Pursuant to the provisions of the Federal Food, Drug, and Cosmetic Act (sec. 401, 52 Stat. 1046, as amended 68 Stat. 54; 21 U. S. C. 341) and in accordance with the authority delegated to the Commissioner of Food and Drugs by the Secretary of Health, Education, and Welfare (20 F. R. 1996), notice is hereby given that no objections were filed to the order published in the FEDERAL REGISTER on September 9, 1955 (20 F. R. 6607) amending the definition and standard of identity for Monterey cheese (21 CFR 19.580). The amendments promulgated by that order will become effective November 10, 1955.

(Sec. 701, 52 Stat. 1055; 21 U. S. C. 371. Interprets or applies sec. 401, 52 Stat. 1046, as amended, 68 Stat. 54; 21 U. S. C. 341)

Dated: October 17, 1955.

[SEAL] GEO. P. LARRICK,
Commissioner of Food and Drugs.

[F. R. Doc. 55-8512; Filed, Oct. 20, 1955; 8:45 a. m.]

PART 130—DRUGS EXEMPTED FROM PRESCRIPTION-DISPENSING REQUIREMENTS OF SECTION 503 (b) (1) (C) OF THE FEDERAL FOOD, DRUG, AND COSMETIC ACT

EXEMPTION OF DIAMTHAZOLE DIHYDROCHLORIDE PREPARATIONS FROM PRESCRIPTION REQUIREMENTS

The Commissioner of Food and Drugs, in accordance with the Federal Food, Drug, and Cosmetic Act (secs. 503 (b) (3), 505 (c), 701 (a), 65 Stat. 649, 52 Stat. 1052, 1055; 21 U. S. C. 353 (b) (3), 355 (c), 371 (a)) and the authority delegated to him by the Secretary of Health, Education, and Welfare (21 CFR, 1954 Supp. 1.108 (c)), hereby orders the following amendment:

Section 130.1 (a) is amended by adding the following new subparagraph (7):

§ 130.1 *Exemption for certain drugs limited by new-drug applications to prescription sale.* (a) * * *

(7) Diamthazole dihydrochloride (2-dimethylamino - 6 - (β - diethylamino ethoxy)-benzothiazole dihydrochloride) preparations meeting all the following conditions:

(i) The diamthazole dihydrochloride is prepared with or without other drugs in a dosage form suitable for external application in self-medication as a dusting powder.

(ii) The diamthazole dihydrochloride and all other components of the preparation meet their professed standards of identity, strength, quality, and purity.

(iii) If the preparation is a new drug, an application pursuant to section 505 (b) of the act is effective for it.

(iv) The preparation contains not more than 5 percent by weight of diamthazole dihydrochloride.

(v) The preparation is labeled with adequate directions for use only for adults and children 12 years of age and older in the prevention of athlete's foot.

(vi) The labeling bears, in juxtaposition with the directions for use, clear warning statements against:

(*a*) Application to infants or young children.

(*b*) Use on open cracks or weeping stages of athlete's foot.

(*c*) Contact with mucous membranes.

(*d*) Use in the event of irritation.

This amendment removes the drug mentioned therein from the prescription-dispensing requirements of the Federal Food, Drug, and Cosmetic Act (sec. 503 (b) (1) (C), 52 Stat. 1052, 65 Stat. 649; 21 U. S. C. 353 (b) (1) (C)). This drug was previously limited by its new-drug application to use under professional supervision because the scientific data establishing the toxic potential of the drug and its intended use showed that it was safe only if used under professional supervision.

Pursuant to the regulations in § 1.108 (c) of this chapter (21 CFR, 1954 Supp., 1.108 (c)), petitions have been submitted to remove the prescription restrictions from this drug. Evidence now available through investigation and marketing experience shows that the drug can be safely used by the laity in self-medication if it is used in accordance with the proposed labeling. The restriction to prescription sale is no longer necessary for the protection of public health.

This action in removing the prior restriction limiting this drug to prescription sale is taken under the authority of the Federal Food, Drug, and Cosmetic Act (secs. 503 (b) (3), 505 (c), 52 Stat. 1052, 65 Stat. 649; 21 U. S. C. 353 (b) (3), 355 (c)), which provides for and requires the removal of such restrictions if they are not necessary for the protection of the public health.

Effective date. This order shall become effective 30 days after the date of its publication in the FEDERAL REGISTER.

(Sec. 701, 52 Stat. 1055; 21 U. S. C. 371. Interprets or applies secs. 503, 505, 52 Stat. 1052, 65 Stat. 649; 21 U. S. C. 353, 355)

Dated: October 17, 1955.

[SEAL] GEO. P. LARRICK,
Commissioner of Food and Drugs.

[F. R. Doc. 55-8528; Filed, Oct. 20, 1955; 8:47 a. m.]

TITLE 7—AGRICULTURE

Chapter I—Agricultural Marketing Service (Standards, Inspections, Marketing Practices), Department of Agriculture

Subchapter K—Federal Seed Act

PART 201—FEDERAL SEED ACT REGULATIONS

MISCELLANEOUS AMENDMENTS

On May 27, 1955, there was published in the FEDERAL REGISTER (20 F. R. 3745) a notice of rule making and notice of hearings with respect to proposed amendments of the regulations of the Secretary of Agriculture (7 CFR 201.1–201.109) under the Federal Seed Act. After consideration of all relevant matters presented at the hearings, or in writing, pursuant to said notice, and under authority of section 402 of the Federal Seed Act (7 U. S. C. 1592), the amendments to the regulations set forth in said notice and specified below are hereby adopted with the changes specifically stated and with certain corrections of typographical errors.

1. In § 201.5 (a) the proposal to insert "orchard grass" after "alfalfa" is not adopted.

2. In § 201.14 (a) the proposal to insert "orchard grass" after "alfalfa" is not adopted.

3. In § 201.31 the germination standard for Welsh Onion stated in proposal No. 9 of the notice as 75 percent is changed to 70 percent.

4. In § 201.34 paragraphs (d) and (e) are deleted and the heading "Kind and variety" is changed to "Kind, variety, and type."

5. The first unnumbered section entitled "Seed Unit" set forth in proposal No. 16 of the notice is promulgated as § 201.47a.

6. The second unnumbered section entitled "Working Samples" set forth in proposal No. 16 of the notice is promulgated as § 201.47b.

7. Section 201.48 is amended to read as set forth in proposal No. 17 of the notice with the addition of the phrase ", except as provided in paragraph (i)" in paragraph (a) following the word "injured".

8. Section 201.51 is amended to read as set forth in proposal No. 20 of the notice with the addition of a new paragraph numbered (a) (4).

9. The unnumbered section set forth in proposal No. 24 is promulgated as § 201.55a.

10. Sections 201.56–1 through 201.56–11 are promulgated as set forth in proposal No. 26 of the notice, with the following changes:

(a) Section 201.56–1 (c) (7) is changed to read "various combinations of the abnormalities described in this paragraph."

(b) In § 201.56–2 (a) (2) (ii) "a" is inserted before "shortened" and "are" is changed to "is."

(c) Section 201.56–2 (a) (2) (viii) is changed to read "various combinations of the abnormalities described in this subparagraph."

(d) Section 201.56–2 (b) (2) (viii) is changed to read "various combinations of the abnormalities described in this subparagraph."

(e) Section 201.56–3 (b) (2) (vii) is changed to read "various combinations of the abnormalities described in this subparagraph."

(f) Section 201.56–4 (b) (2) (v) is changed to read "various combinations of the abnormalities described in this subparagraph."

(g) Section 201.56–5 (b) (2) (viii) is changed to read "various combinations of the abnormalities described in this subparagraph."

(h) In § 201.56–6 (b) (2) (iv) "two" is inserted before "shoots."

(i) In § 201.56–11 (b) (7) "subparagraph" is changed to "paragraph".

11. The unnumbered section set forth in proposal No. 28 of the notice is promulgated as § 201.57a.

12. Section 201.58 is amended to read as set forth in proposal No. 29 of the notice, except that paragraph (c) is changed by substituting the word "indicum" for the word "orientale" with respect to "Sesame" in the column headed "agricultural seed" and by inserting the phrase "vulgare var." between the word

"Sorghum" and the word "sudanense" with respect to "Sudangrass" in said column.

13. The unnumbered section set forth in proposal No. 34 of the notice is promulgated as § 201.62.

14. The proposed amendments of §§ 201.34 (d) and (e), 201.36b, 201.22, and 201.31, referred to, respectively in proposals 10, 11, 40, and 41, are not being adopted. Additional hearing notice was published at 20 F. R. 7879.

The amendments set forth above shall become effective on November 21, 1955.

(Sec. 402, 53 Stat. 1285; 7 U. S. C. 1592)

NOTE: The record keeping and reporting requirements of these amendments have been approved by the Bureau of the Budget in accordance with the Federal Reports Act of 1942.

Done at Washington, D. C., this 13th day of October 1955.

[SEAL] TRUE D. MORSE,
Acting Secretary.

1. Section 201.2 *Terms defined* is amended in the following respects:

a. Paragraph (h) is amended to read as follows:

(h) *Agricultural seeds.* The term "agricultural seeds" means the following kinds of grass, forage, and field crop seeds:

Alfalfa—Medicago sativa L.
Alfilleria—Erodium cicutarium (L.) L'her.
Alyceclover—Alysicarpus vaginalis (L.) DC.
Bahiagrass—Paspalum notatum Fluegge.
Barley—Hordeum vulgare L.
Bean, adzuki—Phaseolus angularis Willd.
Bean, field—Phaseolus vulgaris L.
Bean, mung—Phaseolus aureus Roxb.
Bean—(see Velvetbean).
Beet, field excluding sugar beet—Beta vulgaris L.
Beggarweed—Desmodium tortuosum (Sev.) DC.
Bentgrass or
Bentgrass, colonial—Agrostis tenuis Sibth.
Bentgrass, creeping—Agrostis palustris Huds.
Bentgrass, velvet—Agrostis canina L.
Bermuda-grass—Cynodon dactylon (L.) Pers.
Bluegrass, annual—Poa annua L.
Bluegrass, bulbous—Poa bulbosa L.
Bluegrass, Canada—Poa compressa L.
Bluegrass, Kentucky—Poa pratensis L.
Bluegrass, Nevada—Poa nevadensis Vasey.
Bluegrass, rough—Poa trivialis L.
Bluegrass, Texas—Poa arachnifera Torr.
Bluegrass, wood—Poa nemoralis L.
Bluestem, big—Andropogon furcatus Muhl.
Bluestem, little—Andropogon scoparius Michx.
Bluestem, sand—Andropogon hallii Hack.
Bluestem, yellow—Andropogon ischaemum.
Brome, mountain—Bromus marginatus Nees.
Brome, smooth—Bromus inermis Leyss.
Broomcorn—Sorghum vulgare var. technicum (Koern.) Jav.
Buckwheat—Fagopyrum esculentum Moench (F. vulgare Hill.).
Buffalograss—Buchloe dactyloides (Nutt.) Engl.
Buffelgrass—Pennisetum ciliare (L.) Link.
Bur-clover, California—Medicago hispida Gaertn.
Bur-clover, spotted—Medicago arabica (L.) DC.
Burnet, little—Sanguisorba minor Scop.
Buttonclover—Medicago orbicularis (L.) All.
Canarygrass—Phalaris canariensis L.
Canarygrass, reed—Phalaris arundinacea L.
Carpetgrass—Axonopus affinis Chase.
Castorbean—Ricinus cammunis (L.)
Chickpea—Cicer arietinum L.
Clover, alsike—Trifolium hybridum L.
Clover, berseem—Trifolium alexandrinum L.
Clover, cluster—Trifolium glomeratum L.
Clover, crimson—Trifolium incarnatum L.
Clover, large hop—Trifolium procumbens L.
Clover, small hop (suckling)—Trifolium dubium Sibth.
Clover, ladino—Trifolium repens L.
Clover, lappa—Trifolium lappaceum L.
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, strawberry—Trifolium fragiferum L.
Clover, sub (subterranean)—Trifolium subterraneum L.
Clover, white—Trifolium repens L. (also see Clover, ladino).
Clover, (also see Alyceclover, Bur-clover, Buttonclover, Sourclover, Sweetclover).
Corn, field—Zea mays L.
Corn, pop—Zea mays var. everta (Sturt.) Bailey.
Cotton—Gossypium spp.
Cowpea—Vigna sinensis (Torner) Savi.
Crested dogtail—Cynosurus cristatus L.
Crotalaria, lance—Crotalaria lanceolata E. Mey.
Crotolaria, showy—Crotalaria spectabilis Roth.
Crotalaria, slenderleaf—Crotolaria intermedia Kotschy.
Crotalaria, striped—Crotalaria striata DC.
Crotalaria, Sunn—Crotalaria juncea L.
Dallisgrass—Paspalum dilatatum Poir.
Dichondra-Dichondra repens Forst.
Dropseed, sand—Sporobolus cryptandrus (Torr.) A. Gray.
Emmer—Triticum dicoccum Schrank.
Fescue, Chewings—Festuca rubra var. commutata Gaud.
Fescue, hair—Festuca capillata Lam.
Fescue, meadow—Festuca elatior L.
Fescue, red—Festuca rubra L.
Fescue, sheep—Festuca ovina L.
Fescue, tall—Festuca arundinacea Schreb.
Flax—Linum usitatissimum L.
Grama, blue—Bouteloua gracilis (H. B. K.) Lag.
Grama, side-oats—Bouteloua curtipendula (Michx.) Torr.
Guineagrass—Panicum maximum Jacq.
Hardinggrass—Phalaris tuberosa var. stenoptera (Hack.) Hitchc.
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.
Kudzu—Pueraria thunbergiana (Sieb. and Zucc.) Benth.
Lespedeza, Korean—Lespedeza stipulacea Maxim.
Lespedeza, sericea or Chinese—Lespedeza cuneata Dumont) D. Don. [L. sericea (Thunb.) Miq.]
Lespedeza, Siberian—Lespedeza hedysaroides (Pallas) Ricker.
Lespedeza, striate—Lespedeza striata (Thunb.) Hook. and Arn.
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.
Medick, black—Medicago lupulina L.
Millet, browntop—Panicum ramosum L.
Millet, foxtail—Setaria italica (L.) Beauv.
Millet, Japanese—Echinochloa crusgalli var. frumentacea (Roxb.) Wight.
Millet, pearl—Pennisetum glaucum (L.) R. Br.
Millet, proso—Panicum miliaceum L.
Molassesgrass—Melinis minutiflora Beauv.
Mustard, black—Brassica nigra Koch.
Mustard, white—Brassica hirta Moench.
Napiergrass—Pennisetum purpureum Schumach.
Oat—Avena spp.
Oatgrass, tall—Arrhenatherum elatius (L.) Mert. and Koch.
Orchardgrass—Dactylis glomerata L.
Panicgrass, blue—Panicum antidotale Retz.
Peanut—Arachis hypogaea L.
Pea, field—Pisum sativum var. arvense (L.) Poir.
Poa trivialis—(see Bluegrass, rough).
Rape, annual—Brassica napus var. annua Koch.
Rape, bird—Brassica campestris L.
Rape, turnip—Brassica campestris vars. L.
Rape, winter—Brassica napus var. biennis (Schubl. and Mart.) Reichb.
Redtop—Agrostis alba L.
Rescuegrass—Bromus catharticus Vahl.
Rhodesgrass—Chloris gayana Kunth.
Rice—Oryza sativa L.
Ricegrass, Indian—Oryzopsis hymenoides (Roem. and Schult.) Ricker.
Roughpea—Lathyrus hirstus L.
Rye—Secale cereale L.
Ryegrass or
Ryegrass, Italian—Lolium multiflorum Lam.
Ryegrass, perennial—Lolium perenne L.
Safflower—Carthamus tinctorius L.
Sainfoin—Onobrychis viciaefolia Scop.
Sesame—Sesamum indicum L.
Sesbania—Sesbania exaltata (Raf.) Torr.
Smilo—Oryzopsis miliacea (L.) Benth. and Hook.
Sorghum—Sorghum vulgare Pers.
Sourclover—Melilotus indica (L.) All.
Soybean—Glycine max (L.) Merrill [Soja max (L.) Piper].
Spelt—Triticum spelta L.
Sudangrass—Sorghum vulgare var. sudanense (Piper) Hitchc.
Sunflower—Helianthus annuus L.
Sweetclover or
Sweetclover, white—Melilotus alba Desr.
Sweetclover, yellow—Melilotus officinalis (L.) Lam.
Sweet vernalgrass—Anthoxanthum odoratum L.
Switchgrass—Panicum virgatum L.
Timothy—Phleum pratense L.
Trefoil, big—Lotus uliginosus Schkuhr.
Trefoil, birdsfoot—Lotus corniculatus L.
Vaseygrass—Paspalum urvillei Steud.
Veldtgrass—Ehrharta calycina J. E. Smith.
Velvetbean—Stizolobium deeringianum Bort.
Velvetgrass—Holcus lanatus L.
Vetch or
Vetch, common—Vicia sativa L.
Vetch, hairy—Vicia villosa Roth.
Vetch, Hungarian—Vicia pannonica Grantz.
Vetch, monantha—Vicia articulata Hornem. (V. monantha Desf.)
Vetch, narrowleaf—Vicia angustifolia (L.) Reich.
Vetch, purple—Vicia athopurpurea Desf.
Vetch, woollypod—Vicia dasycarpa Ten.
Wheat or
Wheat, common—Triticum aestivum L. (T. vulgare Vill.)
Wheat, club—Triticum compactum Host.
Wheat, durum—Triticum durum Desf.
Wheat, Polish—Triticum polonicum L.
Wheat, poulard—Triticum turgidum L.
Wheatgrass, crested or fairway crested—Agropyron cristatum (L.) Gaertn.
Wheatgrass, crested or standard crested—Agropyron desertorum (Fisch.) Schult.
Wheatgrass, intermediate—Agropyron intermedium (Host) Beauv.
Wheatgrass, pubescent—Agropyron trichophorum (Link) Richt.
Wheatgrass, slender—Agropyron pauciflorum (Schwein.) Hitchc. (A. Trachycaulum Steud.).
Wheatgrass, tall—Agropyron elongatum (Host) Beauv.
Wheatgrass, western—Agropyron smithii Rydb.
Wild-rye, Canada—Elymus canadensis L.
Wild-rye, Russian—Elymus junceus Fisch.
Zoysia japonica—(see Japanese lawngrass)
Zoysia matrella—(see Manila grass)

b. Paragraph (i) is amended to read as follows:

(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 scolymus L.
Asparagus—Asparagus officinalis L.
Asparagusbean—Vigna sesquipedalis (L.) Fruwirth.
Bean—Phaseolus vulgaris L.
Bean, lima—Phaseolus lunatus var. macrocarpus Van Eseltine.
Bean, runner—Phaseolus coccineus L.
Beet—Beta vulgaris L.
Broadbean—Vicia faba L.
Broccoli—Brassica oleraca var. botrytis L.
Brussels sprouts—Brassica oleracea var. gemmifera Zenker.
Cabbage—Brassica olearacea var. capitata L.
Cantaloupe—(see muskmelon)
Cardoon—Cynara cardunculus L.
Carrot—Daucus carota L.
Cauliflower—Brassica oleracea var. botrytis L.
Celeriac—Apium graviolens var. rapaceum DC.
Celery—Apium graveolens var. dulce (Mill.) Pers.
Chard, Swiss—Beta vulgaris var. cicla L.
Chicory—Cichorium intybus L.
Chinese cabbage—Brassica pekinensis (Lour.) Rupr.
Citron—Citrullus vulgaris Schrad.
Collards—Brassica oleracea var. acephala DC.
Corn, sweet—Zea mays L.
Cornsalad—Valerianella locusta var. olitoria Pall.
Cowpea—Vigna sinensis (Torner) Savi.
Cress, garden—Lepidium sativum L.
Cress, water—Rorippa nasturtium-aquaticum (L.) Britt. and Rendle.
Cucumber—Cucumis sativus L.
Dandelion—Taraxacum officinale Weber.
Eggplant—Solanum melongena var. esculentum Nees.
Endive—Cichorium endivia L.
Kale—Brassica oleracea var. acephala DC.
Kale, Chinese—Brassica oleracea var. alboglabra (Bailey) Musil.
Kohlrabi—Brassica oleracea var. gongylodes L.
Leek—Allium porrum L.
Lettuce—Lactuca sativa L.
Muskmelon—Cucumis melo L.
Mustard—Brassica juncea (L.) Coss.
Mustard, spinach—Brassica perviridis Bailey.
Okra—Hibiscus esculentus L.
Onion—Allium cepa L.
Onion, Welsh—Allium fistulosum L.
Pak-choi—Brassica chinensis L.
Parsley—Petroselinum hortense Hoffm.
Parsnip—Pastinaca sativa L.
Pea—Pisum sativum L.
Pepper—Capsicum spp.
Pumpkin—Cucurbita pepo L., C. moschata Duchesne and C. maxima Duchesne.
Radish—Raphanus sativus L.
Rhubarb—Rheum rhaponticum L.
Rutabaga—Brassica napus var. napobrassica (L.) Reichb.
Salsify—Tragopogon porrifolius L.
Sorrel—Rumex acetosa L.
Soybean—Glycine max (L.) Merrill [Soja max (L.) Piper].
Spinach—Spinacia oleracea L.
Spinach, New Zealand—Tetragonia expansa Thunb.
Squash—Cucurbita Pepo L., C. moschata Duchesne and C. maxima Duchesne.
Tomato—Lycopersicon esculentum Mill.
Tomato, husk—Physalis pubescens L.
Turnip—Brassica rapa L.
Watermelon—Citrullus vulgaris Schrad.

c. Paragraph (y) is amended to read as follows:

(y) *Hybrid.* The term "hybrid" means the first generation seed of a cross produced by controlling the pollination and by combining (1) two, three, or four inbred lines; (2) one inbred or a single cross with an open-pollinated variety; or (3) two varieties or species, except open-pollinated varieties of corn (Zea mays). The second generation and subsequent generations from such crosses shall not be regarded as hybrids. Hybrid designations shall be treated as variety names.

2. In § 201.5 (a) "white clover," is inserted after "red clover,".

3. Paragraph 201.5 (c) is deleted.

4. In § 201.7 the phrase "received from the grower" is deleted from the first sentence and the phrase "and the sample" is deleted from the last sentence, and the following sentence is added at the end of the section: "A copy of the grower's declaration and a sample of the seed shall be retained by the grower."

5. Section 201.12 is amended to read as follows:

§ 201.12 *Name of kind and variety.* The representation of kind or kind and variety shall be confined to the name of the kind or kind and variety determined in accordance with § 201.34. The name shall not have affixed thereto words or terms that create a misleading impression as to the history or characteristics of the kind or variety.

6. In § 201.14 (a) "white clover," is inserted after "red clover,".

7. Section 201.16 is amended by adding at the end of the section the following sentence: "If in the course of such transportation, or thereafter, the seed is diverted to another State of destination, the person or persons responsible for such diversion shall cause the seed to be relabeled with respect to noxious-weed seed content, if necessary, to conform to the laws and regulations of the State to which the seed is diverted."

8. Section 201.20 is amended by adding at the end of the section the following proviso: *"Provided,* That this shall not apply to the seed of Kentucky bluegrass during the months of July, August, and September of the year in which the seed is produced."

9. Section 201.26 is amended to read as follows:

§ 201.26 *Kind and variety.* The label shall bear the name of the kind and variety determined in accordance with § 201.34. The name shall not have affixed thereto words or terms that create a misleading impression as to the history or characteristics of the kind or variety.

10. In § 201.31 the names of kinds of vegetable seeds in the list are rearranged in alphabetical order in accordance with § 201.2 (i) and the following additional kinds and germination standards are inserted in proper alphabetical order:

Kale, Chinese	75
Onion, Welsh	70

11. Section 201.34 is amended to read as follows:

§ 201.34 *Kind, variety and type; designation as hybrid—(a) Indistinguishable seed.* Proper precautions to insure that the kind or variety or type of indistinguishable agricultural or vegetable seeds is properly stated shall include the maintaining of the records described in § 201.7. The examination of the seed and any pertinent facts may be taken into consideration in determining whether proper precautions have been taken to insure the kind, variety, or type to be that which is shown.

(b) *Name of kind.* The name of each kind of agricultural or vegetable seed is the name listed in § 201.2 (h) or (i), respectively.

(c) *Hybrid designation.* Seed shall not be designated in labeling as "hybrid" seed unless it comes within the definition of "hybrid" in § 201.2 (y).

12. Section 201.42 is amended to read as follows:

§ 201.42 *Small containers.* In sampling seed in small containers which it is not practical to sample as required in § 201.41, entire unopened containers may be taken in sufficient number to supply a minimum size sample as required in § 201.43. The sample may consist of the contents of one container, or two or more containers when combined.

13. Section 201.45 (b) is amended to read as follows:

(b) The sample shall be repeatedly divided to the weight to be used for the working sample. Some form of efficient mechanical divider should be used. In case the proper mechanical divider cannot be used or is not available, the sample shall be thoroughly mixed and placed in a pile and the pile shall be repeatedly divided into halves until a sample of the desired weight remains.

14. Section 201.46 is amended as follows:

a. The introductory paragraph is amended to read:

For the detailed purity analysis and noxious-weed seed examination the working samples shall be at least the weights set forth in table 1. In mixtures the weight of the sample for purity analysis and the weight of the sample for noxious-weed seed examination shall be determined by the kind (or group of kinds of similar size) which comprises the major proportion of the sample.

b. In table 1 the necessary amendments are made in the names for the indicated kinds of seed so the names will be the same as those appearing in table 2, § 201.58. Also the order of the kinds of seeds in table 1 is rearranged to correspond with the order in which they are listed in table 2.

c. In table 1 the existing information in the various columns for the indicated kinds is amended to read:

Bahia grass—Paspalum notatum:			
Var. Pensacola	5	50	----
All other varieties	10	50	366
Flax—Linum usitatissimum	15	100	178
Oatgrass, tall meadow—Arrhenatherum elatius	5	50	330
Cornsalad (Fetticus)—Valerianella locusta var. olitoria:			
Vars. Full Hearted and Dark Green Fullhearted	5	50	----
All other varieties	10	50	380

d. In all instances where the figure in the column "Minimum weight for purity analysis" in table 1 is 2 grams,

the corresponding figure in the column "Minimum weight for noxious-weed seed examination" is changed from 50 to 35.

e. Table 1 is further amended by inserting the following kinds and information in their appropriate alphabetical position:

Name of seed	Minimum weight for purity analysis	Minimum weight for noxious-weed seed examination	Approximate number of seeds per gram
	Gm	*Gm*	
Bluestem, yellow—Andropogon ischaemum	2	35	--------
Buffelgrass—Pennisetum ciliare	10	50	--------
Burnet, little—Sanguisorba minor	25	150	108
Buttonclover—Medicago orbicularis	10	50	337
Castor bean—Ricinus communis	500	500	5
Dichondra—Dichondra repens	5	50	472
Indigo, hairy—Indigofera hirsuta	10	50	437
Lovegrass, sand—Eragrostis trichodes	1	25	3,550
Rose clover—Trifolium hirtum	5	50	358
Safflower—Carthamus tinctorius	100	500	29
Sesame—Sesamum indicum	10	50	360
Veldtgrass—Ehrharta calycina	2	35	655
Wheatgrass, pubescent—Agropyron tricophorum	10	50	180
Wheatgrass, intermediate—Agropyron intermedium	10	50	230
Wheatgrass, tall—Agropyron elongatum	10	50	140
Wild-rye, Russian—Elymus junceus	10	50	400
Chinese kale—Brassica oleracea var. alboglabra	10	50	--------
Onion, Welsh—Allium fistulosum	10	50	--------

f. In table 1, footnotes Nos. 1, 2, and 4, including the reference designations in the table are deleted, and footnote No. 3 and its reference designation are renumbered as No. 1.

15. Section 201.47 is amended to read as follows:

§ 201.47 *Separation.* (a) The working sample shall be weighed in grams to four significant figures, and shall then be separated into four parts: (1) Kind or variety to be considered pure seed; (2) other crop seed; (3) weed seed; and (4) inert matter. Each of these four component parts shall be weighed in grams to four significant figures, and the percentage by weight of each part (based on the sum of the weights of the component parts and not on the original weight) shall be determined. The sum of the weights of the component parts shall be compared with the original weight of the working sample as a check against loss of material or other error.

(b) In the case of other crop seed and weed seed, the seeds of each species shall be separated when possible and the number or the weight of each kind determined. The separation of the seed of the kind or variety considered pure seed must be on such a basis that the separation can be made definitely by seed characteristics.

(c) When samples of seed contain two or more similar kinds of seeds the separation of which in the entire working sample would be very difficult, it is permissible to separate and weigh the similar seeds as a group. From the purity working sample at least 400 seeds are to be taken indiscriminately and the separation made on this portion. The proportion of each kind is then determined by weight or, if the seeds are of similar weight, the proportion may be determined by count, and from this the percentage in the entire sample is calculated.

(d) With reference to classification of pure seed, other crop seed, and inert matter, applicable methods of determination may include visual examination, use of reflected light or specific gravity. This has reference particularly to insect-damaged, broken or diseased seeds, or sterile grass florets.

16. Following § 201.47 two new sections are inserted to read, respectively, as follows:

§ 201.47a *Seed unit.* The seed unit is the structure usually regarded as a seed in agricultural practices and in commercial channels. The seed unit may consist of one or more of the following structures:

(a) True seeds;

(b) Caryopses and florets in the grass family. In this family the pure seed unit also includes the following structures for the indicated kinds:

(1) Spikelet or paired spikelets with at least one caryopsis in the bluestems (Andropogon) and yellow Indiangrass (Sorghastrum nutans),

(2) Spikelet with at least one caryopsis in the gramas (Bouteloua), or spike with at least one caryopsis in side-oats grama (B. curtipendula),

(3) Bur or fertile floret of buffalo grass (Buchloe dactyloides),

(4) Fascicle of buffel grass (Pennisetum ciliare),

(5) Bulblet of bulbous bluegrass (Poa bulbosa);

(c) Dry indehiscent fruits in the following plant families: Buckwheat (Polygonaceae), sunflower (Compositae), geranium (Geraniaceae), goosefoot (Chenopodiaceae), and valerian (Valerianaceae);

(d) One- and two-seeded pods of small-seeded legumes, burs of the bur clovers, and pods of peanuts. (This does not preclude the shelling of small-seeded legumes for purposes of identification);

(e) Fruits or half fruits in the carrot family (Umbelliferae);

(f) Nutlets in the following plant families: Borage (Boraginaceae), mint (Labiateae), vervain (Verbenaceae);

(g) "Seed balls" or portions thereof in beets (Beta), and fruits with accessory structures such as occur in New Zealand spinach (Tetragonia expansa).

§ 201.47b *Working samples.* The purity working sample is the sample on which the purity analysis is made. The noxious-weed seed working sample is the sample on which the noxious-weed seed examination is made.

17. Section 201.48 is amended to read as follows:

§ 201.48 *Kind or variety considered pure seed.* The pure seed shall include all seeds of each kind or each kind and variety under consideration present in excess of 5 percent of the whole, and may include kinds and varieties present to an extent of 5 percent or less of the whole. The following shall be included with the pure seed:

(a) Seeds that are immature, shriveled, cracked, insect-damaged or otherwise injured, except as provided in paragraph (i) of this section. (Seeds of legumes and crucifers with the seedcoat entirely removed shall be classified as inert matter. See § 201.51);

(b) Pieces of broken seeds that are larger than one-half the original size;

(c) Seeds that have started to germinate;

(d) Seeds of Cucurbitaceae and Solanaceae consisting principally of seedcoat (usually referred to as empty seed);

(e) Empty fruits (seed units) of species belonging to the following families: Sunflower (Compositae), buckwheat (Polygonaceae), carrot (Umbelliferae), valerian (Valerianaceae), mint (Labiateae), and other families in which the seed unit may be a dry, indehiscent, one-seeded fruit;

(f) All seed units of grasses in which a caryopsis can be detected either by light pressure or by reflected light;

(g) Multiple florets, or spikelets, of the following kinds of seeds when one or more of the florets contain a caryopsis: Bluegrass (Poa), tall meadow oatgrass (Arrhenatherum elatius), Rhodes grass (Chloris gayana), bluestems (Andropogon), gramas (Bouteloua), and oats (Avena), and spikes of side-oats grama (Bouteloua curtipendula) that contain one or more caryopses; in the case of orchard grass (Dactylis glomerata) all empty florets may be removed and classed as inert matter; or alternatively, all multiple florets may be weighed without detaching the empty florets in which case four-fifths (⅘) of the weight is added to the pure seed and one-fifth (⅕) to the inert matter;

(h) Diseased seeds, except ergots, smut balls, and other fungus bodies which are to be classed as inert matter. (See § 201.51);

(i) Insect-damaged seeds, except (1) broken pieces that are one-half or less than the orginal size and (2) chalcid-damaged seeds of alfalfa, red clover, and similar kinds of small-seeded legumes;

(j) Seed units of New Zealand spinach and beets regardless of whether they contain true seeds: *Provided,* That in the case of segmented beet balls, small fragments which obviously do not contain true seeds shall be classified as inert matter.

18. Section 201.49 is amended to read as follows:

§ 201.49 *Other crop seed.* Seeds of plants grown as crops (other than the kind or variety 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.

19. Section 201.50 is amended to read as follows:

§ 201.50 *Weed seed.* Seeds, bulblets, or tubers of plants recognized as weeds by applicable laws or regulations, or gen-

eral usage shall be considered weed seeds. Badly injured weed seeds and empty, seedlike structures, including those of noxious-weed seeds, as described in § 201.51, shall be considered inert matter and not weed seeds. When seeds of Juncus tenuis, or other species of Juncus having seeds of a similar size, are present they may be included with the inert matter. However, clusters of Juncus seeds shall be included with the weed seeds.

20. Section 201.51 is amended to read as follows:

§ 201.51 *Inert matter.* Inert matter shall include seeds and seedlike structures from both crop and weed plants and other material not seeds as follows:

(a) Crop plants—

(1) Broken seeds: Pieces of broken seeds one-half the original size or less;

(2) Seeds of legumes and crucifers with the seedcoats entirely removed;

(3) Glumes and empty florets except when considered pure seed or other crop seed under §§ 201.48 and 201.49;

(4) Chalcid-damaged seeds of alfalfa, red clover, and similar kinds of small-seeded legumes;

(b) Weed plants—

(1) Damaged seeds (other than caryopses of grasses) with over one-half of the embryo missing;

(2) Damaged caryopses of grasses, with over one-half of the root shoot axis missing (the scutellum excluded); and glumes and empty florets of grasses;

(3) Seeds of legumes and species of Brassica with the seedcoats entirely removed;

(4) Empty fruits (seeds) such as occur in the following plant families: Sedge (Cyperaceae), buckwheat (Polygonaceae), morning-glory (Convolvulaceae), and sunflower (Compositae). (This is to be determined by visual examination, which may include dissection or the use of reflected light);

(5) Bulblets of wild onion and wild garlic (Allium) which are devoid of the husk and pass through a 10 x 10 mesh screen (10 mesh per inch) made of 26 gage (0.020 inch diameter) stainless steel wire; bulblets which are devoid of the husks and are retained on 10 x 10 mesh screen, but which show injury to the basal end; bulblets which show evident damage to the basal end and have part of the husk removed;

(6) Immature florets of quackgrass (Agropyron repens) in which the caryopses are less than one-third the length of the palea;

(7) Dodder (Cuscuta): Seeds which are either (i) fragile, (ii) ashy gray to creamy white in color, or (iii) badly shriveled;

(8) Buckhorn (Plantago lanceolata): Black seeds, with no brown color evident, whether shriveled or plump; (The color of questionable seeds should be determined under a magnification of approximately 10 X with strong light);

(9) Ragweed (Ambrosia): Seed with both the involucre and pericarp absent;

(c) Other matter—

(1) Nematode galls, including galls enveloped by the lemma and palea of grass florets;

(2) Fungus bodies, such as ergot and other sclerotia, and smut balls;

(3) All inert matter such as soil particles, sand, stones, chaff, stems, and leaves.

21. Section 201.52 is amended to read as follows:

§ 201.52 *Noxious-weed seeds.* 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 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 species 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.

22. In § 201.53 paragraph (c) is amended to read as follows:

(c) When only a germination test is required and the pure seed is found to be less than 98 percent, the seed for the test shall be obtained by separating the sample into two components as follows: (1) Pure seed and (2) other crop seed, weed seed, and inert matter. In making this separation at least ¼ of the quantity required for a regular purity analysis shall be used. The whole sample must be well mixed and divided in such a manner as to get a completely representative subsample.

23. Section 201.55 is amended to read as follows:

§ 201.55 *Retests.* (a) In considering whether a retest is required a difference of 10 percent between any two 100-seed replicates is permitted when the average is 80 percent or above, and a difference of 15 percent when the average is below 80 percent. When all 4 replicates are in agreement (i. e., do not exceed the 10 and 15 percent limits) the average shall be used and a retest is not required. If three replicates are in agreement the median of the four replicates shall be used and a retest is not required. (The median of four replicates is the average of the two middle values). When no more than two replicates are in agreement, a retest is necessary. If, at the time of the prescribed final count there are indications that a satisfactory germination has not been obtained, such as the presence of firm ungerminated seeds, a retest should be made.

(b) Samples showing injury as a result of chemical treatments shall be retested in soil. The result of the soil test will be regarded as authentic.

(c) When one or more retests, or concurrent tests, are made in the same laboratory in accordance with this part by either (1) the same method, or (2) alternate methods, the results of all tests within tolerance shall be averaged. When the results obtained by different methods are not within tolerance of each other, the higher result shall be used.

24. Following § 201.55 a new section is inserted to read as follows:

§ 201.55a *Moisture and aeration of substratum.* (a) The substratum must be moist enough to supply the needed moisture to the seeds at all times. Excessive moisture which will restrict aeration of the seeds should be avoided. Except as provided for those kinds of seeds requiring high moisture levels of the germination media, the substrata should never be so wet that a film of water is formed around the seeds. For most kinds of seeds blotters or other paper substrata should not be so wet that by pressing, a film of water forms around the finger.

(b) The following formula may be used as a guide in the preparation of sand for germination tests:

$$\frac{\text{118.3 cc. (1 gill) sand}}{\text{Its weight in grams}} \times 20.2 - 8.0 = \text{The number of cc. of water to add to each 100 grams of air-dry sand.}$$

(c) The amount of water provided by this formula is satisfactory for seeds the size of clovers and will have to be modified slightly, depending on the kind of seed being tested and the kind of sand used. For example, slightly more moisture should be added when the larger seeds are to be tested.

(d) In preparing soil tests water should be added to the soil until it can be formed into a ball when squeezed in the palm of the hand but will break freely when pressed between two fingers. After the soil has been moistened it should be rubbed through a sieve and put in the seed containers without packing.

(e) The addition of water subsequent to placing the seed in test will depend on the evaporation from the substrata in the germination chambers. Since the rate of evaporation will depend upon the relative humidity of the air, it is desirable to keep water in the germination chambers or to provide other means of supplying a relative humidity of approximately 95 percent. Germination tests should be observed at frequent intervals to insure an adequate moisture supply of the substrata at all times.

25. Section 201.56 is amended 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. Seedlings possessing those essential structures are referred to as normal seedlings. Abnormal seedlings, consisting of those which are broken, devoid of roots, malformed, or weak, and other types not possessing essential structures, shall not be considered to have germinated.

(b) Sand and/or soil tests may be used as a guide in determining the classification of questionable seedlings and the evaluation of germination tests made on

approved artificial media. This is intended to provide a method of checking the reliability of tests made on artificial substrata when there may be doubt as to the proper evaluation of such tests.

(c) Seedlings infected with fungi or bacteria should be regarded as normal if all essential structures are present. A seedling that has been seriously damaged by bacteria or fungi from any source other than the specific seed should be regarded as normal if it is determined that all essential structures were present before the injury or damage occurred. Germination counts should be made on samples where contamination and decay are present at approximately 2-day intervals between the usual first count and the final count. During the progress of the germination test, seeds which are obviously dead and moldy and which may be a source of contamination of healthy seeds should be removed at each count and the number of such dead seeds should be recorded. When symptoms of certain diseases develop which can be readily recognized and identified, their presence should be noted.

(d) Seed units containing more than one seed or embryo, such as New Zealand spinach seed, Beta seed, and seed units of grasses consisting of multiple florets, shall be tested as a single seed and shall be regarded as having germinated if they produce one or more normal seedlings.

(e) Standard guides for seedling interpretation shall include the photographs of normal and abnormal seedlings[1] identified by photo numbers in table 2 in § 201.58 and the following descriptions for specific kinds and groups.

26. Following § 201.56, 11 new sections are inserted to read, respectively, as follows:

§ 201.56–1 *Goosefoot family (Chenopodiaceae) and Carpetweed family (Aizoaceae).* (a) Kinds of seed: Beet, swiss chard, mangel, spinach, and New Zealand spinach.

(b) A completely normal seedling of the kinds specified in paragraph (a) of this section should have a long, slender root with root hairs, a long, well-developed hypocotyl, two attached leaflike cotyledons and an intact but small epicotyl. Normal seedlings shall include those that have: (1) A well-developed, long, slender root with root hairs; (2) a stubby primary root provided the secondary roots are strong and the hypocotyl is near normal length, as in spinach; (3) at least one attached cotyledon, provided the seedling is otherwise normal; (4) slight infection by fungi, provided none of the essential seedling structures have been damaged; (5) normal seedlings structures of Beta that have been discolored from toxic substances in the seed balls or other causes; or (6) at least one normal seedling from a seed ball, regardless of whether abnormal seedlings also emerge from the same fruit.

[1] These photographs may be purchased from the Office of Information, United States Department of Agriculture, Washington 25, D. C.

(c) Abnormal seedlings include those that have: (1) No root or a stubby primary root with poor secondary root development, usually associated with a shortened hypocotyl; (2) a malformed, shortened, twisted, watery, or stubby hypocotyl, usually associated with a stubby root but not necessarily so; (3) deep grainy lesions or cracks in the hypocotyl if they appear to interfere with the conducting tissues; (4) both cotyledons absent as in samples of "sheared" beets and occasional samples of spinach; (5) two large cotyledons, but a malformed, short hypocotyl, usually with a stubby root; (6) decayed cotyledons or hypocotyl, provided they are not the result of improper test conditions (if there is decay of beet seedlings in blotter tests the results from a properly conducted soil or sand test should be accepted as correct); or (7) various combinations of the abnormalities described in this paragraph.

§ 201.56–2 *Sunflower family (Compositae).* Kinds of seed: Artichoke, cardoon, chicory, dandelion, endive, lettuce, safflower, salisfy, and sunflower.

By the end of the germination test, a perfectly normal seedling belonging to the sunflower family should have a well-developed root with root hairs, a long and well-developed hypocotyl, two leaflike cotyledons, and a small but visible epicotyl.

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

(1) Normal seedlings include those that have: (i) A well-developed, long, slender root with root hairs; (ii) a well-developed long hypocotyl with no deep lesions which might interfere with the conducting tissues; (iii) two green cotyledons with some blackened or reddish brown areas, provided the hypocotyl and roots have developed normally or approximately so; or (iv) slight inflections by fungi, provided none of the essential seedling structures have been damaged.

(2) Abnormal seedlings include those that have: (i) No roots or very stubby or shortened roots, which are usually associated with a shortened hypocotyl; (ii) a shortened hypocotyl which is usually associated with stubby roots; (iii) a malformed hypocotyl, severely twisted or having grainy areas or cracks extending into the conducting tissues; (iv) cotyledons with large areas of blackish or reddish brown tissue, usually appearing along the midrib, associated with a short hypocotyl and root (the seedcoats are often attached to the cotyledons, adhering to the darkened areas and can be easily removed if lightly sprinkled with water); (v) cotyledons with a gray cast over their entire area, usually darker at the midrib section (hypocotyl and roots invariably shortened and seedcoats usually attached to the cotyledons); (vi) swollen, blackened cotyledons with only vestiges of hypocotyl and root, the seedcoats usually remaining attached to the cotyledons; (vii) decayed cotyledons; or (viii) various combinations of the abnormalities described in this subparagraph.

(b) Other kinds in the sunflower family: This group includes artichoke, cardoon, sunflower, safflower, salsify, dandelion, chicory, and endive.

(1) Normal seedlings include those that have: (i) A well-developed, long, slender primary root with root hairs; (ii) a stubby root if there are one or more strong secondary roots, provided the seedling is otherwise normal; (iii) a well-developed, long hypocotyl with no prominent breaks or deep lesions which might interfere with the conducting tissues; (iv) at least one uninjured cotyledon, provided the epicotyl is also present; or (v) slight infection of the roots or hypocotyl with fungi, provided none of the essential seedling structures have been damaged.

(2) Abnormal seedlings include those that have: (i) No root or a stubby root with weak secondary roots, usually associated with a shortened hypocotyl; (ii) a malformed hypocotyl, which may be curled, shortened, or thickened, usually associated with a stubby root; (iii) deep, unhealed cracks or grainy areas on the hypocotyl, extending into the conducting tissues; (iv) both cotyledons entirely broken off; (v) one cotyledon broken off, provided the epicotyl is also absent; (vi) two normal cotyledons with a short malformed hyopcotyl, usually with a stubby root; (vii) decayed cotyledons, provided the infection is not caused by improper test conditions; or (viii) various combinations of the abnormalities described in this subparagraph.

§ 201.56–3 *Mustard family (Cruciferae).* Kinds of seed: Broccoli, brussels sprouts, cabbage, Chinese cabbage, cauliflower, collards, garden cress, water cress, kale, Chinese kale, kohlrabi, mustard, pakchoi, radish, rape, rutabaga, and turnip.

By the end of the germination test, a perfectly normal cruciferous seedling should have a well-developed root, usually with root hairs, a long hypocotyl, two intact green leaflike cotyledons and a small but visible epicotyl or growing point.

(a) *Radish and Brassica.* (1) Normal seedlings include those that have: (i) A well-developed, long, slender primary root with root hairs; (ii) a well-developed, long hypocotyl with no prominent breaks or deep lesions which might interfere with the conducting tissues; (iii) one or two cotyledons not decayed at the point of attachment to the hypocotyl, provided the epicotyl is also present; (iv) slight decay at the base of one cotyledon, provided the epicotyl is not infected; (v) less than 50 percent of the area of the cotyledons covered with spots or darkened areas; or (vi) slight infection of roots or hypocotyl with fungi, provided none of the essential seedling structures have been damaged.

(2) Abnormal seedlings include those that have: (i) No root or a stubby root, usually associated with a shortened hypocotyl; (ii) a malformed hypocotyl, which may be curled, shortened, or thickened and usually associated with a stubby root; (iii) deep, unhealed cracks or lesions (often grainy) on the hypocotyl, extending into the conducting tissues; (iv) decay at the point of at-

tachment of both cotyledons to the hypocotyl which may or may not involve the terminal bud; (v) decay at the point of attachment of one cotyledon to the hypocotyl, provided the terminal bud is also decayed; (vi) 50 percent or more of the area of the cotyledons covered with spots or darkened areas; (vii) decayed roots or hypocotyl, provided the infection was not caused by improper test conditions; (viii) watery hypocotyl (usually associated with some other abnormality of the seedlings) provided this condition is not caused by excessive moisture of the substratum; or (ix) various combinations of the abnormalities described in this subparagraph.

(b) *Garden cress and water cress.* (1) Normal seedlings include those that have: (i) A well-developed, slender root with root hairs; (ii) a long, well-developed hypocotyl with no prominent breaks or deep lesions which might interfere with the conducting tissues; (iii) intact cotyledons; or (iv) slight infection with fungi, provided none of the essential seedling structures have been damaged.

(2) Abnormal seedlings include those that have: (i) No root, or a stubby root, usually associated with a shortened hypocotyl; (ii) a malformed hypocotyl, which may be curled, twisted, shortened, or thickened and frequently associated with a stubby root; (iii) deep, unhealed cracks or grainy lesions on the hypocotyl, extending into the conducting tissues; (iv) watery hypocotyls, usually associated with stubby roots or decayed cotyledons; (v) cotyledons entirely broken off; (vi) decayed cotyledons, provided the infection was not caused by improper test conditions; or (vii) various combinations of the abnormalities described in this subparagraph.

§ 201.56–4 *Cucurbit family (Cucurbitaceae).* (a) Kinds of seed: Citron, cucumber, muskmelon or cantaloup, pumpkin, squash, and watermelon.

(b) By the end of the germination test a perfectly normal seedling should have a well-developed primary root with several secondary roots, a long hypocotyl, two intact cotyledons, and an epicotyl or terminal growing bud.

(1) Normal seedlings include those that have: (i) A well-developed primary root with or without secondary roots; (ii) a stubby primary root with at least two strong and vigorous adventitious roots, provided the hypocotyl is not shortened very much; (iii) a long well-developed hypocotyl; (iv) two intact cotyledons; or (v) slight infection by fungi, provided none of the essential seedling structures have been damaged.

(2) Abnormal seedlings include those that have: (i) No primary root, a stubby primary root only, or a stubby primary root with weak secondard roots which are usually associated with a short hypocotyl; (ii) a malformed hypocotyl which may be shortened or thickened; (iii) a thickened and shortened hypocotyl and roots owing to injury from chemical treatment, provided the injury is still apparent in a soil or sand check test; (iv) decayed cotyledons or other essential seedling structures, provided the decay was not the result of improper test conditions; or (v) various combinations described in this subparagraph.

§ 201.56–5 *Grass family (Gramineae).* Kinds of seed: Bentgrasses, bluegrasses, bluestems, bromes, cereals, fescues, millets, orchard grass, redtop, ryegrass, sorghum, timothy, wheatgrass, and all other grasses listed in § 201.1 (h).

In the grass family a perfect seedling should have a well-developed primary root system, an intact cotyledon or scutellum, seed free from serious decay and long, well-developed green leaves within the coleoptile. One or more leaves may have broken through the coleoptile by the end of the test period.

(a) *Barley, oats, rye, and wheat.* (1) Normal seedlings include those that have: (i) At least one primary or seminal root, but preferably two or three seminal roots, provided the shoot is well-developed and the grain is not badly decayed; (ii) well-developed leaves, green in color, and long enough to extend more than half way up into the sheath or coleoptile at the time the seedling is evaluated; (iii) spiral twisting or bending of the shoot, provided it is green in color, has normal length, and is not frost damaged; or (iv) slight infection by fungi, provided none of the essential seedling structures have been damaged.

(2) Abnormal seedlings include those that have: (i) No primary root, (ii) only one or two short or spindly seminal roots which are usually accompanied by weakened shoots and decayed grains; (iii) no green leaves, but only the white sheath or coleoptile formed, which may or may not be grainy, spirally twisted, split, or shortened; (iv) a shortened shoot, extending no more than one-half the way up through the coleoptile; (v) a thin, spindly, or watery shoot usually accompanied by weak root development and decayed grains; (vi) badly shattered or longitudinally split leaves, with or without splitting of the coleoptile; (vii) thickened and shortened shoot (leaves and coleoptile) often the result of overtreatment of seed with chemicals; (viii) decayed shoots (usually weak and show decay near the point of attachment to the grain which has often decayed) provided the decay is not the result of improper test conditions; (ix) bad frost-damage characterized by grainy coleoptiles and spirally twisted leaves and coleoptiles; (x) coleoptiles developed without the leaves (in soil tests, some of the longest of the spirally twisted seedlings will appear fairly strong but most of them break off just above the attachment of the plumule and coleoptile to the grain; the shortest of the seedlings do not emerge in soil tests); or (xi) various combinations of the abnormalities described in this subparagraph.

(b) *Rice.* (1) Normal seedlings include those that have: (i) One primary root, usually with numerous lateral roots (several permanent roots arising from the first node should be present if seedlings are not removed until the end of the test); (ii) well-developed green leaves which ordinarily should have broken through the coleoptile at the time the seedling is evaluated; or (iii) slight infection by fungi, provided none of the essential seedling structures have been damaged.

(2) Abnormal seedlings include those that have: (i) No roots; (ii) a spindly primary root with very little or no branching or secondary development; (iii) no green leaves, but only the white sheath or coleoptile; (iv) a spindly and sometimes watery shoot which is usually associated with decay of the rice grain; (v) a short leaf, extending no more than one-half the distance up through the coleoptile; (vi) shattered or longitudinally split plumules with or without splitting of the coleoptile; (vii) decayed plumules (usually appear weak and show decay near the point of attachment to the grain) provided the decay is not the result of improper test conditions; or (viii) various combinations of the abnormalities described in this subparagraph.

(c) *Corn.* (1) Normal seedlings include those that have: (i) One primary root, usually with secondary roots present; (ii) no primary root, but with at least two vigorous secondary roots, provided the grain is not badly decayed, and the shoot is well-developed; (iii) well-developed green leaves, usually broken through the coleoptile by the end of the test period; (iv) twisted and curled shoots bound by the tough seedcoat, provided the shoot is not decayed; or (v) slight infection by fungi, provided none of the essential seedling structures have been damaged.

(2) Abnormal seedlings include those that have: (i) No primary or secondary roots; (ii) no primary roots but small and weak secondary roots; (iii) no plumule, but only the white sheath or coleoptile; (iv) a shortened plumule, extending no more than one-half the way up through the coleoptile; (v) a thickened and shortened shoot, often the result of overtreatment of seed with chemicals; (vi) a spindly and pale shoot usually associated with moldy seeds; (vii) albino (entirely white) seedlings, which will not develop into plants because of lack of chlorophyll; (viii) shattered or longitudinally split leaves, with or without splitting of the coleoptile; (ix) decayed shoots of which the plumules usually appear weak and show decay near the point of attachment to the grain and the scutellum is usually rotten, provided the decay is not the result of improper test conditions; or (x) various combinations of the abnormalities described in this subparagraph.

(d) *Sorghum and Sudan grass.* (1) Normal seedlings include those that have: (i) One primary root, usually with well-developed secondary roots and root hairs if left for final counts in soil tests; (ii) well-developed, green leaves, usually broken through the coleoptile by the end of the test period; (iii) slight infection by fungi, provided none of the essential seedling structures have been damaged; or (iv) red coloration on the roots and on the coleoptile of the shoot, caused by natural pigments, provided the seedling is otherwise normal.

(2) Abnormal seedlings include those that have: (i) No roots; (ii) a weak, spindly, and usually shortened primary

root, which is often associated with decay of the grain; (iii) no plumule, but only the white sheath or coleoptile; (iv) a shortened plumule, extending no more than one-half the way up through the coleoptile; (v) a spindly and pale plumule, usually associated with moldy seeds; (vi) shattered and longitudinally split plumules, with or without splitting of the coleoptile; (vii) decayed plumules, provided the decay is not the result of improper test conditions (the plumules usually appear weak and show decay near the point of attachment to the grain which is usually rotten); or (viii) various combinations of the abnormalities described in this subparagraph.

(e) *Grasses and millets.* (1) Normal seedlings include those that have: (i) A well-developed primary root, usually with root hairs; (ii) a well-developed green plumule which has usually broken through the coleoptile by the end of the test period; (iii) slight infection by fungi, provided none of the essential seedling structures have been damaged; (iv) spirally coiled roots held within the tightly enveloping glumes as in certain samples of Bermuda grass; or (v) poor root development resulting from injury caused by use of a potassium nitrate solution (if many roots are so affected, a retest should be made on top of soil in closed Petri dishes).

(2) Abnormal seedlings include those that have: (i) No root; (ii) a weak, stubby, or spindly root, usually short and watery, associated with a decayed seed; (iii) no plumule, but only the white sheath or coleoptile which is often short and thick; (iv) a shortened plumule, extending only one-half the distance up through the coleoptile; (v) a spindly plumule, usually pale and watery; (vi) a shattered longitudinally split plumule with or without splitting of the coleoptile; (vii) decayed plumules, provided the decay is not the result of improper test conditions (the plumules usually appear weak and show decay near the point of attachment to the seed, which is usually rotten); or (viii) various combinations of the abnormalities described in this subparagraph.

§ 201.56–6 *Legume or pea family (Leguminosae).* Kinds of seed: Alfalfa, alyceclover, asparagusbean, beans (Phaseolus spp.), beggarweed, black medic, broadbean, bur-clovers, button-clover, chickpea, clovers (Trifolium spp.). cowpea, crotalarias, hairy indigo, kudzu, lespedezas, lupines, peas, peanut, rough pea, sainfoin, sesbania, sourclover, soybean, sweetclover, trefoils, velvetbean, and vetches.

(a) *Beans: adzuki, field, garden, lima, mung, and asparagusbean.* Seedling interpretation for all these beans is similar as they all have the same type of development.

(1) Normal seedlings include those that have: (i) a terminal bud or epicotyl, and at least one primary leaf, even though one or both cotyledons may be present; (ii) a primary root or adventitious or secondary roots sufficient to anchor the seedling when grown in soil or sand, provided the hypocotyl is approximately of normal length; (iii) a fairly well-developed hypocotyl with no prominent breaks or deep lesions (Healed breaks, sometimes referred to as knees, are to be considered as normal, provided the seedling is not spindly); (iv) spirally twisted and curled roots and hypocotyl held within the tough seedcoat, causing delayed development, but are otherwise normal; (v) slight infection caused by fungi or bacteria, provided the essential structures have not been seriously damaged and appear to be able to carry on their normal functions at the time of evaluation. (If a few seedlings with total or partial decay of the plumule are found, they may be counted as normal, provided the hypocotyl and root are well-developed. The plumules on such seedlings usually do not decay when grown under greenhouse conditions where the cotyledons open up naturally and are exposed to a dry environment and sunlight. However, if there are many seedlings with decayed plumules in a test, a retest should be made and such seedlings evaluated cautiously).

(2) Abnormal seedlings include those that have: (i) No primary leaves or terminal bud (baldheads); (ii) no primary leaves, but with a terminal bud (snakeheads or partial baldheads); (iii) no primary leaves, but terminal bud present and axillary buds in one or both of the cotyledons (partial baldheads); (iv) a malformed hypocotyl, which may be characterized by open splits, or one that appears curled, shortened, or thickened; (v) no primary root or well-developed set of adventitious or secondary roots; or various combinations of the abnormalities described in this subparagraph.

(b) *Broadbean, runner bean, velvetbean, chickpea, field pea, garden pea, roughpea, and vetches.* In this group a perfectly normal seedling should have a well-formed root, with or without secondary or adventitious development, a strong epicotyl with fairly long stem, a well-developed epicotyl with the leaves and terminal bud intact, and attached cotyledons.

(1) Normal seedlings include those that have: (i) A primary root or a set of secondary or adventitious roots sufficient to anchor the seedling when grown in soil or sand, provided the stem is not badly shortened; (ii) a fairly well-developed stem with no prominent breaks or deep lesions which might interfere with the conducting tissues; (iii) a terminal bud with at least one first leaf and an intact growing point; (iv) two shoots, provided the seedling appears vigorous and at least one of the shoots has a normal epicotyl and root; or (v) slight infection by fungi, provided the essential seedling parts have not been seriously damaged and appear to be able to carry on their normal functions at the time of evaluation.

(2) Abnormal seedlings include those that have: (i) No primary root or well-developed secondary or adventitious roots; (ii) a malformed stem, which may be characterized by severe open splits, and curled, shortened, or thickened development; (iii) no epicotyl, or an epicotyl without the terminal bud; (iv) two shoots both of which appear weak and spindly, often partially broken away from the cotyledons; (v) decay caused by the spread of organisms from the cotyledons of the developing seedling; or (vi) various combinations of the abnormalities described in this subparagraph.

(c) *Cowpeas, lupines, peanuts, and soybeans.* A completely normal seedling of the above-mentioned kinds should have a well-formed root with or without secondary or adventitious roots, a strong and fairly long hypocotyl with two attached and open cotyledons, two well-developed primary leaves, and an intact terminal bud or epicotyl.

(1) Normal seedlings include those that have: (i) A primary root or a set of secondary or adventitious roots sufficient to anchor the seedling when grown in soil or sand, provided the hypocotyl is normal; (ii) a fairly well-developed hypocotyl with no prominent breaks or deep lesions which might interfere with the conducting tissues; (iii) a plumule with at least one leaf and an intact growing point; or (iv) slight infection by fungi, provided the essential seedling parts have not been seriously damaged and appear to be able to carry on their normal functions at the time of evaluation.

(2) Abnormal seedlings include those that have: (i) No primary root or no well-developed secondary or adventitious roots; (ii) a malformed hypocotyl which may be curled, shortened, or thickened or have severe open splits; (iii) no epicotyl, or one without the growing point, with or without leaves; (iv) decayed epicotyl, provided the decay has spread from the rotted cotyledons of the developing seedling; or (vi) various combinations of the abnormalities described in this subparagraph.

(d) *Alfalfa, alyceclover, beggarweed, black medic, burclovers, buttonclover, clovers, crotalarias, hairy indigo, kudzu, lespedezas, sainfoin, sesbania, sourclover, sweetclovers, trefoils.* By the end of the germination test a perfectly normal seedling should have a long, slender root, usually with root hairs, a long hypocotyl, two attached cotyledons which have opened, and an intact epicotyl or growing point.

(1) Normal seedlings include those that have: (i) A long, slender root, usually with root hairs; (ii) slightly stubby roots on blotter tests of sweetclovers, provided the seedling is otherwise normal; (iii) roots slightly stubby from being held back by the attached seedcoat, provided the seedling is otherwise normal; (iv) short splits on the roots, provided the split does not extend into the central conducting tissues of the hypocotyl, and provided further that root hairs are present and the seedling is normal in other respects; (v) a long, well-developed hypocotyl which may have slight cracks or breaks, provided they do not extend into the conducting tissues; (vi) at least one cotyledon, provided the epicotyl is also present; or (vii) slight infection by fungi, provided none of the essential seedling structures have been damaged.

(2) Abnormal seedlings include those that have: (i) Stubby roots, usually as-

sociated with shortened hypocotyl; (ii) longitudinal, deep splits on the roots, extending into the conducting tissues of the hypocotyls; (iii) deep cracks or breaks in the hypocotyl which extend into the conducting tissues; (iv) both cotyledons broken off; (v) one cotyledon broken off if the epicotyl is also absent; (vi) rotted cotyledons, provided the decay did not spread to the seedling from an adjacent seed or was not the result of improper test conditions; (vii) A spindly, watery hypocotyl, provided it is not the result of excess moisture in the substrata (usually seedlings of this type have one or more abnormalities of the essential structures, such as broken cotyledons or deep splits in the hypocotyl); or (viii) various combinations of the abnormalities described in this subparagraph.

§ 201.56–7 *Lily family (Liliaceae).* Kinds of seed: Asparagus, leek, onion, and Welsh onion.

(a) *Onion, Welsh onion, and leek.* By the end of the test period a perfectly normal onion or leek seedling should have a long, slender root with a thickened area where it is joined to the base of the hypocotyl, a fairly long hypocotyl, and a long, green cotyledon with a definite loop or bend, often referred to as the "knee."

(1) Normal seedlings include those that have: (i) A well-developed, long, slender root, with or without root hairs; (ii) a fairly long hypocotyl; (iii) a long, green, leaflike cotyledon, with a well-developed bend or "knee" or (iv) slight infection by fungi, provided none of the essential seedling structures have been damaged.

(2) Abnormal seedlings include those that have: (i) A thickened area at the base of the hypocotyl with no root, or a stubby root; (ii) a very short hypocotyl, usually associated with a poorly developed root and cotyledon; (iii) a poorly developed leaflike cotyledon without a definite bend or "knee"; (iv) a spindly, watery hypocotyl, often associated with slowness in sprouting, and one or more other abnormalities; (v) a rotted cotyledon, provided the decay is not the result of improper test conditions; or (vi) various combinations of the abnormalities described in this subparagraph.

(b) *Asparagus.* By the end of the test period a normal asparagus seedling should have a long, slender root, a fairly long epicotyl, an intact terminal bud, and the seedling should not be broken away from the cotyledon.

(1) Normal seedlings include those that have: (i) A long, slender root; (ii) a long, well-developed epicotyl with terminal growing point; (iii) the cotyledon attached to the seedling; or (iv) slight infestation by fungi, provided none of the essential seedling structures have been damaged.

(2) Abnormal seedlings include those that have: (i) No root, or a very stubby root with weak secondary root development; (ii) a malformed epicotyl, which may be thickened, shortened, or twisted; (iii) no terminal growing point or bud; (iv) cotyledon broken away from the seedling; (v) decayed epicotyl, provided the decay is not the result of improper test conditions; or (vi) various combinations of the abnormalities described in this subparagraph.

§ 201.56–8 *Flax family (Linaceae).* (a) Kind of seed: Flax.

(b) By the end of the germination test a normal flax seedling should have a well-developed primary root, a long hypocotyl, two intact cotyledons, and a small epicotyl.

(1) Normal seedlings include those that have: (i) A long, slender root, usually with root hairs; (ii) a short or stubby primary root, provided secondary root development is strong and the hypocotyl is of normal length or approximately so; (iii) a long, well-developed hypocotyl with no breaks or lesions extending into the conducting tissues; (iv) at least one attached cotyledon, provided the epicotyl is not injured; (v) variously broken or cracked cotyledons, provided the other seedling parts appear normal; or (vi) slight infection by fungi, provided none of the essential seedling structures have been damaged.

(2) Abnormal seedlings include those that have: (i) A stubby or no primary root, provided the secondary root development is weak, a condition usually associated with a shortened hypocotyl; (ii) a malformed hypocotyl, which may be twisted, thickened, or shortened; (iii) deep cracks or lesions on the hypocotyl, extending into the conducting tissues; (iv) both cotyledons broken off; (v) one cotyledon broken off if the epicotyl is also injured (vi) decayed cotyledons or other essential seedling structures, provided the decay is not the result of improper test conditions; or (vii) various combinations of the abnormalities described in this subparagraph.

§ 201.56–9 *Mallow family (Malvaceae).* (a) Kinds of seed: Cotton and okra.

(b) By the end of the germination test a perfectly normal seedling should have a long, well-developed root with root hairs, a long hypocotyl, two attached green leaflike cotyledons, and a small epicotyl.

(1) Normal seedlings include those that have: (i) A well-developed, long, slender root, usually with root hairs; (ii) no primary root but strong secondary roots, provided the hypocotyl is of normal or approximately normal length; (iii) a long, well-developed hypocotyl with no breaks or deep grainy lesions which might interfere with the conducting tissues; (iv) at least one cotyledon and intact epicotyl; (v) slight infection by fungi, provided none of the essential seedling structures have been damaged; or (vi) a yellowish hypocotyl or roots of cotton which may appear diseased, provided the cotyledons are free of infection (the seedcoat must be peeled back on young seedlings to determine this condition of the cotyledons).

(2) Abnormal seedlings include those that have: (i) No root or very stubby roots, usually associated with a shortened hypocotyl; (ii) stubby roots and a thickened hypocotyl resulting from chemical treatment of seed, such as often occurs on delinted cottonseed; (iii) malformed hypocotyl, which may be curled, thickened, or shortened; (iv) deep cracks or grainy lesions on the hypocotyl which appear to interfere with the conducting tissues; (v) epicotyl absent, even though one or both cotyledons are attached; (vi) decayed cotyledons and hypocotyl, provided the decay did not spread from another seed or was not the result of improper test conditions; or (vii) various combinations of the abnormalities, described in this subparagraph.

§ 201.56–10 *Spurge family (Euphorbiaceae).* Kind of seed: Caster bean.

(a) Normal seedlings include those that have: (1) A primary root or a set of secondary or adventitious roots sufficient to anchor the seedling when grown in soil or sand, provided the hypocotyl is not badly shortened; (2) a fairly well-developed hypocotyl with no prominent breaks or stem lesions which might interfere with the conducting tissues; (3) an epicotyl with terminal bud; or (4) slight infection by fungi or bacteria, provided the essential seedling parts have not been seriously damaged and appear to be able to carry on their normal functions at the time of evaluation.

(b) Abnormal seedlings include those that have: (1) No primary root or well-developed adventitious or secondary roots; (2) a malformed stem, which may be characterized by severe open splits, and curled, shortened or thickened hypocotyl; (3) no epicotyl, or an epicotyl without the terminal bud; (4) decay caused by microorganisms carried by the individual seed or seedling being evaluated; or (5) various combinations of the abnormalities described in this subparagraph.

§ 201.56–11 *Miscellaneous plant families.* Kinds of seed by families:

Benne family (Pedaliaceae)—Sesame.
Carrot family (Umbelliferae)—carrot, celery, celeriac, parsley, parsnip.
Dichondra family (Dichondraceae)—Dichondra.
Knotweed family (Polygonaceae)—Buckwheat, sorrel, rhubarb.
Nightshade family (Solanaceae)—Eggplant, pepper, tomato, husk tomato.
Geranium family (Geraniaceae)—Alfilleria.
Hemp family (Cannabiaceae)—Hemp.
Rose family (Rosaceae)—Little burnet.
Valerian family (Valerianaceae)—Cornsalad.

(a) In this group of plant families, normal seedlings include those that have: (1) A well-developed primary root, usually with root hairs; (2) a stubby root or no primary root, provided the secondary root development is strong and the hypocotyl is near normal length as is frequently encountered in tomato seedlings; (3) a long, well-formed hypocotyl, with no prominent breaks or lesions, extending into the conducting tissues; (4) at least one attached cotyledon, provided the epicotyl is intact and the seedling is otherwise normal (a tiny epicotyl may be observed in seedlings left in test for final evaluation); or (5) slight infection by fungi, provided none of the essential seedling structures have been damaged (infection is likely to occur in rhubarb in which case retests may be advisable).

(b) Abnormal seedlings include those that have: (1) A stubby root or no primary root, provided there is weak secondary root development; (2) a malformed hypocotyl, which may be twisted, thickened, or shortened; (3) deep cracks or lesions on the hypocotyl extending into the conducting tissues; (4) both cotyledons, or one cotyledon and epicotyl, broken off; (5) two enlarged cotyledons, but hypocotyl short and usually malformed; (6) decayed cotyledons or hypocotyl, provided they are not the result of improper test conditions; or (7) various combinations of the abnormalities described in this paragraph.

27. In the second sentence of § 201.57 the words "and asparagus" are deleted and the words "cotton and dichondra" are substituted therefor.

28. Following § 201.57 a new section is inserted to read as follows:

§ 201.57a *Dormant seeds; firm ungerminated seeds.* Dormant seeds means seeds, other than hard seeds, which fail to germinate when provided the specific germination conditions for the kind of seed in question. Firm ungerminated seeds means seeds, other than hard seeds, which neither germinate nor decay during the prescribed test period and under the prescribed test conditions.

29. Section 201.58 is amended 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) and (b) are applicable:

(a) *Definitions and explanations applicable to table 2*—(1) *Duration of tests.* The following deviations are permitted from the specified duration of tests: Any test may be terminated prior to the number of days listed under "Final Count" if the germination of the sample has then been determined. The number of days stated for the first count is approximate and a deviation of 1 to 3 days is permitted. (Also, see subparagraph (5) of this paragraph and § 201.57.)

(2) *Light.* When light is required the intensity for nondormant seed may be as low as 25 foot-candles. In the case of dormant seed of grasses such as occur in Agrostis tenuis, Poa compressa, and Lolium multiflorum the light intensity should approximate 100 foot-candles.

(3) *Moisture-on-dry-side.* This term means that the moistened substratum should be pressed against a dry absorbent surface such as a dry paper towel or blotter to remove excess moisture. The moisture content thus obtained should be maintained throughout the germination test period.

(4) *Potassium nitrate* (KNO_3). These terms mean a two-tenths (0.2) percent solution of potassium nitrate (KNO_3) shall be used in moistening the substratum. Such solution is prepared by dissolving 2 grams of KNO_3 in 1,000 ml. of distilled water. The grade of the potassium nitrate shall meet A. C. S. specifications.

(5) *Prechill.* The term "prechill" means to place the seed on, or in, a moist substratum at a specified low temperature for a designated period of time. The prechilling period is not included in the duration of tests given in table 2, unless otherwise specified.

(6) *Predry.* The term "predry" means to place the seed in a shallow layer at a temperature of 35° to 40° C. for a period of 5 to 7 days, with provisions for circulation of the air.

(7) *Substrata (Kinds).* The symbols used for substrata are:

B= between blotters
TB= top of blotters
T= paper toweling, used either as folded towel tests or as roll towel tests in horizontal or vertical position
S= sand or soil
TS= top of sand or soil
P= covered Petri dishes: with two layers of blotters; with one layer of absorbent cotton; with five layers of paper toweling; with three thicknesses of filter paper; or with sand or soil
C= creped cellulose paper wadding (0.3-inch thick Kimpak or equivalent) covered with a single thickness of blotter through which holes are punched for the seed that are pressed for about one-half their thickness into the paper wadding
RB= blotters with raised covers, prepared by folding up the edges of the blotter to form a good support for the upper fold which serves as a cover, preventing the top from making direct contact with the seeds.

(8) *Temperature.* A single numeral indicates a constant temperature. Two numerals separated by a dash indicate an alternation of temperature, the test to be held at the first temperature for approximately 16 hours and at the second temperature for approximately 8 hours per day. If tests are not subjected to alternating temperatures over weekends and on holidays they are to be held at the lower temperature during this time. In cases where two temperatures are indicated (separated by a semicolon) the first temperature shall be regarded as the regular method and the second as an alternate method.

(9) *Toxicity of substrata.* If there is question as to whether a paper substratum is toxic to developing seedlings, check tests should be made on Whatman's No. 2 filter paper or its equivalent. Seeds of celery, celeriac, chicory, dandelion, endive, timothy, and Bermuda grass are particularly sensitive to toxic substrata. If root injury is evident on a substratum moistened with potassium nitrate, retests should be made on a substratum moistened with water or on soil.

(b) *Special procedures and alternate methods for germination referred to in table 2*—(1) *Alyce clover (Alysicarpus vaginalis); Swollen seeds.* At the conclusion of the 21-day test period carefully pierce the seedcoat 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) *Bahia grass (Paspalum notatum); removal of glumes*—(i) *Vars. Common and Argentine.* Remove the glumes with the aid of a sharp scalpel. If the seed is fresh or dormant scratch the surface of the caryopsis lightly and use potassium nitrate.

(ii) *Var. Pensacola.* The glumes shall not be removed for the germination test.

(3) *Beet, Swiss chard (Beta); preparation of seed for test.* Before placing the seeds 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 should be blotted off. Samples producing darkened radicles should be retested in soil or by washing in running water for 3 hours and tested on "Kimpak," keeping the seed covered with slightly moist blotters.

(4) *Buffelgrass (Pennisetum ciliare); alternate method for dormant seed.* The caryopses shall be removed from the fascicles and placed on blotters moistened with a 0.2 percent potassium nitrate solution, 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.

(5) *Cotton (Gossypium spp.); dormant samples.* Samples of cottonseed which do not respond to the usual method should be placed in a closed container with water and shaken until the lint is thoroughly wet. The excess moisture should then be blotted off.

(6) *Endive (Cichorium endivia); dormant samples.* Add about ⅛ inch of tap water at the beginning of the test and remove excess water after 24 hours.

(7) *Lettuce (Lactuca sativa); light exposure.* All samples should be given at least ½ hour of light after being placed on the moist substratum. Additional light during the test period is desirable for dormant samples and facilitates seedling interpretation for samples of low vigor.

(8) *Rescue grass (Bromus catharticus); dormant samples.* Wash for 48 hours in running water, or soak for 48 hours, changing the water and rinsing each morning and night.

(9) *Rice (Oryza sativa); flood test.* The seed is planted in moist sand. On the seventh day of the test add water to a depth of ¼ inch above the sand level and leave for the remainder of the test. Only a final count is made.

(10) *Ryegrass (Lolium); fluorescence test.* The germination test for fluorescence of rye grass shall be conducted in light (not to exceed 100 foot-candles) with white filter paper as a substratum. The test shall be conducted in a manner that will prevent the contact of roots of different seedlings.

(11) *Trifolium, Medicago, Melilotus, and Vicia faba; temperature requirements.* The temperature for Trifolium spp., Medicago spp., Melilotus spp., and Vicia faba should never exceed 20° C. and a temperature of 17° to 18° is desirable.

(c) *Table 2; germination requirements for indicated kinds.*

TABLE 2—GERMINATION REQUIREMENTS FOR INDICATED KINDS

Name of seed	Substrata	Temperature	First count	Final count	Additional directions: Specific requirements and photo numbers	Additional directions: Fresh and dormant seed
Agricultural seed		°C.	*Days*	*Days*		
Alfalfa—Medicago sativa	B, S	20	4	[1] 7	Photos 2481, 2486; see par. (b) (11)	
Alfilaria—Erodium cicutarium	B	20–30	3	14	Clip seeds	
Alyceclover—Alysicarpus vaginalis	B	35	4	[1] 21	See par. (b) (1) for swollen seeds	
Bahiagrass—Paspalum notatum:						
Var. Pensacola	P, S	30–35	7	[2] 28	Light; see par. (b) (2)	
All other vars	P	30–35	3	21	Light; remove glumes; see par. (b) (2).	Scratch caryopses; KNO_3.
Barley—Hordeum vulgare	B, T, S	20; 15	4	7		Prechill 5 days at 5° or 10° C. or predry.
Bean:						
Adzuki—Phaseolus angularis	T, S	20–30	4	[1] 10		
Field—Phaseolus vulgaris	T, S	20–30; 25	5	[1] 8		
Mung—Phaseolus aureus	T, S	20–30	3	[1] 7		
Beet, field—Beta vulgaris	B, S	20–30	3	14	Photos 19557, 19558; see par. (b) (3)	
Beggarweed, Florida—Desmodium tortuosum	B	30	5	[1] 28		
Bentgrass:						
Colonial (including Astoria and Highland)—Agrostis tenuis.	P	15–30; 10–30	7	28	Light; KNO_3	Prechill at 5° or 10° C. for 7 days; see par. (a) (2).
Creeping—Agrostis palustris	P	15–30; 10–30	7	28	Light; KNO_3	Prechill at 5° or 10° C. for 7 days.
Velvet—Agrostis canina	P	20–30	7	21	Light; KNO_3	
Bermuda grass—Cynodon dactylon	P	20–35	7	21	Light; KNO_3, photo 2518; see par. (a) (9).	
Bluegrass:						
Annual—Poa annua	P	20–30	7	21	Light	
Bulbous—Poa bulbosa	P, S	10	10	35	KNO_3 or soil	Prechill all samples at 5° C. for 7 days.
Canada—Poa compressa	P	15–30; 10–30	10	28	Light; KNO_3, see par. (a) (2).	
Kentucky (including var. Merion)—Poa pratensis.	P	15–30; 10–30	10	28	Light; KNO_3	Prechill at 10° C. for 5 days.
Nevada—Poa nevadensis	P	20–30	7	21	Light; KNO_3	
Rough—Poa trivialis	P	20–30	7	21	Light	
Texas—Poa arachnifera	P	20–30	7	28	Light; KNO_3	Prechill at 5° C. for 2 weeks.
Wood—Poa nemoralis	P	20–30	7	28	Light	
Bluestem:						
Big—Andropogon gerardi	P, TS	20–30	7	28	Light; KNO_3	Prechill at 5° C. for 2 weeks
Little—Andropogon scoparius	P, TS	20–30	7	28	do	Do.
Sand—Andropogon hallii	P, TS	20–30	7	28	do	Do.
Yellow—Andropogon ischaemum	P, TS	20–30	5	21	do	Do.
Brome:						
Mountain—Bromus marginatus	P	20–30	6	14	Light	
Smooth—Bromus inermis	P, B, TB	20–30	6	14	Light optional	Prechill at 5° or 10° C. for 7 days.
Broomcorn—Sorghum vulgare var. technicum	B, S	20–30	3	10		
Buckwheat—Fagopyrum esculentum	B, T	20–30	3	6		
Buffalograss—Buchloe dactyloides:						
(Burs)	P, TB, TS	20–35	7	28	Light; KNO_3	Prechill at 5° C. for 6 weeks; test 14 additional days.
(Caryposes)	P	20–35	5	14	Light; KNO_3	
Buffelgrass—Pennisetum ciliare	S	30	7	28	Light; press fascles into well-packed soil and prechill at 5° C. for 7 days.	See par. (b)(4).
Bur-clover, California—Medicago hispida	B, T	20	4	[1] 14	Remove seeds from bur; see par. (b) (11).	
Bur-clover, spotted—Medicago arabica	B, T	20	4	[1] 14	do	
Burnet, little—Sangisorba minor	B	15	5	14		
Buttonclover—Medicago orbicularis	B	20	4	[1] 10	See par. (b) (11)	15° C.
Canarygrass—Phalaris canariensis	B	20–30	3	7		
Canarygrass, reed—Phalaris arundinacea	P	20–30	5	21	Light	KNO_3.
Carpet grass—Axonopus affinis	P	20–35	10	21	Light	KNO_3.
Castorbean—Ricinus communis	T, S	20–30	7	14	Remove caruncle if mold interferes with test.	
Chickpea—Cicer arietinum	T, S	20–30	3	7		
Clover:						
Alsike—Trifolium hybridium	B, S	20	3	[1] 7	See par. (b) (11)	15° C.
Berseem—Trifolium alexandrinum	B, S	20	3	[1] 7	do	Do.
Cluster—Trifolium glomeratum	B	20	4	[1] 10	do	Do.
Crimson—Trifolium incarnatum	B, S	20	4	[1] 7	See par. (b) (11). Photos 2479, 2482	Do.
Ladino—Trifolium repens	B, S	20	3	[1] 7	See par. (b) (11)	Do.
Lappa—Trifolium lappaceum	B	20	3	[1] 7	do	Do.
Large hop—Trifolium procumbens (T. campestre).	B	20	4	[1] 14	do	Do.
Persian—Trifolium resupinatum	B	20	3	[1] 7	do	Do.
Red—Trifolium pratense	B, S	20	4	[1] 7	See par. (b) (11). Photos 2483, 2484	Do.
Rose—Trifolium hirtum	B	20	4	[1] 10	See par. (b) (11)	Do.
Small hop (Suckling)—Trifolium dubium	B	20	4	[1] 14	do	Do.
Strawberry—Trifolium fragiferum	B	20	3	[1] 7	do	Do.
Sub—Trifolium subterraneum	B	20	4	[1] 14	do	Do.
White—Trifolium repens	B, S	20	3	[1] 7	do	Do.
Corn:						
Field—Zea mays	T, S	20–30; 25	4	7	Photos 2510, 2511, 2512, 2514	
Pop—Zea mays var. everta	T, S	20–30; 25	4	7		
Cotton—Gossypium spp	T, S	20–30	4	[1] 12	Photos 19553, 19554	Test by alternate method; see par. (b) (5).
Cowpea—Vigna sinensis	T, S	20–30	5	[1] 8	Photos 1989, 1990, 2377.	
Crested dogtail—Cynosurus cristatus	P	20–30	10	21	Light	Prechill for 3 days at 5° or 10° C.
Crotalaria:						
Lance—Crotalaria lanceolata	B, S	20–30	4	[1] 10		
Showy—Crotalaria spectabilis	B, S	20–30	4	[1] 10	Photos 2496, 2497	
Slenderleaf—Crotalaria intermedia	B, S	20–30	4	[1] 10		
Striped—Crotalaria mucronata	B, S	20–30	4	[1] 10		
Sunn—Crotalaria juncea	B, S	20–30	4	[1] 10		
Dallis grass—Paspalum dilatatum	P	20–35	7	21	Light; KNO_3	
Dichondra—Dichondra repens	B	20–30	7	[1] 28		
Dropseed, sand—Sporobolus cryptandrus	P	15–35	5	42	Light; KNO_3	Prechill at 5° C. for 4 to 8 weeks and test for 28 days.
Emmer—Triticum dicoccum	B, T, S	20, 15	4	7		Prechill at 5° C. or 10° C. for 5 days or predry.

[1] Hard seeds often present. [2] Firm ungerminated seeds frequently present.

TABLE 2—GERMINATION REQUIREMENTS FOR INDICATED KINDS—Continued

Name of seed	Substrata	Temperature	First count	Final count	Additional directions	
					Specific requirements and photo numbers	Fresh and dormant seed
Agricultural seed—Continued						
Fescue:		°C.	*Days*	*Days*		
Chewings—Festuca rubra var. commutata	P	15-25	7	21		
(Alternate method	P	20-30	7	28	Light)	
Hair—Festuca capillata	P	10-25	10	28	KNO_3	
Meadow—Festuca elatior	P	20-30	5	14	Light and KNO_3 optional	
(Alternate method	P	15-25	5	14)		
Red—Festuca rubra	P	15-25	7	21		
(Alternate method	P	20-30	7	28	Light)	
Sheep—Festuca ovina	P	15-25	7	21		
(Alternate method	P	20-30	7	28	Light)	
Tall—Festuca arundinacea	P	20-30	5	14	Light and KNO_3 optional	
(Alternate method	P	15-25	5	14)		
Flax—Linum usitatissimum	B, T, S	20-30	3	7	Photos 2003, 2008, 2485, 2487	
Grama:						
Blue—Bouteloua gracilis	P, TB	20-30	7	28	Light	KNO_3.
Side-oats—Bouteloua curtipendula	P	15-30	7	28	Light; KNO_3	
Guineagrass—Panicum maximum	P	20-30	10	28	Light	
Hardinggrass—Phalaris tuberosa var. stenoptera	P	10-30	7	28	Light	KNO_3.
Hemp—Cannabis sativa	B, T	20-30	3	7		
Indiangrass, yellow—Sorghastrum nutans	P, TS	20-30	7	28	Light; KNO_3	Prechill at 5° C. for 2 weeks.
Indigo, hairy—Indigofera hirsuta	B	20-30	5	[1] 14		
Japanese lawngrass—Zoysia japonica	P	35-20	10	28	Light; KNO_3	
Johnsongrass—Sorghum halepense	P	20-35	7	35	Light	KNO_3.
Kudzu—Pueraria thunbergiana	T	20-30	5	[1] 14		
Lespedeza:						
Korean—Lespedeza stipulacea	B, S	20-35	5	[1] 14		
Sericea or Chinese—Lespedeza cuneata (L. sericea).	B, S	20-35	7	[1] 28	Photo 2494	
Siberian—Lespedeza hedysaroides	B, S	20-35	7	[1] 21		
Striate (Common, Kobe, Tenn. 76)—Lespedeza striata.	B, S	20-35	7	[1] 14		
Lovegrass, sand—Eragrostis trichodes	P	20-35	5	14	Light, KNO_3	Prechill at 5° or 10° C. for 6 weeks.
Lovegrass, weeping—Eragrostis curvula	P	20-35	5	14	Light	KNO_3.
Lupine:						
Blue—Lupinus angustifolius	T, S	20	4	[1] 10	Photos 14535-14542	
White—Lupinus albus	T	20	3	[1] 10		
Yellow—Lupinus luteus	T	20	7	[1] 10		
Manilagrass—Zoysia matrella	P	35-20	10	28	Light; KNO_3	
Meadow foxtail—Alopecurus pratensis	P	20-30	7	14	Light	
Medick, black—Medicago lupulina	B, S	20	4	[1] 7	See par. (b) (11).	
Millet:						
Browntop—Panicum ramosum	B	20-30	4	14	Light; KNO_3	Predry at 35° or 40° C. for 7 days; or test at 30° C.
Foxtail—Such as common, white wonder, German, Hungarian, Siberian, or Golden—Setaria italica.	B	20-30	4	10		
Japanese—Echinochloa crusgalli var. frumentacea.	B	20-30	4	10		
Pearl—Pennisetum glaucum	B	20-30	3	7		
Proso—Panicum miliaceum	B	20-30	3	7		
Molassesgrass—Melinis minutiflora	P	20-30	7	21	Light	
Mustard:						
Black—Brassica nigra	P	20-30	3	7	Light	KNO_3 and prechill at 10° C. for 3 days.
White—Brassica hirta	P	20-30	3	5	Light	
Napiergrass—Pennisetum purpureum	B	20-30	3	10		
Oat—Avena spp	B, T, S.	20; 15	5	10	Photos 2407, 2408, 2524-2527, 19545, 19546.	Prechill at 5° or 10° C. for 5 days and conclude test on 7th day or predry.
Oatgrass, tall—Arrhenatherum elatius	P	20-30	6	14	Light	
Orchardgrass—Dactylis glomerata	P, TS	20-30	7	21	Light; germination more rapid on soil.	
Paniegrass, blue—Panicum antidotale	P, TS	20-30	7	28	Light	
Peanut—Arachis hypogaea	T, S	20-30	5	10	Remove shells; Photos 19541, 19542	Test at 30° C.
Pea, field—Pisum sativum var. arvense	T, S	20	3	[1] 8	Photos 2503, 2506, 14543-14547	
Rape:						
Annual—Brassica napus var. annua	B	20-30	3	7		
Bird—Brassica campestris	P	20-30	3	10	Light	KNO_3.
Turnip—Brassica campestris vars	B	20-30	3	7		
Winter—Brassica napus var. biennis	B	20-30	3	7		
Redtop—Agrostis alba	P, TB	20-30	5	10	Light	KNO_3.
Rescuegrass—Bromus catharticus	P, S	10-30	7	28	Light; see par. (b) (8) for alternate method.	In soil at 15° C.
Rhodesgrass—Chloris gayana	P	20-30	6	14	Light; KNO_3	
Rice—Oryza sativa	T, S	20-30	5	14	Photos 19549, 19550; see par. (b) (9) for alternate method.	
Ricegrass, Indian—Oryzopsis hymenoides	P	15	7	42		Prechill at 5° C. for 4 weeks and test for 21 additional days.
Roughpea—Lathyrus hirsutus	T	20	7	[1] 14		
Rye—Secale cereals	B, T, S	20; 15	4	7	Photos 2403, 2406, 2528-2531	Prechill at 5° or 10° C. for 5 days, or predry.
Ryegrass:						
Italian—Lolium multiflorum	P, TB	20-30; 10-30	5	14	Light; KNO_3; see par. (b) (10) for fluorescence test.	Prechill at 5° C. for 5 days; see par. (a) (2).
Perennial—Lolium perenne	P, TB	20-30; 10-30	5	14	do	Do.
Safflower—Carthamus tinctorius	T, S	20	4	8		
Sainfoin—Onobrychis viciaefolia	B, T	20-30	4	[1] 14		
Sesame—Sesamum indicum	P	20-30	3	6		
Sesbania—Sesbania exaltata	T	20-30	5	[1] 7		
Smilo—Oryzopsis miliacea	P	20-30	7	42	Light	Prechill at 5° C. for 2 weeks.
Sorghum:						
Grain and Sweet—Sorghum vulgare	B, T, S	20-30	4	10	Photos 2413-2416	Prechill at 5° or 10° C. for 5 days.
Sourclover—Melilotus indica	B	20	3	[1] 14	See paragraph (b) (11)	
Soybean—Glycine max	T, S	20-30; 25	5	[1] 8	Photos 2371, 2372, 2378	
Spelt—Triticum spelta	B, T, S	20; 15	4	7		Prechill at 5° or 10° C. for 5 days, or predry.
Sudangrass—Sorghum vulgare var. sudanense	B, T, S	20-30	4	10	Photos 2449-2452	Prechill at 10° C. for 5 days.
Sunflower (Cult.)—Helianthus annuus	T, B	20-30	3	7		
Sweetclover:						
White—Melilotus alba	B, S	20	4	[1] 7	Photos 2374, 2375, 2376, 2381; see par. (b) (11).	
Yellow—Melilotus officinalis	B, S	20	4	[1] 7	do	
Sweet vernalgrass—Anthoxathum odoratum	P	20-30	6	14	Light	
Switchgrass—Panicum virgatum	P, TS	15-30	7	28	Light; KNO_3	Prechill at 5° C. for 2 weeks.

[1] Hard seeds often present.

TABLE 2—GERMINATION REQUIREMENTS FOR INDICATED KINDS—Continued

Name of seed	Substrata	Temperature	First count	Final count	Additional directions: Specific requirements and photo numbers	Additional directions: Fresh and dormant seed
Agricultural seed—Continued		°C.	Days	Days		
Timothy—Phleum pratense	P, TB	20-30	5	10	Light; photo 2399; see par. (a) (9)	KNO_3.
Trefoil:						
Big—Lotus uliginosus (L. major)	B	20	5	[1] 10		
Birdsfoot—Lotus corniculatus	B	20	5	[1] 10	Photos 19531, 19532	
Vaseygrass—Paspalum urvillei	P	20-35	7	21	Light	KNO_3.
Veldtgrass—Ehrharta calycina	P	10-30	7	28	Light	
Velvetbean—Stizolobium deeringianum	T, S, C	20-30	3	[1] 14	Photos 19539, 19540	
Velvetgrass—Holcus lanatus	P	20-30	6	14	Light	
Vetch:						
Common—Vicia sativa	T	20	5	[1] 10		
Hairy—Vicia villosa	T	20	5	[1] 14		
Hungarian—Vicia pannonica	T	20	5	[1] 10		
Monantha—Vicia articulata (V. monantha)	T	20	5	[1] 10		
Narrowleaf—Vicia angustifolia	T	20	5	[1] 14		
Purple—Vicia atropurpurea	T	20	5	[1] 10		
Woollypod—Vicia dasycarpa	T	20	5	[1] 14		Prechill at 10° C. for 5 days and test at 15° C.
Wheat:						
Common—Triticum aestivum	B, T, S	20;15	4	7	Photos 2507, 2522	Prechill at 5° or 10° C. for 5 days, or predry.
Club—Triticum compactum	B, T, S	20;15	4	7	do	Do.
Durum—Triticum durum	B, T, S	20;15	4	10	do	Do.
Polish—Triticum polonicum	B, T, S	20;15	4	7	do	Do.
Poulard—Triticum turgidum	B, T, S	20;15	4	7	do	Do.
Wheatgrass:						
Fairway crested—Agropyron cristatum	P, TB	20-30	5	14	Light optional	KNO_3 and prechill at 5° or 10° C. for 7 days.
(Alternate method	P, TB	15-25	5	14	do	
Standard crested—Agropyron desertorum	P, TB	20-30	5	14	do	KNO_3 and prechill at 5° or 10° C. for 7 days.
(Alternate method	P, TB	15-25	5	14	do	
Intermediate—Agropyron intermedium	P	20-30	5	28	Light	
Pubescent—Agropyron tricophorum	P	20-30	5	28	do	
Slender—Agropyron trachycaulum	P, TB	20-30	5	14	do	
Tall—Agropyron elongatum	P	20-30	5	21	do	
Western—Agropyron smithii	P, B	15-30	7	28	Light optional	KNO_3 or soil.
Wild rye:						
Canada—Elymus canadensis	P	15-30	7	21	Light	Prechill at 5° C. for 2 weeks.
Russian—Elymus junceus	P	20-30	5	14		
Vegetable seed						
Artichoke—Cynara scolymus	T	20-30	7	21	Photos 19533, 19534	
Asparagus—Asparagus officinalis	T, S	20-30	7	21		
Asparagusbean—Vigna sesquipedalis	T, S	20-30	5	[1] 8		
Beans:						
Garden—Phaseolus vulgaris	T, S	20-30;25	5	[1] 8	Photos 1834, 1835, 1846, 1854, 1855	
Lima—Phaseolus lunatus var. macrocarpus	T, C, S	20-30	5	[1] 9	Photos 2380, 2400, 2401	
Runner—Phaseolus coccineus	T, S	20-30	5	[1] 9		
Beet—Beta vulgaris	B, S	20-30	3	14	See par. (b) (3); photos 19557, 19558	
Broadbean—Vicia faba	S, C	20	4	14	See para. (b) (11)	Prechill at 10° C. for 3 days.
Broccoli—Brassica oleracea var. botrytis	B, P	20-30	3	10		Prechill at 5° or 10° C. for 3 days; KNO_3 and light.
Brussels sprouts—Brassica oleracea var. gessifera	B, P	20-30	3	10		Do.
Cabbage—Brassica oleracea var. capitata	B, P	20-30	3	10	Photos 19551, 19552	Do.
Cabbage, Chinese—Brassica pekinensis	B	20-30	3	7		
Cardoon—Cynara cardunculus	T	20-30	7	21	Photos 19547, 19548	
Carrot—Daucus carota	B	20-30	6	21	Photo 19561	
Cauliflower—Brassica oleracea var. botrytis	B, P	20-30	3	10		Prechill at 5° or 10° C. for 3 days; KNO_3 and light.
Celeriac—Apium graveolens var. rapaceum	P, TB	10-20;20	10	21	Light at 20° C. constant; see par. (a) (9).	
Celery—Apium graveolens var. dulce	P, TB	10-20;20	10	21	do	KNO_3 and prechill at 10° C. for 3 days.
Chard, Swiss—Beta vulgaris var. cicla	B, S	20-30	3	14	See par. (b) (3)	
Chicory—Cichorium intybus	P, TS	20-30	5	14	Light; KNO_3 or soil; photo 2504; see par. (a) (9).	
Citron—Citrullus vulgaris	T	20-30	7	14	Soak seeds 6 hours	Test at 30° C.
Collards—Brassica oleracea var. acephala	B, P	20-30	3	10		Prechill at 5° or 10° C. for 3 days; KNO_3 and light.
Corn, sweet—Zea mays	T, S	20-30; 25	4	7	Photos 2510-2512, 2514	
Cornsalad (Fetticus)—Valerianella locusta var. olitoria.	B	20	7	28		Test at 10° or 15° C.
Cowpea—Vigna sinensis	T, S	20-30	5	[1] 8	Photos 1989, 1990, 2377	
Cress:						
Garden—Lepidium sativum	B, P	20	4	10		Test at 15° C. and light.
Water—Rorippa nasturtium-aquaticum	P	20-30	4	14	Light	
Cucumber—Cucumis sativus	B, T, S	20-30	3	7	Keep substratum on dry side; see par. (a) (3); photos 19535, 19536.	
Dandelion—Taraxacum officinale	P, TB	20-30	7	21	Light; see par. (a) (9)	
Eggplant—Solanum melongena var. esculentum	P, TB, RB	20-30	7	14		Light; KNO_3.
Endive—Cichorium endivia	P, TS	20-30	5	14	Light; KNO_3 or soil	See pars. (a) (9) and (b) (6).
Kale—Brassica oleracea var. acephala	B, P	20-30	3	10		Prechill at 5° or 10° C. for 3 days; KNO_3 and light.
Kale, Chinese—Brassica oleracea var. alboglabra	P, B	20-30	3	10		Light; KNO_3; Prechill at 5° or 10° C. for 3 days.
Kohlrabi—Brassica oleracea var. gongylodes	B, P	20-30	3	10		Prechill at 5° or 10° C. for 3 days; KNO_3 and light.
Leek—Allium porrum	B	20	6	14		
Lettuce—Lactuca sativa	P	20	none	7	Light for at least ½ hour [par. (b) (7)]; photos 2417, 2418, 19559, 19560.	Prechill at 10° C. for 3 days or test at 15° C.
Muskmelon (cantaloup)—Cucumis melo	B, T, S	20-30	4	10	Keep substratum on dry side [par. (a) (3)].	
Mustard—Brassica juncea	P	20-30	3	7	Light	Prechill at 10° C. for 7 days and test for 5 additional days; KNO_3.
Mustard, spinach—Brassica perviridis	B	20-30	3	7		
Okra—Hibiscus esculentus	T	20-30	4	[1] 14	Photos 19543, 19544	
Onion—Allium cepa	B	20	6	10	Photos 1962, 2253, 2254, 2328, 2330, 2340, 2341, 2469.	
(Alternate method	S	20	6	12)		
Onion, Welsh—Allium fistulosum	B	20	6	10		
Pak-choi—Brassica chinensis	B	20-30	3	7		
Parsley—Petroselinum hortense (P. crispum)	B, TS	20-30	11	28		

[1] Hard seeds often present.

TABLE 2—GERMINATION REQUIREMENTS FOR INDICATED KINDS—Continued

Name of seed	Substrata	Temperature	First count	Final count	Additional directions: Specific requirements and photo numbers	Additional directions: Fresh and dormant seed
Vegetable seed—Continued		°C.	*Days*	*Days*		
Parsnip—Pastinaca sativa	B, TS	20-30	6	28		
Pea—Pisum sativum	T, S	20	5	[1] 8	Photos 2492, 2498-2500	
Pepper—Capsicum spp	P, TB, RB	20-30	6	14		Light and KNO_3.
Pumpkin—Cucurbita pepo	T, S	20-30	4	7	Keep substratum on dry side [par. (a) (3)].	
Radish—Raphanus sativus	B	20	4	6	Photos 2554, 19555, 19556	
Rhubarb—Rheum rhaponticum	TB, TS	20-30	7	21	Light	
Rutabaga—Brassica napus var. napobrassica	B	20-30	3	14		
Salsify—Tragopogon porrifolius	T	20	5	10		Prechill at 10° C. for 3 days. Test at 15° C.
Sorrel—Rumex acetosa	P, TB, TS	20-30	3	14	Light	
Soybean—Glycine max	T, S	20-30; 25	5	[1] 8	Photos 2371, 2372, 2378	
Spinach—Spinacia oleracea	TB	15; 10	7	21	Keep substratum on dry side [par. (a)(3)].	
Spinach, New Zealand—Tetragonia expansa	TS	10-30	5	28	Keep substratum on dry side [par. (a) (3)].	
(Alternate method	B	15	5	21	Remove pulp from "seeds").	
Squash—Cucurbita moschata and C. maxima	T, S	20-30	4	7	Keep substratum on dry side [par. (a)(3)]; photos 19537, 19538.	
Tomato—Lycopersicon esculentum	B, P, RB	20-30	5	14	Photo 2513	Light; KNO_3.
Tomato, husk—Physalis pubescens	P, TB	20-30	7	28	Light; KNO_3	
Turnip—Brassica rapa	B	20-30	3	7		
Watermelon—Citrullus vulgaris	T, S	20-30; 15	4	14	Keep substratum on dry side [par. (a)(3)].	Test at 30° C.

[1] Hard seeds often present.

30. Section 201.65 is renumbered as § 201.58a and amended as follows:

a. In the formula for "percent perennial ryegrass" in paragraph (a), "percent fluorescence + percent nonfluorescence" is deleted and "percent germination" is substituted therefor.

b. Paragraph (b) is amended to read:

(b) *Sweetclover.* In determining the percentage of yellow blossom biennial sweetclover in a mixture of yellow and white blossom biennial sweetclover, at least 400 seeds shall be examined to determine the percentage of mottled seed. The percentage of mottled seed shall be multiplied by four and this product multiplied by the percentage of sweetclover in the sample. The product shall be construed as representing the percentage of yellow blossom sweetclover.

31. Section 201.66 is renumbered as § 201.58b.

32. In § 201.59 the first two words in the first sentence, and the entire second sentence, are deleted, and the following is added to the section: "Tolerances for purity percentages and germination percentages provided for in §§ 201.60 and 201.61 shall be determined from the mean of (a) the results being compared, or (b) the result found by test and the figures shown on a label, or (c) the result found by test and a standard. All other tolerances, including tolerances for pure-live seed, tolerances for pure seed based on 400- to 1000-seed tests, and tolerances for field and greenhouse tests for determination of kind, variety, or type shall be determined from the result or results found in the administration of the act."

33. Section 201.60 is amended as follows:

a. The first sentence in the second undesignated paragraph is amended to read: "An additional tolerance shall be allowed for the following kinds of seeds (a) when any one kind constitutes the principal component of the sample, (b) in mixtures containing these kinds, singly or combined, in excess of 50 percent of the whole, and (c) in mixed and unmixed seeds wherein the chaffy seed plus the empty florets and/or spikelets exceed 50 percent of the sample."

b. The following are added to the list of subject kinds of seed: "Buffelgrass, Hairy intermediate wheatgrass, Intermediate wheatgrass, Tall wheatgrass, and Veldtgrass."

34. Section 201.64a is renumbered as § 201.61, and the section heading and the first sentence are amended to read as follows:

§ 201.61 *Pure seed percentages based on 400- to 1000-seed tests.* Tolerances for pure seed percentages based on 400- to 1000-seed separations and fluorescence tests shall be: (a) Those set forth in the following table plus (b) one-half the regular pure seed tolerances determined in accordance with § 201.60. The sum of these two tolerances shall be applied to the result or results obtained in the administration of the act.

[Tolerance]

Percentage purity found by test [1]	Number of plants— 50-74	75-99	100-149	150-199	200-249	250-299	300-349	350-399	400-799	800 or more
	Tolerance in percent									
95-100	10.0	9.5	8.5	8.0	7.5	7.0	6.5	6.0	5.5	5.0
90-94	10.5	10.0	9.0	8.5	8.0	7.5	7.0	6.5	6.0	5.5
85-89	11.0	10.5	9.5	9.0	8.5	8.0	7.5	7.0	6.5	6.0
80-84	11.5	11.0	10.0	9.5	9.0	8.5	8.0	7.5	7.0	6.5
75-79	12.0	11.5	10.5	10.0	9.5	9.0	8.5	8.0	7.5	7.0
70-74	12.5	12.0	11.0	10.5	10.0	9.5	9.0	8.5	8.0	7.5
65-69	13.0	12.5	11.5	11.0	10.5	10.0	9.5	9.0	8.5	8.0
60-64	13.5	13.0	12.0	11.5	11.0	10.5	10.0	9.5	9.0	8.5
55-59	14.0	13.5	12.5	12.0	11.5	11.0	10.5	10.0	9.5	9.0
50-54	14.5	14.0	13.0	12.5	12.0	11.5	11.0	10.5	10.0	9.5

[1] The tolerance for any value below 50 percent is the tolerance on the difference between 100 percent and the figure for which the tolerance is being determined. Thus, the tolerance on 45 percent for 400 plants would be: 100−45=55; tolerance equals 9.5 percent.

35. A new § 201.62 is added to read as follows:

§ 201.62 *Field and greenhouse tests for determination of kind, variety, or type.* The following table of tolerances shall be used for field and greenhouse tests for determination of kind and variety:

36. Section 201.61 is renumbered as § 201.63; and the heading "Found by test" therein is deleted, and the following is substituted therefor: "Mean (See § 201.59)"

37. Present §§ 201.62, 201.63, and 201.64 are renumbered as §§ 201.64, 201.65, and 201.66, respectively.

38. In the list in § 201.101 the following are inserted in the proper alphabetical order:

Castorbean.
Lettuce.
Rape, winter.
Safflower.
Sesame.

39. Section 201.102 is amended by adding to the tabulation in proper alphabetical order the following names and percentages:

Bluestem, yellow	25
Buffelgrass	50
Lovegrass, sand	50
Veldtgrass	35
Wild-rye, Russian	60

40. Section 201.107 is amended as follows:

a. In paragraph (a) "Piperaceae—Pepper" is added to the list of plant families in proper alphabetical order.

b. In paragraph (b) the following are added to the list of incidental weed seeds in proper alphabetical order:

Alfilleria—Erodium cicutarium (L.) L'Her.
Beggarweed—Desmodium tortuosum (Sev.) DC.
Bluegrass, annual—Poa, annua L.
Burnet, little—Sanguisorba minor Scop.
Dichondra—Dichondra repens Forst.
Sesbania—Sesbania exaltata (Raf.) Torr.

[F. R. Doc. 55-8446; Filed, Oct. 20, 1955; 8:45 a. m.]

TITLE 8—ALIENS AND NATIONALITY

Chapter II—Office of Alien Property, Department of Justice

PART 505—SPECIFIC PROHIBITIONS

REGULATION RESTRICTING TRANSFER OF SHARES OF STOCK VESTED AND SOLD BY OFFICE OF ALIEN PROPERTY

Section 505.10 of the Rules of the Office of Alien Property provides that certain corporations in which stock has been vested pursuant to the Trading With the Enemy Act, as amended (50 U. S. C. App. 1 et seq.), may be designated "key corporations" and that the vested stock, after sale thereof by the Attorney General, may be owned or held only by American nationals as there defined. Section 505.10 (g) provides that key corporations shall report at least annually to this Office the names and addresses of the record holders of the vested stock. It has been found that annual reporting is not necessary to enforce the provisions of § 505.10, that the other provisions of § 505.10 (g) requiring key corporations and record holders to submit information on ownership on request are adequate and that § 505.10 (g) should be amended to conform to such findings. It is hereby found that the following amendment will relieve existing reporting requirements and that notice, hearing and suspension of applicability are unnecessary. Accordingly, § 505.10 (g) is hereby amended to read as follows:

§ 505.10 *Regulation restricting the transfer of shares of stock vested, and sold by the Office of Alien Property.* * * *

(g) Each key corporation shall, when requested by the Director, Office of Alien Property, furnish to the Director, Office of Alien Property, a list of the names and addresses of the holders of record of its outstanding vested stock. Whenever requested by the Director, Office of Alien Property, each holder of record of vested stock shall furnish to the Director, Office of Alien Property, the name and address of the beneficial owner or owners of the stock so held of record by such person.

(Sec. 5, 40 Stat. 415, as amended; 50 U. S. C. App. 5. E. O. 9193, 7 F. R. 5205; 3 CFR, 1943 Cum. Supp.)

Executed at Washington, D. C., on October 14, 1955.

[SEAL] DALLAS S. TOWNSEND,
Assistant Attorney General, Director, Office of Alien Property.

[F. R. Doc. 55-8525; Filed, Oct. 20, 1955; 8:47 a. m.]

TITLE 16—COMMERCIAL PRACTICES

Chapter I—Federal Trade Commission

[Docket 6381]

PART 13—DIGEST OF CEASE AND DESIST ORDERS

WALDBAUM, CIPES, INC., ET AL.

Subpart—*Importing, selling, or transporting flammable wear:* [1] § 13.1057 *Importing, selling, or transporting flammable wear.*[1] Directly or through any corporate or other device: (1) (a) Importing into the United States; or (b) selling, offering for sale, introducing, delivering for introduction, transporting or causing to be transported, in commerce, as "commerce" is defined in the Flammable Fabrics Act; or (c) transporting or causing to be transported, for the purpose of sale or delivery after sale in commerce; any article of wearing apparel, which, under the provisions of section 4 of the said Flammable Fabrics Act, as amended, is so highly flammable as to be dangerous when worn by individuals; prohibited.

(Sec. 6, 38 Stat. 721; 15 U. S. C. 46. Interprets or applies sec. 5, 38 Stat. 719, as amended, 67 Stat. 111; 15 U. S. C. 45, 1191) [Cease and desist order, Waldbaum, Cipes, Inc., et al., New York, N. Y., Docket 6381, September 20, 1955]

In the Matter of Waldbaum, Cipes, Inc., a Corporation, and Jay Cipes and Sidney Waldbaum, Individually and as Officers of Said Corporation

This proceeding was heard by John Lewis, hearing examiner, upon the complaint of the Commission which charged respondents with having violated the Flammable Fabrics Act and the rules and regulations issued thereunder, and the Federal Trade Commission Act, through importing into the United States, selling, and transporting flammable silk scarves manufactured in Japan; and a consent order entered into by respondents disposing of all the issues in the proceeding without hearing.

Respondents, pursuant to aforesaid agreement, admitted all the jurisdictional allegations of the complaint and agreed that the record might be taken as if findings of facts had been duly made in accordance with such allegations; waived all further procedural steps before the hearing examiner or the Commission, including the making of findings of fact or conclusions of law and the right to challenge or contest the validity of the order to cease and desist entered into in accordance therewith; agreed that the record in the proceeding consisted solely of the complaint and said agreement, and that said agreement was for settlement purposes only and did not constitute an admission by respondents that they had violated the law as alleged.

Thereafter, the proceeding having come on for final consideration by the hearing examiner on the complaint and the aforesaid agreement, said hearing examiner made his initial decision in which he set forth the aforesaid matters; his conclusion that said agreement provided for an appropriate disposition of the proceeding; his acceptance of the agreement which he ordered filed as part of the record; his findings that the Federal Trade Commission had jurisdiction of the subject matter and the respondents hereinabove named, that the complaint stated a cause of action against respondents under the Flammable Fabrics Act and the Federal Trade Commission Act, and that the proceeding was in the public interest; and in which he set forth his order to cease and desist.

Thereafter said initial decision, including said order, as announced and decreed by "Decision of the Commission and Order to File Report of Compliance", dated September 20, 1955, became, on said date, pursuant to § 3.21 of the Commission's rules of practice, the decision of the Commission.

Said order to cease and desist is as follows:

It is ordered, That the respondent Waldbaum, Cipes, Inc., a corporation, and Jay Cipes and Sidney Waldbaum, individually and as officers of the said corporation, and respondents' representatives, agents, and employees, directly or through any corporate or other device, do forthwith cease and desist from: (a) Importing into the United States; or (b) selling, offering for sale, introducing, delivering for introduction, transporting or causing to be transported, in commerce, as "commerce" is defined in the Flammable Fabrics Act; or (c) transporting or causing to be transported, for the purpose of sale or delivery after sale in commerce; any article of wearing apparel, which, under the provisions of Section 4 of the said Flammable Fabrics Act, as amended, is so highly flammable as to be dangerous when worn by individuals.

By said "Decision of the Commission", etc., report of compliance was required as follows:

It is ordered, That the respondents herein shall, within sixty (60) days after service upon them of this order, file with the Commission a report in writing setting forth in detail the manner and form in which they have complied with the order to cease and desist.

Issued: September 20, 1955.

By the Commission.

[SEAL] JOHN R. HEIM,
Acting Secretary.

[F. R. Doc. 55-8514; Filed, Oct. 20, 1955; 8:45 a. m.]

[Docket 6309]

PART 13—DIGEST OF CEASE AND DESIST ORDERS

BENEFICIAL STANDARD LIFE INSURANCE CO.

Subpart—*Advertising falsely or misleadingly:* § 13.260 *Terms and conditions;* § 13.275 *Undertakings, in general.* Subpart— *Offering unfair, improper and deceptive inducements to purchase or deal:* § 13.2080 *Terms and conditions;* § 13.2090

[1] New.

Undertakings, in general. In connection with the offering for sale, sale, and distribution in commerce, of any accident, health, hospital, or surgical insurance policy, representing, directly or by implication: (1) That said insurance policy may be continued in effect indefinitely or for any period of time, when, in fact, said policy provides that it may be cancelled by respondent or terminated under any circumstances over which insured has no control, during the period of time represented; (2) that no medical examination is required or that applicant's health is not a factor in securing insurance, unless the representation is clearly and conspicuously limited in immediate connection therewith to insurance on claims not caused by previous conditions of health of the insured; (3) that said policy provides for indemnification to insured in cases of sickness or accident generally or in any or all cases of sickness or accident, when such is not the fact; (4) that said policy provides a monthly or other cash benefit to insured, when disabled by sickness or accident, for a longer period of time or in a larger amount than is in fact provided; (5) that said policy provides for the payment of certain benefits in addition to other benefits when such is not the fact; (6) that said policy will pay in full or in any specified amount or will pay up to any specified amount for any medical, surgical, or hospital service unless the policy provides that the actual cost to the insured for that service will be paid in all cases up to the amount represented; and (7) that said policy provides indemnification for losses caused by accident or sickness immediately upon the effective date of said policy when such is not the fact; prohibited.

(Sec. 6, 38 Stat. 721; 15 U. S. C. 46. Interpret or apply sec. 5, 38 Stat. 719, as amended; 15 U. S. C. 45) [Cease and desist order, Beneficial Standard Life Insurance Company, Los Angeles, Calif., Docket 6309, September 29, 1955]

This proceeding was heard by J. Earl Cox, hearing examiner, upon the complaint of the Commission which charged respondent with violation of the Federal Trade Commission Act by falsely and deceptively advertising the indemnification for losses resulting from accident or injury and sickness, provided by insurance policies which it issued; and upon a Stipulation for Consent Order entered into between respondent and counsel supporting the complaint, which was approved by the Director, Bureau of Litigation.

Said stipulation provided, among other things, that respondent admitted all the jurisdictional allegations set forth in the complaint and that the record therein might be taken as if findings of jurisdictional facts had been made in accordance with such allegations; that the stipulation, together with the complaint, should constitute the entire record in the matter; that the complaint might be used in construing the order agreed upon, which might be altered, modified, or set aside in the manner provided by statute for orders of the Commission; that the signing of the stipulation was for settlement purposes only and did not constitute an admission by respondent that it had violated the law as alleged; and that the order provided for in the stipulation and included in the decision should have the same force and effect as if made after a full hearing, presentation of evidence and findings and conclusions thereon.

All parties further waived the filing of answer, hearing before a hearing examiner or the Commission, the making of findings of fact or conclusions of law by the hearing examiner or the Commission, the filing of exceptions and oral argument before the Commission, and all other procedure before the hearing examiner and the Commission to which respondent might be entitled under the Federal Trade Commission Act and the Rules of Practice of the Commission, including any and all right, power, or privilege to challenge or contest the validity of the order entered in accordance with the stipulation.

Thereafter said hearing examiner made his initial decision in which he set forth the aforesaid matters, found that the order agreed upon conformed to that contained in the "Notice" portion of the complaint, except for the omission therefrom of the provision "(B) Misrepresenting in any other manner or by any other means the terms or provisions of said insurance policies", and disposed of all the issues raised in the complaint, accordingly accepted the Stipulation for Consent Order, found the proceeding to be in the public interest, and issued his order to cease and desist.

Thereafter said initial decision, including said order, as announced and decreed by "Decision of the Commission and Order to File Report of Compliance", dated September 23, 1955, became, on September 29, 1955, pursuant to § 3.21 of the Commission's rules of practice, the decision of the Commission.

Said order to cease and desist is as follows:

It is ordered, That the Beneficial Standard Life Insurance Company, a corporation, and its officers, agents, representatives, and employees, directly or through any corporate or other device, in connection with the offering for sale, sale and distribution in commerce, as "commerce" is defined in the Federal Trade Commission Act, of any accident, health, hospital or surgical insurance policy, do forthwith cease and desist from representing, directly or by implication:

1. That said insurance policy may be continued in effect indefinitely or for any period of time, when, in fact, said policy provides that it may be cancelled by respondent or terminated under any circumstances over which insured has no control, during the period of time represented;

2. That no medical examination is required or that applicant's health is not a factor in securing insurance, unless the representation is clearly and conspicuously limited in immediate connection therewith to insurance on claims not caused by previous conditions of health of the insured;

3. That said policy provides for indemnification to insured in cases of sickness or accident generally or in any or all cases of sickness or accident, when such is not the fact;

4. That said policy provides a monthly or other cash benefit to insured, when disabled by sickness or accident, for a longer period of time or in a larger amount than is in fact provided;

5. That said policy provides for the payment of certain benefits in addition to other benefits when such is not the fact;

6. That said policy will pay in full or in any specified amount or will pay up to any specified amount for any medical, surgical or hospital service unless the policy provides that the actual cost to the insured for that service will be paid in all cases up to the amount represented;

7. That said policy provides indemnification for losses caused by accident or sickness immediately upon the effective date of said policy when such is not the fact.

By said "Decision of the Commission", etc., report of compliance was required as follows:

It is ordered, That respondent Beneficial Standard Life Insurance Company, a corporation, shall, within sixty (60) days after service upon it of this order, file with the Commission a report in writing setting forth in detail the manner and form in which it has complied with the order to cease and desist.

Issued: September 23, 1955.

By the Commission.

[SEAL] JOHN R. HEIM, *Acting Secretary.*

[F. R. Doc. 55-8515; Filed, Oct. 20, 1955; 8:45 a. m.]

[Docket 6284]

PART 13—DIGEST OF CEASE AND DESIST ORDERS

DUMAS OF CALIFORNIA, INC., AND HERBERT BASS

Subpart—*Misbranding or mislabeling:* § 13.1190 *Composition: Wool Products Labeling Act:* § 13.1325 *Source or origin:* Maker or seller, etc.: *Wool Products Labeling Act.* Subpart—*Neglecting, unfairly or deceptively, to make material disclosure:* § 13.1845 *Composition:* Wool Products Labeling Act: § 13.1900 *Source or origin:* Wool Products Labeling Act. In connection with the introduction or manufacture for introduction into commerce, or the offering for sale, sale, transportation, or distribution in commerce, of ladies' coats or other "wool products", which contain, purport to contain, or in any manner are represented as containing "wool", "reprocessed wool", or "reused wool", misbranding said products by: 1. Falsely or deceptively stamping, tagging, labeling, or otherwise identifying such products as to the character or amount of the constituent fibers included therein; 2. Failing to securely affix to or place on each such product a stamp, tag, label, or other means of identification showing in a clear and conspicuous manner: (a)