

**Agricultural Marketing Service, USDA**

**§ 201.59**

**§ 201.58c Detection of captan, mercury, or thiram on seed.**

The bioassay method may be used according to the procedure given in Association of Official Seed Analysts, Handbook No. 26, "Microbiological Assay of Fungicide-treated Seeds", May 1964.

[38 FR 12733, May 15, 1973]

**§ 201.58d Fungal endophyte test.**

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

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

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

(2) Prepare the endophyte staining solution of one part of 1 percent aniline blue solution with 2 parts of 85 percent lactic acid (C<sub>3</sub> H<sub>6</sub> O<sub>3</sub>).

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

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

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

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

(3) Rinse thoroughly in running tap water.

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

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

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

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

(c) Procedure for determining levels of fungal endophyte in seedlings from

seed samples suspected to contain fungal endophyte:

(1) Select seeds at random and germinate.

(2) Examine seedlings from the sample germinated after growing for a minimum of 48 days.

(3) Remove the outermost sheath from the seedling. Tissue should have no obvious discoloration from saprophytes and should have as little chlorophyll as possible.

(4) Isolate a longitudinal section of leaf sheath approximately 3-5 mm in width.

(5) Place the section on a microscope slide with the epidermis side down.

(6) Stain immediately with the endophyte staining solution as prepared in paragraph (a) (2) and (3) of this section. Allow dye to remain at least 15 seconds but no more than one minute.

(7) Blot off the excess dye with tissue paper. Sections should remain on the slide, but may adhere to the tissue paper; if so, remove and place in proper position on the slide.

(8) Place a coverglass on the sections and flood with water.

(9) Proceed with evaluation as described in paragraph (b) (6) and (7) of this section.

[59 FR 64515, Dec. 14, 1994]

**TOLERANCES**

**§ 201.59 Application.**

Tolerances shall be recognized between the percentages or rates of occurrence found by analysis, test, or examination in the administration of the act and percentages or rates of occurrence required or stated as required by the act. Tolerances for purity percentages and germination percentages provided for in §§ 201.60 and 201.63 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 and fluorescence, and tolerances for purity based on 10 to 1,000 seeds, seedlings, or plants shall be

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determined from the result or results found in the administration of the Act.

[5 FR 34, Jan. 4, 1940, as amended at 20 FR 7940, Oct. 21, 1955; 24 FR 3954, May 15, 1959; 35 FR 6108, Apr. 15, 1970]

§ 201.60 Purity percentages.

(a)(1) The tolerance for a given percentage of the purity components is the same whether for pure seed, other crop seed, weed seed, or inert matter. Wider tolerances are provided when 33 percent or more of the sample is composed of seed plus empty florets and/or empty spikelets of the following chaffy kinds: bentgrasses, bermudagrasses, bluegrasses, bluestems, bottlebrush-squirreltail, bromes, buffalograss, buffelgrass, carpetgrass, soft chess, dallisgrass, fescues, foxtails, galletagrass, guineagrass, gramas, molassesgrass, tall oatgrass, orchardgrass, redtop, rescuegrass, rhodesgrass, Indian ricegrass, ryegrasses, sweet vernalgrass, vaseygrass, veldtgrass, wheatgrasses, wildryes, and yellow indiagrass. The wider tolerances do not apply to seed devoid of hulls.

(2) To determine the tolerance for any purity percentage found in the administration of the act, the percentage found is averaged (i) with that claimed or shown on a label or (ii) with a specified standard. The tolerance is found from this average. If more than one test is made, all except any test obviously in error shall be averaged and the result treated as a single percentage.

(b) The tolerances found in columns C and D for the respective purity percentages shown in columns A and B of table No. 3 shall be used for (1) unmixed seed and (2) mixtures in which the particle-weight ratio is 1:1 to 1.49:1, inclusive. Tolerances for intermediate percentages not shown in table 3 shall be obtained by interpolation.

TABLE 3—TOLERANCES FOR ANY COMPONENT OF A PURITY ANALYSIS FOR (1) UNMIXED SEED OR (2) MIXED SEED IN WHICH THE PARTICLE WEIGHT RATIO IS 1: 1 TO 1.49: 1, INCLUSIVE

Average analysis (A)	(B)	Nonchaffy seeds (C)	Chaffy seeds (D)
99.95–100.00 .....	0.00–0.04	0.13	0.16
99.90–99.94 .....	.05–.09	.20	.23
99.85–99.89 .....	.10–.14	.24	.29

TABLE 3—TOLERANCES FOR ANY COMPONENT OF A PURITY ANALYSIS FOR (1) UNMIXED SEED OR (2) MIXED SEED IN WHICH THE PARTICLE WEIGHT RATIO IS 1: 1 TO 1.49: 1, INCLUSIVE—Continued

Average analysis (A)	(B)	Nonchaffy seeds (C)	Chaffy seeds (D)
99.80–99.84 .....	.15–.19	.28	.34
99.75–99.79 .....	.20–.24	.32	.37
99.70–99.74 .....	.25–.29	.35	.41
99.65–99.69 .....	.30–.34	.37	.45
99.60–99.64 .....	.35–.39	.40	.48
99.55–99.59 .....	.40–.44	.42	.50
99.50–99.54 .....	.45–.49	.44	.53
99.40–99.49 .....	.50–.59	.47	.57
99.30–99.39 .....	.60–.69	.51	.60
99.20–99.29 .....	.70–.79	.54	.64
99.10–99.19 .....	.80–.89	.57	.66
99.00–99.09 .....	.90–.99	.59	.70
98.75–98.99 .....	1.00–1.24	.64	.75
98.50–98.74 .....	1.25–1.49	.71	.82
98.25–98.49 .....	1.50–1.74	.76	.89
98.00–98.24 .....	1.75–1.99	.82	.95
97.75–97.99 .....	2.00–2.24	.87	1.01
97.50–97.74 .....	2.25–2.49	.92	1.07
97.25–97.49 .....	2.50–2.74	.96	1.12
97.00–97.24 .....	2.75–2.99	1.00	1.17
96.50–96.99 .....	3.00–3.49	1.06	1.24
96.00–96.49 .....	3.50–3.99	1.14	1.34
95.50–95.99 .....	4.00–4.49	1.21	1.41
95.00–95.49 .....	4.50–4.99	1.27	1.49
94.00–94.99 .....	5.00–5.99	1.36	1.60
93.00–93.99 .....	6.00–6.99	1.47	1.73
92.00–92.99 .....	7.00–7.99	1.58	1.85
91.00–91.99 .....	8.00–8.99	1.67	1.96
90.00–90.99 .....	9.00–9.99	1.75	2.06
88.00–89.99 .....	10.00–11.99	1.87	2.19
86.00–87.99 .....	12.00–13.99	2.01	2.36
84.00–85.99 .....	14.00–15.99	2.14	2.51
82.00–83.99 .....	16.00–17.99	2.24	2.64
80.00–81.99 .....	18.00–19.99	2.35	2.76
78.00–79.99 .....	20.00–21.99	2.44	2.86
76.00–77.99 .....	22.00–23.99	2.52	2.96
74.00–75.99 .....	24.00–25.99	2.59	3.04
72.00–73.99 .....	26.00–27.99	2.65	3.12
70.00–71.99 .....	28.00–29.99	2.71	3.19
65.00–69.99 .....	30.00–34.99	2.80	3.29
60.00–64.99 .....	35.00–39.99	2.89	3.40
50.00–59.99 .....	40.00–49.99	2.96	3.48

(c) Tolerances calculated by the following formula shall be used for either chaffy or nonchaffy mixtures when the average particle-weight ratio is 1.5:1 to 20:1 and beyond:

The symbols used in the formula are as follows:

- T=tolerance being calculated.
- A=percent which the weight of the component with the heavier average particle-weight is of the weight of both components.
- B=percent which the weight of the component with the lighter average particle-weight is of the weight of both components.