 percent moisture, and Cheddar cheese

has a 38-percent moisture standard. Therefore, the water in producer milk has some value in manufactured products, resulting in revenue to the processor as that fluid is captured in products such as butter, yogurt, cheeses, and nonfat dry milk.

MMPA, ICMPA, Leprino, NCI, and Kraft all supported a fluid carrier component to represent the residual value of the hundredweight of producer milk in Class II and Class III. Each party supported a formula identical to that which is recommended for adoption. The fluid carrier residual would have provided an average value, per hundredweight, of $3.39 in 1992 and $3.68 in 1993.

An alternative residual price was proposed by NAJ, which would price the residual value of the M–W price after the removal of the butterfat and protein values on the basis of "other nonfat solids." The other solids price would be calculated by subtracting from the M–W price the sum of the value of 3.5 pounds of butterfat and the average protein content of milk included in the M–W price survey times the protein price. The result would be divided by the M–W other solids content (M–W nonfat solids minus M–W protein) to obtain the other solids price per pound. This proposed residual would have provided average values, per pound, of $0.40 and $0.41 in 1992 and 1993, respectively.

There is no readily available measure of the market value of the other nonfat solids. The nonfat nonprotein solids component principally consists of lactose. The other solids price would represent not only the value of the lactose and ash, but would include an adjustor between the butterfat and protein component values of milk, which are determined by the market value of those components in dairy products, with a competitively set producer pay price (the M–W). While there is a value to lactose, attributing the entire residual value of milk to the nonfat nonprotein component would overstate the true economic value of lactose after accounting for processing costs and ignore the value of water in milk. It would be inequitable and uneconomical to place the residual value of milk on lactose instead of on the residual fluid volume. The other solids price may send a signal to producers to produce higher solids while sending a conflicting signal to manufacturers.

Because the M–W price is a basic price for milk, at least one of the components in the payment plan must represent the difference between a competitively-set pay price (the M–W) and the product-derived component prices. The fluid carrier is this component.

In addition, if the other solids price had a negative value, either the protein or butterfat price would need to be adjusted in order for the other solids price to retain at least a value of zero. If this situation were to arise, the adjusted protein price, for example, would no longer represent the true market value associated with protein. Consequently, producers and handlers would receive an inappropriate economic signal from the adjusted price.

The residual skim value of the M–W, after accounting for protein, should be placed on the fluid carrier component. Hearing record evidence indicates that the M–W price represents various factors that may not have a known market value, such as various premiums or pure competition for milk supply. The fluid carrier value would represent these factors. The hearing record also shows that moisture standards exist for all dairy products. The fluid carrier component recognizes the fact that the water in milk does hold value for the processor and the producer. Lastly, the correct economic signals relating to butterfat and protein will be sent to both producers and processors if the residual calculation is negative. The function of the residual is to connect the value of milk components in manufactured dairy products with a market-determined price for milk used in those products.

Miscellaneous. The butterfat and protein component prices will be expressed on a per-pound basis to the nearest one-hundredth cent. Analysis has shown that by expressing these prices to the nearest one-hundredth of a cent, the accuracy of the prices is enhanced significantly over expressing the prices to the nearest cent. Additionally, the difference between what is paid into the producer-settlement fund and what is drawn from the producer-settlement fund is much closer to zero than when prices are rounded to the nearest full cent. The fluid carrier price will be expressed on a per hundredweight basis, rounded to the nearest whole cent.

For the purpose of allocating protein and fluid carrier to the classes of use, the assumption will be made that the protein and fluid carrier cannot easily be separated. The protein and fluid carrier will therefore be allocated proportionately based on the percentage of protein and fluid carrier in the skim milk received from producers.

In contrast to other orders that have multiple component pricing provisions, this decision incorporates only one protein price. The pooling of the components to include the Class I skim portion is incorporated within the computation of the producer price differential. This feature of the pricing plan allows for the elimination of separate handler and producer protein prices, and resulting confusion over which price, handler or producer, should be used in different situations. In addition, a handler's per-pound price for protein is the same whether the handler is buying milk from producers or from other handlers.

The producer price differential, which represents the additional value of Class I and Class II milk in the pool and any positive or negative effect of Class III–A, will be determined by computing for each handler, and then accumulating for all handlers, the differential value (from Class III) of the Class I, Class II, and Class III–A product pounds. The differential value is adjusted, when appropriate, for shrinkage and overage, inventory reclassification, receipts of other source milk allocated to Class I, receipts from unregulated supply plants and location adjustments.

For the purpose of eliminating differences between handler and producer component values, the value of the Class I skim milk and the values of the protein and fluid carrier contained in the skim milk allocated to Class II and Class III will be added to, and the values of the protein and fluid carrier contained in all producer milk subtracted from, the differential pool. The accumulated total for all handlers then will be adjusted by total producer location adjustments and one-half the unobligated balance in the producer-settlement fund. The resulting value then will be divided by the total pounds of producer milk in the pool, with an amount not less than six cents or more than seven cents per hundredweight deducted. The result is the producer price differential to be paid to producers on a per hundredweight basis.

It is possible for the producer price differential to be negative. A negative producer price differential can result for two reasons. Any one or more of the Class I, II, or III–A differential prices may be negative and/or the minus adjustments may be large enough to offset any positive contribution from the differential prices. A negative producer price differential would be equivalent to a uniform price less than the Class III price.

The Leprino panel testifying at the initial hearing session suggested that payment for protein be based on true protein rather than total Kjeldahl nitrogen because only true protein has real value to processors.

Testing for true protein may have considerable merit. However, the hearing record lacks sufficient discussion of the benefits of specifying testing for true protein versus total protein. Approved testing methods currently vary among states, and the orders at this time should not mandate specific protein tests. If more and more states begin to mandate specific types of protein testing, it may become necessary to specify such testing in the orders.

4. Somatic Cell Adjustment

This decision continues to recommend a somatic cell count (SCC) adjustment to protein prices paid to producers for all classes of milk. The somatic cell adjustment recommended is derived from the reduction in cheese yield as the somatic cell level goes from zero to 1,000,000, converted to a value per pound of protein.

Adjusting protein prices paid to producers by SCC was proposed during the initial hearing as part of a multiple component pricing system and was included in the recommended decision. Three fluid milk processors and a trade association for fluid milk processors filed exceptions to the recommended decision. Although this specific issue was outside the scope of the reopened hearing notice, two witnesses at the reopened hearing session testified against inclusion of a somatic cell adjustment in addition to filing exceptions to the recommended decision and briefs after the reopened hearing.

Each of these four parties opposed the recommended application of an SCC adjustment on milk used in Class I. Support for the SCC adjustment on Class I milk was stated in MMPA's post-hearing brief. Following is a summary of the initial hearing somatic cell testimony, exceptions to the original recommended decision, reopened hearing testimony, and briefs filed after the reopened hearing. Most of the exceptions, reopened hearing testimony, and briefs reiterated what was presented during the initial hearing and in post-hearing briefs. Unless specified, the following evidence was given at the initial hearing.

The director of milk sales for Michigan Milk Producers Association stated that the functional value of protein in the production of manufactured dairy products and its role in providing wholesome flavor and nutritional value in fluid milk products is affected by the SCC level of the raw milk supply. Therefore, the witness asserted, elevated SCC levels and raw bacteria counts diminish the functional value of all milk. According to the witness, the damage is irreversible and cannot be restored by a mechanical process at a dairy plant.

The MMPA witness testified that high SCC levels are accompanied by an increase in the amount of undesirable enzymes in milk as well as an increased susceptibility of the fat component to attack by these enzymes. The witness explained that the undesirable enzymes attack the fat in milk and release free fatty acids. The witness stressed that even at very low concentrations, free fatty acids are responsible for producing off-flavors in any dairy product that contains milkfat. The MMPA witness noted that research has shown that the free fatty acid content of raw milk with high SCCs is higher than that of raw milk with low SCCs. The witness also pointed out that the enzymes are able to survive normal pasteurization and continue the process of deterioration of the flavor of finished fluid products, thus reducing shelf life. Therefore, he testified, protein payments to producers should reflect the influence of somatic cells on the quality of all milk.

The director of member services and quality control for MMPA testified that mastitis, an inflammation of the mammary gland, is a reaction to a cow's immune system fighting off invading bacteria. The witness explained that white blood cells and epithelial cells known as somatic cells are secreted during the process to destroy the invading bacteria. The witness stated that the level of somatic cells indicates, and is proportionate to, the infection level of a cow's udder.

Another witness testified for MMPA that somatic cells seem to have an impact on milk quality through their ability to cause changes in the enzymatic characteristics of milk. The witness explained that the enzymes generated by somatic cells degrade the casein and change its functional attributes. He pointed out that some changes include higher losses in cheese yield, differences in flavor characteristics, and changes in other functional characteristics that may weaken the structure of curd in a curd formation when making a product. The witness stated that high SCCs in milk cause an increased rate of rancid off-flavors, which produce a flavor that would be noticeable to a consumer. The witness explained that free fatty acids are one component that determines the shelf life of a fluid product and correlates to rancid off-flavors.

MMPA's witness went on to say that the enzyme which causes the damage is always present in an inactive form in milk. The active form of the enzyme, once it is produced in milk, is heat-stable and therefore unaffected by pasteurization or ultra-high temperature processing. The witness explained that most of the damage to protein occurs while milk is in the udder of the cow. However, if milk is cooled quickly and held at refrigeration temperature, further damage is minimized. The witness explained that producers can reduce the average somatic cell count of their milk through better management and proper adjustment and maintenance of milking equipment.

The MMPA quality control employee stated that SCC standards were adopted as a measure of milk quality and are included in the Pasteurized Milk Ordinance (PMO) because of the recognition of their public health significance in the milk supply. The witness explained that the condition of mastitis and the subsequent increase of somatic cell levels decrease the quality of milk by reducing the levels of butterfat, lactose, total casein and total solids in milk and increasing whey protein, chloride, and sodium levels.

The MMPA witness noted that SCCs have been included as a criterion within quality premium programs throughout the United States, including Michigan, for several years. The witness testified that all milk marketing cooperatives in Michigan use the Optical Somatic Cell Count (OSCC), an electronic method, for measuring levels of somatic cells. According to the witness, the OSCC method is the most accurate method available for testing somatic cells and is a method approved by the Association of Official Analytical Chemists (AOAC). Another MMPA witness stated that instruments are available and currently are being used to test a large number of samples on a reliable basis for both protein and somatic cell count.

The MMPA witness noted that the SCC standards under the PMO would be lowered from 1,000,000 to 750,000 on July 1, 1993. The witness pointed out that under the PMO, all Grade A producers are required to be tested a minimum of four times in six months for somatic cells. He explained that most producers whose milk is pooled under Federal Order 40 have been tested five times a month for the past several months, with test results reported to the producers. The witness stated that MMPA's average SCC for 1992 was 308,000, according to record data. However, he stated, this average is based upon one SCC test per farm per month. The witness explained that in comparing data collected for the past six months, one test per month versus five tests per month, the cooperative's average SCC could increase by as much as 50,000. Another MMPA

representative testified that the proposed neutral zone had been reduced from the initial proposal to between 300,000 and 450,000 to better reflect current data with regard to average SCCs in Order 40.

According to an MMPA witness, an adequate number of times per month to test a herd for SCC would be the number of times currently used for butterfat, four or five times. The witness stated that the functional value of milk changes as soon as the SCC exceeds about 100,000. He stated that one of his research studies, which was conducted under ideal conditions, indicated that as SCCs change from zero to 1,300,000, cheese yields decline an additional two to three percent. The witness also stated that there is a maximum yield loss of about two percent when SCCs change from 100,000 to 750,000.

MMPA supported the SCC adjustment on all milk in a brief filed after the reopened hearing. The brief asserted that the recommended decision recognizes the impact that SCC levels have on the functional value of milk for both fluid and manufacturing processors. The brief noted that the difference in the Class I differentials between the Ohio and Indiana orders greatly exceed the four to six cents per hundredweight identified as the potential effect on a Class I handler's price resulting from the somatic cell adjustment.

The regional dairy director for National Farmers Organization (NFO) testified in opposition to the inclusion of a somatic cell adjustment. The witness stated that uniformity in the pricing provisions of Orders 40, 33, 36, and 49 is of overriding importance and urged the Secretary to adopt the same MCP programs for all orders. The witness argued that because of the degree of overlap in milksheds and sales between these orders, differences in order provisions will cause confusion and disorderly marketing conditions.

The NFO witness observed that SCC is only one of several factors in NFO's and other quality programs. The witness stated that the incorporation of an SCC adjustment would destroy the flexibility of voluntary quality programs. The NFO witness stated that adoption of an SCC adjustment would overstate the importance of SCC among other factors used in determining milk quality and elevate SCCs to a disproportionate role in determining the value of milk. He argued that this disproportionate emphasis on SCCs is exacerbated by the inherent vagaries of testing for SCCs.

The NFO representative stated that somatic cell count is one of the more volatile variables in the measurement of milk quality and can vary significantly within the same herd. The witness noted that a MMPA witness testified at the multiple component pricing hearing for Orders 33, 36, and 49 that tests for SCC are much less precise than tests for butterfat or protein. The NFO witness explained that the variations in SCC tests within a herd during a month are much greater than for butterfat or protein.

A Kraft witness stated at the initial hearing that Kraft supports the inclusion of somatic cell adjustments in any component pricing plan. The witness noted that testimony and evidence in previous hearings, as well as in this hearing, reveal that there is a reduction in cheese yield as somatic cell levels increase, thus lowering the value of protein in milk.

During the initial hearing, the witness for Country Fresh, Inc. (Country Fresh), a fluid milk and Class II processor in Order 40, supported an SCC adjustment on all classes of milk, but recommended that the size of the proposed adjustment be reduced substantially. Under his recommended changes to the proposal, the witness stated that based on the peak cheese prices during 1992, the maximum plus and minus somatic cell adjustments would have been 15 cents a hundredweight. He argued that combined, this would create a range of about 30 cents, as the most the market can bear without creating a disincentive against receiving high-quality milk.

The witness noted that effective July 1, 1993, the cap on the SCC for Grade A milk will be 750,000. The witness and Country Fresh's brief argued that the proposed neutral zone of 300,001 to 500,000 and MMPA's modified proposed neutral zone of 300,001 to 450,000 are too high. The witness testified that the average somatic cell count in the Southern Michigan marketing area is approximately 340,000, according to the market's largest cooperative. Therefore, the witness suggested that the appropriate neutral zone be 300,000 to 399,999 and the highest bracket 700,000 and up.

The witness continued by stating that if the somatic cell program is modified as suggested, Country Fresh could support its inclusion in the Southern Michigan order. He testified that Country Fresh urges that the somatic cell program be tried in a moderate rather than a radical manner. Otherwise, the witness claimed, chaotic marketing conditions could be created which would result in a new hearing being held in the not-too-distant future to amend the order. Country Fresh's brief further noted testimony of MMPA, Leprino, and NFO which asserted that there are other factors involved in high quality milk besides SCC.

In an exception to the recommended decision, in testimony during the reopened hearing, and in a post-hearing brief, Country Fresh changed its position and expressed opposition to an SCC adjustment to milk used in Class I. During the reopened hearing and in a post-hearing brief, Country Fresh proposed to modify the recommended Southern Michigan somatic cell adjustment to be similar to the SCC adjustment on Class II, III, and producer milk adopted in the Ohio Valley, Eastern Ohio-Western Pennsylvania, and Indiana marketing orders. Country Fresh's brief filed after the reopened hearing stated that the handler currently does not adjust for SCC on the milk it purchases.

The Country Fresh witness testified that uniformity of pricing provisions across Federal orders is important because a substantial overlap in Class I sales and raw milk procurement exists between Indiana, Ohio, and Michigan. The witness stated that the SCC adjustment on Class I milk in the recommended decision does not apply in either the Indiana or the Ohio Valley Federal orders.

Country Fresh's brief asserted that implementing an SCC adjustment on Class I milk in Southern Michigan but not the surrounding areas would change the Class I price relationship between these orders. The brief stated that disruptive and inequitable marketing conditions would result for handlers regulated under the Southern Michigan order relative to handlers regulated under orders in which no SCC adjustment is made. The brief contended that evidence presented at either the initial or reopened hearing did not justify an increase in the cost of Class I milk in Southern Michigan relative to neighboring orders.

The Country Fresh witness estimated that on a total milk supply basis, the SCC adjustment for each Class I handler could potentially affect the Class I price from four to six cents per hundredweight. The witness stated that the impact of SCC has not been this great in the Indiana Federal order, where the adjustment is not based on the total milk supply as was recommended in Southern Michigan.

Country Fresh's exception and brief agreed that lower SCC levels have some value to fluid milk processors. However, both the exception and brief argued that no difference exists whether milk is processed in Michigan or in Indiana; thus no distinction should be made between these markets based on SCC pricing. In addition, the witness stated

that it is not possible to relate somatic cell levels to a value on Class I milk or to the specific value adjustments recommended in the decision.

Witnesses for, and briefs and exceptions filed by, the Kroger Company (Kroger), Dean Foods Company (Dean), and the Milk Industry Foundation (MIF) opposed the inclusion of somatic cell counts as part of the pricing structure as it would relate to Class I fluid handlers. Kroger operates a pool distributing plant regulated under Order 40. Dean has been marketing milk in the Southern Michigan market for over 30 years and operates a bottling plant known as Liberty Dairy in Evert, Michigan. MIF is a national trade association with 215 member companies located in all 50 states that process nearly 80 percent of all fluid milk products nationwide.

The division manager of milk procurement for Kroger argued that there is no economic justification to include a somatic cell adjustment on Class I sales or any Class II and III products such as raw fluid milk inventory, half and half, eggnog, Class III shrinkage, and sales of surplus cream. According to the witness, the price or product yields of these items are not influenced by the amount of protein in the raw milk used in their manufacture. Additionally, the witness argued, adoption of the MMPA proposal would make it impossible for processors to recover the cost of these products and would create inequitable and uncompetitive Class II and Class III market conditions for Order 40 processors compared to their competitors regulated under other orders.

The Kroger representative continued by stating that Kroger is not opposed to a proposal which introduces multiple component pricing with protein pricing and a somatic cell adjustment for milk processed in Class II and III used-to-produce products. The witness stated that if the MMPA proposal is modified accordingly the MCP plan combined with a somatic cell count adjustment would have a potential benefit to producers and processors. Kroger's opposition to an SCC adjustment on Class I milk was reiterated in an exception to the recommended decision.

The Kroger witness and MIF's brief argued that adoption of an SCC adjustment on milk used in Class I would result in disruptive and inequitable marketing conditions for Order 40 handlers versus their competitors in other markets where the provision does not exist. The Kroger witness and MIF noted that a somatic cell count adjustment would eliminate the advance knowledge fluid milk processors currently have of the Class I price and force handlers to estimate the value of somatic cells for the current month's price. The Kroger representative claimed that the proposal would influence the value of Class I milk based on the SCC level in raw milk.

MIF expressed concern that milk processors would incur increased costs from milk with low SCCs that they would be unable to recover from product sales because consumers are unable to differentiate between low and high SCC milk. MIF's exception also contended that increased costs from both procuring low SCC milk and more frequent product testing would lead to higher retail prices for milk and a decrease in fluid milk sales. Exceptions to the recommended decision, testimony during the reopened hearing, and post-hearing briefs filed by MIF reiterated these arguments opposing an SCC adjustment on Class I milk.

According to MIF's brief, there is no quantifiable scientific evidence that the level of somatic cells results in any appreciable difference in the attributes of fluid milk, particularly attributes which would be discernible by consumers. MIF described the testimony of MMPA as failing to make an absolute statement regarding quantifiable economic benefits to fluid milk use resulting from lower somatic cell counts. MIF stressed that there is no need to pay a premium for reduced SCCs when the permissible count is being reduced by regulations. In briefs, MIF and NFO questioned whether it is appropriate for the Federal order system to adopt a policy and administer practices which allocate economic advantages and disadvantages among certain segments of the dairy industry.

The witness for Dean Foods stated that there is no scientific evidence which shows that handlers or consumers benefit from lower somatic cell counts and that the inclusion of SCC adjustments in the pricing structure of producer milk within the Federal order system would ultimately be borne by the consumer. However, the witness stated, Dean supports the inclusion of SCC premiums in Class II or Class III producer milk where there is evidence of improved yields due to reduced levels of somatic cells.

Dean Foods' exception reiterated arguments made by Country Fresh and MIF. Additionally, Dean's exception noted that a six cent per hundredweight adjustment in the Class I price would equal 0.005 cents per gallon and would amount to additional costs between $180,000 and $200,000 per year for the Liberty Dairy bottling plant. The exception stated that the plant, at which 85 to 90 percent of receipts are used in Class I, currently has a premium program which includes an SCC adjustment as one of the factors in pricing milk. Dean noted, however, that SCC alone is not considered to be a quality enhancer for Class I products.

The Leprino panel that testified in the original hearing stated that Leprino supports the inclusion of SCC adjustments to value protein properly as long as other basic milk quality criteria are achieved, notably low psychrotrophic bacteria count and low raw bacteria count. Additionally, the panel also testified that Leprino opposes quality adjustments for Class I milk unless it can be clearly demonstrated that there is a discernable benefit to the Class I handler. The panel recommended that yield factors used to value somatic cell counts should be conservative, given the conflicting scientific evidence, and should be uniform across Federal orders.

According to testimony at the original hearing by the Leprino production manager, Leprino participates in milk quality programs based on several parameters, providing incentives for producers with high-quality milk and disincentives for inferior-quality milk. The witness noted that in the MCP hearing for Orders 33, 36, and 49, three studies were introduced into evidence and referenced in the recommended decision to justify adjusting the protein payment by SCCs. However, the witness argued that each study shows different yield impacts at different SCC levels in raw milk. The witness also noted a study which indicates that SCCs may affect yields, but day-to-day changes in milk composition obscure the effect. The witness pointed out that a study by one of the MMPA witnesses states that payment for milk quality should not rest solely on somatic cell counts.

The Leprino witness testified that scientific evidence indicates that the greatest yield benefits are at a level of 100,000 to 200,000 and greatest yield losses are above 500,000. The witness noted that the SCC limit under the PMO soon will be adjusted to 750,000. He stated that Leprino's proposal offers an adjustment of plus 20 cents to minus 20 cents for legal Grade A milk and includes a prerequisite of other milk quality conditions that can affect cheese yield. The witness recommended that USDA use a conservative approach given the Department's limited experience with mandated milk quality criteria for payment purposes. The witness urged that the adjustments be

uniform between all Federal orders to ensure orderly marketing.

The Leprino quality assurance director testified that the two methods for testing for the level of SCC are direct microscopic cell count (DMSCC) and optical somatic cell count (OSCC). She stated that the DMSCC is a tedious method which takes extensive training and precision to perform and is used to calibrate electronic methods. She estimated that equipment for performing SCC tests by the DMSCC method costs about $4,000. According to the witness, the OSCC methods are easily performed, generally more precise, and are less labor intensive than the DMSCC. The witness stated that the unit cost for equipment is between $40,000 and $100,000 and, when combined with infra-red component testing systems, could range from $150,000 to $200,000.

The Leprino quality witness expressed opposition to the proposed order amendment which would allow no adjustment to a producer's protein price if an average SCC was not available for the month. The witness claimed that processors would not be able to reduce payments on high SCC milk if testing is not mandated. Therefore, the witness urged that testing be conducted no less than five times per month with at least one test per week. Furthermore, the witness recommended that if no tests are available, the handler should assume the milk falls in the highest adjustment category of 750,000 SCC per milliliter.

The quality witness for Leprino testified that in addition to SCC, raw bacterial count (SPC) and psychrotrophic bacteria also have a direct influence on milk quality and hence its value to a processor. The witness stated that SPC gives an indication of sanitary practices around milking, and transferring and the storage of milk. The witness claimed that SPC has been recognized and widely used as a basis for valuing milk. She added that psychrotrophic bacteria are those bacteria capable of appreciable growth under commercial refrigeration, regardless of the optimal growth temperature of the organisms. According to the witness, such bacteria degrade protein and fats, causing off-flavors, odors, slime formation, and reduction in cheese yields.

Leprino's exception to the recommended decision stated that the adoption of one quality attribute (SCC) as a requirement for milk payment purposes without consideration of the other raw milk quality attributes opposes all the market practices currently operating in the Southern Michigan order. The exception urged that if milk quality is to be regulated under the order, the adopted model should be similar to those currently used by almost all of the handlers. The exception asserted that this program would include multiple minimum raw milk quality attributes such as raw bacteria counts and psychrotrophic bacteria counts.

In a brief filed after the reopened hearing, NCI contended that a specific schedule of SCC adjustments, such as was included in the recommended decision, should not be included as part of the order. The brief suggested that the order provisions should include authority for handlers to submit individual plans for market administrator approval to pay premiums or make deductions based on SCC as long as the total payment to all producers reflects the monthly minimum pay price under the order. The brief contended that this system would permit individual handlers the option to use adjustments that reflect the effect of low or high SCC milk on manufactured product production without requiring a rigid schedule of order-specified adjustments in milk costs based on various levels of SCC.

A somatic cell count adjustment should be adopted because it reflects the value of the level of somatic cells contained in milk. The adjustment will be on protein prices received by producers for all producer milk. There was significant testimony during the initial hearing that elevated levels of somatic cells diminish the functional value of milk in all uses. A reduction in the yield of cheese and other curd-based manufactured products, an increased rate of off-flavors, and a reduction in the shelf-life of fluid products all result from elevated levels of somatic cells.

The proponents' proposed neutral zone of 300,000 to 450,000 has been reduced to between 301,000 and 400,000 to better reflect the market's average somatic cell count and to correspond more closely with the multiple component pricing plan adopted for Orders 33, 36 and 49. Although increments of 100,000 were proposed, this decision breaks down somatic cell adjustments into increments of 50,000. Increments of 50,000 assure producers that if slight testing inaccuracies (which may be greater in the case of somatic cells than for butterfat or protein) cause their protein price to be adjusted to the next level, that adjustment will not represent the entire value of a 100,000 increment of SCC.

In addition, because of the reduction in the maximum permissible SCC, 750,000 and over will become the maximum increment for which protein prices will be adjusted for somatic cell content. It is possible that some Grade A producers may have an average SCC of 750,000 or more for a month without losing Grade A status because of differences between the market administrators and health departments in the number of leucocyte (somatic cell) tests taken in a given period of time. In cases where a handler has not determined a monthly average SCC for a producer, it will be determined by the market administrator.

Because the value of milk has been shown to be affected by the level of somatic cells, appropriate adjustments must be determined to apply to the various levels of somatic cells. These adjustments will be used to adjust the protein prices paid to individual producers. The somatic cell adjustment to producer protein prices will be computed by multiplying the appropriate constant for increment of somatic cell count by the monthly average 40-pound block cheese price at the National Cheese Exchange as published monthly by the Dairy Division. The resulting somatic cell adjustment will be added to or subtracted from the protein price paid to producers.

The somatic cell adjustment to be used in determining protein prices paid to producers is derived from the reduction in cheese yield as the somatic cell level goes from zero to 1,000,000, converted to a value per pound of protein. The evidence contained in the hearing record shows that there is a one percent reduction in cheese yields as somatic cells increase to 100,000, and cheese yields decline an additional two to three percent as somatic cells increase from 100,000 to 1,000,000. There is also a maximum yield loss of about two percent as SCCs increase from 100,000 to 750,000. This decision reflects the proportional change in cheese yields as the SCC level changes.

The constant to be used for calculating somatic cell adjustments was computed by dividing the change in cheese yields attributable to changes in somatic cell counts by a representative protein test of producer milk (3.2 percent). As proposed, the adjustment to the producer protein price for somatic cell content would be computed by dividing the product of the cheese price and a factor that varies with the somatic cell level by the representative protein percent used in calculating the handler protein price.

MMPA's proposed factors varied from .20 for a somatic cell count below 100,001 to −.20 for a somatic cell count above 750,000. Leprino's proposed

factors varied from .20 to −.25, and Country Fresh proposed factors varied from .128 to −.128. This decision includes factors that vary from .25 to −.25 and are based on the reduction in cheese yield associated with varying somatic cell counts. Although .20 was the maximum positive factor proposed, .25 should not overcompensate producers for producing the highest quality milk.

The factors adopted in this decision are similar to the ones proposed, with the largest difference occurring at SCC levels below 151,000 and above 500,000. Record testimony reveals that milk containing between 100,000 and 200,000 SCC yields the greatest benefits and milk containing more than 500,000 SCC yields the greatest losses in cheese production. Evidence also reveals that SCC per milliliter of milk typically ranges between 200,000 and 400,000. Therefore, it is logical to assume that the majority of Order 40 producers' SCCs will fall within the 200,000 to 400,000 range.

As shown in Table 1, the factors to be used in adjusting handler and producer protein prices for somatic cell content do not reflect a linear relationship between cheese yields and somatic cells because the relationship between these factors is not linear. Dividing these factors by a standard protein content of 3.2 yields the constants shown in Table 1 to be used for computing the somatic cell adjustment. Use of a constant substantially simplifies the computation of the somatic cell adjustment without changing the corresponding value. This result occurs because the protein percentage must change by a considerable amount before the adjustment will change. Therefore, the somatic cell adjustment will be calculated by multiplying the constant corresponding to each somatic cell count interval by the average price of 40-pound block cheese at the National Cheese Exchange as reported monthly by the Dairy Division.

TABLE 1.—FACTORS AND CONSTANTS TO BE USED IN COMPUTING THE SOMATIC CELL ADJUSTMENT

Somatic cell counts	Factors	Constants for computing the somatic cell adjustment
1 to 50,000	.250	.078125
51,000 to 100,000	.200	.062500
101,000 to 150,000	150	.046875
151,000 to 200,000	100	.031250
201,000 to 250,000	.050	.015625
251,000 to 300,000	.025	.0078125
301,000 to 350,000	.000	.0000000
351,000 to 400,000	.000	.0000000
401,000 to 450,000	−.025	−.0078125
451,000 to 500,000	−.050	−.015625
501,000 to 550,000	−.075	−.0234375
551,000 to 600,000	− 100	−.031250
601,000 to 650,000	− 125	−.0390625
651,000 to 700,000	− 150	−.046875
701,000 to 750,000	−.200	−.062500
751,000 to above	−.250	−.078125

Several hearing participants indicated that there is a great deal of overlap in milk procurement and Class I sales between Order 40 and Orders 33, 36, and 49 and stressed the importance of uniformity between the orders. This decision differs from the MCP plan adopted for Orders 33, 36, and 49 because it recommends a somatic cell adjustment on all producer milk, as proposed. There is no reason to believe that the resulting difference between the orders will have an adverse effect by allowing Order 40 handlers a competitive advantage over Orders 33, 36, and 49, or vice versa.

Although there is considerable overlap in the production areas of these four markets, significant differences currently exist in the prices paid to producers located in the same production areas but pooled under different orders. It is not likely that the considerably smaller differences in somatic cell adjustments to producer protein prices will cause marketing disorders in milk procurement arrangements between the four marketing areas.

Regarding assertions that somatic cell adjustments would increase Class I handlers' cost of milk significantly, it is unlikely that any handler's total milk receipts would vary greatly from the market's average SCC. Even handlers with a somatic cell average in the 201,000–250,000 range will pay an SCC adjustment of no more than about 6 cents per hundredweight, which would still result in a lower Class I price than is effective in any of the other three marketing areas. It is also probable that application of somatic cell adjustments to milk used in Classes II and III, but not in Class I, would result in Class I handlers receiving lower-quality milk from suppliers without the payment of additional premium.

The effect of somatic cell adjustments on the advance nature of Class I prices should be expected to be minimal. The somatic cell adjustments are a very small portion of the cheese price and any changes from month to month would be correspondingly small in relation to changes in the cheese price. In addition, the biggest factor in Class I price movements is the amount of change in the M–W price, which can be expected, on average, to represent ten times the change in the cheese price.

The argument that somatic cell counts have wider fluctuations than butterfat or protein tests is apparently valid. However, the hearing record does not contain evidence that any problems resulting from variability in testing outweighs the benefits of including SCC adjustments in the MCP plan. As specified in the Agricultural Marketing Agreement Act of 1937, one of the functions of the market administrator is "Providing * * * for the verification of weights, sampling and testing of milk purchased from producers." 7 U.S.C. 608c(5)(E). Because the market administrator will now be verifying the sampling and testing of milk for somatic cells, the variation in somatic cell levels due to testing should be minimized much as the differences in butterfat tests

due to testing variations were minimized when the Federal milk order program was first instituted.

The Agricultural Marketing Agreement Act in 7 U.S.C. § 608c(5) authorizes the Secretary to adjust minimum prices paid to producers based upon the quality of the milk purchased. Therefore, the argument that somatic cells cannot be used as a criterion for adjusting a producer's pay price is invalid. Furthermore, the hearing record shows that the level and presence of somatic cells directly affect the quality and grade of milk in that SCCs above a certain level result in the loss of a producer's Grade A permit.

Record evidence indicates that SCC is only one of the factors that affect milk quality. However, there is not enough substantial evidence to include other factors, such as psychrotrophic and raw bacteria count, as criteria used to determine milk quality for payment purposes. Testimony indicates that there may be merit in including other quality factors besides SCC in Federal milk order pricing, but further study of the role of such other factors in affecting the value of milk is needed. In any case, the inclusion of other quality factors in this proceeding goes beyond the scope of the hearing notice.

Because the NCI proposal for individual handler SCC plans was not included in the notice for either the initial or the reopened hearing, thus precluding an opportunity for cross-examination, it cannot be considered as an alternative to the proposed or recommended SCC adjustment schedule. It should be noted that adjusting the minimum producer milk price for SCC does not preclude other premiums paid by the handler

5. Administrative Assessment

The maximum allowable rate of assessment to be paid by handlers to cover the cost of administering the Southern Michigan order should be increased to 4 cents per hundredweight. The assessment would continue to be applied to the same milk to which the present assessment applies. The Act specifies that persons who are regulated shall pay the cost of operating the program through an assessment on the milk handled by regulated persons who are defined as handlers under the order. The present 2-cent per hundredweight maximum allowable rate of assessment has been provided for the administration of Order 40 since the order became effective on December 1, 1960.

The 2-cent increase in the maximum allowable rate was proposed by MMPA. During the initial hearing, a witness for the cooperative association testified that the present ceiling on the deduction rate for administrative services does not adequately compensate the market administrator for all services rendered. In a post-hearing brief, MMPA stated that the market administrator should have the authority to collect revenue necessary to perform the duties required by regulations. There was no other testimony on this proposal at the hearing. NFO's brief expressed support for MMPA's proposal.

The Ohio Valley, Eastern Ohio-Western Pennsylvania, Southern Michigan and Michigan Upper Peninsula orders (Orders 33, 36, 40 and 44) are administered under the supervision of a single market administrator, headquartered in Cleveland, Ohio. Prior to 1992, Federal Orders 33 and 36 were administered by another market administrator

The Balance Sheets and Income and Expense Statements for the Administrative Fund are compiled by the market administrator and reported annually to regulated handlers as well as to other interested parties. Record data for the years 1990 and 1991 show that the administrative expenses associated with the operation of Orders 40 and 44 exceeded the income the market administrator received from assessments by $80,000. However, when the four markets were consolidated in 1992, income exceeded expenses by $400,000. The change indicates that Orders 33 and 36 are bearing some of the financial responsibilities of Orders 40 and 44.

The witness for MMPA stated that the current rates of assessment for Federal Orders 33 and 36 are higher than for Orders 40 and 44. Furthermore, the witness noted, the recent recommended decision for Orders 33 and 36 sets the maximum allowable deduction rate for administrative services at 4 cents per hundredweight.

Handlers and producers serving the market have jointly asked that a new multiple component pricing program be provided to adjust the value of milk used by regulated handlers and payments to producers. The implementation and administration of that pricing plan for Order 40 may require the purchase of some new laboratory equipment and the performance of additional administrative duties. Many of the testing expenses associated with the multiple component pricing plan would be paid for with money from the marketing service fund. However, because the value of milk used by handlers in Classes I, II and III would be established on the basis of the milk's butterfat, protein, fluid carrier, and somatic cell content, some of the expenses related to establishing the level of these factors in producer milk likely would be paid for with money from the administrative fund. Thus, there is no reason to expect the expenses of administering the order to decline.

Providing a higher maximum rate of assessment in the order does not mean that the higher rate will apply automatically when the amended order becomes effective. The amendment gives the market administrator the discretionary authority to set the rate at any level up to the maximum specified in the order When the amended order becomes effective, the market administrator may decide that no change in the effective assessment rate is necessary or that some increase to a level less than the maximum allowed is warranted. Further, an increase in the maximum rate will assure that Order 40 will bear, with Orders 33 and 36, an equitable share of the cost of operating the market administrator's office

6. Marketing Service Assessment

The maximum rate of deduction from payments to nonmember producers for the cost of providing marketing services such as butterfat, protein, somatic cell testing, and market information for nonmember producers should be increased to 7 cents per hundredweight under the Southern Michigan order The increase is needed to assure sufficient revenue to cover the expenses incurred by the market administrator in providing such services to producers who are not members of a qualified cooperative association. Currently, the maximum allowable deduction for such services is 5 cents per hundredweight. Like the administrative assessment, this maximum rate has been effective since December 1, 1960.

During the initial hearing, Michigan Milk Producers Association proposed that the maximum allowable assessment rate for marketing services be increased to 7 cents per hundredweight. The MMPA representative testified that the market administrator provides services which involve verification of weights, samples and tests of milk received from producers, as well as providing market information to producers who are not members of a cooperative association. The witness and MMPA's post-hearing brief stated that in order for the market administrator to adequately perform the duties required by the order, he must be allowed to have the authority to collect the revenue necessary to provide those services. A post-hearing brief filed on behalf of NFO supported MMPA's

proposal. There was no opposition to the proposal.

The Ohio Valley, Eastern Ohio-Western Pennsylvania, Southern Michigan and Michigan Upper Peninsula orders (Orders 33, 36, 40 and 44) are administered under the supervision of a single market administrator, headquartered in Cleveland, Ohio. Prior to 1992, Federal Orders 33 and 36 were administered by another market administrator.

The Balance Sheets and Income and Expense Statements for the Marketing Service Fund are compiled by the market administrator and reported annually to nonmember producers as well as to other interested parties. Record data for the years 1990 and 1991 show that the expenses incurred by the market administrator in providing marketing services exceeded income by about $54,000. In 1992, when the statements for the four markets were combined, expenses exceeded income by approximately $116,000.

It is evident from the foregoing that the 5-cent deduction from producer payments for marketing services in the Southern Michigan order has been inadequate to cover the costs incurred in the performance of such duties by the market administrator. It also shows that the financial situation worsened when the statements were combined in 1992. The increase will align the maximum marketing service assessment rate of Order 40 with that recently adopted for Orders 33 and 36. In addition, the multiple component pricing plan recommended in this decision will require additional testing activities. Because not all handlers are equipped to make all of the determinations that will be required under the amended order, many of these duties will have to be performed by the market administrator responsible for administering the order.

The 7-cent maximum rate of deduction for marketing services proposed by MMPA should be provided in Order 40. The higher rate should give the market administrator the necessary flexibility to conduct effective marketing service programs, including any additional duties relating to the implementation and administration of the new pricing program that will be incorporated in the order.

Provision of a 7-cent maximum rate does not mean that the 7-cent rate will become effective automatically. Maximum rather than fixed rates of deduction are specified in the orders because the relationship between income and expenses for the fund is subject to many variables. Changes in the pounds of nonmember milk marketed and the rate assessed on these marketings increase or decrease the income of the marketing service fund, while changes in order requirements and the expenses of providing marketing services result in changes in total outlays.

An increase in the maximum allowable assessment will give the market administrator the discretionary authority to set the rates of deduction for marketing services at levels necessary to cover the expense of providing marketing services. The market administrator may use his discretionary authority to determine if rates below the upper limits adopted in the amended order will provide sufficient funding to conduct an adequate program for nonmember producers.

9. Conforming Changes

To accommodate multiple component pricing, a number of changes need to be made in the current order provisions of the Southern Michigan order. To compute a handler's obligation and the producer price differential, several prices need to be defined. The Class I differential price should be defined as the difference between the current month's Class I price and the current month's Class III price. The Class II differential price should be defined as the difference between the current month's Class II price and the current month's Class III price. These differential values should not be confused with the fixed value that is added to the Minnesota-Wisconsin price for the second preceding month to arrive at the Class I price for the current month or the computed value that is used in the computation of the Class II price. It should also be pointed out that these differential prices may be negative, which currently happens when the Minnesota-Wisconsin price is greater than the Class I or Class II price. The skim milk price will be calculated by subtracting from the Class III price the value determined by multiplying the butterfat differential by 35. The skim milk price will be expressed on a per hundredweight basis.

Because producer location adjustments are not changed in this decision, the application of such adjustments to the producer price differential remains unchanged.

To enable the market administrator to compute the producer price differentials, handlers will need to supply additional information on their monthly reports of receipts and utilization. In addition to the product pounds and butterfat currently reported, handlers will be required to report pounds of protein. This information will be required from each handler for all producer receipts, including milk diverted by the handler, receipts from cooperatives as 9(c) handlers, and receipts of bulk milk received by transfer or diversion.

Somatic cell adjustments to protein prices will be made when handlers pay producers for their milk. Somatic cell counts, therefore, must be reported with other producer payroll information. As in the case of payments to producers for butterfat, somatic cell adjustments do not have to be included in pool obligations or credits for payments to producers. The handlers receiving producer milk will pay for the protein in the milk based on its somatic cell count because they are the parties directly affected by the quality of milk they receive.

The amendments to order language accompanying this revised recommended decision are based on the current language of the Southern Michigan order There are two national amendatory proceedings in process (the M–W replacement and Class II pricing) that may result in changes to some of the provisions that will also be changed by this proceeding. No attempt has been made in drafting the order language amendments accompanying this decision to accommodate any of the changes that may result from the other two proceedings. Any adjustments needed will be made on the basis of the order language in effect at the time a final decision is issued.

Rulings on Proposed Findings and Conclusions

Briefs and proposed findings and conclusions were filed on behalf of certain interested parties. These briefs, proposed findings and conclusions, and the evidence in the record were considered in making the findings and conclusions set forth above. To the extent that the suggested findings and conclusions filed by interested parties are inconsistent with the findings and conclusions set forth herein, the requests to make such findings or reach such conclusions are denied for the reasons previously stated in this decision.

General Findings

The findings and determinations hereinafter set forth supplement those that were made when the Southern Michigan order was first issued and when it was amended. The previous findings and determinations are hereby ratified and confirmed, except where they may conflict with those set forth herein.

(a) The tentative marketing agreement and the order, as hereby proposed to be amended, and all of the terms and conditions thereof, will tend to effectuate the declared policy of the Act;

(b) The parity prices of milk as determined pursuant to section 2 of the Act are not reasonable in view of the price of feeds, available supplies of feeds, and other economic conditions which affect market supply and demand for milk in the marketing area, and the minimum prices specified in the tentative marketing agreement and the order, as hereby proposed to be amended, are such prices as will reflect the aforesaid factors, insure a sufficient quantity of pure and wholesome milk, and be in the public interest;

(c) The tentative marketing agreement and the order, as hereby proposed to be amended, will regulate the handling of milk in the same manner as, and will be applicable only to persons in the respective classes of industrial and commercial activity specified in, a marketing agreement upon which a hearing has been held; and

(d) It is hereby found that the necessary expense of the market administrator for the maintenance and functioning of such agency will require the payment by each handler, as his pro rata share of such expense, 4 cents per hundredweight or such lesser amount as the Secretary may prescribe, with respect to milk specified in § 1040.85 of the aforesaid tentative marketing agreement and the order as proposed to be amended.

Recommended Marketing Agreement and Order Amending the Order

The recommended marketing agreement is not included in this decision because the regulatory provisions thereof would be the same as those contained in the order, as hereby proposed to be amended. The following order amending the order, as amended, regulating the handling of milk in the Southern Michigan marketing area is recommended as the detailed and appropriate means by which the foregoing conclusions may be carried out.

List of Subjects in 7 CFR Part 1040

Milk marketing orders.

For the reasons set forth in the preamble, the following provisions in Title 7, Part 1040, are proposed to be amended as follows:

PART 1040—MILK IN THE SOUTHERN MICHIGAN MARKETING AREA

1. The authority citation for 7 CFR Part 1040 continues to read as follows:

Authority: Secs. 1–19, 48 Stat. 31, as amended; 7 U.S.C. 601–674.

2. Section 1040.7 is amended by adding paragraphs (b)(5)(iii) and (b)(6)(iii) to read as follows:

§ 1040.7 Pool Plant.

* * * * *

(b) * * *

(5) * * *

(iii) A partially regulated distributing plant that is neither an other order plant, producer-handler plant, nor an exempt plant and from which there is route disposition in consumer-type packages or dispenser units in the marketing area during the month.

(6) * * *

(iii) The shipping percentages determined pursuant to paragraph (b)(6)(ii) of this section may be increased or decreased by the market administrator if the market administrator finds that such revision is necessary to encourage needed shipments or to prevent uneconomic shipments. Before making such a finding, the market administrator shall investigate the need for revision either on the market administrator's own initiative or at the request of interested parties. If the investigation shows that a revision of the shipping requirements might be appropriate, the market administrator shall issue a notice stating that the revision is being considered and invite data, views, and arguments. Any request for revision of shipping percentages shall be filed with the market administrator no later than the 15th day of the month prior to the month for which the requested revision is desired to be effective.

* * * * *

3. Section 1040.30 is amended by revising paragraphs (a) introductory text, (a)(1), (a)(2) and (a)(3), and paragraph (c), and removing paragraph (d), to read as follows:

§ 1040.30 Reports of receipts and utilization.

* * * * *

(a) Each handler described in § 1040.9 (a), (b), and (c) shall report for each of its operations the following information.

(1) Product pounds, pounds of butterfat, and pounds of protein contained in:

(i) Receipts of producer milk, including producer milk diverted by the handler;

(ii) Receipts of milk from handlers described in § 1040.9(c); and

(iii) Receipts by transfer or diversion of bulk fluid milk products.

(2) Product pounds and pounds of butterfat contained in:

(i) Receipts of fluid milk products not included in (a)(1) above and bulk fluid cream products from any source;

(ii) Receipts of other source milk;

(iii) Inventories at the beginning and end of the month of fluid milk products and products specified in § 1040.40(b)(1); and

(3) The utilization or disposition of all milk, filled milk, and milk products required to be reported pursuant to this paragraph.

* * * * *

(c) Each handler not specified in paragraphs (a) and (b) of this section shall report with respect to its receipts and utilization of milk, filled milk, and milk products in such manner as the market administrator may prescribe.

4. Section 1040.31 is amended by revising paragraph (a) to read as follows:

§ 1040.31 Payroll reports.

(a) On or before the 20th day after the end of each month, each handler described in § 1040.9 (a), (b), and (c) shall report to the market administrator its producer payroll for such month, in the detail prescribed by the market administrator, showing for each producer:

(1) The producer's name and address;

(2) The total pounds of milk received from such producer, with its protein and butterfat percentage;

(3) The total pounds of butterfat contained in the producer's milk;

(4) The total pounds of protein contained in the producer's milk;

(5) The somatic cell count of the producer's milk;

(6) The amount, or the rate per hundredweight, or rate per pound of component, the somatic cell adjustment to the protein price, the gross amount due, the amount and nature of any deductions, and the net amount paid.

* * * * *

5. Section 1040.41 is amended by revising the second sentence of paragraph (c) to read as follows:

§ 1040.41 Shrinkage.

* * * * *

(c) * * * If the operator of the plant to which the milk is delivered purchases such milk on the basis of weights determined by farm bulk tank calibration, with protein and butterfat tests and somatic cell counts determined from farm bulk tank samples, the applicable percentage for the cooperative association shall be zero.

6. Section 1040.50 is amended by revising the section heading, introductory text and paragraph (a), and adding paragraphs (e) through (j), to read as follows:

§ 1040.50 Class and component prices.

Subject to the provisions of § 1040.52, the class prices per hundredweight of milk containing 3.5 percent butterfat and the component prices for the month shall be as follows:

(a) *Class I price.* The Class I price shall be the basic formula price for the second preceding month plus $1.75

* * * * *

(e) *Class I differential price.* The Class I differential price shall be the difference between the current month's Class I and Class III price (this price may be negative).

(f) *Class II differential price* The Class II differential price shall be the difference between the current month's Class II and Class III price (this price may be negative).

(g) *Skim milk price.* The skim milk price per hundredweight, rounded to the nearest cent, shall be the Class III price less an amount computed by multiplying the butterfat differential by 35.

(h) *Butterfat price.* The butterfat price per pound, rounded to the nearest one-hundredth cent, shall be the Class III price plus an amount computed by multiplying the butterfat differential by 965 and dividing the resulting amount by one hundred.

(i) *Protein price.* The protein price per pound, rounded to the nearest one-hundredth cent, shall be 1.32 times the average monthly price per pound for 40-pound block Cheddar cheese on the National Cheese Exchange as reported by the Department.

(j) *Fluid carrier price.* The fluid carrier price per hundredweight, rounded to the nearest whole cent, shall be the Class III price, less the sum of the butterfat price times 3.5 and the protein price times the average protein test of the basic formula price as reported by the Department for the month (this price may be negative).

7 Section 1040.53 is revised to read as follows:

§ 1040.53 Announcement of class and component prices.

(a) On or before the 5th day of the month, the market administrator shall announce the following prices and any other price information deemed appropriate:

(1) The Class I price for the following month;

(2) The Class III price for the preceding month,

(3) The Class III–A price for the preceding month,

(4) The skim milk price for the preceding month,

(5) The butterfat price for the preceding month,

(6) The protein price for the preceding month;

(7) The fluid carrier price for the preceding month;

(8) The butterfat differential for the preceding month.

(b) On or before the 15th day of the month, the market administrator shall announce the Class II price for the following month computed pursuant to § 1040.50(b).

8. The section heading in § 1040.60 and the undesignated center heading preceding it, the introductory text, and paragraphs (a) and (f) are revised to read as follows:

Producer Price Differential

§ 1040.60 Handler's value of milk.

For the purpose of computing a handler's obligation for producer milk, the market administrator shall determine for each month the value of milk of each handler with respect to each of his pool plants and of each handler described in § 1040.9 (b) and (c), as follows:

(a) Calculate the following values:

(1) Multiply the total hundredweight of producer milk in Class I as determined pursuant to § 1040.44(c) by the Class I differential price for the month;

(2) Add an amount obtained by multiplying the total hundredweight of producer milk in Class II as determined pursuant to § 1040.44(c) by the Class II differential price for the month,

(3) Add an amount obtained by multiplying the hundredweight of skim milk in Class I as determined pursuant to § 1040.44(a) by the skim milk price;

(4) Add an amount obtained by multiplying the pounds of skim milk in Class II and Class III as determined pursuant to § 1040.44(a) by the average protein content of producer skim milk received by the handler and multiplying the resulting pounds of protein by the protein price; and

(5) Add an amount obtained by subtracting from the hundredweight of skim milk in Class II and Class III as determined pursuant to § 1040.44(a), an amount determined by multiplying that hundredweight of skim milk by the average protein content of producer skim milk received by the handler and multiplying the resulting hundredweight of fluid carrier by the fluid carrier price.

* * * * *

(f) Add an amount obtained from multiplying the Class I differential price applicable at the location of the nearest unregulated supply plants from which an equivalent volume was received by the pounds of skim milk and butterfat in receipts of concentrated fluid milk products assigned to Class I pursuant to § 1040.43(e) and § 1040.44(a)(7)(i) and the pounds of skim milk and butterfat subtracted from Class I pursuant to § 1040.44(a)(11) and the corresponding steps of § 1040.44(b), excluding such skim milk and butterfat in receipts of bulk fluid milk products from an unregulated supply plant to the extent that an equivalent amount of skim milk or butterfat disposed of to such plant by handlers fully regulated under any Federal milk order is classified and priced as Class I milk and is not used as an offset for any other payment obligation under any order

* * * * *

9 Section 1040.61 is revised to read as follows.

§ 1040.61 Producer price differential.

For each month the market administrator shall compute a producer price differential per hundredweight of milk as follows:

(a) Combine into one total for all handlers:

(1) The values computed pursuant to § 1040.60 (a)(1), (a)(2) and (b) through (i) for all handlers who made reports pursuant to § 1040.30 for the month and who made payments pursuant to § 1040.71 for the preceding month,

(2) Add the values computed pursuant to § 1040.60 (a)(3), (a)(4), and (a)(5) and subtract the values obtained by multiplying the handlers' total pounds of protein and total hundredweight of fluid carrier contained in such milk by their respective prices,

(3) Subtract the value obtained by multiplying the difference between the Class III price and the Class III–A price times the pounds of product determined pursuant to § 1040.43(f);

(4) Add an amount equal to the total value of the minus location adjustments computed pursuant to § 1040.75 (a) and (b);

(5) Subtract an amount equal to the total value of the plus location differentials computed pursuant to § 1040.75 (a) and (b); and

(6) Add an amount equal to not less than one-half of the unobligated balance in the producer-settlement fund.

(b) Divide the aggregate value computed pursuant to paragraph (a) of this section by the sum of the following

(1) The total hundredweight of producer milk, and

(2) The total hundredweight for which a value is computed pursuant to § 1040.60(f).

(c) Subtract not less than 6 cents nor more than 7 cents per hundredweight.

The result shall be the "producer price differential."

10. Section 1040.62 is revised to read as follows:

§ 1040.62 Announcement of producer prices.

On or before the 11th day after the end of each month, the market administrator shall announce the following prices and information:

(a) The producer price differential;

(b) The protein price;

(c) The fluid carrier price;

(d) The butterfat price;

(e) The average protein content of producer milk; and

(f) The statistical uniform price for milk containing 3.5 percent butterfat, computed by combining the Class III price and the producer price differential.

11. A new section 1040.63 with an undesignated centerheading preceding it and a new section 1040.64 are added to read as follows:

Producer Price Differential

§ 1040.63 Value of producer milk.

The value of producer milk shall be the sum of:

(a) The producer price differential computed pursuant to § 1040.61 and adjusted pursuant to § 1040.75, multiplied by the total hundredweight of producer milk received from the producer;

(b) The butterfat price computed pursuant to § 1040.50(h), multiplied by the total pounds of butterfat contained in the producer milk received from the producer;

(c) The protein price computed pursuant to § 1040.50(i) and adjusted pursuant to § 1040.64, multiplied by the total pounds of protein contained in the producer milk received from the producer; and

(d) The fluid carrier price computed pursuant to § 1040.50(j), multiplied by the total pounds of fluid carrier contained in the producer milk received from the producer.

§ 1040.64 Computation of somatic cell adjustment.

(a) For each producer, an adjustment to the protein price for the somatic cell count of the producer's milk shall be determined by multiplying the constant associated with the appropriate somatic cell count interval in the table in paragraph (b) of this section by the simple average price for the month of 40-pound blocks of Cheddar cheese at the National Cheese Exchange as reported by the Department. If a handler has not determined a monthly average somatic cell count, it will be determined by the market administrator.

(b) The following table shows the factors and constants to be used in computing the somatic cell adjustment

Somatic cell counts	Factors	Constants for computing the somatic cell adjustment
1 to 50,000	.250	.078125
51,000 to 100,000	.200	.062500
101,000 to 150,000	.150	.046875
151,000 to 200,000	.100	.031250
201,000 to 250,000	.050	.015625
251,000 to 300,000	.025	.078125
301,000 to 350,000	.000	.000000
351,000 to 400,000	.000	.000000
401,000 to 450,000	−.025	−.0078125
451,000 to 500,000	−.050	−.015625
501,000 to 550,000	−.075	−.0234375
551,000 to 600,000	−.100	−.031250
601,000 to 650,000	−.125	−.0390625
651,000 to 700,000	−.150	−.046875
701,000 to 750,000	−.200	−.062500
751,000 and above	−.250	−.078125

12. Section 1040.71 is amended by revising paragraphs (a)(1) and (a)(2) to read as follows:

§ 1040.71 Payments to the producer-settlement fund.

(a) * * *

(1) The total value of milk of the handler for such month as determined pursuant to § 1040.60.

(2) The sum of:

(i) An amount obtained by multiplying the total hundredweight of producer milk as determined pursuant to § 1040.44(c) by the producer price differential, excluding any applicable location adjustment pursuant to § 1040.75(a)(3);

(ii) An amount obtained by multiplying the total pounds of protein contained in producer milk by the protein price;

(iii) An amount obtained by multiplying the total pounds of fluid carrier contained in producer milk by the fluid carrier price; and

(iv) An amount obtained by multiplying the pounds of skim milk and butterfat for which a value was computed pursuant to § 1040.60(f) by a price computed as follows: the statistical uniform price as adjusted for location pursuant to § 1040.52 less 3.5 times the butterfat differential pursuant to § 1040.74.

* * * * *

13. Section 1040.73 is amended by revising the first sentence of paragraph (a), paragraph (b)(1)(ii), and paragraph (c), to read as follows:

§ 1040.73 Payments to producers and to cooperative associations.

(a) Except as provided by paragraph (b) of this section, on or before the 15th day of each month, each handler (except a cooperative association) shall pay each producer for milk received from the producer during the preceding month, not less than the value determined pursuant to § 1040.63 adjusted by the location differential pursuant to § 1040.75, less the payment made pursuant to paragraph (d) of this section. * * *

(b) * * *

(1) * * *

(ii) The total pounds of butterfat, total pounds of protein contained, and total pounds of fluid carrier in such milk, and the average somatic cell count;

* * * * *

(c) On or before the 13th day after the end of each month, each handler shall pay a cooperative association, which is a handler with respect to milk received by him from a pool plant operated by such cooperative association, or by bulk tank delivery pursuant to § 1040.9(c), not less than an amount computed by:

(1) The hundredweight of Class I milk received times the Class I differential price for the month plus the pounds of Class I skim milk times the skim milk price for the month;

(2) The hundredweight of Class II milk received times the Class II differential price for the month,

(3) The pounds of butterfat received times the butterfat price for the month;

(4) The pounds of protein received in Class II and Class III times the protein price for the month;

(5) The pounds of fluid carrier received in Class II and Class III times the fluid carrier price for the month;

(6) The somatic cell adjustment to the protein price, as computed pursuant to § 1040.63(c); and

(7) Less any payment made pursuant to paragraph (d) of this section.

* * * * *

14. Section 1040.74 is revised to read as follows:

§ 1040.74 Butterfat differential.

The butterfat differential, rounded to the nearest one-tenth cent, shall be 0.138 times the butter price less 0.0028 times the average price per hundredweight, at test, for manufacturing grade milk, f.o.b. plants in Minnesota and Wisconsin, as reported by the Department for the month. The butter price means the simple average for the month of the daily prices per pound of Grade A (92 score) butter. The prices used shall be those of the Chicago Mercantile Exchange as reported and published weekly by the Dairy Division, Agricultural Marketing Service. The average shall be computed by the Director of the Dairy Division using the price reported each week as the daily price for that day and for each following day until the next price is reported.

15. Section 1040.75 is amended by revising paragraphs (a)(1) and (c), to read as follows:

§ 1040.75 Plant location adjustments for producers and on nonpool milk.

(a) * * *

(1) May deduct for milk to be paid for at the producer price differential the rate per hundredweight applicable pursuant to § 1040.52(a) (1) or (2) for the location of the plant at which the milk was first physically received.

* * * * *

(c) For purposes of computation pursuant to §§ 1040.71 and 1040.72, the statistical uniform price shall be adjusted at the rates set forth in § 1040.52 applicable at the location of the nonpool plant from which the other source milk was received except that the statistical uniform price, so adjusted, shall not be less than the Class III price.

16. Section 1040.76 is amended by revising paragraph (a)(4) and the third sentence of paragraph (b)(1)(ii), to read as follows:

§ 1040.76 Payments by handler operating a partially regulated distributing plant.

* * * * *

(a) * * *

(4) Multiply the remaining pounds by the amount by which the Class I differential price exceeds the producer price differential, both prices to be applicable at the location of the partially regulated distributing plant (but not to be less than the Class III price); and

* * * * *

(b) * * *

(1) * * *

(ii) * * * Any such transfers remaining after the above allocation which are classified in Class I and for which a value is computed for the handler operating the partially regulated distributing plant pursuant to § 1040.60 shall be priced at the statistical uniform price (or at the weighted average price if such is provided) of the respective order regulating the handling of milk at the transferee-plant, with such statistical uniform price adjusted to the location of the nonpool plant (but not to be less than the lowest class price of the respective order), except that transfers of reconstituted skim milk in filled milk shall be priced at the lowest class price of the respective order; and

* * * * *

§ 1040.85 [Amended]

17. In Section 1040.85 the introductory text is amended by removing the words "2 cents" and adding in their place the words "4 cents."

§ 1040.86 [Amended]

18. In Section 1040.86 paragraph (a) is amended by removing the words "5 cents" and adding in their place the words "7 cents".

Dated: December 2, 1994.

Kenneth C. Clayton,

Acting Administrator.

[FR Doc. 94-30417 Filed 12-13-94; 8:45 am]

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federal register

Wednesday
December 14, 1994

Part III

Department of Agriculture

Agricultural Marketing Service

7 CFR Part 201
Federal Seed Act Regulations; Final Rule

DEPARTMENT OF AGRICULTURE

Agricultural Marketing Service

7 CFR Part 201

[No. LS-91-010 PR]

RIN 0581-AA52

Amendments to Regulations Under the Federal Seed Act

AGENCY: Agricultural Marketing Service, USDA.

ACTION: Final rule.

SUMMARY: The Agricultural Marketing Service (AMS) is revising the Federal Seed Act (FSA) regulations by changing the common and botanical names of several agricultural and vegetable seeds; adding several kinds to the list of agricultural and vegetables seeds subject to the FSA; changing germination evaluation descriptions; changing the method of fluorescence use in determining pure seed percentages in ryegrasses; adding methods for testing coated seed; adding methods for determining the presence of fungal endophyte in seeds; and updating the standards for certified seed. These changes will result in the adoption of scientific names currently recognized by the scientific community and provide for the use of common names most widely acceptable in seed trade. They will also eliminate potential conflicts between State and Federal regulations which could inhibit the interstate movement of seeds.

EFFECTIVE DATE: January 13, 1995.

FOR FURTHER INFORMATION CONTACT: For further information contact James P. Triplitt, Chief, Seed Regulatory and Testing Branch, Livestock and Seed Division, AMS, USDA, Building 506, BARC-E, Beltsville, Maryland 20705, telephone 301-504-9430.

SUPPLEMENTARY INFORMATION: This rule has been determined to be not-significant for purposes of Executive Order 12866 and therefore has not been reviewed by OMB.

This final rule has been reviewed under Executive Order 12778, Civil Justice Reform. It is not intended to have a retroactive effect. The rule will not preempt any State or local laws, regulations, or policies unless they present an irreconcilable conflict with this rule. There are no administrative procedures which must be exhausted prior to judicial challenge to the provision of this rule.

The Administrator, AMS, has certified that this action will not have a significant impact on a substantial number of small entities as defined in the Regulatory Flexibility Act. Many small entities sell seed. However, small entities selling seed must test and label the seed to comply with the requirements of state laws. Generally the testing requirements of the state laws are similar to those of the FSA. These changes will further reconcile State and Federal testing procedures. Using similar testing procedures will reduce the burden on small entities shipping seed in interstate commerce because the test used for intrastate commerce can also be used in interstate commerce. Some additional burden might occur concerning small entities shipping kinds which are added to those subject to the FSA. However, many small entities are likely to benefit because more small entities are purchasers of those kinds than sellers. The small entity purchasers will benefit from the regulations in that the interstate shipper would be required to test and label the kinds before shipping them to the purchaser. There will be no effect on the competitive position of small entities in relation to larger entities since both will have to comply with the same regulations.

Background

Seed Testing and Labeling

This document updates the FSA regulations pertaining to seed testing to eliminate differences between the FSA regulations and the Association of Official Seed Analysts (AOSA) Rules for Testing Seed. The Association is made up of State and Federal seed testing agencies. Its function is to develop and standardize methods to be used in testing seeds. These rules are widely recognized and are used by most state and commercial seed laboratories to test seed in the United States. In addition, common and scientific names are updated.

Agricultural and vegetable seeds shipped in interstate commerce must comply with the FSA and the regulations issued thereunder. The FSA requires seed to be labeled with certain information concerning its quality when moving across state lines. Once in a state, seed must comply with state laws and regulations. Labeling requirements in State and Federal laws are generally very similar so as not to inhibit the free movement of seed. Tests used prior to shipment to determine the required labeling information, as well as tests used by state seed regulatory agencies to check compliance, are generally performed using AOSA rules. Tests to assure that seed is in compliance with the FSA are performed using methods specified in the FSA regulations. Although the testing methods under the FSA regulations and those of AOSA are generally very similar, some changes have been made in the AOSA Rules For Testing Seed without corresponding changes in the FSA regulations. The changes to the AOSA rules were based on scientific research and were made with input from AMS. This document amends the FSA seed testing regulations so that they are essentially the same as those contained in the AOSA rules. This will eliminate the need to perform separate tests to assure that seed labeling complies with both Federal and State laws. It also facilitates seed trade and reduces cost to the seed industry and to seed buyers. These changes reflect improvements in seed testing technology and the current standards of usage within the industry. The specific changes to the testing rules are discussed under "Other Amendments."

Additional Kinds

There are presently about a dozen kinds (mostly grasses) which are being shipped interstate that are not subject to the FSA. Cooperating state seed regulatory agencies have requested that the list of kinds subject to the FSA be kept current so that interstate shipments of those kinds can be regulated. Occasionally complaints are received on these kinds. For that reason these kinds are being added to the regulations under the FSA making them subject to Federal law. Bluejoint, galletagrass, bottlebrush-squirreltail, green needlegrass, kenaf, forage kochia, mountain rye, intermediate ryegrass, northern sweetvetch, and basin wildrye are added to the list of agricultural seeds subject to the FSA. Dill, sage, and summer savory are added to the list of vegetable seeds subject to the FSA. Standardized test methods have been developed for the kinds to be added and they are currently covered by AOSA rules and are being regulated by the states. Therefore, this addition will result in little cost to the seed industry. Being subject to the FSA will require that the seed is labeled when shipped in interstate commerce.

Scientific Names

Changes to § 201.2 update scientific names for the agricultural seeds colonial bentgrass, glaucantha bluegrass, Nevada bluegrass, sand bluestem, carpetgrass, soft chess, emmer, hard fescue, kudzu, Korean lespedeza, striate lespedeza, Japanese millet, pearl millet, bird rape, turnip rape, rescuegrass, smilo, sorghum-sudangrass, sudangrass, turf timothy, velvetbean, beardless wheatgrass, intermediate wheatgrass, pubescent wheatgrass, Siberian

wheatgrass, slender wheatgrass, streambank wheatgrass, tall wheatgrass, western wheatgrass, and Russian wildrye. The scientific names for the vegetable seeds artichoke, Chinese cabbage, tronchuda cabbage, water cress, leek, pak-choi, and rhubarb are also be updated. The document changes the scientific names to those currently recognized by the scientific community and to be in agreement with the names used by the USDA Germplasm Resources Information Network (GRIN).

At the request of growers, researchers, and breeders the document changes the kind name "muskmelon" to "melon," because "melon" is the more widely recognized name.

Seed Certification Standards

The rule also updates the FSA regulations pertaining to seed certification to eliminate differences with the standards of the Association of Official Seed Certifying Agencies (AOSCA). This Association is made up primarily of State seed certifying agencies. The function of AOSCA is to establish minimum standards for genetic purity and to standardize seed certification regulations and procedures. State seed certifying agencies recognize and follow minimum standards for genetic purity established by AOSCA.

Seed represented as a class of certified seed, as defined in the FSA regulations, must meet the minimum genetic certification standards for certified classes as provided by the regulations. State seed certifying agencies which certify seed pursuant to the standards contained in the FSA regulations are members of AOSCA and must also maintain minimum AOSCA standards for certifying seed. This document changes the FSA regulations pertaining to genetic certification standards in order to bring them in conformity with the AOSCA standards. The changes to the standards have been reviewed and found to be consistent with the requirements under the FSA.

Corrections and Clarifications

There are a number of technical nonsubstantive corrections and clarifications which will also be made. Some of the more important ones change "Consumer and Marketing Service" to "Agricultural Marketing Service" and omit the word "hybrid" from the name "sorghum-sudangrass." In § 201.36b the word "pole" will be enclosed in parentheses. In § 201.36c the word "garden" is added to bean to show the correct kind name. Section 201.34(d) is changed to add a footnote to reflect the effective date which was previously omitted. Paragraph (e) of this section is removed to delete partial lists of variety names.

Other Amendments

Changes to § 201.2 redefine the Act to include 7 U.S.C 1551–1611, update scientific names, and add additional kinds as discussed above. Changes also add a definition of coated seed and change the definition of certified seed to show the proper reference, § 201.70, rather than § 201.79 which does not exist. Section 201.22(c) is changed to remove scientific names. Section 201.31 is changed to establish germination standards for dill, sage, and summer savory which were added to the list of vegetable seeds subject to the FSA in 201.2(i) and to reflect the change of the name "muskmelon" to "melon."

Section 201.36c will be changed to separate and alphabetize agricultural seeds and vegetable seeds in the table and to change "bean" in the vegetable list to "garden bean," the name recognized in § 201.2(i). Section 201.43 is changed to add metric equivalent weights and to specify the minimum number of coated seeds to be taken during sampling.

Section 201.46(b) is changed to substitute the word "comprise" for the incorrect word "compromise." Table 1 will be changed to reflect the changes in § 201.2. Scientific names are removed and working weights added for those kinds added in that section. In addition, several spelling errors are corrected.

The document changes several sections to add provisions for testing coated seed. Specific procedures have been developed to provide for uniform methods to test seed coated with products such as those designed to improve planting characteristics or to improve seedling growth. Section 201.2 adds a definition of coated seed. Section 201.45 adds comments pertaining to dividing coated seed. Section 201.47 cites added instructions for purity analysis of coated seed. Section 201.51b establishes purity testing procedures for coated seed. Section 201.52 is changed to add a new paragraph (b) to establish the amount of seed to be examined for a noxious-weed seed test on coated seed. The existing § 201.52 becomes paragraph (a).

Section 201.47a is also changed to clarify that the "entire spikelet" for rice, browntop millet, and Paspalum spp. is considered to be a seed unit; to define a seed unit for galletagrass (a new kind which was added in § 201.2); to include side-oats grama and blue grama, as kinds for which the Uniform Blowing Procedure is used to determine the percentages of pure seed and inert matter; and to clarify that fruits with accessory structures of other Chenopodiaceae (fourwing saltbush and forage kochia) are to be considered a seed unit.

Section 201.48 is changed to update seed unit interpretations to be consistent with § 201.51, to remove scientific names, and to add procedures to determine pure seed of forage kochia which was added to the kinds subject to the FSA.

Section 201.48, § 201.49, and § 201.51a are changed, in part, to add tall wheatgrass and western wheatgrass to the list of kinds to be tested using the Multiple Unit Procedure. These kinds contain multiple florets. The Multiple Unit Procedure provides faster, more consistent test results without a loss of accuracy when compared to the current, more tedious, hand method.

Several sections, including some of the changes to § 201.47, § 201.48, § 201.49, and § 201.51a add blue grama and side-oats grama to the kinds for which the purity percentages are determined by using the Uniform Blowing Procedure. The Uniform Blowing Procedure provides a method, for determining purity percentages for these kinds, which has proven to be faster, more consistent, and just as accurate as the hand method.

Section 201.50 is changed to clarify that wild onion and wild garlic bulblets devoid of husks are to be classified as weed seeds if not damaged at the basal end and are a specified size. Research has shown that these seeds would likely germinate.

Section 201.51 will update seed units that are considered to be inert matter, to include classification of certain seed units of newly added kinds, forage kochia and northern sweetvetch, as well as coating material.

Sections 201.56 through 201.56–12 are changed to establish new procedures for describing abnormal seedlings of each seed group for use in determining germination percentages and to eliminate references to outdated photographs. Seedling descriptions which had been developed over many years are being completely revised so that consistent, current terminology is used to describe abnormal seedlings for all kinds. The changes are designed to make the seedling descriptions more easily interpreted so that more consistent, accurate test results will be achieved. The changes will not result in significant differences in the percentages of germination found when compared to tests made under the current regulations.

Section 201.57a is changed to remove and to add new kinds, bottlebrush-squirreltail, basin wildrye, galletagrass,

mountain rye, johnsongrass, and forage kochia to the kinds having dormant seed.

Section 201.58 is changed to clarify the definition of "prechill" applicable to Table 2, to make editorial changes in special procedures for alyceclover, bahiagrass, beet, and garden bean, and to add special procedures for green needlegrass. Changes incorporate more specific information on the type of light to be used for ryegrass fluorescence tests, add germination procedures for coated seed, and correct common and remove scientific names in the section including Table 2. Germination test procedures for those kinds added in §§ 201.2(h) and 201.2(i) are added and references to outdated photographs of seedlings removed. The changes in testing procedures incorporate into the regulations the latest research on testing these kinds.

Section 201.58a is changed to revise the use of the fluorescence test for determining the percentages of pure seed and other crop seed of annual ryegrass and perennial ryegrass. The changes incorporate methods agreed on by AOSA, AASCO, the grass seed industry, and AMS. The procedure for determining the percentage of yellow sweetclover in white sweetclover is changed from a mottled seed test to a chemical test because the chemical test provides a more accurate, consistent result. Procedures for the phenol test for wheat, previously cited in AOSA Handbook Number 28, are being added and the reference to AOSA Handbook Number 28 is being removed so that all information will be contained in the regulations removing the need to have a copy of AOSA Handbook Number 28. Procedures for conducting a peroxidase test for varietal purity of soybean and fluorescence test procedures for determining varietal purity of oat are added. These procedures have been in use for many years and have proven to be accurate, reliable, and consistent. These tests are essential to check the accuracy of variety representations.

Section 201.58d adds established testing procedures for determining the percentage of fungal endophyte in seed and plant material growing therefrom to the regulations. Some grass seed is being labeled to indicate the presence or absence of fungal endophyte. Uniform testing procedures have been developed for determining the amount of fungal endophyte present.

Changes to § 201.60 will to remove scientific names, add ryegrasses and galletagrass to the list of chaffy kinds, and make editorial changes.

Changes to § 201.61 and § 201.62 correct typographical errors in the tolerance table.

A change to § 201.76 provides for the certification agency to grant a variance in the land cropping history in specific circumstances where cultural practices have been proven adequate to maintain genetic purity. Generally this change would allow for the agency to modify the number of years the field must have been free of potential contaminants before being planted to a crop under certification. Section 201.76 is also changed to update Table 5 and the footnotes to Table 5 to include metric equivalents, to update names to be consistent with § 201.2, and to make editorial changes and corrections. Standards for chemically assisted hybrid barley, buckwheat, and chemically assisted hybrid wheat are added. Field standards for classes of mung bean are changed and a field standard for hybrid corn added. In addition footnotes are added corresponding to those changes in the table.

Summary of Public Comment

A notice of proposed rulemaking was published in the **Federal Register** on May 17, 1994. A hearing on the proposed rule was held in Washington, DC on June 8, 1994. At that time interested parties were given an opportunity to present views concerning the proposal. No one commented at the hearing. Interested parties were invited to submit written comments until July 8, 1994. Fourteen written comments were received.

Five comments supported the proposal. One comment supported the change providing for "melon" as a common name for *Cucumis melo*. One comment supported the proposal with exception of changes in fluorescence calculations for ryegrasses. Three comments supported the changes in the fluorescence calculations for ryegrasses. Three comments recommended that the word "weak" not be used to describe abnormal lettuce seedlings. One comment suggested different scientific and/or common names for several kinds.

The provision on the use of the fluorescence test is being adopted because there were seven comments supporting the proposal including four which specifically mentioned support of the fluorescence proposal. Only one comment opposed that provision. Also, failure to adopt the fluorescence proposal would cause a conflict between Federal and State regulations which could inhibit the interstate movement of ryegrass seed.

As suggested by the three comments, the word "weak" was removed from the description of abnormal lettuce seedlings.

The comment on scientific and common names made several recommendations. The commenter suggested that in addition to smooth brome the common name "bieberstein brome" be included for *Bromus biebersteinii* because that name was cited in a reliable reference. No other use of that name has been found and we have no indication that any seed is being marketed under the name "bieberstein brome." To avoid potential confusion the name "bieberstein brome" was not added. The comment indicated that GRIN now shows the scientific name *"Festuca brevipila"* for hard fescue in lieu of *Festuca trachphylla*. The scientific name for hard fescue was changed to *"Festuca brevipila"* as recommended. "Bluebunch wheatgrass" was recommended as a synonym for "beardless wheatgrass" because the two have the same scientific name. "Thickspike wheatgrass" was recommended as a synonym for "streambank wheatgrass" because they have the same scientific name. Although these kinds have the same scientific name they differ in several characteristics. Because these crops are currently being marketed as separate kinds, the recommendation was not incorporated into the final rule. The comment noted that GRIN shows the common name "husk tomato" for *Physalis philadelphia* and the common name "downy groundcherry" for *P. pubescens*. *P. pubescens* has been marketed for many years as "husk tomato." To change the common name to "downy groundcherry," a name which is not used in marketing the kind, would lead to confusion. Therefore, the common name "husk tomato" was retained for *P. pubescens*.

In reviewing the common and scientific names as a result of the comment, several additional changes were found in the GRIN since the original proposal was drafted. Therefore, the following changes in scientific names are also included in this rule.

The scientific names of the following agricultural seeds were changed in § 201.2(h): Glaucantha bluegrass; Nevada bluegrass; sand bluestem; carpetgrass; bird rape; turnip rape; mountain rye; smilo; beardless wheatgrass; pubescent wheatgrass; streambank wheatgrass; and western wheatgrass.

The scientific names of the following vegetable seeds were changed in

§ 201.2(i): Artichokes; Chinese cabbage; water cress; and pak-choi.

In reviewing the use of scientific names in the regulations, the various tables were easier to use with less information. Therefore, most scientific names are being removed from the tables and text of the regulations. Scientific names of all kinds subject to the FSA including all kinds in the tables are shown along with the common name in § 201.2. The common and scientific names of agricultural seeds are listed in § 201.2(h) and vegetable seeds listed in § 201.2(i). Only scientific names of the kinds shown in § 201.2 are removed from other sections of this document.

This document does not contain new collection of information requirements. Sections amended by the rule contain collection of information requirements that were previously submitted for review to the Director of Management and Budget (OMB) and assigned OMB control number 0581–0026 under the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 *et seq.*).

List of Subjects in 7 CFR Part 201

Advertising, Agricultural commodities, Imports, Labeling, Reporting and recordkeeping requirements, Seeds, Vegetables.

For reason set forth in the preamble, 7 CFR Part 201 is amended as follows:

PART 201—FEDERAL SEED ACT REGULATION

1. The authority citation for part 201 is revised to read as follows:

Authority: 7 U.S.C. 1592.

2. In § 201.2, paragraphs (a), (h), (i), and (ee) are revised and paragraph (q) is added to read as follows:

§ 201.2 Terms defined.

* * * * *

(a) The Act. The term "Act" means the FSA approved August 9, 1939 (53 Stat. 1275; 7 U.S.C. 1551–1611 as amended);

* * * * *

(h) Agricultural seeds. The term "agricultural seeds" means the following kinds of grass, forage, and field crop seeds, that are used for seeding purposes in the United States:

Agrotricum—*x Agrotriticum Ciferri and Giacom.*
Alfalfa—*Medicago sativa* L.
Alfilaria—*Erodium cicutarium* (L.) L'Her.
Alyceclover—*Alysicarpus vaginalis* (L.) DC.
Bahiagrass—*Paspalum notatum* Fluegge
Barley—*Hordeum vulgare* L.
Barrelclover—*Medicago truncatula* Gaertn.
Bean, adzuki—*Vigna angularis* (Willd.) Ohwi and Ohashi
Bean, field—*Phaseolus vulgaris* L.
Bean, mung—*Vigna radiata* (L.) Wilczek
Beet, field—*Beta vulgaris* L. subsp. *vulgaris*
Beet, sugar—*Beta vulgaris* L. subsp. *vulgaris*
Beggarweed, Florida—*Desmodium tortuosum* (Sw.) DC.
Bentgrass, colonial—*Agrostis capillaris* L.
Bentgrass, creeping—*Agrostis stolonifera* L. var. *palustris* (Huds.) Farw.
Bentgrass, velvet—*Agrostis canina* L.
Bermudagrass—*Cynodon dactylon* (L.) Pers. var. *dactylon*
Bermudagrass, giant—*Cynodon dactylon* (L.) Pers. var. *Aridus* Harlan and de Wet
Bluegrass, annual—*Poa annua* L.
Bluegrass, bulbous—*Poa bulbosa* L.
Bluegrass, Canada—*Poa compressa* L.
Bluegrass, glaucantha—*Poa glauca* Vahl
Bluegrass, Kentucky—*Poa pratensis* L.
Bluegrass, Nevada—*Poa secunda* J.S. Presl
Bluegrass, rough—*Poa trivialis* L.
Bluegrass, Texas—*Poa arachnifera* Torr.
Bluegrass, wood—*Poa nemoralis* L.
Bluejoint—*Calamagrostis canadensis* (Michx.) P. Beauv.
Bluestem, big—*Andropogon gerardii* Vitm. var. *gerardii*
Bluestem, little—*Schizachyrium scoparium* (Michx.) Nash
Bluestem, sand—*Andropogon hallii* Hack.
Bluestem, yellow—*Bothriochloa ischaemum* (L.) Keng.
Bottlebrush-squirreltail—*Elymus elymoides* (Raf.) Swezey
Brome, field—*Bromus arvensis* L.
Brome, meadow—*Bromus biebersteinii* Roem. and Schult.
Brome, mountain—*Bromus marginatus* Steud.
Brome, smooth—*Bromus inermis* Leyss.
Broomcorn—*Sorghum bicolor* (L.) Moench
Buckwheat—*Fagopyrum esculentum* Moench
Buffalograss—*Buchloe dactyloides* (Nutt.) Engelm.
Buffelgrass—*Cenchrus ciliaris* L.
Burclover, California—*Medicago polymorpha* L.
Burclover, spotted—*Medicago arabica* (L.) Huds.
Burnet, little—*Sanguisorba minor* Scop.
Buttonclover—*Medicago orbicularis* (L.) Bartal.
Canarygrass—*Phalaris canariensis* L.
Canarygrass, reed—*Phalaris arundinacea* L.
Carpetgrass—*Axonopus fissifolius* (Raddi) Kuhlm.
Castorbean—*Ricinus communis* L.
Chess, soft—*Bromus hordeaceus* L.
Chickpea—*Cicer arietinum* L.
Clover, alsike—*Trifolium hybridum* L.
Clover, arrowleaf—*Trifolium vesiculosum* Savi
Clover, berseem—*Trifolium alexandrinum* L.
Clover, cluster—*Trifolium glomeratum* L.
Clover, crimson—*Trifolium incarnatum* L.
Clover, Kenya—*Trifolium semipilosum* Fresen.
Clover, ladino—*Trifolium repens* L.
Clover, lappa—*Trifolium lappaceum* L.
Clover, large hop—*Trifolium campestre* Schreb.
Clover, Persian—*Trifolium resupinatum* L.
Clover, red or
Red clover, mammoth—*Trifolium pratense* L.
Red clover, medium—*Trifolium pratense* L.
Clover, rose—*Trifolium hirtum All.*
Clover, small hop or suckling—*Trifolium dubium* Sibth.
Clover, strawberry—*Trifolium fragiferum* L.
Clover, sub or subterranean—*Trifolium subterraneum* L.
Clover, white—*Trifolium repens* L. (also see Clover, ladino)
Clover—(also see Alyceclover, Burclover, Buttonclover, Sourclover, Sweetclover)
Corn, field—*Zea mays* L.
Corn, pop—*Zea mays* L.
Cotton—*Gossypium spp.*
Cowpea—*Vigna unguiculata (L.) Walp. subsp. unguiculata*
Crambe—*Crambe abyssinica R.E. Fries*
Crested dogtail—*Cynosurus cristatus* L.
Crotalaria, lance—*Crotalaria lanceolata* E. Mey.
Crotalaria, showy—*Crotalaria spectabilis* Roth
Crotalaria, slenderleaf—*Crotalaria brevidens* Benth. var. *intermedia* (Kotschy) Polh.
Crotalaria, striped or smooth—*Crotalaria pallida* Ait.
Crotalaria, sunn—*Crotalaria juncea* L.
Crownvetch—*Coronilla varia* L.
Dallisgrass—*Paspalum dilatatum* Poir.
Dichondra—*Dichondra repens* Forst. and Forst. f.
Dropseed, sand—*Sporobolus cryptandrus* (Torr.) A. Gray
Emmer—*Triticum dicoccon* Schrank
Fescue, chewings—*Festuca rubra* L. subsp. *commutata* Gaud.
Fescue, hair—*Festuca tenuifolia* Sibth.
Fescue, hard—*Festuca brevipila* Tracey
Fescue, meadow—*Festuca pratensis* Huds.
Fescue, red—*Festuca rubra* L. subsp. *rubra*
Fescue, sheep—*Festuca ovina* L. var. *ovina*
Fescue, tall—*Festuca arundinacea* Schreb.
Flax—*Linum usitatissimum* L.
Galletagrass—*Hilaria jamesii* (Torr.) Benth.
Grama, blue—*Bouteloua gracilis* (Kunth) Steud.
Grama, side-oats—*Bouteloua curtipendula* (Michx.) Torr.
Guar—*Cyamopsis tetragonoloba* (L.) Taub.
Guineagrass—*Panicum maximum* Jacq. var. *maximum*
Hardinggrass—*Phalaris stenoptera* Hack.
Hemp—*Cannabis sativa* L.
Indiangrass, yellow—*Sorghastrum nutans* (L.) Nash
Indigo, hairy—*Indigofera hirsuta* L.
Japanese lawngrass—*Zoysia japonica* Steud.
Johnsongrass—*Sorghum halepense* (L.) Pers.
Kenaf—*Hibiscus cannabinus* L.
Kochia, forage—*Kochia prostrata* (L.) Schrad.
Kudzu—*Pueraria montana* (Lour.) Merr. var. *lobata* (Willd.) Maesen and S. Almeida
Lentil—*Lens culinaris* Medik.
Lespedeza, Korean—*Kummerowia stipulacea* (Maxim.) Makino
Lespedeza, sericea or Chinese—*Lespedeza cuneata* (Dum.-Cours.) G. Don
Lespedeza, Siberian—*Lespedeza juncea* (L. f.) Pers.
Lespedeza, striate—*Kummerowia striata* (Thunb.) Schindler
Lovegrass, sand—*Eragrostis trichodes* (Nutt.) Wood
Lovegrass, weeping—*Eragrostis curvula* (Schrad.) Nees
Lupine, blue—*Lupinus angustifolius* L.

Lupine, white—*Lupinus albus* L.
Lupine, yellow—*Lupinus luteus* L.
Manilagrass—*Zoysia matrella* (L.) Merr.
Meadow foxtail—*Alopecurus pratensis* L.
Medic, black—*Medicago lupulina* L.
Milkvetch or cicer milkvetch—*Astragalus cicer* L.
Millet, browntop—*Brachiaria ramosa* (L.) Stapf
Millet, foxtail—*Setaria italica* (L.) Beauv.
Millet, Japanese—*Echinochloa frumentacea* Link
Millet, pearl—*Pennisetum glaucum* (L.) R. Br.
Millet, proso—*Panicum miliaceum* L.
Molassesgrass—*Melinis minutiflora* Beauv.
Mustard, black—*Brassica nigra* (L.) Koch
Mustard, India—*Brassica juncea* (L.) Czernj. and Coss.
Mustard, white—*Sinapis alba* L.
Napiergrass—*Pennisetum purpureum* Schumach.
Needlegrass, green—*Stipa viridula* Trin.
Oat—*Avena byzantina* C. Koch, *A. sativa* L., *A. nuda* L.
Oatgrass, tall—*Arrhenatherum elatius* (L.) J.S. Presl and K.B. Presl
Orchardgrass—*Dactylis glomerata* L.
Panicgrass, blue—*Panicum antidotale* Retz.
Panicgrass, green—*Panicum maximum* Jacq. var. *trichoglume* Robyns
Pea, field—*Pisum sativum* L.
Peanut—*Arachis hypogaea* L.
Poa trivialis—(see Bluegrass, rough)
Rape, annual—*Brassica napus* L. var. *annua* Koch
Rape, bird—*Brassica rapa* L. subsp. *rapa*
Rape, turnip—*Brassica rapa* L. subsp. *silvestris* (Lam.) Janchen
Rape, winter—*Brassica napus* L. var. *biennis* (Schubl. and Mart.) Reichb.
Redtop—*Agrostis gigantea* Roth
Rescuegrass—*Bromus catharticus* Vahl
Rhodesgrass—*Chloris gayana* Kunth
Rice—*Oryza sativa* L.
Ricegrass, Indian—*Oryzopsis hymenoides* (Roem. and Schult.) Ricker
Roughpea—*Lathyrus hirsutus* L.
Rye—*Secale cereale* L.
Rye, mountain—*Secale strictum* (K.B. Presl) K.B. Presl subsp. *strictum*
Ryegrass, annual or Italian—*Lolium multiflorum* Lam.
Ryegrass, intermediate—*Lolium* x *hybridum* Hausskn.
Ryegrass, perennial—*Lolium perenne* L.
Ryegrass, Wimmera—*Lolium rigidum* Gaud.
Safflower—*Carthamus tinctorius* L.
Sagewort, Louisiana—*Artemisia ludoviciana* Nutt.
Sainfoin—*Onobrychis viciifolia* Scop.
Saltbush, fourwing—*Atriplex canescens* (Pursh) Nutt.
Sesame—*Sesamum indicum* L.
Sesbania—*Sesbania exaltata* (Raf.) A.W. Hill
Smilo—*Piptatherum miliaceum* (L.) Coss
Sorghum—*Sorghum bicolor* (L.) Moench
Sorghum almum—*Sorghum* x *almum* L. Parodi
Sorghum-sudangrass—*Sorghum* x *drummondii* (Steud.) Millsp. and Chase
Sorgrass—Rhizomatous derivatives of a johnsongrass x sorghum cross or a johnsongrass x sudangrass cross
Southernpea—(See Cowpea)
Sourclover—*Melilotus indicus* (L.) All.
Soybean—*Glycine max* (L.) Merr.
Spelt—*Triticum spelta* L.
Sudangrass—*Sorghum* x *drummondii* (Steud.) Millsp. and Chase
Sunflower—*Helianthus annuus* L.
Sweetclover, white—*Melilotus albus* Medik.
Sweetclover, yellow—*Melilotus officinalis* Lam.
Sweet vernalgrass—*Anthoxanthum odoratum* L.
Sweetvetch, northern—*Hedysarum boreale* Nutt.
Switchgrass—*Panicum virgatum* L.
Timothy—*Phleum pratense* L.
Timothy, turf—*Phleum bertolonii* DC.
Tobacco—*Nicotiana tabacum* L.
Trefoil, big—*Lotus uliginosus* Schk.
Trefoil, birdsfoot—*Lotus corniculatus* L.
Triticale—x *Triticosecale* Wittm. (*Secale* x *Triticum*)
Vaseygrass—*Paspalum urvillei* Steud.
Veldtgrass—*Ehrharta calycina* J.E. Smith
Velvetbean—*Mucuna pruriens* (L.) DC. var. *utilis* (Wight) Burck
Velvetgrass—*Holcus lanatus* L.
Vetch, common—*Vicia sativa* L. subsp. *sativa*
Vetch, hairy—*Vicia villosa* Roth subsp. *villosa*
Vetch, Hungarian—*Vicia pannonica* Crantz
Vetch, monantha—*Vicia articulata* Hornem.
Vetch, narrowleaf or blackpod—*Vicia sativa* L. subsp. *nigra* (L.) Ehrh.
Vetch, purple—*Vicia benghalensis* L.
Vetch, woollypod or winter—*Vicia villosa* Roth subsp. *varia* (Host) Corb.
Wheat, common—*Triticum aestivum* L.
Wheat, club—*Triticum compactum* Host
Wheat, durum—*Triticum durum* Desf.
Wheat, Polish—*Triticum polonicum* L.
Wheat, poulard—*Triticum turgidum* L.
Wheat x Agrotricum—*Triticum* x *Agrotriticum*
Wheatgrass, beardless—*Pseudoroegneria spicata* (Pursh) A. Love
Wheatgrass, crested or fairway crested—*Agropyron cristatum* (L.) Gaertn.
Wheatgrass, crested or standard crested—*Agropyron desertorum* (Link) Schult.
Wheatgrass, intermediate—*Elytrigia intermedia* (Host) Nevski subsp. *intermedia*
Wheatgrass, pubescent—*Elytrigia intermedia* (Host) Nevski subsp. *intermedia*
Wheatgrass, Siberian—*Agropyron fragile* (Roth) Candargy subsp. *sibiricum* (Willd.) Meld.
Wheatgrass, slender—*Elymus trachycaulus* (Link) Shinn.
Wheatgrass, streambank—*Elymus lanceolatus* (Scribn. and J.G. Smith) Gould subsp. *lanceolatus*
Wheatgrass, tall—*Elytrigia elongata* (Host) Nevski
Wheatgrass, western—*Pascopyrum smithii* (Rydb.) A. Love
Wildrye, basin—*Leymus cinereus* (Scribn. and Merr.) A. Love
Wildrye, Canada—*Elymus canadensis* L.
Wildrye, Russian—*Psathyrostachys juncea* (Fisch.) Nevski
Zoysia japonica—(see Japanese lawngrass)
Zoysia matrella—(see Manilagrass)

(i) Vegetable seeds. The term "vegetable seeds" means the seeds of the following kinds that are or may be grown in gardens or on truck farms and are or may be generally known and sold under the name of vegetable seeds:

Artichoke—*Cynara cardunculus* L. subsp. *cardunculus*
Asparagus—*Asparagus officinalis* Baker
Asparagusbean or yard-long bean—*Vigna unguiculata* (L.) Walp. subsp. *sesquipedalis* (L.) Verdc.
Bean, garden—*Phaseolus vulgaris* L.
Bean, lima—*Phaseolus lunatus* L.
Bean, runner or scarlet runner—*Phaseolus coccineus* L.
Beet—*Beta vulgaris* L. subsp. *vulgaris*
Broadbean—*Vicia faba* L.
Broccoli—*Brassica oleracea* L. var. *botrytis* L.
Brussels sprouts—*Brassica oleracea* L. var. *gemmifera* DC.
Burdock, great—*Arctium lappa* L.
Cabbage—*Brassica oleracea* L. var. *capitata* L.
Cabbage, Chinese—*Brassica rapa* L. subsp. *pekinensis* (Lour.) Hanelt
Cabbage, tronchuda—*Brassica oleracea* L. var. *costata* DC.
Cantaloupe—(see Melon)
Cardoon—*Cynara cardunculus* L. subsp. *cardunculus*
Carrot—*Daucus carota* L. subsp. *sativus* (Hoffm.) Arcang.
Cauliflower—*Brassica oleracea* L. var. *botrytis* L.
Celeriac—*Apium graveolens* L. var. *rapaceum* (Mill.) Gaud.
Celery—*Apium graveolens* L. var. *dulce* (Mill.) Pers.
Chard, Swiss—*Beta vulgaris* L. subsp. *cicla* (L.) Koch
Chicory—*Cichorium intybus* L.
Chives—*Allium schoenoprasum* L.
Citron—*Citrullus lanatus* (Thunb.) Matsum. and Nakai var. *citroides* (Bailey) Mansf.
Collards—*Brassica oleracea* L. var. *acephala* DC.
Corn, sweet—*Zea mays* L.
Cornsalad—*Valerianella locusta* (L.) Laterrade
Cowpea—*Vigna unguiculata* (L.) Walp. subsp. *unguiculata*
Cress, garden—*Lepidium sativum* L.
Cress, upland—*Barbarea verna* (Mill.) Asch.
Cress, water—*Rorippa nasturtium-aquaticum* (L.) Hayek
Cucumber—*Cucumis sativus* L.
Dandelion—*Taraxacum officinale* Wigg.
Dill—*Anethum graveolens* L.
Eggplant—*Solanum melongena* L.
Endive—*Cichorium endivia* L.
Gherkin, West India—*Cucumis anguria* L.
Kale—*Brassica oleracea* L. var. *acephala* DC.
Kale, Chinese—*Brassica oleracea* L. var. *alboglabra* (Bailey) Musil
Kale, Siberian—*Brassica napus* L. var. *pabularia* (DC.) Reichb.
Kohlrabi—*Brassica oleracea* L. var. *gongylodes* L.
Leek—*Allium porrum* L.
Lettuce—*Lactuca sativa* L.
Melon—*Cucumis melo* L.
Muskmelon—(see Melon).
Mustard, India—*Brassica juncea* (L.) Czernj. and Coss.
Mustard, spinach—*Brassica perviridis* (Bailey) Bailey
Okra—*Abelmoschus esculentus* (L.) Moench

Onion—*Allium cepa* L.
Onion, Welsh—*Allium fistulosum* L.
Pak-choi—*Brassica rapa* L. subsp. *chinensis* (L.) Hanelt
Parsley—*Petroselinum crispum* (Mill.) A.W. Hill
Parsnip—*Pastinaca sativa* L.
Pea—*Pisum sativum* L.
Pepper—*Capsicum* spp.
Pe-tsai—(see Chinese cabbage).
Pumpkin—*Cucurbita pepo* L., C. *moschata* (Duchesne) Poiret, and C. *maxima* Duchesne
Radish—*Raphanus sativus* L.
Rhubarb—*Rheum rhabarbarum* L.
Rutabaga—*Brassica napus* L. var. *napobrassica* (L.) Reichb.
Sage—*Salvia officinalis* L.
Salsify—*Tragopogon porrifolius* L.
Savory, summer—*Satureja hortensis* L.
Sorrel—*Rumex acetosa* L.
Southernpea—(see Cowpea).
Soybean—*Glycine max* (L.) Merr.
Spinach—*Spinacia oleracea* L.
Spinach, New Zealand—*Tetragonia tetragonioides* (Pall.) Ktze.
Squash—*Cucurbita pepo* L., C. *moschata* (Duchesne) Poiret, and C. *maxima* Duchesne
Tomato—*Lycopersicon esculentum* Mill.
Tomato, husk—*Physalis pubescens* L.
Turnip—*Brassica rapa* L. subsp. *rapa*
Watermelon—*Citrullus lanatus* (Thunb.) Matsum. and Nakai var. *lanatus*

* * * * *

(q) Coated Seed. The term "coated seed" means any seed unit covered with any substance that changes the size, shape, or weight of the original seed. Seeds coated with ingredients such as, but not limited to, rhizobia, dyes, and pesticides are excluded.

* * * * *

(ee) Certified seed. Certified seed is a class of certified seed which is the progeny of Breeder, Foundation, or Registered seed, except as provided in § 201.70, and is produced and handled under procedures established by the certifying agency, in accordance with this part, for producing the Certified class of seed, for the purpose of maintaining genetic purity and identity.

§ 201.3 [Amended]

3. Section 201.3 is amended by removing "shall" and adding in its place "may".

§ 201.10 [Amended]

4. Section 201.10(a) is amended by removing the word "hybrid".

§ 201.13 [Amended]

5. Section 201.13 is amended by removing "in", the first time it appears and adding in its place "on".

§ 201.17 [Amended]

6. Section 201.17 is amended by removing "bermuda grass" and adding its place "bermudagrass" everywhere it appears.

§ 201.20 [Amended]

7. Section 201.20 is amended by removing "for each kind or kind and variety or kind and type or kind and hybrid" and adding in its place " each kind, or kind and variety, or kind and type, or kind and hybrid".

8. In § 201.22, paragraph (c) is revised to read as follows:

§ 201.22 Date of Test.

* * * * *

(c) The following kinds shall be tested within the indicated time before interstate shipment:

Agricultural seeds and mixtures thereof	Months from test date to shipment
Bentgrass, Colonial	15
Bentgrass, Creeping	15
Bluegrass, Kentucky	15
Fescue, Chewings	15
Fescue, Hard	15
Fescue, Red	15
Fescue, Tall	15
Ryegrass, Annual	15
Ryegrass, Perennial	15

201.26 [Amended]

9. Section 201.26 is amended by removing "is" following the word "pollination" and adding in its place "in".

10. Section 201.31 is revised to read as follows:

§ 201.31 Germination standards for vegetable seeds in interstate commerce.

The following germination standards for vegetable seeds in interstate commerce, which shall be construed to include hard seed, are determined and established under section 403(c) of the act:

	Percent
Artichoke	60
Asparagus	70
Asparagusbean	75
Bean, garden	70
Bean, lima	70
Bean, runner	75
Beet	65
Broadbean	75
Broccoli	75
Brussels sprouts	70
Burdock, great	60
Cabbage	75
Cabbage, tronchuda	70
Cardoon	60
Carrot	55
Cauliflower	75
Celeriac	55
Celery	55
Chard, Swiss	65
Chicory	65
Chinese cabbage	75
Chives	50
Citron	65
Collards	80
Corn, sweet	75
Cornsalad	70
Cowpea	75
Cress, garden	75
Cress, upland	60
Cress, water	40
Cucumber	80
Dandelion	60
Dill	60
Eggplant	60
Endive	70
Kale	75
Kale, Chinese	75
Kale, Siberian	75
Kohlrabi	75
Leek	60
Lettuce	80
Melon	75
Mustard, India	75
Mustard, spinach	75
Okra	50
Onion	70
Onion, Welsh	70
Pak-choi	75
Parsley	60
Parsnip	60
Pea	80
Pepper	55
Pumpkin	75
Radish	75
Rhubarb	60
Rutabaga	75
Sage	60
Salsify	75
Savory, summer	55
Sorrel	65
Soybean	75
Spinach	60
Spinach, New Zealand	40
Squash	75
Tomato	75
Tomato, husk	50
Turnip	80
Watermelon	70

11. Section 201.34 is amended by revising paragraph (d)(5) and reserving paragraph (e) to read as follows:

§ 201.34 Kind, variety, and type; treatment substances; designation as hybrid.

* * * * *

(d) * * *

(5) Names of varieties which through broad general usage prior to July 28, 1956 were recognized variety names, except for hybrid seed corn, shall be considered variety names without regard to the principles stated in paragraph (d)(2) of this section.

§ 201.36b [Amended]

* * * * *

(e) * * *

12. Section 201.36b, paragraph (b) is amended by removing "pole" and adding in its place "(pole) garden".

13. Section 201.36c, paragraph (c) is revised to read as follows:

§ 201.36c Hermetically-sealed containers.

* * * * *

(c) The seed in the container does not exceed the percentage of moisture, on a wet weight basis, as listed below:

Agricultural seeds	Percent
Beet, field	7.5
Beet, sugar	7.5
Bluegrass, Kentucky	6.0
Clover, crimson	8.0
Fescue, red	8.0
Mustard, India	5.0
Ryegrass, annual	8.0
Ryegrass, perennial	8.0
All others	6.0

Vegetable seeds	Percent
Bean, garden	7.0
Bean, lima	7.0
Beet	7.5
Broccoli	5.0
Brussels sprouts	5.0
Cabbage	5.0
Cabbage, Chinese	5.0
Carrot	7.0
Cauliflower	5.0
Celeriac	7.0
Celery	7.0
Chard, Swiss	7.5
Chives	6.5
Collards	5.0
Corn, sweet	8.0
Cucumber	6.0
Eggplant	6.0
Kale	5.0
Kohlrabi	5.0
Leek	6.5
Lettuce	5.5
Melon	6.0
Mustard, India	5.0
Onion	6.5
Onion, Welsh	6.5
Parsley	6.5
Parsnip	6.0
Pea	7.0
Pepper	4.5
Pumpkin	6.0
Radish	5.0
Rutabaga	5.0
Spinach	8.0
Squash	6.0
Tomato	5.5
Turnip	5.0
Watermelon	6.5
All others	6.0

201.37 [Amended]

13. Section 201.37 is amended by removing "Consumer and Marketing Service" and adding in its place "Agricultural Marketing Service".

14. In § 201.43, paragraphs (a) through (e) are revised and a new paragraph (g) is added to read as follows:

§ 201.43 Size of Sample

* * * * *

(a) Two ounces (57 grams) of grass seed not otherwise mentioned, white or alsike clover, or seeds not larger than these.

(b) Five ounces (142 grams) of red or crimson clover, alfalfa, lespedeza, ryegrass, bromegrass, millet, flax, rape, or seeds of similar size.

(c) One pound (454 grams) of sudangrass, proso millet, hemp, or seeds of similar size.

(d) Two pounds (907 grams) of cereals, sorghum, vetch, or seeds of similar or larger size.

(e) Two quarts (2.2 liters) of screenings.

* * * * *

(g) Coated seed for a purity analysis shall consist of at least 7,500 seed units. Coated seed for noxious-weed seed examination shall consist of at least 30,000 seed units. Coated seed for germination test only shall consist of at least 1,000 seed units.

16. Section 201.44 is revised to read as follows:

§ 201.44 Forwarding samples.

Before being forwarded for analysis, test, or examination, the containers of samples shall be properly sealed and identified in such manner as may be prescribed by AMS. Samples of coated seed shall be forwarded in firmly packed crush-proof and moisture-proof containers.

§ 201.45 [Amended]

17. In § 201.45, paragraph (b) is amended by removing "," after the words "damaging large seeds" and adding in its place "and coated seeds,"

18. Section 201.46 is amended by adding a new paragraph (d) and revising Table 1 to read as follows:

§ 201.46 Weight of working sample.

* * * * *

(d) Coated seed.

(1) Unmixed coated seed. Due to variation in the weight of coating materials, the size or weight of the working sample shall be determined separately for each lot. The weight of the working sample shall be determined by weighing 100 completely coated units and calculating the weight of 2,500 coated units for the purity analysis and 25,000 coated units for the noxious-weed seed examination

(2) Mixtures of coated seed The working weight shall be determined in the following manner·

(i) Calculate the weight of the working sample to be used for the mixture under consideration as though the sample were not coated by following paragraph (b) or (c) of this section.

(ii) Determine the amount of coating material on 100 coated units by weighing the coated units. Remove the coating material using the methods described in §§ 201.51b (c) and (d) Calculate the percentage of coating material using the following formulas

Weight of coating material = weight of 100 coated units − weight of 100 de-coated units;

The percentage of coating material = weight of the coating material divided by the weight of 100 coated units × 100%

(iii) The weight of the working sample shall be the product of the weight calculated in paragraph (b)(2)(i) of this section multiplied by 100%, divided by 100% minus the percentage of coating material calculated in paragraph (b)(2)(ii) of this section.

TABLE 1.—WEIGHT OF WORKING SAMPLE

Name of seed	Minimum weight for purity analysis (grams)	Minimum weight for noxious-weed seed examination (grams)	Approximate number of seeds per gram
Agricultural Seed			
Agrotricum	65	500	39
Alfalfa	5	50	500
Alfilaria	5	50	440
Alyceclover	5	50	665
Bahiagrass:			
Var. Pensacola	5	50	600
All other vars.	7	50	365
Barley	100	500	30

TABLE 1.—WEIGHT OF WORKING SAMPLE—Continued

Name of seed	Minimum weight for purity analysis (grams)	Minimum weight for noxious-weed seed examination (grams)	Approximate number of seeds per gram
Barrelclover	10	100	250
Bean:			
Adzuki	200	500	11
Field	500	500	4
Mung	100	500	24
Beet, field	50	500	55
Beet, sugar	50	500	55
Beggarweed, Florida	5	50	440
Bentgrass:			
Colonial	0.25	2.5	13,000
Creeping	0.25	2.5	13,515
Velvet	0.25	2.5	18,180
Bermudagrass	1	10	3,930
Bermudagrass, giant	1	10	2,950
Bluegrass:			
Annual	1	10	2,635
Bulbous	4	40	585
Canada	0.5	5	5,050
Glaucantha	1	10	.....
Kentucky	1	10	3,060
Nevada	1	10	2,305
Rough	0.5	5	4,610
Texas	1	10	2,500
Wood	0.5	5	4,330
Bluejoint	0.5	5	8,461
Bluestem:			
Big	7	70	320
Little	5	50	525
Sand	10	100	215
Yellow	1	10	1,945
Bottlebrush-squirreltail	9	90	300
Brome:			
Field	5	50	465
Meadow	13	130	190
Mountain	20	200	140
Smooth	7	70	315
Broomcorn	40	400	60
Buckwheat	50	500	45
Buffalograss:			
(Burs)	20	200	110
(Caryopses)	3	30	740
Buffelgrass:			
(Fascicles)	6	66	365
(Caryopses)	2	20	1,940
Burclover, California:			
(in bur)	50	500	.....
(out of bur)	7	70	375
Burclover, spotted			
(in bur)	50	500	50
(out of bur)	5	50	550
Burnet, little	25	250	110
Buttonclover	7	70	365
Canarygrass	20	200	150
Canarygrass, reed	2	20	1,185
Carpetgrass	1	10	2,230
Castorbean	500	500	5
Chess, soft	5	50	555
Chickpea	500	500	2
Clover:			
Alsike	2	20	1,500
Arrowleaf	4	40	705
Berseem	5	50	455
Cluster	1	10	2,925
Crimson	10	100	330
Kenya	2	20	
Ladino	2	20	1,935
Lappa	2	20	1,500
Large hop	1	10	5,435

TABLE 1.—WEIGHT OF WORKING SAMPLE—Continued

Name of seed	Minimum weight for purity analysis (grams)	Minimum weight for noxious-weed seed examination (grams)	Approximate number of seeds per gram
Persian	2	20	1,415
Red	5	50	600
Rose	7	70	360
Small hop	2	20	1 950
Strawberry	5	50	635
Sub	25	250	120
White	2	20	1,500
Corn:			
Field	500	500	3
Pop	500	500	3
Cotton	300	500	8
Cowpea	300	500	8
Crambe	25	250	
Crested dogtail	2	20	1,900
Crotalaria:			
Lance	7	70	375
Showy	25	250	80
Slenderleaf	10	100	205
Striped	10	100	215
Sunn	75	500	35
Crownvetch	10	100	305
Dallisgrass	4	40	620
Dichondra	5	50	470
Dropseed, sand	0.25	2.5	12,345
Emmer	100	500	25
Fescue:			
Chewings	3	30	900
Hair	1	10	
Hard	2	20	1,305
Meadow	5	50	495
Red	3	30	900
Sheep	2	20	1 165
Tall	5	50	455
Flax	15	150	180
Galletagrass:			
(Other than caryopses)	10	100	260
(Caryopses)	5	50	580
Grama:			
Blue	2	20	1,595
Side-oats:			
(Other than caryopses)	6	60	350
(Caryopses)	2	20	1 605
Guar	75	500	35
Guineagrass	2	20	2,205
Hardinggrass	3	30	750
Hemp	50	500	45
Indiangrass, yellow	7	70	395
Indigo, hairy	7	70	435
Japanese lawngrass	2	20	1,325
Johnsongrass	10	100	265
Kenaf	50	500	
Kochia, forage	2	20	1,070
Kudzu	25	250	80
Lentil	120	500	14–23
Lespedeza:			
Korean	5	50	525
Sericea	3	30	820
Siberian	3	30	820
Striate	5	50	750
Lovegrass, sand	1	10	3,585
Lovegrass, weeping	1	10	3,270
Lupine:			
Blue	500	500	7
White	500	500	7
Yellow	300	500	9
Manilagrass	2	20	
Meadow foxtail	3	30	893
Medic, black	5	50	585

TABLE 1.—WEIGHT OF WORKING SAMPLE—Continued

Name of seed	Minimum weight for purity analysis (grams)	Minimum weight for noxious-weed seed examination (grams)	Approximate number of seeds per gram
Milkvetch	9	90	270
Millet:			
Browntop	8	80	315
Foxtail	5	50	480
Japanese	9	90	315
Pearl	15	150	180
Proso	15	150	185
Molassesgrass	0.5	5	7,750
Mustard:			
Black	2	20	1,255
India	5	50	625
White	15	150	160
Napiergrass	5	50	.....
Needlegrass, green	7	70	370
Oat	75	500	35–50
Oatgrass, tall	6	60	417
Orchardgrass	3	30	945
Panicgrass, blue	2	20	1,370
Panicgrass, green	2	20	1,305
Pea, field	500	500	4
Peanut	500	500	1–3
Rape:			
Annual	7	70	345
Bird	7	70	425
Turnip	5	50	535
Winter	10	100	230
Redtop	0.25	2.5	10,695
Rescuegrass	20	200	115
Rhodesgrass	1	10	4,725
Rice	50	500	65
Ricegrass, Indian	7	70	355
Roughpea	75	500	40
Rye	75	500	40
Rye, mountain	28	280	90
Ryegrass:			
Annual	5	50	420
Intermediate	8	80	338
Perennial	5	50	530
Wimmera	5	50	.....
Safflower	100	500	30
Sagewort, Louisiana	0.5	5	8,900
Sainfoin	50	500	50
Saltbush, fourwing	15	150	165
Sesame	7	70	360
Sesbania	25	250	105
Smilo	2	20	2,010
Sorghum	50	500	55
Sorghum almum	15	150	150
Sorghum-sudangrass	65	500	38
Sorgrass [1]	15	150	135
Sourclover	5	50	660
Soybean	500	500	6–13
Spelt	100	500	25
Sudangrass	25	250	100
Sunflower	100	500	.....
Sweetclover:			
White	5	50	570
Yellow	5	50	570
Sweet vernalgrass	2	20	1,600
Sweetvetch, northern	19	190	130
Switchgrass	4	40	570
Timothy	1	10	2,565
Timothy, turf	1	10	2,565
Tobacco	0.5	5	[1]5,625
Trefoil:			
Big	2	20	1,945
Birdsfoot	3	30	815
Triticale	100	500	.....

TABLE 1.—WEIGHT OF WORKING SAMPLE—Continued

Name of seed	Minimum weight for purity analysis (grams)	Minimum weight for noxious-weed seed examination (grams)	Approximate number of seeds per gram
Vaseygrass	3	30	970
Veldtgrass	4	40	655
Velvetbean	500	500	2
Velvetgrass	1	10	3,360
Vetch:			
Common	150	500	19
Hairy	75	500	35
Hungarian	100	500	24
Monantha	100	500	.....
Narrowleaf	50	500	60
Purple	100	500	22
Woollypod	100	500	25
Wheat:			
Common	100	500	25
Club	100	500	25
Durum	100	500	25
Polish	100	500	25
Poulard	100	500	25
Wheat x Agrotricum	65	500	38
Wheatgrass:			
Beardless	8	80	275
Fairway crested	4	40	685
Standard crested	5	50	425
Intermediate	15	150	175
Pubescent	15	150	180
Siberian	5	50	.....
Slender	7	70	295
Streambank	10	50	370
Tall	15	150	165
Western	10	100	250
Wildrye:			
Basin	8	80	317
Canada	11	110	190
Russian	6	60	360
Vegetable Seed			
Artichoke	100	500	24
Asparagus	100	500	25
Asparagusbean	300	500	8
Bean:			
Garden	500	500	4
Lima	500	500	2
Runner	500	500	1
Beet	50	300	60
Broadbean	500	500	.....
Broccoli	10	50	315
Brussels sprouts	10	50	315
Burdock, great	15	150	.....
Cabbage	10	50	315
Cabbage, Chinese	5	50	635
Cabbage, tronchuda	10	100	.....
Cardoon	100	500	.....
Carrot	3	50	825
Cauliflower	10	50	315
Celeriac	1	25	2,520
Celery	1	25	2,520
Chard, Swiss	50	300	60
Chicory	3	50	940
Chives	5	50	
Citron	200	500	11
Collards	10	50	315
Corn, sweet	500	500	..
Cornsalad:			
Vars. Fullhearted and Dark Green Fullhearted	5	50	.....
All other vars	10	50	380
Cowpea	300	500	8
Cress:			
Garden	5	50	425

TABLE 1.—WEIGHT OF WORKING SAMPLE—Continued

Name of seed	Minimum weight for purity analysis (grams)	Minimum weight for noxious-weed seed examination (grams)	Approximate number of seeds per gram
Upland	2	35	1,160
Water	1	25	5,170
Cucumber	75	500	40
Dandelion	2	35	1,240
Dill	3	50	800
Eggplant	10	50	230
Endive	3	50	940
Gherkin, West India	16	160	153
Kale	10	50	315
Kale, Chinese	10	50	.....
Kale, Siberian	8	80	325
Kohlrabi	10	50	315
Leek	7	50	395
Lettuce	3	50	890
Melon	50	500	45
Mustard, India	5	50	625
Mustard, spinach	5	50	535
Okra	100	500	19
Onion	7	50	340
Onion, Welsh	10	50	.....
Pak-choi	5	50	635
Parsley	5	50	650
Parsnip	5	50	430
Pea	500	500	3
Pepper	15	150	165
Pumpkin	500	500	5
Radish	30	300	75
Rhubarb	50	300	60
Rutabaga	5	50	430
Sage	25	150	120
Salsify	50	300	65
Savory, summer	2	35	1,750
Sorrel	2	35	1,080
Soybean	500	500	6–13
Spinach	25	150	100
Spinach, New Zealand	200	500	13
Squash	200	500	14
Tomato	5	50	405
Tomato, husk	2	35	1,240
Turnip	5	50	535
Watermelon	200	500	11

[1] Rhizomatous derivatives of a johnsongrass x sorghum cross or a johnsongrass x sudangrass cross.

19. Section 201.47 is amended by revising paragraph (e) and adding a new paragraph (f) to read as follows:

§ 201.47 Separation.

* * * * *

(e) The Uniform Blowing Procedure described in § 201.51a(a) shall be used for the separation of pure seed and inert matter in seeds of Kentucky bluegrass, Canada bluegrass, rough bluegrass, Pensacola variety of bahiagrass, orchardgrass, side-oats grama, and blue grama.

(f) Procedures for purity analysis for coated seed are given in § 201.51b.

20. Section 201.47a is amended by revising paragraphs (b)(3), (b)(4), and (g) to read as follows:

§ 201.47a Seed unit.

* * * * *

(b) * * *

(3) Entire spikelets in bahiagrass, bentgrasses, dallisgrass, guineagrass, browntop millet, foxtail millet, proso millet, panicgrasses, redtop, rice, switchgrass, and vaseygrass. Entire spikelets which may have attached rachis segments, pedicels, and sterile spikelets in big bluestem, little bluestem, sand bluestem, yellow bluestem, bottlebrush-squirreltail, broomcorn, yellow indiangrass, johnsongrass, sorghum, sorghum-sudangrass, sorghum almum, sorgrass, and sudangrass;

(4) Spikelet groups:

(i) Spikelet groups that disarticulate as a unit in galletagrass;

(ii) Spikelet groups that disarticulate as units with attached rachis and internodes bluestems, side-oats grama, and yellow indiangrass;

* * * * *

(g) "Seed balls" or portions thereof in multigerm beets, and fruits with accessory structures such as occur in other Chenopodiaceae and New Zealand spinach. For forage kochia refer to § 201.48(j) and § 201.51(a)(7).

21. In § 201.48, paragraphs (g)(2), (g)(3), (h), and (i) are revised and a new paragraph (j) is added to read as follows.

§ 201.48 Kind or variety considered pure seed.

* * * * *

(g) * * *

(2) The Uniform Blowing Procedure described in § 201.51a(a) shall be used to determine classification of florets into pure seed or inert matter for Kentucky bluegrass, Canada bluegrass, rough bluegrass, Pensacola variety of bahiagrass, side-oats grama, blue grama, and orchardgrass.

(3) Special purity procedures for smooth brome, chewings fescue, red fescue, orchardgrass, fairway crested wheatgrass, standard crested wheatgrass, intermediate wheatgrass, pubescent wheatgrass, tall wheatgrass, and western wheatgrass are listed in § 201.51a(b).

* * * * *

(h) Seed units with nematode galls, fungal bodies (i.e. ergot, other sclerotia, and smut) and spongy or corky caryopses that are entirely enclosed within the seed unit. Refer to § 201.51(c)(1) for inert matter classification.

(i) Seed units of beet and other Chenopodiaceae, and New Zealand spinach. Refer to § 201.47a(g) and § 201.51(a)(6) for definitions of seed units and inert matter, respectively.

(j) Seed units of forage kochia that are retained on a 1 mm opening square-hole sieve, when shaken for 30 seconds. For inert matter, refer to § 201.51(a)(7).

22. Section 201.49 is amended by revising paragraph (a) and reserving paragraph (b) to read as follows:

§ 201.49 Other crop seed.

(a) Seeds of plants grown as crops (other than the kind(s) and variety(ies) included in the pure seed) shall be considered other crop seeds, unless recognized as weed seeds by applicable laws, or regulations, or by general usage. All interpretations and definitions for "pure seed" in § 201.48 shall also apply in determining whether seeds are "other crop seed" or "inert matter" with the following two exceptions which may be applied as acceptable alternatives:

(1) Uniform Blowing Procedure in § 201.51a(a) for kinds listed in § 201.47(e) may be disregarded. If disregarded, all seed units (as defined in § 201.47a) for these kinds found in the working sample shall be manually separated into pure seed and inert matter. Only units containing at least one caryopsis with some degree of endosperm development which can be detected either by slight pressure or by examination over light are considered other crop seed.

(2) Multiple Unit Procedure in § 201.51a(b) for kinds listed in § 201.48(g)(3) may be disregarded. If disregarded, all multiple units and single units (as defined in § 201.51a(b)) for these kinds found in the working sample shall be manually separated into single florets. Each floret containing a caryopsis with some degree of endosperm development, which can be detected either by slight pressure or examination over light, is considered other crop seed. Empty florets and glumes, if present, are considered inert matter. Refer to § 201.51(a)(4).

(b) [Reserved]

23. In § 201.50, paragraph (c) is revised to read as follows:

§ 201.50 Weed seed.

* * * * *

(c) Wild onion and wild garlic (*Allium* spp.) bulblets that have any part of the husk remaining and are not damaged at the basal end are considered weed seeds regardless of size. Bulblets that are completely devoid of husk, and are not damaged at the basal end, and are retained by a 1/13-inch (1.9 mm) round-hole sieve are considered weed seeds. For wild onion and wild garlic (*Allium* spp.) bulblets classed as inert matter, refer to § 201.51(b)(5).

24. In § 201.51, paragraphs (a)(5), (a)(6), and (c)(2) are revised and new paragraphs (a)(7), (a)(8), and (c)(3) are added to read as follows:

§ 201.51 Inert matter.

(a) * * *

(5) Seed units with nematode galls or fungal bodies (smut, ergot, and other sclerotia) that are not entirely enclosed within the seed unit. Refer to § 201.48(h) for pure seed classification.

(6) Broken seed units of Chenopodiaceae and fruit portions or fragments of monogerm beets, New Zealand spinach, buffalograss, and families in which the seed unit is a dry indehiscent one-seeded fruit that visibly do not contain a seed. Refer to § 201.48 (f), (g)(1), (i), and (j) for pure seed classification.

(7) Seed units of forage kochia that pass through a 1 mm opening, square-hole sieve, when shaken for 30 seconds.

(8) The thin pericarp (fruit wall), if present on seeds of northern sweetvetch.

* * * * *

(c) * * *

(2) Soil particles, sand, stone, chaff, stems, leaves, flowers, loose coating material, and any other foreign material.

(3) Coating material removed from coated seed by washing. Refer to § 201.51b(c).

25. Section § 201.51a is revised to read as follows:

§ 201.51a Special procedures for purity analysis.

(a) The Uniform Blowing Procedure shall be used for the separation of pure seed and inert matter in the following: Kentucky bluegrass, Canada bluegrass, rough bluegrass, Pensacola variety of bahiagrass, orchardgrass, blue grama, and side-oats grama.

(1) When kinds listed in this section appear in mixtures they shall be separated from other kinds before using the Uniform Blowing Procedure.

(2) To determine the blowing point for these procedures, individual calibration samples for Kentucky bluegrass, orchardgrass, and Pensacola variety of bahiagrass shall be used The calibration sample for Kentucky bluegrass shall be used for Canada bluegrass, rough bluegrass, blue grama, and side-oats grama.

(i) The blowing point for Canada bluegrass shall be the same as the blowing point determined for Kentucky bluegrass.

(ii) The blowing point for rough bluegrass shall be a factor of 0.82 (82 percent) of the blowing point determined for Kentucky bluegrass. The 0.82 factor is restricted to the General-type seed blower

(iii) The blowing point for blue grama shall be a factor of 1 157 of the blowing point determined for Kentucky bluegrass. Before blowing, extraneous material that will interfere with the blowing process shall be removed. The sample to be blown shall be divided into four approximately equal parts and each blown separately. The 1.157 factor is restricted to the General-type seed blower.

(iv) The blowing point for side-oats grama shall be a factor of 1.480 of the blowing point determined for Kentucky bluegrass. Before blowing, extraneous material that will interfere with the blowing process shall be removed The sample to be blown shall be divided into four approximately equal parts and each part blown separately The 1 480 factor is restricted to the General-type seed blower

(3) Calibration samples and instructions are available on loan through the Seed Regulatory and Testing Branch, LS, AMS, Building 306, Room 213, Beltsville, Maryland 20705

(4) The calibration samples shall be used to establish a blowing point prior to proceeding with the separation of pure seed and inert matter for these kinds. After completing the blowing procedure, remove all weed and other crop seeds from the light portion and add these to the weed or other crop separation, as appropriate. The remainder of the light portion shall be considered inert matter. Remove all weed and other crop seeds and other inert matter (stems, leaves, dirt) from the heavy portion and add these to the

weed seed, other crop seed, or inert matter separations, as appropriate. The remainder of the heavy portion shall be considered pure seed.

(5) With orchardgrass, after the blowing, proceed with the multiple unit procedure.

(b) The Multiple Unit Procedure of determining the pure seed fraction shall be used only for the kinds included in the following table when multiple units are present in a sample. These methods are applicable to the kinds listed when they occur in mixtures or singly. Any single unit without attached structures, as described below, shall be considered a single unit. Multiple units and single units for the kinds listed shall remain intact. The attached glumes and fertile or sterile florets shall not be removed from the fertile floret.

(1) A multiple unit is a seed unit that includes one or more structures as follows (the length of the awn shall be disregarded when determining the length of a fertile floret or an attached structure):

(i) An attached sterile or fertile floret that extends to or beyond the tip of a fertile floret;

(ii) A fertile floret with basally attached glume, glumes, or basally attached sterile floret of any length;

(iii) A fertile floret with two or more attached sterile and/or fertile florets of any length.

(2) Procedure for determination of multiple units:

(i) For the single kind: determine the percentage of single units present, based on the total weight of single units and multiple units. Apply the appropriate factor, as determined from the following table, to the weight of the multiple units and add that portion of the multiple unit weight to the weight of the single units. The remaining multiple unit weight shall be added to the weight of the inert matter.

(ii) For mixtures that include one or more of the kinds in the following table, determine the percentage of single units, based on the total weight of single units and multiple units, for each kind. Apply the appropriate factor as determined from the following table, to the weight of multiple units of each kind.

TABLE OF FACTORS TO APPLY TO MULTIPLE UNITS[a]

Percent of single units of each kind	Chewings fescue	Red fescue	Orchardgrass	Crested wheatgrass[b]	Pubescent wheatgrass	Intermediate wheatgrass	Tall wheatgrass[c]	Western wheatgrass[c]	Smooth brome
50 or below	91	80	80	70	66	72	—	—	72
50.01–55.00	91	81	81	72	67	74	—	—	74
55.01–60.00	91	82	81	73	67	75	—	—	75
60.01–65.00	91	83	82	74	67	76	—	—	76
65.01–70.00	91	84	82	75	68	77	—	60	78
70.01–75.00	91	86	82	76	68	78	—	66	79
75.01–80.00	91	87	83	77	69	79	50	67	81
80.01–85.00	91	88	83	78	69	80	55	68	82
85.01–90.00	91	89	83	79	69	81	65	70	83
90.01–100.00	91	90	84	79	70	82	70	74	85

[a] The factors represent the percentages of the multiple unit weights which are considered pure seed. The remaining percentage is regarded as inert matter.

[b] Includes both standard crested wheatgrass and fairway crested wheatgrass.

[c] Dashes in table indicate that no factors are available at the levels shown.

26. New § 201.51b is added to read as follows:

§ 201.51b Purity procedures for coated seed.

(a) The working sample for coated seed is obtained as described in § 201.46(d) (1) and (2), and weighed in grams to four significant figures.

(b) Any loose coating material shall be sieved, weighed, and included with the inert matter component.

(c) Coating material is removed from the seed by washing with water or other solvents such as, but not limited to, dilute sodium hydroxide (NaOH). Use of fine mesh sieves is recommended for this procedure, and stirring or shaking the coated units may be necessary to obtain de-coated seed.

(d) Spread de-coated seed on blotters or filter paper in a shallow container. Air dry overnight at room temperature.

(e) Separation of component parts:

(1) Kind or variety considered pure seed.

(2) Other crop seed.

(3) Inert matter

(4) Weed seed.

(f) The de-coated seed shall be separated into four components in accordance with §§ 201.48 through 201.51. §§ 201.51a (a) and (b) shall not be followed. The weight of the coating material is determined by subtracting the sum of the weights of the other four components from the original weight of the working sample. The percentage of coating material shall be included with the inert matter percentage. Calculate percentages of all components based on the original weight of the working sample (see paragraph (a) of this section).

27. Section 201.52 is revised to read as follows:

§ 201.52 Noxious-weed seeds.

(a) The determination of the number of seeds, bulblets, or tubers of individual noxious weeds present per unit weight should be made on at least the minimum quantities listed in § 201.46 Table 1: *Provided*, That if the following indicated numbers of a single kind of seed, bulblet, or tuber are found in the pure seed analysis (or noxious-weed seed examination of a like amount) the occurrence of that kind in the remainder of the bulk examined for noxious-weed seeds need not be noted ½-gram purity working sample, 16 or more seeds; 1-gram purity working sample, 23 or more seeds; 2-gram purity working sample or larger, 30 or more seeds. The seeds per unit weight shall be based on the number of single seeds. The number of individual seeds shall be determined in burs of sandbur (*Cenchrus* spp.) and cocklebur (*Xanthium* spp.); in capsules of dodder (*Cuscuta* spp.); in berries of groundcherry, horsenettle, and nightshade (Solanaceae); and in the fruits of other noxious weeds that contain more than one seed. Refer to §§ 201.50 and 201.51(b)(4) for the classification of weed seeds and inert matter, respectively.

(b) A noxious-weed seed examination of coated seed samples shall be made by examining approximately 25,000 units obtained in accordance with § 201.46(d)

and which have been de-coated by the method described in § 201.51b(c).

28. Section 201.54 is revised to read as follows:

§ 201.54 Number of seeds for germination.

At least 400 seeds shall be tested for germination; except that in mixtures, 200 seeds of each of those kinds present to the extent of 15 percent or less may be used in lieu of 400, in which case an additional 2 percent is to be added to the regular germination tolerances. The seeds shall be tested in replicate tests of 100 seeds or less.

29. In § 201.56, paragraphs (a) and (e) are revised to read as follows:

§ 201.56 Interpretation.

(a) A seed shall be considered to have germinated when it has developed those essential structures which, for the kind of seed under consideration, are indicative of its ability to produce a normal plant under favorable conditions. In general, the following are considered to be essential structures necessary for the continued development of the seedling (although some structures may not be visible in all kinds at the time of seedling evaluation). Seedlings possessing these essential structures are referred to as normal seedlings: Root system (consisting of primary, secondary, seminal, or adventitious roots); hypocotyl; epicotyl; cotyledon(s); terminal bud; primary leaves; and coleoptile and mesocotyl (in the grass family). Abnormal seedlings consist of those with defects to these structures, as described in the abnormal seedling descriptions, and are judged to be incapable of continued growth. The seedling descriptions assume that test conditions were adequate to allow proper assessment of the essential seedling structures.

* * * * *

(e) Standard guides for seedling interpretation shall include the following descriptions for specific kinds and groups. The "General Description" for each group of crop kinds describes a seedling without defects. While such a seedling is clearly normal, seedlings with some defects may also be classified as normal, provided the defects do not impair the functioning of the structure. The "Abnormal seedling description" is to be followed when judging the severity of defects.

30. Sections 201.56–1 through 201.56–12 are revised to read as follows:

§ 201.56–1 Goosefoot family, Chenopodiaceae, and Carpetweed family, Aizoaceae.

Kinds of seed: Beet, Swiss chard, fourwing saltbush, spinach, New Zealand spinach, and forage kochia.

(a) General description.

(1) Germination habit: Epigeal dicot.

(2) Food reserves: Leaf-like cotyledons and perisperm.

(3) Shoot system: The hypocotyl elongates carrying the cotyledons above the soil surface. The epicotyl usually does not show any development within the test period.

(4) Root system: A primary root; secondary roots may develop within the test period.

(5) Seedling: Frequent counts should be made on multigerm beet since the growing seedlings will separate from the cluster making it difficult to identify the source. Any cluster which produces at least one normal seedling is classified as normal; only one normal seedling per cluster is to be counted (see § 201.56(d)). Toxic substances from the clusters of beet and Swiss chard may cause discoloring of the hypocotyl and/or root. Seedlings which are slightly discolored are to be classified as normal; however, if there is excessive discoloration, retest by the method in § 201.58(b)(3).

(b) Abnormal seedling description.

(1) Cotyledons:

(i) Less than half of the original cotyledon tissue remaining attached.

(ii) Less than half of the original cotyledon tissue free of necrosis or decay.

(2) Epicotyl:

(i) Missing. (May be assumed to be present if cotyledons are intact.)

(3) Hypocotyl:

(i) Deep open cracks extending into the conducting tissue.

(ii) Malformed, such as markedly shortened, curled, or thickened.

(iii) Watery.

(4) Root:

(i) None.

(ii) Weak, stubby, or missing primary root with weak secondary or adventitious roots.

(iii) For discolored roots of beet and Swiss chard, see § 201.58(b)(3).

(5) Seedling:

(i) One or more essential structures impaired as a result of decay from primary infection. (For discolored seedlings of beet and Swiss chard, see § 201.58(b)(3).)

(ii) Albino.

§ 201.56–2 Sunflower family, Asteraceae (Compositae).

Kinds of seed: Artichoke, cardoon, chicory, dandelion, endive, great burdock, lettuce, safflower, salsify, Louisiana sagewort, and sunflower.

(a) Lettuce.

(1) General description.

(i) Germination habit: Epigeal dicot.

(ii) Food reserves: Cotyledons which expand and become thin, leaf-like, and photosynthetic. The cotyledons of some varieties develop elongated petioles.

(iii) Shoot system: The hypocotyl elongates and carries the cotyledons above the soil surface. The epicotyl usually does not show any development within the test period.

(iv) Root system: A long primary root.

(v) Seedling: The interpretations of lettuce seedlings are made only at the end of the test period.

(2) Abnormal seedling description.

(i) Cotyledons:

(A) Less than half of the original cotyledon tissue remaining attached.

(B) Less than half of the original cotyledon tissue free of necrosis or decay. (Remove attached seed coat for evaluation of cotyledons. Physiological necrosis is manifested by discolored areas on the cotyledons and should not be confused with natural pigmentation of some lettuce varieties.)

(ii) Epicotyl:

(A) Missing. (May be assumed to be present if cotyledons are intact.)

(B) Any degree of necrosis or decay.

(iii) Hypocotyl:

(A) Deep open cracks extending into the conducting tissue.

(B) Severely twisted or grainy.

(C) Watery.

(iv) Root:

(A) Stubby or missing primary root. (Secondary roots will not compensate for a defective primary root.)

(B) Primary root tip blunt, swollen, or discolored. (Toxic materials in the substratum may cause short, blunt roots; see § 201.58(a)(9).)

(C) Primary root with splits or lesions.

(v) Seedling:

(A) Swollen cotyledons associated with extremely short or vestigial hypocotyl and root.

(B) One or more essential structures impaired as a result of decay from primary infection.

(C) Albino.

(b) Other kinds in the sunflower family: Artichoke, cardoon, chicory, dandelion, endive, great burdock, safflower, salsify, Louisiana sagewort, and sunflower.

(1) General description.

(i) Germination habit: Epigeal dicot.

(ii) Food reserves: Cotyledons which expand and become thin, leaf-like, and photosynthetic.

(iii) Shoot system: The hypocotyl elongates and carries the cotyledons above the soil surface. The epicotyl usually does not show any development within the test period.

(iv) Root system: A long primary root with secondary roots usually developing within the test period.

(2) Abnormal seedling description.

(i) Cotyledons:

(A) Less than half of the original cotyledon tissue remaining attached.

(B) Less than half of the original cotyledon tissue free of necrosis or decay. (Remove any attached seed coats at the end of the test period for evaluation of cotyledons.)

(ii) Epicotyl:

(A) Missing. (May be assumed to be present if cotyledons are intact.)

(iii) Hypocotyl:

(A) Deep open cracks extending into the conducting tissue.

(B) Malformed, such as markedly shortened, curled, or thickened.

(C) Watery.

(iv) Root:

(A) None.

(B) Weak, stubby, or missing primary root with weak secondary or adventitious roots. (Seedlings with roots bound within tough seed coats should be left in the test until the final count to allow for development.)

(v) Seedling:

(A) One or more essential structures impaired as a result of decay from primary infection.

(B) Albino.

§ 201.56–3 Mustard family, Brassicaceae (Cruciferae).

Kinds of seed: Broccoli, brussels sprouts, cabbage, Chinese cabbage, cauliflower, collards, garden cress, upland cress, water cress, kale, Chinese kale, Siberian kale, kohlrabi, mustard, pakchoi, radish, rape, rutabaga, and turnip.

(a) General description.

(1) Germination habit: Epigeal dicot.

(2) Food reserves: Cotyledons which expand and become thin, leaf-like and photosynthetic. In *Brassica, Sinapis,* and *Raphanus,* the cotyledons are bi-lobed and folded, with the outer cotyledon being larger than the inner.

(3) Shoot system: The hypocotyl elongates and carries the cotyledons above the soil surface; the epicotyl usually does not show any development within the test period.

(4) Root system: A long primary root.

(b) Abnormal seedling description.

(1) Cotyledons:

(i) Decayed at point of attachment.

(ii) Less than half of the original cotyledon tissue remaining attached.

(iii) Less than half of the original cotyledon tissue free of necrosis or decay.

(2) Epicotyl:

(i) Missing. (May be assumed to be present if the cotyledons are intact.)

(3) Hypocotyl:

(i) Deep open cracks extending into the conducting tissue.

(ii) Malformed, such as markedly shortened, curled, or thickened.

(iii) Watery.

(4) Root:

(i) Weak, stubby, or missing primary root. (Secondary roots will not compensate for a defective root.)

(5) Seedling:

(i) One or more essential structures impaired as result of decay from primary infection.

(ii) Albino.

§ 201.56–4 Cucurbit family, Cucurbitaceae.

Kinds of seed: Citron, cucumber, West India gherkin, melon, pumpkin, squash, and watermelon.

(a) General description.

(1) Germination habit: Epigeal dicot.

(2) Food reserves: Cotyledons which are large and fleshy; they expand, become photosynthetic, and usually persist beyond the seedling stage.

(3) Shoot system: The hypocotyl elongates and the cotyledons are pulled free of the seed coat, which often adheres to a peg-like appendage at the base of the hypocotyl. The epicotyl usually does not show any development within the test period.

(4) Root system: A long primary root with numerous secondary roots.

(b) Abnormal seedling description.

(1) Cotyledons:

(i) Less than half of the original cotyledon tissue remaining attached.

(ii) Less than half of the original cotyledon tissue free of necrosis or decay. (Remove any attached seed coats at the end of the test period for evaluation of cotyledons.)

(2) Epicotyl:

(i) Missing. (May be assumed to be present if the cotyledons are intact.)

(3) Hypocotyl:

(i) Deep open cracks extending into the conducting tissue.

(ii) Malformed, such as markedly shortened, curled, or thickened.

(4) Root:

(i) None.

(ii) Weak, stubby, or missing primary root, with less than two strong secondary or adventitious roots.

(5) Seedling:

(i) One or more essential structures impaired as a result of decay from primary infection.

(ii) Albino.

§ 201.56–5 Grass family, Poaceae (Gramineae).

Kinds of seed: Bentgrasses, bluegrasses, bluestems, bromes, cereals, fescues, millets, orchardgrass, redtop, ryegrasses, sorghums, timothy, turf timothy, wheatgrasses, and all other grasses listed in § 201.2(h).

(a) Cereals: Agrotricum, barley, oat, rye, mountain rye, wheat, wheat x agrotricum, and triticale.

(1) General description.

(i) Germination habit: Hypogeal monocot.

(ii) Food reserves: Endosperm. The scutellum is a modified cotyledon which is in direct contact with the endosperm. During germination the scutellum remains inside the seed to absorb nutrients from the endosperm and transfer them to the growing seedling.

(iii) Shoot system: The shoot consists of the coleoptile, leaves enclosed in the coleoptile, and the mesocotyl. The coleoptile elongates and pushes through the soil surface; the mesocotyl may elongate depending on the variety and light intensity, but may not be discernible. Splitting of the coleoptile occurs naturally as a result of growth and emergence of the leaves.

(iv) Root system: A primary root and seminal roots. The primary root is not readily distinguishable from the seminal roots; therefore, all roots arising from the seed are referred to as seminal roots.

(2) Abnormal seedling description.

(i) Shoot:

(A) Missing.

(B) No leaf.

(C) Leaf extending less than halfway up into the coleoptile.

(D) Leaf extensively shredded or split.

(E) Spindly or watery.

(F) Grainy, spirally twisted, shredded, and weak.

(G) Deep open cracks in the mesocotyl.

(ii) Root:

(A) Less than one strong seminal root.

(iii) Seedling:

(A) Decayed at point of attachment to the scutellum.

(B) One or more essential structures impaired as a result of decay from primary infection.

(C) Albino.

(D) Endosperm obviously detached from the root-shoot axis (e.g. kernel lifted away by the growing shoot).

(E) Thickened and shortened roots and/or shoots.

(b) Rice.

(1) General description.

(i) Germination habit: Hypogeal monocot.

(ii) Food reserves: Endosperm. The scutellum is a modified cotyledon which is in direct contact with the endosperm. During germination the scutellum remains inside the seed to absorb nutrients from the endosperm and transfer them to the growing seedling.

(iii) Shoot system: The shoot consists of the coleoptile, leaves enclosed in the coleoptile, and the mesocotyl. The coleoptile elongates and pushes through the soil or water surface; the mesocotyl may elongate depending on the variety and environmental conditions. Splitting of the coleoptile occurs naturally as a result of growth and emergence of the leaves.

(iv) Root system: Strong primary root and seminal roots. Adventitious roots may start to develop from the mesocotyl or coleoptilar node within the test period. If the mesocotyl elongates, the adventitious roots will be carried above the grain.

(2) Abnormal seedling description.

(i) Shoot:

(A) Missing.

(B) No leaf.

(C) Leaf extending less than halfway up into the coleoptile.

(D) Leaf extensively shredded or split.

(E) Spindly or watery.

(F) Deep open cracks in the mesocotyl.

(ii) Root:

(A) None.

(B) Weak primary root with insufficient seminal or adventitious roots.

(iii) Seedling:

(A) Decayed at point of attachment to the scutellum.

(B) One or more essential structures impaired as a result of decay from primary infection.

(C) Albino.

(c) Corn.

(1) General description.

(i) Germination habit: Hypogeal monocot.

(ii) Food reserves: Endosperm. The scutellum is a modified cotyledon which is in direct contact with the endosperm. During germination the scutellum remains inside the seed to absorb nutrients from the endosperm and transfer them to the growing seedling.

(iii) Shoot system: The shoot consists of the coleoptile, leaves enclosed in the coleoptile, and the mesocotyl. The coleoptile elongates and pushes through the soil surface. The mesocotyl usually elongates. Splitting of the coleoptile occurs naturally as a result of growth and emergence of the leaves. A twisted and curled shoot bound by a tough seed coat may be considered normal, provided the shoot is not decayed.

(iv) Root system: Strong primary root and seminal roots. Adventitious roots may start to develop from the mesocotyl or coleoptilar node within the test period.

(2) Abnormal seedling description.

(i) Shoot:

(A) Missing.

(B) Thickened and shortened.

(C) No leaf.

(D) Leaf extending less than halfway up into the coleoptile.

(E) Leaf extensively shredded or split.

(F) Spindly or watery.

(G) Deep open cracks in the mesocotyl.

(ii) Root:

(A) None.

(B) Weak, stubby, or missing primary root with weak seminal roots.

(iii) Seedling:

(A) Decayed at point of attachment to the scutellum.

(B) One or more essential structures impaired as a result of decay from primary infection.

(C) Albino.

(d) Johnsongrass, sorghum, sorgrass, sorghum almum, sudangrass, and sorghum-sudangrass.

(1) General description.

(i) Germination habit: Hypogeal monocot.

(ii) Food reserves: Endosperm. The scutellum is a modified cotyledon which is in direct contact with endosperm. During germination the scutellum remains inside the seed to absorb nutrients from the endosperm and transfer them to the growing seedling.

(iii) Shoot system: The shoot consists of the coleoptile, leaves enclosed in the coleoptile, and the mesocotyl. The coleoptile elongates and pushes through the soil surface; the mesocotyl usually elongates. Areas of natural, reddish pigmentation may develop on the mesocotyl and coleoptile. Splitting of the coleoptile occurs naturally as a result of growth and emergence of the leaves.

(iv) Root system: A long primary root, usually with secondary roots developing within the test period. Adventitious roots may start to develop from the mesocotyl or coleoptilar node within the test period. Areas of natural, reddish pigmentation may develop on the root.

(2) Abnormal seedling description.

(i) Shoot:

(A) Missing.

(B) Thickened and shortened.

(C) No leaf.

(D) Leaf extending less than halfway up into the coleoptile.

(E) Leaf extensively shredded or split.

(F) Spindly or watery.

(G) Deep open cracks in the mesocotyl.

(ii) Root:

(A) None.

(B) Damaged or weak primary root with less than two strong secondary roots.

(iii) Seedling:

(A) Decayed at point of attachment to the scutellum.

(B) One or more essential structures impaired as a result of decay from primary infection.

(C) Albino.

(e) Grasses and millets.

(1) General description.

(i) Germination habit: Hypegeal monocot.

(ii) Food reserves: Endosperm. The scutellum is a modified cotyledon which is in direct contact with the endosperm. During germination the scutellum remains inside the seed to absorb nutrients from the endosperm and transfer them to the growing seedling.

(iii) Shoot system: The shoot consists of the coleoptile, leaves enclosed in the coleoptile, and the mesocotyl. The coleoptile elongates and pushes through the soil surface. The mesocotyl may or may not elongate significantly, depending on the kind. Splitting of the coleoptile occurs naturally as a result of growth and emergence of the leaves.

(iv) Root system: A long primary root. Secondary or adventitious roots may develop within the test period. In certain kinds (e.g. bermudagrass) the primary root may not be readily visible because it is coiled inside the tightly fitting lemma and palea. At the time of evaluation, the glumes should be removed and the root observed. Such seedlings are classified as normal if the primary root has developed. For Kentucky bluegrass, a primary root 1/16 inch (1.6 mm) or more in length is classified as normal.

(2) Abnormal seedling description.

(i) Shoot:

(A) Missing.

(B) Short, thick, and grainy.

(C) No leaf.

(D) Leaf extending less than halfway up into the coleoptile.

(E) Leaf extensively shredded or split.

(F) Spindly or watery.

(G) Deep open cracks in the mesocotyl.

(ii) Root:

(A) Missing or defective primary root even if other roots are present.

(B) Spindly, stubby, or watery primary root.

(iii) Seedling:

(A) Decayed at point of attachment to the scutellum.

(B) One or more essential structures impaired as a result of decay from primary infection.

(C) Albino.

(D) Yellow (when grown in light).

(E) Endosperm obviously detached from the root-shoot axis (e.g. kernel lifted away by the growing shoot).

§ 201.56–6 Legume or pea family, Fabaceae (Leguminosae).

Kinds of seed: Alfalfa, alyceclover, asparagusbean, beans (*Phaseolus* spp.), Florida beggarweed, black medic, broadbean, burclovers, buttonclover, chickpea, clovers (*Trifolium* spp.), cowpea, crotalarias, crownvetch, guar, hairy indigo, kudzu, lentil, lespedezas, lupines, northern sweetvetch, peas, peanut, roughpea, sainfoin, sesbania, sourclover, soybean, sweetclovers, trefoils, velvetbean, and vetches.

(a) Field bean, garden bean, lima bean, mung bean, asparagusbean, and cowpea.

(1) General description.

(i) Germination habit: Epigeal dicot.

(ii) Food reserves: Cotyledons which are large and fleshy.

(iii) Shoot system: The hypocotyl elongates and carries the cotyledons above the soil surface. The epicotyl elongates, causing the terminal bud to emerge from between the cotyledons; the primary leaves expand rapidly.

(iv) Root system: A long primary root with secondary roots.

(2) Abnormal seedling description.

(i) Cotyledons:

(A) For garden bean (*Phaseolus vulgaris* in part), remove any attached seed coats at the end of the test period for evaluation of cotyledons:

(*1*) Less than half of the original cotyledon tissue remaining attached.

(*2*) Less than half of the original cotyledon tissue free of necrosis or decay.

(B) All other kinds:

(*1*) Both missing and the seedling generally weak.

(ii) Epicotyl:

(A) Missing.

(B) Deep open cracks.

(C) Malformed, such as markedly curled or thickened.

(D) Less than one primary leaf.

(E) Primary leaves too small in proportion to the rest of the seedling, usually associated with visible defects of, or damage to, the main stem of the epicotyl.

(F) Terminal bud missing or damaged. (If a few seedlings with total or partial decay to the epicotyl are found, they may be classified as normal, provided the hypocotyl and root are normal. The epicotyl on such seedlings usually does not decay when grown in a fairly dry environment and exposed to light. A retest, preferably in soil or sand, will aid in interpretation of such seedlings.)

(iii) Hypocotyl:

(A) Deep open cracks extending into the conducting tissue. (A healed break, sometimes referred to as a "knee," is considered normal.)

(B) Malformed, such as markedly shortened, curled, or thickened. (Hypocotyl stunting or curling may be caused by seedling orientation or constriction on or in the substratum.) (Hypocotyl collar rot is the breakdown of hypocotyl tissue initially characterized by a watery appearance and collapse of the hypocotyl below the cotyledonary node. The area later becomes discolored, shrivelled, and necrotic. The condition is caused by insufficient calcium available to the seedling. If hypocotyl collar rot is observed on seedlings of garden bean, the sample involved shall be retested in accordance with § 201.58(b)(12).)

(iv) Root:

(A) None.

(B) Weak, stubby, or missing primary root with weak secondary or adventitious roots. (A root bound within a tough seed coat is considered normal.)

(v) Seedling:

(A) One or more essential structures impaired as the result of decay from primary infection. (Secondary infection is common in towel and blotter tests. Some pathogens, such as *Fusarium, Phomopsis,* and *Rhizoctonia,* can spread through the substratum and infect seedlings some distance away from the primary source. Seedlings with secondary infection are to be classified as normal. A retest in sand or soil may be advisable.)

(B) Albino.

(b) Adzuki bean, broadbean, chickpea, field pea, lentil, pea, roughpea, runner bean, velvetbean, and vetches.

(1) General description.

(i) Germination habit: Hypogeal dicot.

(ii) Food reserves: Cotyledons which are large and fleshy, and remain enclosed within the seed coat beneath the soil surface. They are usually not photosynthetic.

(iii) Shoot system: The epicotyl elongates and carries the terminal bud and primary leaves above the soil surface. The stem bears one or more scale leaves and, prior to emergence, is arched near the apex, causing the terminal bud to be pulled through the soil; after emergence, the stem straightens. For practical purposes, the hypocotyl is not discernible and is not an evaluation factor. Buds in the axils of each cotyledon and scale leaf usually remain dormant unless the terminal bud is seriously damaged. In this case, one or more axillary buds may start to develop into a shoot. If the axillary shoot is well-developed, it may be considered normal.

(iv) Root system: A long primary root with secondary roots.

(2) Abnormal seedling description.

(i) Cotyledons:

(A) Less than half of the original tissue remaining attached.

(B) Less than half of the original tissue free of necrosis or decay.

(ii) Epicotyl:

(A) Missing.

(B) Less than one primary leaf.

(C) Malformed such as markedly shortened, curled, or thickened.

(D) Severely damaged (e.g. terminal bud missing or damaged) with only a weak shoot developing from the axil of a cotyledon or scale leaf.

(E) Two weak and spindly shoots.

(F) Deep open cracks extending into the conducting tissue.

(iii) Root:

(A) None.

(B) Weak, stubby, or missing primary root with weak secondary roots.

(iv) Seedlings:

(A) One or more essential structures impaired as a result of decay from primary infection. (Secondary infection is common in towel and blotter tests. Some pathogens can spread through the substratum and infect seedlings some distance away from the primary source. Seedlings with secondary infection are classified as normal. A retest in sand or soil may be advisable.)

(B) Albino.

(c) Soybean and lupine.

(1) General description.

(i) Germination habit: Epigeal dicot.

(ii) Food reserves: Cotyledons, which are large and fleshy; they expand and become photosynthetic.

(iii) Shoot system: The hypocotyl elongates and carries the cotyledons above the soil surface. The primary leaves usually increase in size and the epicotyl may elongate within the test period.

(iv) Root system: A long primary root with secondary roots.

(2) Abnormal seedling description.

(i) Cotyledons.

(A) Less than half of the original cotyledon tissue remaining attached.

(B) Less than half of the original cotyledon tissue free of necrosis or decay.

(ii) Epicotyl.

(A) Missing.

(B) Less than one primary leaf.

(C) Deep open cracks.

(D) Terminal bud damaged, missing, or decayed. (If a few seedlings with partial decay of the epicotyl are found, they may be classified as normal, provided the hypocotyl and root are normal. The epicotyl on such seedlings usually does not decay when grown in a fairly dry environment and is exposed to light. A retest, preferably in soil or sand, will aid in interpretation of such seedlings.)

(iii) Hypocotyl:

(A) Deep open cracks extending into the conducting tissue. (Adventitious

roots may occur at the site of injury, particularly on the hypocotyl and near the base of the cotyledons. The seedling is classified as normal if the injury is healed over and other essential structures are normal.)

(B) Malformed, such as markedly shortened, curled, or thickened. (Hypocotyl development is slow until the roots start functioning. Caution should be exercised to ensure slow seedlings are not classified as abnormal. Hypocotyl stunting or curling also may be caused by seedling orientation or constriction on or in the substratum.)

(iv) Root:

(A) None.

(B) Weak, stubby, or missing primary root with weak secondary or adventitious roots. (Roots of seedlings on "Kimpak" with insufficient moisture may not become established and hypocotyl elongation may appear to be abnormal. There may be curling of the root and hypocotyl. When a number of seedlings are observed with this condition, the sample should be retested.)

(v) Seedlings:

(A) One or more essential structures impaired as a result of decay from primary infection. (Secondary infection is common in towel and blotter tests. Some pathogens, such as *Fusarium*, *Phomopsis*, and *Rhizoctonia*, can spread through the substratum and infect seedlings some distance away from the primary source. Seedlings with secondary infection are to be classified as normal. A retest in sand or soil may be advisable.)

(B) Albino.

(d) Peanut.

(1) General description.

(i) Germination habit: Epigeal dicot.

(ii) Food reserves: Cotyledons, which are large and fleshy.

(iii) Shoot system: The cotyledons are carried to the soil surface by the hypocotyl which is very thick, narrowing abruptly at the root. Elongation of the hypocotyl stops when the epicotyl is exposed to light at the soil surface. The primary leaves are compound and usually expand during the test period.

(iv) Root system: A long primary root with secondary roots. Adventitious roots develop from the base of the hypocotyl if the primary root is damaged.

(2) Abnormal seedling description.

(i) Cotyledons:

(A) Less than half of the original cotyledon tissue remaining attached.

(B) Less than half of the original cotyledon tissue free of necrosis or decay.

(ii) Epicotyl:

(A) Missing.

(B) Less than one primary leaf.

(C) Deep open cracks.

(D) Terminal bud damaged, missing, or decayed.

(iii) Hypocotyl:

(A) Deep open cracks extending into the conducting tissue.

(B) Malformed, such as markedly shortened or curled. (Hypocotyls remain somewhat thickened and may appear to be stunted. Light, depth of planting, and substratum moisture all contribute to the length of the hypocotyl. Hypocotyl stunting or curling may be caused by seedling orientation or constriction in the substratum. Seedlings planted in a soil test with the radicle too close to the surface may send roots above the soil and appear to exhibit negative geotropism and a distorted, U-shaped hypocotyl.

(iv) Root:

(A) None.

(B) Weak, stubby, or missing primary root with weak secondary or adventitious roots.

(v) Seedling:

(A) One or more essential structures impaired as a result of primary infection.

(B) Albino.

(e) Alfalfa, alyceclover, Florida beggarweed, black medic, burclovers, buttonclover, milkvetch, clovers, crotalarias, crownvetch, guar, hairy indigo, kudzu, lespedezas, northern sweetvetch, sainfoin, sesbania, sourclover, sweetclovers, and trefoils.

(1) General description.

(i) Germination habit: Epigeal dicot.

(ii) Food reserve: Cotyledons, which are small and fleshy; they expand and become photosynthetic. The cotyledons of sub clover develop elongated petioles.

(iii) Shoot system: The hypocotyl elongates and carries the cotyledons above the soil surface. The epicotyl usually does not show any development within the test period.

(iv) Root system: A long, tapering primary root, usually with root hairs. Secondary roots may or may not develop within the test period, depending on the kind.

(2) Abnormal seedling description.

(i) Cotyledons:

(A) Less than half of the original cotyledon tissue remaining attached. (Breaks at the point of attachment of the cotyledons to the hypocotyl are common in seeds which have been mechanically damaged. It is important that seedlings not be removed during preliminary counts unless development is sufficient to allow the conditions of the cotyledons to be determined. If the point of attachment of the cotyledons cannot be seen at the end of the test, the seed coat should be peeled back to determine whether a break has occurred.)

(B) Less than half of the original cotyledon tissue free of necrosis or decay.

(ii) Epicotyl:

(A) Missing. (May be assumed to be present if both cotyledons are intact.)

(iii) Hypocotyl:

(A) Deep open cracks extending into the conducting tissue.

(B) Malformed, such as markedly shortened, curled, or thickened. (Seedlings of sainfoin which have been constricted by growing through the netting of the pod, but which are otherwise normal, are classified as normal.)

(C) Weak and watery

(iv) Root:

(A) None.

(B) Primary root stubby. (The roots of sweetclovers may be stubby when grown on artificial substrata due to the presence of coumarin in the seed; since this condition usually does not occur in soil, such seedlings are classified as normal. Roots may appear stubby as a result of being bound by the seed coat; such seedlings are classified as normal. Crownvetch produces phytotoxic effects similar to sweetclovers.)

(C) Split extending into the hypocotyl.

(v) Seedling:

(A) One or more essential structures impaired as a result of decay from primary infection.

(B) Albino.

§ 201.56–7 Lily family, Liliaceae.

Kinds of seed: Asparagus, chives, leek, onion, and Welsh onion.

(a) Asparagus.

(1) General description.

(i) Germination habit: Hypogeal monocot.

(ii) Food reserves: Endosperm which is hard, semi- transparent, and non-starchy; minor reserves in the cotyledon. The endosperm surrounds the entire embryo.

(iii) Cotyledon: A single cylindrical cotyledon; following germination, all but the basal end remains embedded in the endosperm to absorb nutrients.

(iv) Shoot system: The epicotyl elongates and carries the terminal bud above the soil surface. The epicotyl may bear several small scale leaves. A short hypocotyl is barely distinguishable, joining the root to the basal end of the cotyledon. More than one shoot may arise simultaneously, and the seedling may be considered normal if at least one shoot is well- developed and has a terminal growing point, provided other essential structures are normal.

(v) Root system: A long slender primary root.
(2) Abnormal seedling description.
(i) Cotyledon:
(A) Detached from seedling.
(B) Deep open cracks at basal end.
(ii) Epicotyl:
(A) Missing.
(B) Terminal bud missing or damaged.
(C) Deep open cracks.
(D) Malformed, such as markedly shortened, curled, or thickened.
(E) Spindly.
(F) Watery.
(iii) Hypocotyl:
(A) Deep open cracks.
(iv) Root:
(A) No primary root.
(B) Stubby primary root with weak secondary roots.
(v) Seedling:
(A) One or more essential structures impaired as a result of decay from primary infection.
(B) Albino.
(b) Chives, leek, onion, Welsh onion.
(1) General description.
(i) Germination habit: Epigeal monocot.
(ii) Food reserves: Endosperm which is hard, semi-transparent, and non-starchy; minor reserves in the cotyledon.
(iii) Cotyledon: A single cylindrical cotyledon. The cotyledon emerges with the seed coat and endosperm attached to the tip. A sharp bend known as the "knee" forms; continued elongation of the cotyledon on each side of this knee pushes it above the soil surface. The cotyledon tip is pulled from the soil and straightens except for a slight kink which remains at the site of the knee.
(iv) Shoot system: The first foliage leaf emerges through a slit near the base of the cotyledon, but this does not usually occur during the test period. The hypocotyl is a very short transitional zone between the primary root and the cotyledon, and is not distinguishable for purposes of seedling evaluation.
(v) Root system: A long slender primary root with adventitious roots developing from the hypocotyl. The primary root does not develop secondary roots.
(2) Abnormal seedling description.
(i) Cotyledon:
(A) Short and thick.
(B) Without a definite bend or "knee"
(C) Spindly or watery.
(ii) Epicotyl:
(A) Not observed during the test period.
(iii) Hypocotyl:
(A) Not evaluated.
(iv) Root:
(A) No primary root.
(B) Short, weak, or stubby primary root.
(v) Seedling:
(A) One or more essential structures impaired as a result of decay from primary infection.
(B) Albino.

§ 201.56–8 Flax family, Linaceae.

Kind of seed: Flax.
(a) General description.
(1) Germination habit: Epigeal dicot. (Due to the mucilaginous nature of the seed coat, seedlings germinated on blotters may adhere to the blotter and appear to be negatively geotropic.)
(2) Food reserves: Cotyledons which expand and become photosynthetic.
(3) Shoot system: The hypocotyl elongates carrying the cotyledons above the soil surface. The epicotyl usually does not show any development within the test period.
(4) Root system: A primary root, with secondary roots usually developing within the test period.
(b) Abnormal seedling description.
(1) Cotyledons:
(i) Less than half of the original cotyledon tissue remaining attached.
(ii) Less than half of the original cotyledon tissue free of necrosis or decay.
(2) Epicotyl:
(i) Missing. (May be assumed to be present if cotyledons are intact.)
(3) Hypocotyl:
(i) Deep open cracks extending into the conducting tissue.
(ii) Malformed, such as markedly shortened, curled, or thickened.
(4) Root:
(i) None.
(ii) Weak, stubby, or missing primary root with weak secondary or adventitious roots.
(5) Seedling:
(i) One or more essential structures impaired as a result of decay from primary infection.
(ii) Albino.

§ 201.56–9 Mallow family, Malvaceae.

Kinds of seed: Cotton, kenaf, and okra.
(a) General description.
(1) Germination habit: Epigeal dicot.
(2) Food reserve: Cotyledons, which are convoluted in the seed; they expand and become thin, leaf-like, and photosynthetic.
(3) Shoot system: The hypocotyl elongates carrying the cotyledons above the soil surface. The epicotyl usually does not show any development within the test period. Areas of yellowish pigmentation may develop on the hypocotyl in cotton.
(4) Root system: A primary root, with secondary roots usually developing within the test period. Areas of yellowish pigmentation may develop on the root in cotton.
(b) Abnormal seedling description.
(1) Cotyledons:
(i) Less than half of the original cotyledon tissue remaining attached.
(ii) Less than half of the original cotyledon tissue free of necrosis or decay. (Remove any attached seed coats at the end of the test period for evaluation of cotyledons.)
(2) Epicotyl:
(i) Missing. (May be assumed to be present if both cotyledons are intact.)
(3) Hypocotyl:
(i) Deep open cracks or grainy lesions extending into the conducting tissue.
(ii) Malformed, such as markedly shortened, curled, or thickened.
(4) Root:
(i) None.
(ii) Weak, stubby, or missing primary root with weak secondary or adventitious roots.
(5) Seedling:
(i) One or more essential structures impaired as a result of decay from primary infection. (A cotton seedling with yellowish areas on the root or hypocotyl is classified as normal, provided the cotyledons are free of infection.)
(ii) Albino.

§ 201.56–10 Spurge family, Euphorbiaceae.

Kind of seed: Castorbean.
(a) General description.
(1) Germination habit: Epigeal dicot
(2) Food reserves: Cotyledons, which are thin and leaf-like; endosperm (fleshy food-storage organs) usually persisting in the laboratory test.
(3) Shoot system: The hypocotyl lengthens, carrying the cotyledons, endosperm, and epicotyl above the soil surface.
(4) Root system: A primary root, with secondary roots usually developing within the test period.
(b) Abnormal seedling description.
(1) Cotyledons:
(i) Less than half of the original cotyledon tissue remaining attached.
(ii) Less than half of the original cotyledon tissue free of necrosis or decay.
(2) Endosperm:
(i) Missing.
(3) Epicotyl:
(i) Missing.
(ii) Damaged or missing terminal bud.
(4) Hypocotyl:
(i) Deep open cracks extending into the conducting tissue.
(ii) Malformed, such as markedly shortened, curled, or thickened.
(5) Root:
(i) None.

(ii) Weak, stubby, or missing primary root with weak secondary or adventitious roots.

(6) Seedling:

(i) One or more essential structures impaired as a result of decay from primary infection.

(ii) Albino.

§ 201.56–11 Knotweed family, Polygonaceae.

Kinds of seed: Buckwheat, rhubarb, and sorrel.

(a) General description.

(1) Germination habit: Epigeal dicot.

(2) Food reserves: Cotyledons, starchy endosperm.

(3) Shoot system: The hypocotyl elongates carrying the cotyledons above the soil surface. The epicotyl usually does not show any development within the test period.

(4) Root system: A primary root, with secondary roots developing within the test period for some kinds.

(b) Abnormal seedling description.

(1) Cotyledons:

(i) Less than half of the original cotyledon tissue remaining attached.

(ii) Less than half of the original cotyledon tissue free of necrosis or decay.

(2) Epicotyl:

(i) Missing. (May be assumed to be present if cotyledons are intact.)

(3) Hypocotyl:

(i) Deep open cracks or grainy lesions extending into the conducting tissue.

(ii) Malformed, such as markedly shortened, curled, or thickened.

(iii) Watery.

(4) Root:

(i) None.

(ii) Weak, stubby, or missing primary root with weak secondary or adventitious roots.

(5) Seedling:

(i) One or more essential structures impaired as a result of decay from primary infection.

(ii) Albino.

§ 201.56–12 Miscellaneous plant families.

Kinds of seed by family:

Carrot family, Apiaceae (Umbelliferae)—carrot, celery, celeriac, dill, parsley, parsnip;

Hemp family, Cannabaceae—hemp;

Dichondra family, Dichondraceae—dichondra;

Geranium family, Geraniaceae—alfilaria;

Mint family, Lamiaceae (Labiatae)—sage, summer savory; benne family, Pedaliaceae—sesame;

Rose family, Rosaceae—little burnet;

Nightshade family, Solanaceae—eggplant, tomato, husk tomato, pepper, tobacco; and

Valerian family, Valerianaceae—cornsalad.

(a) General description.

(1) Germination habit: Epigeal dicot.

(2) Food reserves: Cotyledons; endosperm may or may not be present, depending on the kind.

(3) Shoot system: The hypocotyl elongates, carrying the cotyledons above the soil surface. The epicotyl usually does not show any development within the test period.

(4) Root system: A primary root; secondary roots may or may not develop within the test period, depending on the kind.

(b) Abnormal seedling description.

(1) Cotyledons:

(i) Less than half of the original cotyledon tissue remaining attached.

(ii) Less than half of the original cotyledon tissue free of necrosis or decay.

(2) Epicotyl:

(i) Missing. (May be assumed to be present if the cotyledons are intact.)

(3) Hypocotyl:

(i) Malformed, such as markedly shortened, curled, or thickened.

(ii) Deep open cracks extending into the conducting tissue.

(iii) Watery.

(4) Root:

(i) None.

(ii) Missing or stubby primary root with weak secondary or adventitious roots.

(5) Seedling:

(i) One or more essential structures impaired as a result of decay from primary infection.

(ii) Albino.

31. In § 201.57a, paragraph (b) is revised and a new paragraph (c) is added to read as follows:

§ 201.57a Dormant Seeds.

* * * * *

(b) The percentage of dormant seed, if present, shall be determined in addition to the percentage of germination for the following kinds: Bahiagrass, basin wildrye, big bluestem, little bluestem, sand bluestem, yellow bluestem, bottlebrush-squirreltail, buffalograss, buffelgrass, galletagrass, forage kochia, blue grama, side-oats grama, Indian ricegrass, johnsongrass, sand lovegrass, weeping lovegrass, mountain rye, sand dropseed, smilo, switchgrass, veldtgrass, western wheatgrass, and yellow indiangrass.

(c) For green needlegrass, if the test result of method 2 is less than the result of method 1, subtract the result of method 2 from method 1 and report the difference as the percentage of dormant seed. Refer to § 201.58(b)(7).

32. Section 201.58 is amended by revising the introductory text, paragraphs (a)(5), (b)(1) through (b)(4), adding a new paragraph (b)(7); revising paragraphs (b)(10), (b)(12), Table 2, and adding a new paragraph (c) to read as follows:

§ 201.58 Substrata, temperature, duration of test, and certain other specific directions for testing for germination and hard seed.

Specific germination requirements are set forth in table 2 to which the following paragraphs (a), (b), and (c) are applicable.

* * * * *

(a) * * *

(5) *Prechill.* The term "prechill" means a cold, moist treatment applied to seeds to overcome dormancy prior to the germination test. The prechill method varies among kinds, but is usually performed by holding imbibed seeds at a low temperature for a specified period of time. The prechill period is not included in the duration of tests given in table 2, unless otherwise specified.

* * * * *

(b) * * *

(1) *Alyceclover;* swollen seeds. At the conclusion of the 21-day test period, carefully pierce the seed coat with a sharp instrument and continue the test for 5 additional days. Alternate method: The swollen seeds may be placed at 20° C for 48 hours and then at 35° C for 3 additional days.

(2) *Bahiagrass;* removal of glumes. On all varieties except "Pensacola," remove the enclosing structures (glumes, lemma, and palea) from the caryopsis with the aid of a sharp scalpel. If the seed is fresh or dormant, lightly scratch the surface of the caryopsis.

(3) *Beet, Swiss chard;* preparation of seed for test. Before the seeds are placed on the germination substratum, they shall be soaked in water for 2 hours, using at least 250 ml of water per 100 seeds, then washed in running water and the excess water blotted off. The temperature of the soaking and washing water should be no lower than 20 °C. Samples producing excessive discoloration of the hypocotyl or root should be retested in soil or by washing in running water for 3 hours and testing on "Kimpak," keeping the seed covered with slightly moist blotters. Sugar beets may require 16 hours soaking in water at 25 °C, followed by rinsing and then drying for 2 hours at room temperature.

(4) *Buffelgrass;* alternate method for dormant seed. The caryopses shall be removed from the fascicles and placed on blotters moistened with a 0.2 percent solution of KNO_3, in petri dishes. The seeds from a fascicle should be arranged so they will not be confused with seeds from other fascicles during the test. The

seeds are then prechilled at 5 °C for 7 days and tested at 30 °C in light for 21 additional days. Firm ungerminated seeds remaining at the conclusion of the test should be scratched lightly and left in test for 7 additional days.

* * * * *

(7) *Green needlegrass*; two test methods as prescribed in table 2 shall be used on each sample:

(i) For method 1, acid scarify 400 seeds for 10 minutes in concentrated sulfuric acid (95 to 98 percent H_2SO_4). Rinse seeds and dry on blotters for 16 hours, then place seeds on blotters moistened with a solution of 0.055 percent (500 ppm gibberellic acid GA_3) and 0.46 percent (3,000 ppm) thiram and germinate 14 days.

(ii) For method 2, plant 400 seeds on blotters moistened with a 0.2 percent solution of KNO_3 and germinate 14 days. Refer to § 201.57a(c).

(iii) Report the results of method 2 as the percentage germination. If the number in method 2 is less than method 1, subtract the results of method 2 from method 1 and report the difference as dormant seed.

* * * * *

(10) *Ryegrass*; fluorescence test. The germination test for fluorescence of ryegrass shall be conducted in light [not to exceed 100 foot candles (1,076 lux)] with white filter paper as the substratum. The white filter paper should be nontoxic to the roots of ryegrass and of a texture that will resist penetration of ryegrass roots. Distilled or deionized water shall be used to moisten the filter paper. The test shall be conducted in a manner that will prevent the contact of roots of different seedlings. Roots of some seedlings produce fluorescent lines on white filter paper when viewed under ultraviolet light. First counts shall not be made before the eighth day; at that time remove only normal fluorescent seedlings. Evaluation of fluorescence shall be made under F15T8–BLB or comparable ultraviolet tubes in an area where light from other sources is excluded. If there are over 75 percent normal fluorescent seedlings present at the time of the first count, break the contact of the roots of the nonfluorescent seedlings from the substratum and reread the fluorescence at the time of the final count. At the final count, lift each remaining seedling, observing the path of each root since sometimes faint fluorescence will show on the substratum as the root is lifted. Abnormal seedlings and dead seeds are not evaluated for fluorescence. See § 201.58a(a).

* * * * *

(12) *Garden bean;* use of calcium nitrate. If hypocotyl collar rot is observed on seedlings, the sample involved shall be retested using a 0.3 to 0.6 percent solution of calcium nitrate ($CaNO_3$) to moisten the substratum.

* * * * *

(c) Procedures for coated seed:

(1) Germination tests on coated seed shall be conducted in accordance with methods in paragraphs (a) and (b) of this section. However, kinds for which soaking or washing is specified in paragraph (b) shall not be soaked or washed in the case of coated seed.

(i) Coated seed units shall be placed on the substratum in the condition in which they are received without rinsing, soaking, or any other pretreatment.

(ii) Coated seed units in mixtures which are color coded or can otherwise be separated by kinds shall be germinated as separate kinds without removing the coating material.

(iii) Coated seed units in mixtures which cannot be separated by kinds without removing the coating material shall be de-coated and germinated as separate kinds. The coating material shall be removed in a manner that will not affect the germination capacity of the seeds.

(2) The moisture level of the substratum is important. It may depend on the water-absorbing capacity of the coating material. A retest may be necessary before satisfactory germination of the sample is achieved.

(3) Phytotoxic symptoms may be evident when germinating coated seeds in paper substrata. In such cases a retest in sand or soil may be necessary.

TABLE 2.—GERMINATION REQUIREMENTS FOR INDICATED KINDS

Name of seed	Substrata	Temperature (°C)	First count days	Final count days	Additional directions	
					Specific requirements	Fresh and dormant seed
AGRICULTURAL SEED						
Agrotricum	B, T, S	20; 15	4	7		Prechill at 5° or 10 °C for 5 days.
Alfalfa	B, T, S	20	4	[1]7	See ¶ (b)(11)	
Alfilaria	B, T	20–30	3	14	Clip seeds	
Alyceclover	B, T	35	4	[1]21	See ¶ (b)(1) for swollen seeds.	
Bahiagrass:						
Var. Pensacola.	P, S	20–35	7	28	Light; see ¶ (b)(2)	See § 201.57a
All other vars.	P	30–35	3	21	Light; remove glumes; see ¶ (b)(2).	Scratch caryopses; KNO_3; see § 201.57a
Barley	B, T, S	20; 15	4	7		Prechill 5 days at 5° or 10 °C or predry
Barrelclover	B, T	20	4	[1]14	Remove seeds from bur; see ¶ (b)(11).	
Bean:						
Adzuki	B, T, S	20–30	4	[1]10		
Field	B, T, S, TC	20–30; 25	5	[1]8		
Mung	B, T, S	20–30	3	[1]7		
Beet, field	B, T, S	20–30	3	14	See ¶ (b)(3)	
Beet, sugar	B, T, S	20–30; 20	3	10	See ¶ (b)(3)	
Beggarweed, Florida.	B, T	30	5	[1]28		
Bentgrass:						
Colonial	P	15–30; 10–30; 15–25	7	28	Light; KNO_3	Prechill at 5° or 10 °C for 7 days.
Creeping	P	15–30; 10–30; 15–25	7	28	Light; KNO_3	Prechill at 5° or 10 °C for 7 days.

TABLE 2.—GERMINATION REQUIREMENTS FOR INDICATED KINDS—Continued

Name of seed	Substrata	Temperature (°C)	First count days	Final count days	Additional directions	
					Specific requirements	Fresh and dormant seed
Velvet	P	15–25; 20–30	7	21	Light; KNO_3	
Bermudagrass	P	20–35	7	21	Light; KNO_3; see ¶ (a)(9).	
Bermudagrass, giant.	P	20–35	7	21 Light; KNO_3; see ¶ (a)(9)	Prechill at 10 °C for 7 days and then test at 20–35 °C; continue tests of hulled seed for 14 days and of unhulled seed for 21 days.	
Bluegrass:						
Annual	P	20–30	7	21	Light	
Bulbous	P, S	10	10	35	KNO_3 or soil	Prechill all samples at 5 °C for 7 days.
Canada	P	15–25; 15–30	10	28	Light; KNO_3	10–30 °C.
Glaucantha	P	15–25; 15–30	10	28	Light; KNO_3	
Kentucky	P	15–25; 15–30	10	28	Light; KNO_3	Prechill at 10 °C for 5 days.
Nevada	P	20–30	7	21	Light; KNO_3	
Rough	P	20–30	7	21	Light	
Texas	P	20–30	7	28	Light; KNO_3	Prechill at 5 °C for 2 weeks.
Wood	P	20–30	7	28	Light	
Bluejoint	TB, P	15–25	10	21	Light and KNO_3 optional.	Prechill at 5 °C for 5 days
Bluestem:						
Big	P, TS	20–30	7	14	Light; KNO_3	Prechill at 5 °C for 2 weeks; see §201.57a.
Little	P, TS	20–30	7	14	Light; KNO_3	Prechill at 5 °C for 2 weeks; see §201.57a.
Sand	P, TS	20–30	7	14	Light; KNO_3	Prechill at 5 °C for 2 weeks; see §201.57a.
Yellow	P, TS	20–30	5	14	Light; KNO_3	Prechill at 5 °C for 2 weeks; see §201.57a.
Bottlebrush-squirreltail.	P, B	20; 15	10	14		See §201.57a.
Brome:						
Field	P, TB	15–25; 20–30	6	14	Light	Prechill at 10 °C for 5 days.
Meadow	B, T, TB	20–30	6	14	Light optional	
Mountain	P	20–30	6	14	Light.	
Smooth	P, B, TB	20–30	6	14	Light optional	Prechill at 5° or 10°C for 5 days, then test at 30°C for 9 additional days.
Broomcorn	B, T, S	20–30	3	10		
Buckwheat	B, T	20–30	3	6		
Buffalograss:						
(Burs)	P, TB, TS	20–35	7	28	Light; KNO_3	Prechill at 5°C for 6 weeks; test 14 additional days; see §201.57a.
(Caryopses)	P	20–35	5	14	Light; KNO_3	See §201.57a.
Buffelgrass	S	30	7	28	Light; press fascicles into well-packed soil and prechill at 5°C for 7 days.	See ¶ (b)(4); see §201.57a.
Burclover, California.	B, T	20	4	[1]14	Remove seeds from bur; see ¶ (b)(11).	
Burclover, spotted	B, T	20	4	[1]14	Remove seeds from bur; see ¶ (b)(11).	
Burnet, littler	B, T	15	5	14		
Buttonclover	B, T	20	4	[1]10	See ¶ (b)(11)	15°C.
Canarygrass	B, T	20–30	3	7		
Canarygrass, reed.	P	20–30	5	21	Light; KNO_3	
Carpetgrass	P	20–35	10	21	Light	KNO_3.
Castorbean	T, S	20–30	7	14	Remove caruncle if mold interferes with test.	
Chess, soft	P	20–30	7	14	Light	Prechill at 5° or 10°C for 7 days.
Chickpea	T,S	20–30	3	[1]7		
Clover:						
Alsike	B, T, S	20	3	[1]7	See ¶ (b)(11)	15°C.
Arrowleaf	B, T	20; 15	4	[1]14	See ¶ (b)(11)	
Berseem	B, T, S	20	3	[1]7	See ¶ (b)(11)	15°C.
Cluster	B, T	20	4	[1]10	See ¶ (b)(11)	15°C.
Crimson	B, T, S	20	4	[1]7	See ¶ (b)(11)	15°C.
Kenya	B, T, S	20	3	17		
Ladino	B, T, S	20	3	[1]7	See ¶ (b)(11)	15°C.
Lappa	B, T	20	3	[1]7	See ¶ (b)(11)	15°C.
Large hop	B, T	20	4	[1]14	See ¶ (b)(11)	15°C.

TABLE 2.—GERMINATION REQUIREMENTS FOR INDICATED KINDS—Continued

Name of seed	Substrata	Temperature (°C)	First count days	Final count days	Additional directions	
					Specific requirements	Fresh and dormant seed
Persian	B, T	20	3	[1]7	See ¶ (b)(11)	15°C.
Red	B, T, S	20	4	[1]7	See ¶ (b)(11)	15°C.
Rose	B, T	20	4	[1]10	See ¶ (b)(11)	15°C.
Small hop	B, T	20	4	[1]14	See ¶ (b)(11)	15°C.
Strawberry	B, T	20	3	[1]7	See ¶ (b)(11)	15°C.
Sub	B, T	20	4	[1]14	See ¶ (b)(11)	15°C.
White	B, T, S	20	3	[1]7	See ¶ (b)(11)	15°C.
Corn:						
Field	B, T, S, TC	20–30; 25	4	7		
Pop	B, T, S, TC	20–30; 25	4	7		
Cotton	B, T, S	20–30; 30	4	[1]12		Test by alternate method; see ¶ (b)(5).
Cowpea	B, T, S	20–30	5	[1]8		
Crambe	T	25	3	7		
Crested dogtail	P	20–30	10	21	Light	Prechill at 5° or 10°C for 3 days.
Crotalaria:						
Lance	B, T, S	20–30	4	[1]10		
Showy	B, T, S	20–30	4	[1]10		
Slenderleaf	B, T, S	20–30	4	[1]10		
Striped	B, T, S	20–30	4	[1]10		
Sunn	B, T, S	20–30	4	[1]10		
Crownvetch	B, T, S	20	7	[1]14		
Dallisgrass	P	20–35	7	21	Light; KNO_3	
Dichondra	B, T	20–30	7	[1]28		
Drop seed, sand	P	5–35; 15–35	5	14	Light; KNO_3	Prechill at 5 °C for 4 weeks; see §201.57a.
Emmer	B, T, S	20; 15	4	7		Prechill at 5° or 10 °C for 5 days or predry.
Fescue:						
Chewings	P	15–25	7	21	Light and KNO_3 optional.	Prechill at 5° or 10 °C for 5 days.
Hair	P	10–25	10	28	KNO_3	
Hard	P	15–25	7	21	Light and KNO_3 optional.	
Meadow	P	15–25; 20–30	5	14	Light and KNO_3 optional.	
Red	P	15–25	7	21	Light and KNO_3 optional.	
Sheep	P	15–25	7	21	Light and KNO_3 optional.	
Tall	P	15–25; 20–30	5	14	Light and KNO_3 optional.	Prechill at 5° or 10 °C for 5 days and test for 21 days.
Flax	B, T, S	20–30	3	7		
Galletagrass	P, B	20; 25; 20–30	4	10		See §201.57a
Grama:						
Blue	P, TB	20–30	7	14	Light	KNO_3; see §201.57a.
Side-oats	P	15–30	7	14	Light; KNO_3	See §201.57a.
Guar	B, T, S	30; 20–30	5	[1]14		
Guineagrass	P	15–35	10	28	Light; KNO_3 optional	
Hardinggrass	P	10–30	7	28	Light	KNO_3.
Alternate method.	P	15–25	7	14	Light; presoak at 15 °C for 24 hrs.	
Hemp	B, T	20–30	3	7		
Indiangrass, yellow.	P, TS	20–30	7	14	Light; KNO_3	Prechill at 5 °C for 2 weeks; see §201.57a.
Indigo, hairy	B, T	20–30	5	[1]14		
Japanese lawngrass.	P	35–20	10	28	Light; KNO_3	
Johnsongrass	P	20–35	7	35	Light	KNO_3; see §201.57a.
Kenaf	T, B	20–30	4	[1]8		
Kochia, forage	P	20	4	14		See §201.57a.
Kudzu	B, T	20–30	5	[1]14		
Lentil	B, T	20	5	[1]10		
Lespedeza:						
Korean	B, T, S	20–35	5	[1]14		
Sericea	B, T, S	20–35	7	[1]21		
Siberian	B, T, S	20–35	7	[1]21		
Striate	B, T, S	20–35	7	[1]14		
Lovegrass, sand	P	20–30	5	14	Light; KNO_3	Prechill at 5° or 10 °C for 6 weeks; see §201.57a.
Lovegrass, weeping.	P	20–35	5	14	Light	KNO_3; see §201.57a.

TABLE 2.—GERMINATION REQUIREMENTS FOR INDICATED KINDS—Continued

Name of seed	Substrata	Temperature (°C)	First count days	Final count days	Additional directions	
					Specific requirements	Fresh and dormant seed
Lupine:						
Blue	B, T, S	20	4	[1]10		
White	B, T	20	3	[1]10		
Yellow	B, T	20	7	[1]10		
Manilagrass	P	35–20	10	28	Light; KNO_3	
Meadow foxtail	P	20–30	7	14	Light	
Medic, black	B, T, S	20	4	[1]7	See ¶ (b)(11)	
Milkvetch	B, T	20	6	[1]14		
Alternate method.	B, TB, T	15–25	10	[1]21		
Millet:						
Browntop	B, P, T	20–30; 30	4	14	Light and KNO_3 optional.	Predry at 35° or 40 °C for 7 days and test at 30 °C.
Alternate method.	B, P, T	5–35	4	14	Light; KNO_3	
Foxtail	B, T	15–30; 20–30	4	10		
Japanese	B, T	20–30	4	10		
Pearl	B, T	20–30	3	7		
Proso	B, T	20–30	3	7		
Molassesgrass	P	20–30	7	21	Light	
Mustard:						
Black	P	20–30	3	7	Light	KNO_3 and prechill at 10 °C for 3 days.
India	P	20–30	3	7	Light	Prechill at 10 °C for 7 days and test for 5 days; KNO_3
White	P	20–30	3	5	Light	
Napiergrass	B, T	20–30	3	10		
Needlegrass, green:						
Method 1	P	15–30	7	14	H_2SO_4,GA_3 and thiram; dark; see ¶(b)(7).	
Method 2	P	15–30	7	14	KNO_3, dark; see ¶(b)(7).	
Oat	B, T, S	20; 15	5	10	Prechill at 5° or 10 °C for 5 days and test for 7 days or predry and test for 10 days..	
Oatgrass, tall	P	20–30	6	14	Light	
Orchardgrass	P, TS	15–25	7	21	Light; germination more rapid on soil.	Prechill at 5° or 10 °C for 7 days.
Panicgrass, blue	P, TS	20–30	7	28	Light	
Panicgrass, green	P	15–35	10	28	Light; KNO_3 optional	
Pea, field	B, T, S	20	3	[1]8		
Peanut	B, T, S	20–30; 25	5	[1]10	Remove shells	Ethephon or ethylene; see ¶ (a) (10) and (11).
Rape:						
Annual	B, T	20–30	3	7		
Bird	P	20–30	3	10	Light	KNO_3
Turnip	B, T	20–30	3	7		
Winter	B, T	20–30	3	7		
Redtop	P, TB	20–30	5	10	Light	KNO_3
Rescuegrass	P, S	10–30	7	28	Light; see ¶ (b)(8) for alternate method.	In soil at 15°C.
Rhodesgrass	P	20–30	6	14	Light; KNO_3	
Rice	T, S	20–30; 30	5	14	See ¶ (b)(9) for alternate method.	Presoak; see ¶ (b)(9).
Ricegrass, Indian	P	15	7	42		Prechill at 5 °C for 4 weeks and test for 21 additional days; see §201.57a.
Alternate method.	S	5–15; 15; 15–25	7	28		Dark; prechill in soil at 5 °C for 4 weeks, see §201.57a.
Roughpea	B, T	20	7	[1]14		
Rye	B, T, S	20; 15	4	7		Prechill at 5° or 10 °C for 5 days or predry
Rye, mountain	B, T	20; 15	4	7		See §201.57a.
Ryegrass:						
Annual	P, TB	15–25	5	14	Light optional; see ¶ (b)(10) for fluorescence test.	Light; KNO_3, prechill at 5° or 10°C for 5 days and test at 15–25 °C; if still dormant prechill for 3 days and continue test at 15–25 °C an additional 4 days.

TABLE 2.—GERMINATION REQUIREMENTS FOR INDICATED KINDS—Continued

Name of seed	Substrata	Temperature (°C)	First count days	Final count days	Additional directions	
					Specific requirements	Fresh and dormant seed
Intermediate .	P, TB	15–25	7	14	Light	KNO_3 and prechill at 5° or 10 °C for 5 days and test at 15–25°C; if still dormant rechill for 3 days and continue test at 15–25 °C an additional 4 days.
Perennial	P, TB	15–25	5	14	Light optional; see ¶ (b)(10) for fluorescence test.	Light; KNO_3; prechill at 5° or 10 °C for 5 days and test at 15–25 °C; if still dormant rechill for 3 days and continue test at 15–25° C an additional 4 days.
Wimmera	P, TB	15–25; 20–30	5	14	Light optional	Light; KNO_3; prechill at 5° or 10 °C for 5 days and test at 15–25 °C; if still dormant rechill for 3 days and continue test at 15–25 °C an additional 4 days.
Safflower	P, B, T, S	15; 20	4	14	Light at 15 °C	
Sagewort, Louisiana.	P	15–25	7	14	Light	
Sainfoin	B, T	20–30	4	[1]14		
Saltbush, fourwing.	B	20	5	14	See ¶ (b)(13)	Prechill at 5 °C for 7 days.
Alternate method.	B	15		21		
Sesame	B, T, TB	20–30	3	6		
Sesbania	B, T	20–30	5	[1]7		
Smilo	P	20–30	7	42	Light	Prechill at 5 °C for 2 weeks; see §201.57a.
Sorghum	B, T, S	20–30	4	10		Prechill grain vars. at 5° or 10 °C for 5 days; test sweet vars. at 30–45 °C, maintaining 45 °C for 2–4 hours per day.
Sorghum almum .	T, S	20–35; 15–35	5	21		Prechill at 5 °C for 5 days; on the 10th day of test, clip or pierce the distal end of ungerminated seeds.
Sorghum-sudangrass.	B, T, S	20–30; 25	4	10		Prechill at 5° or 10 °C for 5 days.
Sorgrass[2]	B, T, S	15–35; 20–35	5	21		Prechill at 5° or 10 °C for 7 days.
Sourclover	B, T	20	3	[1]14	See ¶ (b)(11)	
Soybean	B, T, S, TC	20–30; 25	5	[1]8		
Spelt	B, T, S	20; 15	4	7		Prechill at 5° or 10 °C for 5 days, or predry
Sudangrass	B, T, S	20–30; 15–30	4	10		Prechill at 10 °C for 5 days.
Sunflower	T, B	20–30	3	7		
Sweetclover:						
White	B, T, S	20	4	[1]7	See ¶ (b)(11)	
Yellow	B, T, S	20	4	[1]7	See ¶ (b)(11)	
Sweet vernalgrass.	P	20–30	6	14	Light	
Sweetvetch, northern.	B, TB, T	15–25; 20	14	[1]28		
Switchgrass	P, TS	15–30	7	14	Light; KNO_3	Prechill at 5 °C for 2 weeks; see §201.57a.
Timothy	P, TB	15–25; 20–30	5	10	Light; see ¶ (a)(9)	KNO_3 and prechill at 5° or 10 °C for 5 days.
Timothy, turf	P, TB	15–25; 20–30	5	10	Light	KNO_3 and prechill at 5° or 10 °C for 5 days.
Tobacco	P, TB	20–30	7	14	Light	
Trefoil:						
Big	B, T	20	5	[1]12		
Birdsfoot	B, P, T	20	5	[1]12		
Triticale	B, T, S	20; 15	4	7		Prechill at 5° or 10 °C for 5 days, or predry
Vaseygrass	P	20–35	7	21	Light	KNO_3.
Veldtgrass	P	10–30	7	28	Light	See §201.57a.
Velvetbean	B, T, S, C	20–30	3	[1]14		
Velvetgrass	P	20–30	6	14	Light	
Vetch:						
Common	B, T	20	5	[1]10		
Hairy	B, T	20	5	[1]14		
Hungarian	B, T	20	5	[1]10		
Monantha	B, T	20	5	[1]10		
Narrowleaf	B, T	20	5	[1]14		
Purple	B, T	20	5	[1]10		
Woollypod	B, T	20	5	[1]14		Prechill at 10 °C for 5 days, test at 15 °C.
Wheat:						
Common	B, T, S	20; 15	4	7		Prechill at 5° or 10 °C for 5 days, or predry.
Club	B, T, S	20; 15	4	7		Prechill at 5° or 10 °C for 5 days, or predry

TABLE 2.—GERMINATION REQUIREMENTS FOR INDICATED KINDS—Continued

Name of seed	Substrata	Temperature (°C)	First count days	Final count days	Additional directions	
					Specific requirements	Fresh and dormant seed
Durum	B, T, S	20; 15	4	10		Prechill at 5° or 10 °C for 5 days, or predry
Polish	B, T, S	20; 15	4	7		Prechill at 5° or 10 °C for 5 days, or predry
Poulard	B, T, S	20; 15	4	7		Prechill at 5° or 10 °C for 5 days, or predry
Wheat Agrotricum	B, T, S	20; 15	4	7		Prechill at 5° or 10 °C for 5 days, or predry
Wheatgrass:						
Beardless	P, TB	15–25	7	14	Light and KNO_3 optional.	KNO_3 and prechill at 5° or 10 °C for 7 days.
Fairway crested.	P, TB	15–25; 20–30	5	14	Light and KNO_3 optional.	KNO_3 and prechill at 5° or 10 °C for 7 days.
Standard crested.	P, TB	15–25; 20–30	5	14	Light and KNO_3 optional.	KNO_3 and prechill at 5° or 10 °C for 7 days.
Intermediate	P	15–25	5	28	Light and KNO_3 optional.	KNO_3 and prechill at 5° or 10 °C for 7 days.
Alternate method.	P	20–30	5	28	Light	
Pubescent	P	15–25	5	28	Light and KNO_3 optional.	KNO_3 and prechill at 5° or 10 °C for 7 days.
Alternate method.	P	20–30	5	28	Light	
Siberian	P, TB	15–25	7	14	Light and KNO_3 optional.	KNO_3 and prechill at 5° or 10 °C for 7 days.
Slender	P, TB	15–25; 10–30	5	14	Light and KNO_3 optional.	Prechill at 5° or 10 °C for 5 days; if still dormant on the 10th day, rechill 2 days, then place at 20–30° C for 4 days.
Streambank	P, TB	15–25	5	14	Light and KNO_3 optional.	Prechill at 5° or 10 °C for 5 days.
Tall	P	15–25	5	21	Light and KNO_3 optional.	Prechill at 5° or 10 °C for 5 days.
Alternate method.	P	20–30	5	21	Light	Prechill at 5° or 10 °C for 5 days.
Western	B, P, T	15–30	7	28	Dark	KNO_3 or soil; see §201.57a.
Wildrye:						
Basin	P	15–25	10	21		See §201.57a.
Canada	P	15–30	7	21	Light	Prechill at 5 °C for 2 weeks.
Russian	P	20–30	5	14	Light	Prechill at 5° or 10 °C for 5 days.
VEGETABLE SEED						
Artichoke	B, T	20–30	7	21		
Asparagus	B, T, S	20–30	7	21		
Asparagusbean	B, T, S	20–30	5	[1]8		
Bean:						
Garden	B, T, S, TC	20–30; 25	None	[1]8		See ¶ (b)(12).
Lima	B, T, C, S	20–30	5	[1]9		
Runner	B, T, S	20–30	5	[1]9		
Beet	B, T, S	20–30	3	14	See ¶ (b)(3)	
Broadbean	S, C	20	4	[1]14	See ¶ (b)(11)	Prechill at 10 °C for 3 days.
Broccoli	B, P, T	20–30	3	10		Prechill at 5° or 10 °C for 3 days; KNO_3 and light.
Brussels sprouts	B, P, T	20–30	3	10	Prechill at 5° or 10 °C for 3 days; KNO_3 and light.	
Burdock, great	B, T	20–30	7	14		
Cabbage	B, P, T	20–30	3	10		Prechill at 5° or 10° C for 3 days, KNO_3 and light.
Cabbage, Chinese.	B, T	20–30	3	7		
Cabbage, tronchuda.	B, P	20–30	3	10		Prechill at 5° or 10 °C for 3 days, KNO_3 and light.
Cardoon	B, T	20–30	7	21		
Carrot	B, T	20–30	6	14		
Cauliflower	B, P, T	20–30	3	10		Prechill at 5° or 10 °C for 3 days; KNO_3 and light
Celeriac	P	5–25; 20	10	21	Light; see ¶ (a)(9)	
Celery	P	15–25; 20	10	21	Light; see ¶ (a)(9)	
Chard, Swiss	B, T, S	20–30	3	14	See ¶ (b)(3)	
Chicory	P, TS	20–30	5	14	Light; KNO_3 or soil; see ¶ (a)(9)	
Chives	B, T	20	6	14		
Citron	B, T	20–30	7	14	Soak seeds 6 hrs	Test at 30° C

TABLE 2.—GERMINATION REQUIREMENTS FOR INDICATED KINDS—Continued

Name of seed	Substrata	Temperature (°C)	First count days	Final count days	Additional directions	
					Specific requirements	Fresh and dormant seed
Collards	B, P, T	20–30	3	10		Prechill at 5° or 10° C for 3 days; KNO_3 and light
Corn, sweet	B, T, S, TC	20–30; 25	4	7		
Cornsalad	B, T	15	7	28	Test at 10° C..	
Cowpea	B, T, S	20–30	5	[1]8		
Cress:						
Garden	B, P, T	15	4	10		Light.
Upland	P, TB	20–35	4	7	Light; KNO_3	
Water	P	20–30	4	14	Light	
Cucumber	B, T, S	20–30	3	7	Keep substratum on dry side; see ¶ (a)(3).	
Dandelion	P, TB	20–30	7	21	Light; see ¶ (a)(9)	
Dill	B, T	20–30	7	21		
Eggplant	P, TB, RB, T	20–30	7	14	Light; KNO_3..	
Endive	P, TS	20–30	5	14	Light; KNO_3 or soil	See ¶ (b)(6).
Gherkin, West India.	B, T, S	20–30	3	7	Test at 30° C..	
Kale	B, P, T	20–30	3	10		Prechill at 5° or 10° C for 3 days; KNO_3 and light.
Kale, Chinese	B, P, T	20–30	3	10		Prechill at 5° or 10° C for 3 days; KNO_3 and light.
Kale, Siberian	B, P, T	20–30; 20	3	7		
Kohlrabi	B, P, T	20–30	3	10		Prechill at 5° or 10° C for 3 days; KNO_3 and light.
Leek	B, T	20	6	14		
Lettuce	P	20	None	7	Light	Prechill at 10° C for 3 days or test at 15° C.
Melon	B, T, S	20–30	4	10	Keep substratum on dry side; see ¶ (a)(3).	
Mustard, India	P	20–30	3	7	Light	Prechill at 10° C for 7 days and test for 5 additional days; KNO_3.
Mustard, spinach	B, T	20–30	3	7		
Okra	B, T	20–30	4	[1]14		
Onion	B, T	20	6	10		
Alternate method.	S	20	6	12		
Onion, Welsh	B, T	20	6	10		
Pak-choi	B, T	20–30	3	7		
Parsley	B, T, TS	20–30	11	28		
Parsnip	B, T, TS	20–30	6	28		
Pea	B, T,S	20	5	[1]8		
Pepper	TB, RB, T	20–30	6	14		Light and KNO_3.
Pumpkin	B, T, S	20–30	4	7	Keep substratum on dry side; see ¶ (a)(3).	
Radish	B, T	20	4	6		
Rhubarb	TB, TS	20–30	7	21	Light	
Rutabaga	B, T	20–30	3	14		
Sage	B, T, S	20–30	5	14		
Salsify	B, T	15	5	10	Prechill at 10° C for 3 days..	
Savory, summer	B, T	20–30	5	21		
Sorrel	P, TB, TS	20–30	3	14	Light	Test at 15° C.
Soybean	B, T, S, TC	20–30; 25	5	[1]8		
Spinach	TB, T	15;10	7	21	Keep substratum on dry side; see ¶ (a)(3).	
Spinach, New Zealand.	T	15; 20	5	21	Soak fruits overnight (16 hrs), air dry 7 hrs; plant in very wet towels; do not rewater unless later counts exhibit drying out.	On 21st day scrape fruits and test for 7 additional days.

TABLE 2.—GERMINATION REQUIREMENTS FOR INDICATED KINDS—Continued

Name of seed	Substrata	Temperature (°C)	First count days	Final count days	Additional directions	
					Specific requirements	Fresh and dormant seed
Alternate method	B, T	15	5	21	Remove pulp from basal end of fruit.	
Squash	B, T, S	20–30	4	7	Keep substratum on dry side; see ¶ (a)(3).	
Tomato	B, P, RB, T	20–30	5	14		Light; KNO_3.
Tomato, husk	P, TB	20–30	7	28	Light; KNO_3	
Turnip	B, T	20–30	3	7		
Watermelon	B, T, S	20–30; 25	4	14	Keep substratum on dry side; see ¶ (a)(3).	Test at 30° C.

[1] Hard seeds may be present. (See § 201.57)
[2] Rhizomatous derivatives of a johnsongrass sorghum cross or a johnsongrass sudangrass cross.

33. Section 201.58a is revised to read as follows:

§ 201.58a Indistinguishable seeds.

When the identification of the kind, variety, or type of seed or determination that seed is hybrid is not possible by seed characteristics, identification may be based upon the seedling, growing plant or mature plant characteristics according to such authentic information as is available.

(a) *Ryegrass.* In determining the pure seed percentage of perennial ryegrass and annual ryegrass, 400 seeds shall be grown on white filter paper and the number of fluorescent seedlings determined under ultraviolet light at the end of the germination period (see § 201.58(b)(10)).

(1) Fluorescence results are to be determined as test fluorescence level (TFL) to two decimal places as follows

$$\% \text{ TFL} = \frac{\text{Number of normal fluorescent seedlings}}{\text{Total number of normal seedlings}} \times 100$$

(2) The percentage of perennial ryegrass is calculated as follows:

$$\% \text{ Perennial ryegrass} = \frac{\% \text{ VFL (annual)} - \% \text{ TFL}}{\% \text{ VFL (annual)} - \% \text{ VFL (perennial)}} \times \% \text{ Pure ryegrass}$$

where VFL=Variety fluorescence level.

(3) Using results from the above formula, the percentage of annual ryegrass is calculated as follows:

% Annual Ryegrass = % Pure Ryegrass − % Perennial Ryegrass

(4) If the test fluorescence level (TFL) of a perennial ryegrass is equal to or less than the variety fluorescence level (VFL) described for the variety, all pure ryegrass is considered to be perennial ryegrass and the formula is not applied.

(5) If the test fluorescence level (TFL) of an annual ryegrass is equal to or greater than the variety fluorescence level (VFL) described for the variety, all pure ryegrass is considered to be annual ryegrass and the formula is not applied.

(6) A list of variety fluorescence level (VFL) descriptions for perennial ryegrass varieties which are more than 0 percent fluorescent and annual ryegrass varieties which are less than 100 percent fluorescent is maintained and published by the National Grass Variety Review Board of the Association of Official Seed Certifying Agencies (AOSCA). If the variety being tested is not stated or the fluorescence level has not been described, the fluorescence level shall be considered to be 0 percent for perennial ryegrass and 100 percent for annual ryegrass. Both VFL (annual) and VFL (perennial) values must always be entered in the formula. If a perennial ryegrass variety is being tested, the VFL (annual) value is 100 percent. If an annual ryegrass variety is being tested, the VFL (perennial) value is 0 percent. For blends the fluorescence level shall be interpolated according to the portion of each variety claimed to be present.

(b) *Sweetclover.* To determine the presence of yellow sweetclover in samples of white sweetclover, at least 400 seeds shall be subjected to the chemical test as follows:

(1) Preparation of test solution: Add 3 grams of cupric sulfate ($CuSO_4$) to 30 ml of household ammonia (NH_4OH, approximately 4.8 percent) in a stoppered bottle to form tetraamminecopper sulfate ($[Cu(NH_3)_4]SO_4$) solution used for this test. After mixing, a light blue precipitate of cupric hydroxide ($Cu(OH)_2$) should form. If no precipitate forms, add additional $CuSO_4$ until a precipitate appears. Since the strength of household ammonia can vary, formation of a precipitate indicates that a complete reaction has taken place between $CuSO_4$ and NH_4OH; otherwise fumes from excess ammonium hydroxide may cause eye irritation.

(2) Preparation of seeds: To insure imbibition, scratch, prick, or otherwise scarify the seed coats of the sweetclover seeds being tested. Soak seeds in water for 2 to 5 hours in a glass container

(3) Chemical reaction: When seeds have imbibed, remove excess water and add enough test solution to cover the seeds. Seeds coats of yellow sweetclover will begin to stain dark brown to black.

seed coats of white sweetclover will be olive or yellow-green. Make the separation within 20 minutes, since the seed coats of white sweetclover will eventually turn black also.

(4) Calculation of results: Count the number of seeds which stain dark brown or black and divide by the total number of seeds tested; multiply by the pure seed percentage for Melilotus spp., the result is the percentage of yellow sweetclover in the sample. The percentage of white sweetclover is found by subtracting the percentage of yellow sweetclover from the percentage of Melilotus spp. pure seed.

(c) *Wheat.* In determining varietal purity, the phenol test may be used. From the pure seed sample count four replicates of 100 seeds each. Soak the seed in distilled water for 16 hours; then flush with tap water and remove the excess water from the surface of the seeds. Place two layers of filter paper in a container and moisten with a 1 percent phenol (C_6H_5OH) solution. Place the seed, palea side down, on the two layers of filter paper and cover the container. A preliminary observation may be made at 2 hours. At 4 hours, record the number of seeds in each of the following color categories:

(1) Ivory.
(2) Fawn.
(3) Light Brown.
(4) Brown.
(5) Brown Black.

(d) *Soybean.* In determining the varietal purity, the peroxidase test may be used. Remove and place the dry seed coat from seeds into individual test tubes or suitable containers. Add 10 drops (0.5–1.0 ml) of 0.5 percent guaiacol ($C_7H_8O_2$) to each test tube. After waiting 10 minutes add one drop (about 0.1 ml) of 0.1 percent hydrogen peroxide (H_2O_2). One minute after adding hydrogen peroxide, record the seed coat as peroxidase positive (high peroxidase activity) indicated by a reddish-brown solution or peroxidase negative (low peroxidase activity) indicated by a colorless solution in the test tube. Various sample sizes may be used for this test. Test results shall include the sample size tested.

(e) *Oat.* In determining the varietal purity, the fluorescence test may be used. Place at least 400 seeds on a black background under a F15T8–BLB or comparable ultraviolet tube(s) in an area where light from other sources is excluded. Seeds are considered fluorescent if the lemma or palea fluoresce or appear light in color "Partially fluorescent" seeds shall be considered fluorescent. Seeds are considered nonfluorescent if the lemma and palea do not fluoresce and appear dark in color under the ultraviolet light.

34. A new § 201.58d is added to read as follows:

§ 201.58d Fungal endophyte test.

A fungal endophyte test may be used to determine the amount of fungal endophyte (*Acremonium* spp.) in certain grasses.

(a) Method of preparation of aniline blue stain for use in testing grass seed and plant material for the presence of fungal endophyte:

(1) Prepare a 1 percent aqueous aniline blue solution by dissolving 1 gram aniline blue in 100 ml distilled water.

(2) Prepare the endophyte staining solution of one part of 1 percent aniline blue solution with 2 parts of 85 percent lactic acid ($C_3H_6O_3$).

(3) Use stain as-is or dilute with water if staining is too dark.

(b) Procedure for determining levels of fungal endophyte in grass seed:

(1) Take a sub-sample of seed (1 gram is sufficient) from the pure seed portion of the kind under consideration.

(2) Digest seed at room temperature for 12–16 hours in a 5 percent sodium hydroxide (NaOH) solution or other temperature/time combination resulting in adequate seed softening.

(3) Rinse thoroughly in running tap water.

(4) De-glume seeds and place on a microscope slide in a drop of endophyte staining solution. Slightly crush the seeds. Use caution to prevent carryover hyphae of fungal endophyte from one seed to another.

(5) Place coverglass on seed and apply gentle pressure.

(6) Examine with compound microscope at 100–400x magnification, scoring a seed as positive if any identifiable hyphae are present.

(7) Various sample sizes may be used for this test. Precision changes with sample size; therefore, the test results must include the sample size tested.

(c) Procedure for determining levels of fungal endophyte in seedlings from seed samples suspected to contain fungal endophyte:

(1) Select seeds at random and germinate.

(2) Examine seedlings from the sample germinated after growing for a minimum of 48 days.

(3) Remove the outermost sheath from the seedling. Tissue should have no obvious discoloration from saprophytes and should have as little chlorophyll as possible.

(4) Isolate a longitudinal section of leaf sheath approximately 3–5 mm in width.

(5) Place the section on a microscope slide with the epidermis side down.

(6) Stain immediately with the endophyte staining solution as prepared in paragraph (a) (2) and (3) of this section. Allow dye to remain at least 15 seconds but no more than one minute.

(7) Blot off the excess dye with tissue paper. Sections should remain on the slide, but may adhere to the tissue paper; if so, remove and place in proper position on the slide.

(8) Place a coverglass on the sections and flood with water.

(9) Proceed with evaluation as described in paragraph (b) (6) and (7) of this section.

35. In § 201.60, paragraphs (a)(1) and (c) are revised to read as follows:

§ 201.60 Purity percentages.

(a)(1) The tolerance for a given percentage of the purity components is the same whether for pure seed, other crop seed, weed seed, or inert matter Wider tolerances are provided when 33 percent or more of the sample is composed of seed plus empty florets and/or empty spikelets of the following chaffy kinds: bentgrasses, bermudagrasses, bluegrasses, bluestems, bottlebrush- squirreltail, bromes, buffalograss, buffelgrass, carpetgrass, soft chess, dallisgrass, fescues, meadow foxtail, galletagrass, guineagrass, gramas, molassesgrass, tall oatgrass, orchardgrass, redtop, rescuegrass, rhodesgrass, Indian ricegrass, ryegrasses, sweet vernalgrass, vaseygrass, veldtgrass, wheatgrasses, wildryes, and yellow indiangrass. The wider tolerances do not apply to seed devoid of hulls.

* * * * *

(c) Tolerances calculated by the following formula shall be used for either chaffy or nonchaffy mixtures when the average particle-weight ratio is 1.5:1 to 20:1 and beyond:

The symbols used in the formula are as follows:

T=tolerance being calculated.
A=percent which the weight of the component with the heavier average particle-weight is of the weight of both components.
B=percent which the weight of the component with the lighter average particle-weight is of the weight of both components.
H=average particle-weight for the component with the heavier average particle-weight.
L=average particle-weight for the component with the lighter average particle-weight.
R=ratio of the average particle-weight for the component with the heavier

average particle-weight to the average particle-weight for the component with the lighter average particle-weight. R=H/L.

$$T = A - \frac{100\,R[(100\,A/R)/(B+A/R)-T1]}{[(100\,B)/(B+A/R)+T1]+R[(100\,A/R)/(B+A/R)-T1]}$$

T1=regular tolerance for the kind of seed (chaffy or nonchaffy) and for (100B)/(B+A/R).

In determining the values for A and B in the formula, the sample shall be regarded as composed of two parts:

(1) The kind, type, or variety under consideration, and

(2) All other components. Values for H and L shall be obtained from the last column of Table 1, § 201.46, or by laboratory tests for inert matter, weed seeds, or crop seeds where such values are not obtainable from Table 1. In computing tolerances for nonchaffy kinds the values for T1 are taken from column C of Table 3, and for chaffy kinds the values for T1 are taken from column D of Table 3.

§ 201.61 [Amended]

36. Section 201.61 is amended by removing "2.4" following the number "3" in the first table and adding "2.8" in its place and removing "2.8" following the number "2" and adding "2.4" in its place.

§ 201.62 [Amended]

37. In § 201.62, Table 4 is amended by removing in the "100" column "4.0" and adding "4.6" in its place.

38. Section 201.76 and Table 5 are revised to read as follows:

§ 201.76 Minimum Land, Isolation, Field, and Seed Standards.

In the following Table 5 the figures in the "Land" column indicate the number of years that must elapse between the destruction of a stand of a kind and establishment of a stand of a specified class of a variety of the same kind. A certification agency may grant a variance in the land cropping history in specific circumstances where cultural practices have been proven adequate to maintain genetic purity. The figures in "Isolation" column indicate the distance in feet from any contamination source. The figures in the "Field" column indicate the minimum number of plants or heads in which one plant or head of another variety is permitted. The figure in the "Seed" column indicate the maximum percentage of seed of other varieties of off-types permitted in the cleaned seed.

TABLE 5

Crop	Foundation				Registered				Certified			
	Land	Isolation	Field	Seed	Land	Isolation	Field	Seed	Land	Isolation	Field	Seed
Alfalfa:												
Non hybrid	[1]4	[44, 48]600 ([59]182.88m)	1,000	0.1	[1]3	[3, 44, 48]300 ([59]91.44m)	400	0.25	[1, 2]1	[44, 49]165 ([59]50.29m)	100	1.0
Hybrid	[1]4	[43]1,320 ([59]402.34m)	[42]1,000	0.1	.....	.....	.....	.....	[1, 2]1	[3, 43, 44]165 ([59]50.29m)	[42]100	1.0
Barley:												
Non hybrid	[7]1	[23]0	3,000	0.05	[7]1	[23]0	2,000	0.1	[7]1	[23]0	1,000	0.2
Hybrid	[30]1	[21, 32]660 ([59]201.17m)	3,000	0.05	[30]1	[21, 32]660 ([59]201.17m)	2,000	0.1	[30]1	[21, 32]330 ([59]100.59m)	1,000	[55]0.2
Hybrid (Chemically assisted)	.....	.....	.....	.....	.....	.....	.....	.....	[57]0	[52, 53]330 ([59]100.59m)	[54]1,000	0.2
Bean:												
Field and garden	[7]1	[23]0	2,000	0.05	[7]1	[23]0	1,000	0.1	[7]1	[23]0	400	0.2
Mung	[7]1	[23]0	1,000	0.1	[7]1	[23]0	500	0.2	[7]1	[23]0	200	0.5
Broad bean	[7]1	[23]0	2,000	0.05	[7]1	[23]0	1,000	0.1	[7]1	[23]0	500	0.2
Buckwheat	[7]1	660 ([59]201.17m)	3,000	0.05	[7]1	660 ([59]201.17m)	2,000	0.1	[7]1	660 ([59]201.17m)	1,000	0.2
Clover all kinds	[1, 9]5	[5, 18, 44]600 ([59]182.88m)	1,000	0.1	[1, 9]3	[5, 18, 44]300 ([59]91.44m)	400	0.25	[1, 9]2	[18, 44]165 ([59]50.29	100	1.0
Corn:												
Back cross	0	[10, 11]660 ([59]201.17m)	[13, 46]1,000	[15]0.1	.....	.....	.....	.....	.....	.....	.....	.....
Inbred	0	[10, 11]660 ([59]201.17m)	[13, 46]1,000	[15]0.1	.....	.....	.....	.....	.....	.....	.....	.....
Foundation single cross	0	[10, 11]660 ([59]201.17m)	[13, 46]1,000	[15]0.1	.....	.....	.....	.....	.....	.....	.....	.....
Hybrid	.....	.....	.....	.....	.....	.....	.....	.....	0	[11, 12]660 ([59]201.17m)	1,000	0.5
Open-pollinated	.....	.....	.....	.....	.....	.....	.....	.....	0	[11, 12]660 ([59]201.17m)	200	0.5
Sweet	.....	.....	.....	.....	.....	.....	.....	.....	0	[11, 14]600 ([59]201.17m)	.....	0.5
Cotton	0	[19]0	10,000	0.03	0	[19]0	5,000	0.05	0	[19]0	1,000	0.1
Cowpea	[7]1	[23]0	2,000	0.1	[7]1	[23]0	1,000	0.2	[7]1	[23]0	500	0.5
Crambe	[7]1	660 ([59]201.17m)	2,000	0.05	[7]1	[24]660 ([59]201.17m)	1,000	0.1	[7]1	[24]660 ([59]201.17m)	500	0.25
Crownvetch	[1]5	[5, 44]600 ([59]182.88m)	1,000	0.1	[1]3	[5, 44]300 ([59]91.44m)	400	0.25	[1]2	[6, 44]165 ([59]50.29)	100	1.0
Flatpea	[1]4	[5, 44]600 ([59]182.88m)	1,000	0.1	[1]3	[3, 5, 44]300 ([59]91.44m)	400	0.25	[1, 2]1	[3, 44]165 ([59]50.29m)	100	1.0
Flax	[7]1	[23]0	5,000	0.05	[7]1	[23]0	2,000	0.1	[7]1	[23]0	1,000	0.2
Grasses:												
Cross-pollinated	[57]5	[4, 18, 20]900 ([59]274.32m)	1,000	0.1	[8, 57]1	[4, 18, 20]300 ([59]91.44m)	100	1.0	[8, 57]1	[4, 18, 20, 58]165 ([59]50.29)	50	[47, 50]2.0
Strains at least 80 percent apomictic and highly self-fertile species	[57]5	[4, 18, 20]60 ([59]18.29m)	1,000	0.1	[8, 57]1	[4, 18, 20]30 ([59]9.14m)	100	1.0	[9, 57]1	[4, 18, 20, 58]15 ([59]4.57m)	50	[16]2.0
Lespedeza	[1]5	[4]10 ([59]3.05m)	1,000	0.1	[1]3	[4]10 ([59]3.05m)	400	0.25	[1]2	[4]10 ([59]3.05m)	100	1.0
Millet:												
Cross-pollinated	[8]1	[40]1,320 ([59]402.34m)	[27]20,000	0.005	[8]1	[40]1,320 ([59]402.34m)	[27]10,000	0.01	[8]1	[40]660 ([59]201.17m)	[27]5,000	0.02

TABLE 5—Continued

Crop	Foundation				Registered				Certified			
	Land	Isolation	Field	Seed	Land	Isolation	Field	Seed	Land	Isolation	Field	Seed
Self-pollinated	[8] 1	[23] 0	3,000	0.05	[8] 1	[23] 0	2,000	0.1	[8] 1	[23] 0	1,000	0.2
Mustard	4	1,320 ([59] 402.34m)	2,000	0.05	.....	.....	.....	.....	2	[24] 660 ([59] 201.17m)	500	0.25
Oat	[7] 1	[23] 0	3,000	0.2	[7] 1	[23] 0	2,000	0.3	[7] 1	[23] 0	1,000	0.5
Okra	[7] 1	1,320 ([59] 402.34m)	[27] 0	0.0	[7] 1	1,320 ([59] 402.34m)	[27] 2,500	0.5	[7] 1	825 ([59] 251.46m)	[27] 1,250	1.0
Onion	[7] 1	5,280 ([59] 1,609.36m)	[22] 200	0.0	[7] 1	2,640 ([59] 804.66m)	[22] 200	[22] 0.5	[7] 1	1,320 ([59] 402.34m)	[22] 200	[22] 1.0
Pea, field	[7] 1	[23] 0	2,000	0.05	[7] 1	[23] 0	1,000	0.1	[7] 1	[23] 0	500	0.2
Peanut	[7] 1	[23] 0	1,000	0.1	[7] 1	[23] 0	500	0.2	[7] 1	[23] 0	200	0.5
Pepper	[7] 1	[25] 200 ([59] 60.96m)	0	0.0	[7] 1	[25] 100 ([59] 30.48m)	300	0.5	[7] 1	[25] 30 ([59] 9.14m)	150	1.0
Rape:												
Cross-pollinated	4	[24] 1,320 ([59] 402.34m)	2,000	0.05	.....	.....	.....	.....	2	[24] 330 ([59] 100.59m)	500	0.25
Self-pollinated	4	[24] 660 ([59] 201.17m)	2,000	0.05	.....	.....	.....	.....	2	[24] 330 ([59] 100.59m)	500	0.25
Rice	[7] 1	[39] 10 ([59] 3.05m)	10,000	0.05	[7] 1	[39] 10 ([59] 3.05m)	5,000	0.1	[7] 1	[39] 10 ([59] 3.05)	1,000	0.2
Rye	[7] 1	[18] 660 ([59] 201.17m)	3,000	0.05	[7] 1	[18] 660 ([59] 201.17m)	2,000	0.1	[7] 1	[18] 660 ([59] 201.17m)	1,000	0.2
Safflower	[7] 2	1,320 ([59] 402.34m)	10,000	0.01	[7] 2	1,320 ([59] 402.34m)	2,000	0.05	[7] 2	1,320 ([59] 402.34m)	1,000	0.1
Sainfoin	[1] 5	[5, 44] 600 ([59] 182.88m)	1,000	0.1	[1] 3	[5, 44] 300 ([59] 91.44m)	400	0.25	[1] 2	[6, 44] 165 ([59] 50.29m)	100	1.0
Sorghum:												
Nonhybrid	[7] 1	900 ([59] 301.76m)	[27] 50,000	0.005	[7] 1	990 ([59] 301.76m)	[27] 35,000	0.01	[7] 1	[29] 660 ([59] 201.17m)	[27] 20,000	0.05
Hybrid seedstock	[7] 1	990 ([59] 301.76m)	[27] 50,000	0.005	.....	.....	.....	.....	.....	.....	.....	.....
Commercial hybrid	.....	.....	.....	.....	.....	.....	.....	.....	[7] 1	[21, 29, 31] 660 ([59] 201.17m)	[27] 20,000	0.1
Soybean	[23] 1	[23] 0	1,000	0.1	[33] 1	[23] 0	500	0.2	[33] 1	[23] 0	200	0.5
Sunflower:												
Nonhybrid	1	[41, 45] 2,640 ([59] 804.66m)	200	0.02	1	[41, 45] 2,640 ([59] 804.66m)	200	0.02	1	[41, 45] 2,640 ([59] 804.66m)	200	[34] 0.1
Hybrid	1	[41, 45] 2,640 ([59] 804.66m)	[35] 250	[56] 0.02	.....	.....	.....	.....	1	[41, 45] 2,640 ([59] 804.66m)	[35] 250	[34, 56] 0.1
Tomato	[7] 1	[25] 200 ([59] 60.96m)	0	0	[7] 1	[25] 100 ([59] 30.48m)	300	0.5	[7] 1	[25] 30 ([59] 9.14m)	150	1.0
Tobacco:												
Nonhybrid	[36] 0	[37] 150 ([59] 45.72m)	0	0.01	[36] 0	[37] 150 ([59] 45.72m)	0	0.01	[36] 0	[37] 150 ([59] 45.72m)	0	0.01
Hybrid	.....	.....	.....	.....	.....	.....	.....	.....	[36] 0	[38] 150 ([59] 45.72m)	0	0.01
Trefoil, birdsfoot	[1] 5	[5, 44] 600 ([59] 182.88m)	1,000	0.1	[1] 3	[5, 44] 300 ([59] 91.44m)	400	0.25	[1] 2	[6, 44] 165 ([59] 50.29m)	100	1.0
Triticale	[7] 1	[23] 0	3,000	0.05	[7] 1	[23] 0	2,000	0.1	[7] 1	[23] 0	1,000	0.2
Vetch	[1, 7] 5	[17, 44] 10 ([59] 3.05m)	1,000	0.1	[1, 7] 3	[17, 44] 10 ([59] 3.05m)	400	0.25	[1, 7] 2	[17, 44] 10 ([59] 3.05m)	100	1.0
Vetch, milk	[1] 5	[5, 44] 600 ([59] 182.88m)	2,000	0.05	[1] 3	[5, 44] 300 ([59] 91.44m)	1,000	0.1	[1] 2	[44] 165 ([59] 50.29m)	200	0.5

Watermelon	[7]1	[26]2,640 ([59]804.66m)	[28]0	0	[7]1	[26]2,640 ([59]402.34m)	[28]0	0.5	[7]1	[26]1,320	[28]500	1.0
Wheat:												
Nonhybrid	[7]1	[23]0	3,000	0.05	[7]1	[23]0	2,000	0.1	[7]1	[23]0	1,000	0.2
Hybrid	[30]1	[21,32]660 ([59]201.17m)	3,000	0.05	[30]1	[21,32]660 ([59]201.17m)	2,000	0.1	[30]1	[21,32]330 ([59]100.59m)	1,000	0.2
Hybrid (Chemically assisted)	.....	.....	.....	.....	.....	.....	.....	.....	[51]0	[52,53]330 ([59]100.58m)	[54]1,000	[55]0.2

[1] The land must be free of volunteer plants of the crop kind during the year immediately prior to establishment and no manure or other contaminating material shall be applied the year previous to seeding or during the establishment and productive life of the stand.
[2] At least 2 years must elapse between destruction of indistinguishable varieties or varieties of dissimilar adaptation and establishment of the stand for the production of the Certified class of seed.
[3] Isolation distance for certified seed production shall be at least 500 feet (152.07m) from varieties of dissimilar adaptation.
[4] Isolation between classes of the same variety may be reduced to 25 percent of the distance otherwise required.
[5] This distance applies when fields are 5 acres (2ha) or larger in area. For smaller fields, the distances are 900 feet (274.32m) and 450 feet (137 16m) for the Foundation and Registered classes, respectively.
[6] Fields of less than 5 acres (2ha) require 330 feet (100.59m).
[7] Requirement is waived if the previous crop was grown from certified seed of the same variety.
[8] Requirement is waived if the previous crop was of the same variety and of a certified class equal or superior to that of the crop seeded.
[9] Reseeding varieties of crimson clover may be allowed to volunteer back year after year on the same ground. If a new variety is being planted where another variety once grew, the field history requirements apply.
[10] No isolation is required for the production of hand-pollinated seed.
[11] When the contaminant is the same color and texture, the isolation distance may be modified by (1) adequate natural barriers or (2) differential maturity dates, provided there are no receptive silks in the seed parent at the time the contaminant is shedding pollen. In addition, dent sterile popcorn requires no isolation from dent corn.
[12] Where the contaminating source is corn of the same color and texture as that of the field inspected or white endosperm-corn optically sorted, the isolation distance is 410 feet (124.97m) and may be modified by the planting of pollen parent border rows according to the following table:

Minimum distance from contaminant	Minimum Numbers of Border Rows Required	
	Field size, up to 20 acres (8ha)	Field size, 20 acres (8ha) or more
410 (124.97m)	0	0
370 (112.78m)	2 (0.8ha)	1 (0.4ha)
330 (100.59m)	4 (1.6ha)	2 (0.8ha)
290 (88.39m)	6 (2.4ha)	3 (1.2ha)
245 (74.68m)	8 (3.2ha)	4 (1.6ha)
205 (62.48m)	10 (4.0ha)	5 (2.0ha)
165 (50.29m)	12 (4.8ha)	6 (2.4ha)
125 (38.10m)	14 (5.6ha)	7 (2.8ha)
85 (25.91m)	16 (6.4ha)	8 (3.2ha)
0	Not permitted	10 (4.0ha)

[13] Refers to off-type plants in the pollen parent that have shed pollen or to the off-type plants in the see parent at the time of the last inspection.
[14] The required minimum isolation distance for sweet corn is 660 feet (201.17m) from the contaminating source, plus four border rows when the field to be inspected is 10 acres (4.0ha) or less in size. This distance may be decreased by 15 feet (4.57m) for each increment of 4 acres (1.6ha) in the size of the field to a maximum of 40 acres (16ha) and further decreased 40 feet (12.19m) for each additional border row to a maximum of 16 rows. These border rows are for pollen-shedding purposes only.
[15] Refers to off-type ears. Ears with off-colored or different textured kernels are limited to 0.5 percent, or a total of 25 off-colored or different textured kernels per 1,000 ears.
[16] The Merion variety of Kentucky bluegrass is allowed 3 percent.
[17] All cross-pollinating varieties must be 400 feet (121.92m) from any contaminating source.
[18] Isolation between diploids and tetraploids shall be at least 15 feet (4.57m).
[19] Minimum isolation shall be at least 100 feet (30.48m) if the cotton plants in the contaminating source differ by easily observable morphological characteristics from the field to be inspected. Isolation distance between upland and Egyptian types shall be at least 1,320 feet (402.34m), 1,320 feet (402.34m), and 660 feet (182.88m) for Foundation, Registered, and Certified classes, respectively.
[20] These distances apply when there is no border removal. Border removal applies only to fields of 5 acres (2ha) or more. Removal of a 9-foot (2.7m) border (after flowering) decreases the required distance for Foundation, Registered, and Certified seed classes to 600 feet (182.88m), 225 feet (68.58m), and 100 feet (30.48m), respectively, for cross-pollinated species, and to 30 feet (9.14m), 15 feet (4.57m), and 15 feet (4.57m), respectively, for apomictic and self-pollinated species. Removal of a 15 foot (4.57m) border (after flowering) allows a further decrease to 450 feet (136.16m), 150 feet (45.72m), and 75 feet (22.86m), respectively, for cross-pollinated species.
[21] Isolation distances between 2 fields of the same kind may be reduced to a distance adequate to prevent mechanical mixture, if the sum of percentages of plants in bloom in both fields does not exceed 5 percent at a time when more than 1 percent of the plants in either field are in bloom.
[22] Refers to bulbs.
[23] Distance adequate to prevent mechanical mixture is necessary.
[24] Required isolation between classes of the same variety is 10 feet (3.05m).
[25] The minimum distance may be reduced by 50 percent if different classes of the same variety are involved.
[26] The minimum distance may be reduced by 50 percent if the field is adequately protected by natural or artificial barriers.
[27] These ratios are for definite other varieties. The ratios for doubtful other varieties are:

	Foundation	Registered	Certified
Millet	1:10,000	1:5,000	1:2,500
Sorghum:			
Nonhybrid	1:20,000	1:10,000	1:1,000

	Foundation	Registered	Certified
Hybrid	1:20,000	NA	1,1,000
Okra	None	1:750	1:500

[28] Whiteheart fruits may not exceed 1 per 100, 40, and 20 for Foundation, Registered, and Certified classes, respectively Citron or hard rind is not permitted in Foundation or Registered classes and may not exceed 1 per 1,000 fruits in the Certified class.

[29] This distance applies if the contaminating source does not genetically differ in height from the pollinator parent or has a different chromosome number. If the contaminating source does (genetically) differ and has the same chromosome number the distance shall be 990 feet (301.76m). The minimum isolation from grass sorghum or broomcorn with the same chromosome number shall be 1,320 feet (402.34m).

[30] Requirement is waived for the production of pollinator lines if the previous crop was grown from a certified class of seed of the same variety. Sterile lines and crossing blocks must be on land free of contaminating plants.

[31] If the contaminating source is similar to the hybrid in all important characteristics, the isolation may be reduced by 66 feet (20.12m) for each pair of border rows of the pollinator parent down to a minimum of 330 feet (100.59m). These rows must be located directly opposite or diagonally to the contaminating source. The pollinator border rows must be shedding pollen during the entire time 5 percent or more of the seed parent flowers are receptive.

[32] An unplanted strip at least 2 feet (0.61m) in width shall separate male sterile plants and pollinator plants in inter-planted blocks.

[33] Unless the preceding crop was another kind or unless the preceding soybean crop was planted with a class of certified seed of the same variety, or unless the preceding soybean crop and the variety being planted have an identifiable character difference, in which case, no time need elapse.

[34] May include not more than 0.04 percent purple or white seeds.

[35] Standards apply equally to seed parents and pollen parents which may include up to 1 1,000 plants each of the wild-type branching, purple, or white-seeded plants.

[36] A new plant bed must be used each year unless the bed is properly treated with a soil sterilant prior to seeding.

[37] This distance is applied between varieties of the same type and may be waived if four border rows of each variety are allowed to bloom and set seed between the two varieties but are not harvested for seed. Isolation between varieties of different types shall be 1,320 feet (402.34m) except if protected by bagging or by topping all plants in the contaminating source before bloom.

[38] When male sterile and male fertile plants of the same type are planted adjacent in a field, this requirement may be waived; provided, four border rows of male sterile plants are allowed to bloom and set seeds. The seed from these border rows shall not be harvested as part of the certified lot of seed produced by the male sterile plants. When plants are of different types, the distance shall be 1,320 feet (402.34m) except if protected by bagging or by topping all plants in the contaminating source before bloom.

[39] Isolation between varieties or non-certified fields of the same variety shall be 100 feet (30.48m) if aerial seeded and 50 feet (15.24m) if ground broadcast, and 10 feet (3.05m) is ground drilled.

[40] Isolation between millets of different genera shall be 6 feet (1.83m).

[41] Does not apply to *Helianthus similes, H. ludens,* or *H. agrestis.*

[42] The ratio of male sterile (A) strains and pollen (B or C) strains shall not exceed 2:1

[43] Parent lines (A and B) in a crossing block, or seed and pollen lines in a hybrid seed production field, shall be separated by at least 6 feet (1.83m) and shall be managed and harvested in a manner to prevent mixing.

[44] Distance between fields of certified classes of the same variety may be reduced to 10 feet (3.05m) regardless of the class or size of the fields.

[45] An isolation distance of 5,280 feet (1609.36m) is required between oil and non-oil sunflower types and between either type and other volunteers or wild types.

[46] Detasseling, cutting, or pulling of the cytoplasmic male-sterile seed parent is permitted.

[47] All varieties of perennial ryegrass seed are allowed 3.0 percent.

[48] This distance applies for fields over 5 acres (2ha) For alfalfa fields of 5 acres (2ha) or less that produce the Foundation and Registered seed classes, the minimum distance from a different variety or a field of the same variety that does not meet the varietal purity requirements for certification shall be 900 feet (274.32m) and 450 feet (137 16m), respectively

[49] There must be at least 10 feet (3.05m) or a distance adequate to prevent mechanical mixture between a field of another variety (or non-certified area within the same field) and the area being certified. The 165 feet (50.29m) isolation requirement is waived if the area of the "isolation zone" is less than 10 percent of the field eligible for the Certified class The "isolation zone" is that area calculated by multiplying the length of the common border(s) with other varieties of alfalfa by the average width of the field (being certified) falling within the 165 feet (50.29m) isolation Areas within the isolation zone nearest the contamination source shall not be certified.

[50] Seed of Critana thickspike wheatgrass may contain up to 30 percent slender wheatgrass types

[51] Crossing blocks must be planted on land free of volunteer contaminating plants.

[52] This distance applies to the seed parent when the contaminating source is wheat of another market class If the contaminating source is the same market class as the seed parent, the distance may be modified by the planting of pollen parent border according to the following table

Minimum distance from contaminant		Pollen (parent border)	
Feet	Meters	Feet	Meters
	100.59	0	0
330	83.82	15	4.57
275	65.53	25	7 62
215	48 77	35	10.67
160	30 48	50	15.24
100			

[53] Interplanted blocks of seed parent and pollinator shall be separated by an unplanted strip a minimum of one foot (0.31m) in width and be clearly identifiable

[54] If Foundation or Registered the ratio shall be 1 3000 (Foundation) and 1 2000 (Registered)

[55] Does not include seed of the female parent

[56] Pre-Control Test Standards If field inspection shows one or more of the following, the applicant may request that seed certification be based on the results of a pre-certification grow-out test approved by the certification agency a inadequate isolation, b too few male parent plants shedding pollen when female plants are receptive, c excess off-types not to include wild types In such cases, at least 2,000 plants must be observed and meet the following standards before seed can be certified from fields with problems listed above

[For non-oil types, seed which contains not more than 15 percent sterile plants may be certified. If it contains 85 percent-95 percent hybrid plants, the percentage of hybrid shall be shown on the certification label]

Factor	Maximum Permitted	
	Hybrid (percent)	Inbred (percent)
Sterile Plants	5.0	....
Sterile or Fertile Plants	....	5.0
Morphological Variants	0.5	0.5
Wild Types	0.2	0.2
Total (including above types)	5.0	5.0

[57] Application to establish the pedigree must be made within one year of seeding. The crop will remain under supervision of the certifying agency as long as the field is eligible for certification.

[58] These distances apply when there is no border removal. Varieties that are 95 percent or more apomictic, as defined by the originating breeder, shall have the isolation distance reduced to a mechanical separation only. Varieties less than 95 percent apomictic and all other cross pollinating species that have an "isolation zone" of less than 10 percent of the entire field, no isolation is required. (Isolation zone is calculated by multiplying the length of the common border with other varieties of grass by the average width of the certified field falling within the isolation distance required.)

[59] Indicates metric equivalent in meters.

Dated: December 2, 1994

Lon Hatamiya,

Administrator

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