

RULE PROPOSALS - 1999

**AOSA Rules Committee
Rodney W. Young, Chair**

The following twenty-five proposals for changes in or additions to the AOSA Rules have been reviewed and approved by the Rules Committee for further consideration by the AOSA membership at the 1999 meeting. Please note that approval does not mean that the committee or the members endorse these proposals.

These proposals are published in this issue of The Seed Technologist Newsletter so that they may be evaluated prior to the annual meeting. The names and addresses of the authors are included. Please contact them if you need additional information. You may also submit written comments to the Rules Chair prior to the meeting. Although comment time will be available during the Open Rules meeting, extensive changes to the proposals will not be made during the meeting. Since only a limited number of copies of the proposals will be available at the Open Rules meeting please bring your copy of this Newsletter with you.

RULE CHANGE PROPOSAL FORM

Proposal Number One

PRESENT RULE

2.3 Weight of working samples

b. Kinds of seed not listed in Table 1. The weight of the purity working sample and its corresponding noxious-weed seed working sample may be determined from Table 1 by a kind of seed that is similar in size and weight, and which would provide approximately the equivalent weight of 2,500 pure seed units in the working sample.

PROPOSED RULE

2.3 Weight of working samples

b. Kinds of seed not listed in Table 1. The weight of the purity working sample and its corresponding noxious-weed seed working sample may be determined from Table 1 by a kind of seed that is similar in size and weight, and which would provide approximately the equivalent weight of 2,500 pure seed units in the working sample.

OR

The weight of that kind may be determined by using the ISTA Weight Determination Method. See Appendix 4.

APPENDIX 4

DETERMINATION OF WEIGHT OF WORKING SAMPLES FOR KINDS NOT LISTED IN TABLE 1

To determine the weight of the purity working sample and its corresponding noxious-weed seed working sample the ISTA Weight Determination Method (section 10.4.3 of the International Rules for Seed Testing) will be followed.

From the working sample count out at random, by hand or with a germination counter, eight replicates, each of 100 seeds. Weigh each replicate in grams to the same number of decimal places as in the purity analysis (see section 2.5a).

Calculate the variance, standard deviation and coefficient of variation as follows:

$$\text{Variance} = \frac{n(\Sigma x^2) - (\Sigma x)^2}{n(n-1)}$$

Where x = weight of each replicate in grams

n = number of replicates

Σ = sum of

$$\text{Standard deviation}(s) = \sqrt{\text{Variance}}$$

$$\text{Coefficient of variation} = \frac{s}{\bar{x}} \times 100$$

where \bar{x} = mean weight of 100 seeds

If the coefficient of variation does not exceed 6.0 for chaffy grass seeds, or 4.0 for other seeds, the result of the determination can be calculated.

If the coefficient of variation exceeds whichever of these limits is appropriate, count and weigh a further eight replicates and calculate the standard deviation for the 16 replicates. Discard any replicates that diverge from the mean by more than twice the standard deviation so calculated.

To calculate the minimum weight for purity analysis (grams): multiply the mean weight of 100 seeds by 25 (2,500 seed weight).

To calculate the minimum weight for noxious weed seed or bulk examination (grams): multiply the minimum weight for purity analysis by 10.

To calculate the approximate number of seeds per gram: divide 100 (the number of seeds) by the mean weight (of the 100 seed replicates).

To calculate the approximate number of seeds per ounce: multiply the approximate number of seeds per gram by 28.35.

For species which have small and large seeded varieties, more than one morphological seed form, or have seed weights which may vary with processing, counts should be made for each type.

SUPPORTING EVIDENCE

Currently there are no AOSA procedures for determining seed weight. Adoption of the ISTA method would be another procedure where harmonization of testing methods between the two organizations can occur.

SUBMITTED BY

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DATE OF PROPOSAL

September 23, 1998

PRESENT RULE

Table 1. Weights for working samples.

New Rule

PROPOSED RULE

Table 1. Weights for working samples.

Kind of seed	Minimum weight for purity analysis (grams)	Minimum weight for noxious weed seed or bulk examination (grams)	Approximate number of seeds per gram	Approximate number of seeds per ounce
<i>Achillea ptarmica</i> L. The Pearl, Achillea	.6	6	4200	119,070
<i>Alcea rosea</i> L. Hollyhock	24	240	105	2,977
<i>Ageratum houstonianum</i> Miller Ageratum	.6	6	3,920	111,132
<i>Alyssum saxatile</i> L. Golden tuft alyssum Basket-of-gold	3	30	920	26,082
<i>Amaranthus spp.</i> Amaranthus	2	20	1,475	41,816
<i>Arabis spp.</i> Rockcress	.6	6	4,050	114,818
<i>Asclepias tuberosa</i> L. Butterfly milkweed	12	120	215	6,095
<i>Aubrieta deltoidea</i> (L) de Candolle Aubrieta	1	10	2,500	70,875
<i>Bellis perennis</i> L. English daisy	.4	4	5,620	159,327
<i>Browallia spp.</i> Browallia	.6	6	4,445	126,016
<i>Calendula officinalis</i> L. Calendula	18	180	140	3,969

<i>Callistephus chinensis</i> (L.) Nees China-aster	5	50	495	14,033
<i>Catharanthus roseus</i> (L.) G. Don Vinca, periwinkle	4	40	685	19,420
<i>Celosia</i> spp. L. Cockscomb, Celosia	2	20	1,365	38,698
<i>Mimosa pudica</i> L. Sensitive plant	15	150	170	4,820
<i>Moluccella laevis</i> L. Bells-of-Ireland	14	140	180	5,103
<i>Nicotiana alata</i> Link & Otto, <i>N. x sanderae</i> W. Watson Nicotiana	.3	3	9,435	267,482
<i>Nierembergia</i> spp. Nierembergia	.4	4	6,330	179,456
<i>Petunia</i> spp. Petunia	.2	2	10,415	295,313
<i>Physalis Aalkekengi</i> Chinese Lantern	4	40	660	18,711
<i>Salpiglossis sinuata</i> Ruiz & Pavon 'Gloxiniiflora' Salpiglossis	.6	6	4,310	122,189
<i>Schizanthus</i> spp. Schizanthus	2	20	1,440	40,824
<i>Thunbergia alata</i> Sims. <i>Thunbergia</i> , clockvine	66	660	40	1,134

SUPPORTING EVIDENCE

Seed data obtained according to the ISTA seed weight determination method.

SUBMITTED BY

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DATE OF PROPOSAL

September 28, 1998

Species: Alyssum saxatile L.												
100 seed weight												
Lot No.	1	2	3	4	5	6	7	8	mean	variance	SD	Var. Coeff.
1	0.0844	0.0861	0.0842	0.0878	0.0820	0.0844	0.0913	0.0866	0.0859	0.000008	0.0028	3.2880
2	0.0869	0.0881	0.0855	0.0881	0.0811	0.0818	0.0811	0.0819	0.0843	0.000010	0.0032	3.7391
3	0.0948	0.0945	0.0931	0.0946	0.0919	0.0945	0.0919	0.0925	0.0935	0.000002	0.0013	1.3517
4	0.1329	0.1454	0.1481	0.1500	0.1466	0.1514	0.1451	0.1445	0.1455	0.000032	0.0056	3.8788
5	0.0913	0.0871	0.0854	0.0843	0.0869	0.0835	0.0844	0.0865	0.0862	0.000006	0.0025	2.8484
6	0.0911	0.0917	0.0909	0.0917	0.0911	0.0905	0.0894	0.0899	0.0908	0.000001	0.0008	0.8995
7	0.1065	0.1046	0.1077	0.1045	0.1065	0.1077	0.1042	0.1073	0.1061	0.000002	0.0015	1.3929
8	0.1409	0.1375	0.1455	0.1453	0.1382	0.1379	0.1442	0.1434	0.1416	0.000012	0.0034	2.4087
9	0.1632	0.1633	0.1645	0.1592	0.1633	0.1554	0.1594	0.1636	0.1615	0.000010	0.0032	1.9539
10	0.1722	0.1671	0.1643	0.1755	0.1733	0.1745	0.1767	0.1798	0.1729	0.000026	0.0051	2.9293
11	0.1006	0.0991	0.1022	0.1022	0.0998	0.1043	0.1022	0.1032	0.1017	0.000003	0.0017	1.7168
12	0.0802	0.0802	0.0799	0.0790	0.0824	0.0793	0.0786	0.0804	0.0800	0.000001	0.0012	1.4531
13	0.1053	0.0989	0.1081	0.1081	0.1066	0.1038	0.1075	0.1093	0.1060	0.000011	0.0033	3.1514
14	0.1033	0.1018	0.1032	0.1037	0.1065	0.1035	0.1044	0.0999	0.1033	0.000004	0.0019	1.8467
15	0.1054	0.1051	0.1061	0.1072	0.1079	0.1096	0.1062	0.1078	0.1069	0.000002	0.0015	1.4056
16	0.1035	0.1091	0.1117	0.1063	0.1087	0.1058	0.1095	0.1082	0.1079	0.000006	0.0025	2.3634
17	0.0764	0.0745	0.0766	0.0737	0.0717	0.0741	0.0753	0.0747	0.0746	0.000002	0.0016	2.1015
									Mean	0.1087		
Species: Amaranthus spp.												
100 seed weight												
Lot No.	1	2	3	4	5	6	7	8	mean	variance	SD	Var. Coeff.
1	0.0711	0.0710	0.0690	0.0712	0.0710	0.0708	0.0700	0.0702	0.0705	0.000001	0.0008	1.0742
2	0.0782	0.0775	0.0804	0.0780	0.0794	0.0776	0.0780	0.0821	0.0789	0.000003	0.0016	2.0604
3	0.0585	0.0581	0.0587	0.0592	0.0565	0.0574	0.0617	0.0610	0.0589	0.000003	0.0017	2.9545
4	0.0623	0.0617	0.0622	0.0609	0.0614	0.0613	0.0621	0.0605	0.0616	0.000000	0.0006	1.0493
5	0.0791	0.0761	0.0710	0.0722	0.0785	0.0777	0.0765	0.0749	0.0758	0.000008	0.0029	3.8378
6	0.0607	0.0598	0.0600	0.0578	0.0596	0.0650	0.0613	0.0630	0.0609	0.000005	0.0022	3.6580
7	0.0648	0.0654	0.0665	0.0657	0.0643	0.0639	0.0644	0.0622	0.0647	0.000002	0.0013	2.0134
8	0.0722	0.0744	0.0736	0.0729	0.0738	0.0744	0.0733	0.0745	0.0736	0.000001	0.0008	1.1079
9	0.0716	0.0704	0.0724	0.0699	0.0675	0.0645	0.0673	0.0665	0.0688	0.000007	0.0027	3.9743
10	0.0658	0.0680	0.0691	0.0652	0.0672	0.0662	0.0632	0.0662	0.0664	0.000003	0.0018	2.7075
11	0.0666	0.0707	0.0672	0.0637	0.0664	0.0645	0.0630	0.0656	0.0660	0.000006	0.0024	3.6573
12	0.0682	0.0671	0.0685	0.0667	0.0678	0.0650	0.0677	0.0665	0.0672	0.000001	0.0011	1.6772
									Mean	0.0678		
Species: Arabis spp.												
100 seed weight												
Lot No.	1	2	3	4	5	6	7	8	mean	variance	SD	Var. Coeff.
1	0.0171	0.0156	0.0166	0.0162	0.0163	0.0168	0.0162	0.0165	0.0164	0.000000	0.0005	2.7527
2	0.0293	0.0274	0.0280	0.0280	0.0282	0.0263	0.0289	0.0286	0.0281	0.000001	0.0009	3.3205
3	0.0282	0.0292	0.0295	0.0282	0.0290	0.0278	0.0279	0.0288	0.0286	0.000000	0.0006	2.2192
4	0.0227	0.0220	0.0225	0.0220	0.0233	0.0231	0.0232	0.0222	0.0226	0.000000	0.0005	2.3596
5	0.0261	0.0261	0.0252	0.0264	0.0251	0.0254	0.0253	0.0244	0.0255	0.000000	0.0007	2.5843
6	0.0234	0.0236	0.0245	0.0242	0.0240	0.0236	0.0236	0.0236	0.0238	0.000000	0.0004	1.5942
7	0.0227	0.0235	0.0242	0.0242	0.0226	0.0240	0.0245	0.0250	0.0238	0.000001	0.0008	3.5521
8	0.0255	0.0250	0.0260	0.0260	0.0271	0.0261	0.0257	0.0252	0.0258	0.000000	0.0006	2.5159
9	0.0239	0.0245	0.0249	0.0242	0.0251	0.0244	0.0242	0.0242	0.0244	0.000000	0.0004	1.6340
10	0.0281	0.0282	0.0280	0.0270	0.0281	0.0281	0.0291	0.0272	0.0280	0.000000	0.0006	2.3067
11	0.0240	0.0248	0.0246	0.0240	0.0257	0.0251	0.0242	0.0244	0.0246	0.000000	0.0006	2.3901
									Mean	0.0247		

Species: <i>Asclepias tuberosa</i> L.												
100 seed weight												
Lot No.	1	2	3	4	5	6	7	8	mean	variance	SD	Var. Coeff.
1	0.4900	0.5168	0.5131	0.5064	0.4979	0.5089	0.5095	0.4802	0.5029	0.000157	0.0125	2.4881
2	0.3105	0.3214	0.3239	0.3172	0.3050	0.3029	0.3142	0.3090	0.3130	0.000057	0.0075	2.4051
3	0.5006	0.4833	0.4536	0.4665	0.4821	0.4652	0.4762	0.4592	0.4733	0.000233	0.0153	3.2237
4	0.4019	0.4221	0.4104	0.4224	0.4109	0.4001	0.4245	0.4030	0.4119	0.000099	0.0100	2.4186
5	0.4901	0.4825	0.4713	0.4812	0.4939	0.4550	0.4745	0.4939	0.4803	0.000175	0.0132	2.7558
6	0.3576	0.3675	0.3710	0.3841	0.3801	0.3957	0.3728	0.3657	0.3743	0.000143	0.0120	3.1929
7	0.5688	0.5756	0.5789	0.5380	0.5631	0.5859	0.5266	0.5756	0.5641	0.000438	0.0209	3.7123
8	0.4868	0.5072	0.4883	0.4946	0.5116	0.5161	0.4964	0.5248	0.5032	0.000190	0.0138	2.7399
9	0.5122	0.5403	0.4869	0.5344	0.5166	0.5039	0.4923	0.5197	0.5133	0.000351	0.0187	3.6475
10	0.4412	0.4242	0.4561	0.4170	0.4439	0.4695	0.4456	0.4400	0.4422	0.000274	0.0166	3.7433
11	0.4752	0.4659	0.4818	0.4804	0.4565	0.5119	0.4869	0.4895	0.4810	0.000275	0.0166	3.4473
									Mean	0.4600		
Species: <i>Aubretia deltoidea</i>												
100 seed weight												
Lot No.	1	2	3	4	5	6	7	8	mean	variance	SD	Var. Coeff.
1	0.0349	0.0370	0.0358	0.0370	0.0358	0.0348	0.0341	0.0367	0.0358	0.000001	0.0011	3.0592
2	0.0407	0.0420	0.0438	0.0407	0.0430	0.0419	0.0426	0.0426	0.0422	0.000001	0.0011	2.5574
3	0.0372	0.0388	0.0410	0.0371	0.0392	0.0396	0.0382	0.0388	0.0387	0.000002	0.0013	3.2971
4	0.0405	0.0378	0.0390	0.0369	0.0374	0.0399	0.0388	0.0381	0.0386	0.000002	0.0012	3.2071
5	0.0356	0.0362	0.0368	0.0376	0.0365	0.0354	0.0349	0.0360	0.0361	0.000001	0.0009	2.3616
6	0.0380	0.0364	0.0382	0.0375	0.0373	0.0374	0.0377	0.0354	0.0372	0.000001	0.0009	2.4652
7	0.0370	0.0387	0.0371	0.0374	0.0373	0.0373	0.0368	0.0368	0.0373	0.000000	0.0006	1.6339
8	0.0410	0.0387	0.0406	0.0418	0.0400	0.0408	0.0426	0.0418	0.0409	0.000001	0.0012	2.9604
9	0.0354	0.0360	0.0378	0.0363	0.0346	0.0370	0.0386	0.0380	0.0367	0.000002	0.0014	3.7615
10	0.0429	0.0430	0.0442	0.0431	0.0429	0.0443	0.0448	0.0431	0.0435	0.000001	0.0008	1.7576
11	0.0310	0.0334	0.0333	0.0330	0.0330	0.0347	0.0339	0.0324	0.0331	0.000001	0.0011	3.2808
12	0.0384	0.0398	0.0387	0.0387	0.0394	0.0394	0.0392	0.0391	0.0391	0.000000	0.0005	1.1798
13	0.0454	0.0467	0.0471	0.0464	0.0462	0.0463	0.0457	0.0455	0.0462	0.000000	0.0006	1.2891
14	0.0375	0.0390	0.0382	0.0387	0.0375	0.0370	0.0388	0.0399	0.0383	0.000001	0.0010	2.5017
15	0.0459	0.0452	0.0462	0.0463	0.0477	0.0467	0.0467	0.0464	0.0464	0.000001	0.0007	1.5478
16	0.0515	0.0538	0.0542	0.0530	0.0525	0.0504	0.0518	0.0531	0.0525	0.000002	0.0013	2.3946
17	0.0313	0.0300	0.0301	0.0300	0.0298	0.0314	0.0302	0.0312	0.0305	0.000000	0.0007	2.2099
18	0.0437	0.0419	0.0447	0.0423	0.0433	0.0452	0.0466	0.0460	0.0442	0.000003	0.0017	3.8430
19	0.0405	0.0451	0.0440	0.0433	0.0411	0.0423	0.0432	0.0408	0.0425	0.000003	0.0016	3.8750
									Mean	0.0400		
Species: <i>Bellis perennis</i> L.												
100 seed weight												
Lot No.	1	2	3	4	5	6	7	8	mean	variance	SD	Var. Coeff.
1	0.0186	0.0180	0.0175	0.0183	0.0180	0.0174	0.0183	0.0188	0.0181	0.000000	0.0005	2.7118
2	0.0193	0.0184	0.0198	0.0191	0.0198	0.0199	0.0204	0.0199	0.0197	0.000000	0.0004	2.1659
3	0.0178	0.0185	0.0175	0.0173	0.0174	0.0172	0.0174	0.0178	0.0176	0.000000	0.0004	2.3788
4	0.0162	0.0165	0.0166	0.0168	0.0166	0.0166	0.0165	0.0165	0.0165	0.000000	0.0002	1.0189
5	0.0166	0.0163	0.0166	0.0167	0.0173	0.0165	0.0166	0.0167	0.0167	0.000000	0.0003	1.7257
6	0.0205	0.0195	0.0189	0.0193	0.0195	0.0206	0.0192	0.0189	0.0196	0.000000	0.0007	3.3709
7	0.0141	0.0145	0.0149	0.0142	0.0146	0.0150	0.0146	0.0146	0.0146	0.000000	0.0003	2.1066
8	0.0178	0.0179	0.0181	0.0188	0.0178	0.0186	0.0186	0.0181	0.0182	0.000000	0.0004	2.1852
9	0.0174	0.0187	0.0189	0.0183	0.0181	0.0182	0.0181	0.0182	0.0182	0.000000	0.0004	2.4511
10	0.0168	0.0182	0.0182	0.0188	0.0188	0.0179	0.0177	0.0189	0.0182	0.000000	0.0007	3.8925
11	0.0156	0.0151	0.0152	0.0159	0.0146	0.0150	0.0144	0.0144	0.0150	0.000000	0.0005	3.6411
12	0.0172	0.0173	0.0171	0.0179	0.0179	0.0172	0.0175	0.0179	0.0175	0.000000	0.0004	2.0029
13	0.0170	0.0170	0.0170	0.0172	0.0170	0.0172	0.0171	0.0171	0.0171	0.000000	0.0001	0.5191
14	0.0217	0.0215	0.0218	0.0216	0.0216	0.0218	0.0218	0.0223	0.0217	0.000000	0.0003	1.4463
15	0.0175	0.0187	0.0185	0.0184	0.0190	0.0187	0.0196	0.0188	0.0187	0.000000	0.0006	3.1786
									Mean	0.0178		

Species: <i>Browallia</i> spp.												
100 seed weight												
Lot No.	1	2	3	4	5	6	7	8	mean	variance	SD	Var. Coeff.
1	0.0216	0.0225	0.0216	0.0240	0.0226	0.0230	0.0226	0.0227	0.0226	0.000001	0.0008	3.4046
2	0.0228	0.0218	0.0213	0.0216	0.0211	0.0199	0.0218	0.0215	0.0215	0.000001	0.0008	3.7892
3	0.0237	0.0241	0.0236	0.0253	0.0239	0.0240	0.0232	0.0239	0.0240	0.000000	0.0006	2.5427
4	0.0202	0.0210	0.0203	0.0210	0.0209	0.0204	0.0206	0.0202	0.0206	0.000000	0.0003	1.6986
5	0.0210	0.0228	0.0226	0.0222	0.0221	0.0224	0.0223	0.0227	0.0223	0.000000	0.0006	2.5403
6	0.0227	0.0229	0.0221	0.0230	0.0231	0.0229	0.0229	0.0229	0.0228	0.000000	0.0003	1.3549
7	0.0227	0.0221	0.0231	0.0226	0.0225	0.0224	0.0224	0.0222	0.0225	0.000000	0.0003	1.3852
8	0.0245	0.0245	0.0241	0.0249	0.0242	0.0241	0.0239	0.0240	0.0243	0.000000	0.0003	1.3707
9	0.0222	0.0225	0.0225	0.0226	0.0225	0.0224	0.0221	0.0224	0.0224	0.000000	0.0002	0.7546
									Mean	0.0225		
Species: <i>Calendula officinalis</i> L.												
100 seed weight												
Lot No.	1	2	3	4	5	6	7	8	mean	variance	SD	Var. Coeff.
1	0.9169	0.8855	0.8907	0.9182	0.8804	0.8711	0.8661	0.9323	0.8952	0.000591	0.0243	2.7159
2	0.5049	0.5149	0.4816	0.4754	0.4825	0.5103	0.5094	0.5064	0.4982	0.000244	0.0156	3.1326
3	0.5785	0.6049	0.5850	0.5823	0.5365	0.5702	0.5715	0.5563	0.5732	0.000414	0.0204	3.5509
4	0.8197	0.8777	0.8116	0.8100	0.7750	0.8002	0.7889	0.7993	0.8103	0.000937	0.0306	3.7779
5	1.0527	1.0532	1.0923	1.0348	1.0066	1.0175	1.0219	1.0085	1.0359	0.000844	0.0291	2.8043
6	0.5697	0.5413	0.5299	0.5186	0.5323	0.5319	0.5544	0.5212	0.5374	0.000297	0.0172	3.2044
7	1.0039	1.0021	1.0095	1.0021	1.0054	1.0036	0.9779	1.0142	1.0023	0.000115	0.0107	1.0684
8	0.6980	0.6409	0.6400	0.6592	0.6705	0.6991	0.6482	0.6387	0.6618	0.000631	0.0251	3.7946
9	0.9032	0.8827	0.9619	0.8904	0.9252	0.8832	0.9215	0.8894	0.9072	0.000759	0.0275	3.0365
10	0.6064	0.6061	0.6031	0.5900	0.6205	0.6059	0.6060	0.6146	0.6066	0.000078	0.0088	1.4562
11	0.6205	0.5875	0.6061	0.6265	0.5882	0.6110	0.5775	0.5775	0.5994	0.000369	0.0192	3.2065
12	0.6038	0.6303	0.5993	0.5988	0.6086	0.5949	0.6172	0.5669	0.6025	0.000340	0.0184	3.0585
									Mean	0.7275		
Species: <i>Callistephus chinensis</i>												
100 seed weight												
Lot No.	1	2	3	4	5	6	7	8	mean	variance	SD	Var. Coeff.
1	0.1656	0.1672	0.1690	0.1694	0.1641	0.1613	0.1670	0.1689	0.1666	0.000008	0.0028	1.6789
2	0.2031	0.2006	0.1967	0.1990	0.2047	0.1970	0.2034	0.2008	0.2007	0.000009	0.0030	1.4788
3	0.2320	0.2261	0.2383	0.2428	0.2447	0.2333	0.2390	0.2450	0.2377	0.000045	0.0067	2.8305
4	0.2083	0.2081	0.2057	0.2091	0.2153	0.2030	0.2091	0.2196	0.2098	0.000028	0.0053	2.5190
5	0.1988	0.1962	0.1960	0.2064	0.2035	0.1985	0.2029	0.1900	0.1990	0.000027	0.0052	2.6061
6	0.1989	0.2020	0.2045	0.1980	0.2014	0.1959	0.2066	0.1928	0.2000	0.000021	0.0045	2.2647
7	0.2302	0.2396	0.2332	0.2364	0.2298	0.2345	0.2381	0.2301	0.2340	0.000015	0.0038	1.6323
8	0.1880	0.1988	0.2105	0.2026	0.1997	0.2051	0.1964	0.2009	0.2003	0.000043	0.0066	3.2791
9	0.2128	0.2162	0.2120	0.2090	0.2077	0.2160	0.2107	0.2091	0.2117	0.000010	0.0032	1.5054
10	0.2083	0.2074	0.2096	0.2115	0.2027	0.2094	0.2102	0.1996	0.2073	0.000017	0.0041	1.9735
11	0.1915	0.1970	0.1865	0.1972	0.1888	0.2041	0.1973	0.1897	0.1940	0.000034	0.0059	3.0191
12	0.1775	0.1703	0.1762	0.1834	0.1741	0.1688	0.1833	0.1660	0.1750	0.000041	0.0064	3.6756
13	0.2082	0.2037	0.2013	0.1986	0.2082	0.1947	0.1997	0.2049	0.2024	0.000022	0.0047	2.3431
14	0.2101	0.2161	0.2080	0.2114	0.2139	0.2138	0.2188	0.2112	0.2129	0.000012	0.0035	1.6255
15	0.1713	0.1692	0.1728	0.1727	0.1736	0.1679	0.1706	0.1681	0.1708	0.000005	0.0022	1.2904
16	0.2042	0.2050	0.2135	0.2085	0.2000	0.2085	0.2112	0.2078	0.2073	0.000018	0.0042	2.0378
17	0.2215	0.2174	0.2149	0.2208	0.2189	0.2197	0.2165	0.2208	0.2188	0.000006	0.0023	1.0727
18	0.2071	0.2021	0.1938	0.2063	0.2064	0.2000	0.2055	0.2037	0.2031	0.000020	0.0045	2.2045
									Mean	0.2028		

Species: <i>Catharanthus roseus</i>												
100 seed weight												
Lot No.	1	2	3	4	5	6	7	8	mean	variance	SD	Var. Coeff.
1	0.1491	0.1527	0.1467	0.1496	0.1508	0.1487	0.1534	0.1483	0.1499	0.000005	0.0023	1.5100
2	0.1321	0.1262	0.1292	0.1306	0.1303	0.1258	0.1344	0.1307	0.1299	0.000008	0.0029	2.2036
3	0.1507	0.1449	0.1448	0.1463	0.1456	0.1395	0.1433	0.1466	0.1452	0.000010	0.0032	2.1766
4	0.1398	0.1341	0.1348	0.1369	0.1343	0.1338	0.1282	0.1344	0.1345	0.000011	0.0033	2.4219
5	0.1519	0.1513	0.1555	0.1621	0.1444	0.1480	0.1480	0.1541	0.1519	0.000030	0.0055	3.5958
6	0.1478	0.1485	0.1443	0.1461	0.1458	0.1486	0.1423	0.1458	0.1462	0.000005	0.0022	1.4798
7	0.1153	0.1157	0.1120	0.1100	0.1120	0.1084	0.1144	0.1138	0.1127	0.000007	0.0026	2.2899
8	0.1326	0.1383	0.1327	0.1350	0.1392	0.1402	0.1345	0.1342	0.1358	0.000009	0.0030	2.1891
9	0.1350	0.1441	0.1310	0.1452	0.1393	0.1399	0.1440	0.1400	0.1398	0.000024	0.0049	3.4838
10	0.1398	0.1427	0.1406	0.1421	0.1404	0.1376	0.1375	0.1421	0.1404	0.000004	0.0020	1.4174
11	0.1665	0.1657	0.1632	0.1662	0.1647	0.1633	0.1606	0.1665	0.1646	0.000004	0.0021	1.2713
12	0.1486	0.1512	0.1435	0.1486	0.1460	0.1411	0.1448	0.1430	0.1459	0.000012	0.0034	2.3335
13	0.1489	0.1573	0.1482	0.1457	0.1502	0.1413	0.1493	0.1452	0.1483	0.000022	0.0046	3.1361
14	0.1531	0.1619	0.1580	0.1592	0.1603	0.1542	0.1527	0.1529	0.1565	0.000014	0.0037	2.3827
15	0.1641	0.1685	0.1666	0.1683	0.1655	0.1730	0.1719	0.1722	0.1688	0.000011	0.0033	1.9647
16	0.1489	0.1503	0.1499	0.1478	0.1466	0.1546	0.1556	0.1515	0.1507	0.000010	0.0031	2.0856
17	0.1605	0.1600	0.1600	0.1582	0.1547	0.1618	0.1605	0.1643	0.1600	0.000008	0.0028	1.7288
								Mean	0.1459			
Species: <i>Celosia spp L.</i>												
100 seed weight												
Lot No.	1	2	3	4	5	6	7	8	mean	variance	SD	Var. Coeff.
1	0.0750	0.0761	0.0781	0.0768	0.0774	0.0809	0.0777	0.0761	0.0773	0.000003	0.0018	2.3038
2	0.0900	0.0871	0.0868	0.0842	0.0843	0.0808	0.0852	0.0862	0.0856	0.000007	0.0027	3.1311
3	0.0412	0.0433	0.0415	0.0436	0.0444	0.0446	0.0432	0.0452	0.0434	0.000002	0.0014	3.2854
4	0.0780	0.0799	0.0738	0.0800	0.0784	0.0811	0.0809	0.0770	0.0786	0.000006	0.0024	3.0843
5	0.0796	0.0842	0.0774	0.0791	0.0819	0.0807	0.0771	0.0800	0.0800	0.000005	0.0023	2.9078
6	0.0569	0.0579	0.0580	0.0585	0.0594	0.0563	0.0571	0.0560	0.0575	0.000001	0.0011	1.9965
7	0.0684	0.0701	0.0644	0.0685	0.0657	0.0644	0.0682	0.0678	0.0672	0.000004	0.0021	3.1235
8	0.0778	0.0796	0.0795	0.0764	0.0766	0.0771	0.0754	0.0792	0.0777	0.000003	0.0016	2.0442
9	0.0661	0.0660	0.0665	0.0680	0.0657	0.0682	0.0652	0.0643	0.0663	0.000002	0.0013	1.9972
10	0.0623	0.0600	0.0625	0.0580	0.0627	0.0627	0.0617	0.0591	0.0611	0.000003	0.0018	3.0100
11	0.0647	0.0640	0.0645	0.0662	0.0647	0.0652	0.0698	0.0642	0.0664	0.000004	0.0019	2.9023
12	0.0532	0.0545	0.0551	0.0558	0.0555	0.0561	0.0540	0.0559	0.0550	0.000001	0.0010	1.8701
13	0.0839	0.0910	0.0871	0.0890	0.0914	0.0878	0.0866	0.0896	0.0883	0.000006	0.0025	2.8075
14	0.0580	0.0581	0.0558	0.0584	0.0604	0.0577	0.0577	0.0571	0.0579	0.000002	0.0013	2.2310
15	0.0784	0.0794	0.0803	0.0798	0.0816	0.0796	0.0828	0.0794	0.0802	0.000002	0.0014	1.7489
16	0.1408	0.1395	0.1373	0.1414	0.1405	0.1372	0.1386	0.1400	0.1394	0.000002	0.0016	1.1318
17	0.0634	0.0626	0.0635	0.0634	0.0627	0.0643	0.0618	0.0640	0.0632	0.000001	0.0008	1.2808
								Mean	0.0732			
Species: <i>Mimosa pudica L.</i>												
100 seed weight												
Lot No.	1	2	3	4	5	6	7	8	mean	variance	SD	Var. Coeff.
1	0.5970	0.6350	0.6095	0.6261	0.6244	0.6286	0.6069	0.6021	0.6162	0.000196	0.0140	2.2714
2	0.5862	0.5810	0.5934	0.5780	0.5843	0.5861	0.5908	0.5830	0.5854	0.000025	0.0050	0.8551
3	0.4971	0.4865	0.4907	0.4923	0.4910	0.5004	0.4791	0.4979	0.4919	0.000047	0.0069	1.3974
4	0.6027	0.6083	0.5814	0.5890	0.5885	0.5958	0.5730	0.5838	0.5903	0.000133	0.0115	1.9565
5	0.6374	0.6282	0.6593	0.6278	0.6379	0.6612	0.6573	0.6482	0.6447	0.000188	0.0137	2.1251
6	0.5974	0.5932	0.5934	0.5940	0.6006	0.5798	0.5723	0.5873	0.5898	0.000090	0.0095	1.6074
7	0.5115	0.5126	0.5184	0.5046	0.5152	0.5061	0.5240	0.5147	0.5134	0.000040	0.0063	1.2259
8	0.6226	0.6231	0.6103	0.6153	0.5994	0.6054	0.6146	0.6376	0.6160	0.000140	0.0119	1.9240
9	0.5893	0.5991	0.5835	0.5883	0.5911	0.5846	0.5876	0.6120	0.5919	0.000088	0.0094	1.5880
10	0.6017	0.5866	0.5883	0.5899	0.6084	0.5889	0.5831	0.6018	0.5936	0.000082	0.0091	1.5269
11	0.6284	0.6154	0.6452	0.6343	0.6373	0.6106	0.6231	0.6414	0.6295	0.000153	0.0124	1.9643
12	0.5655	0.5992	0.6053	0.5930	0.5844	0.5816	0.6054	0.5973	0.5915	0.000186	0.0136	2.3069
								Mean	0.5878			

Species: <i>Moluccella laevis</i> L.												
100 seed weight												
Lot No.	1	2	3	4	5	6	7	8	mean	variance	SD	Var. Coeff.
1	0.5416	0.4977	0.5418	0.5262	0.5372	0.5450	0.5563	0.5418	0.5360	0.000308	0.0176	3.2746
2	0.5761	0.5867	0.5900	0.5812	0.5843	0.5727	0.5920	0.5831	0.5833	0.000043	0.0066	1.1257
3	0.6556	0.6639	0.6658	0.6726	0.6798	0.6682	0.6670	0.6691	0.6678	0.000048	0.0069	1.0400
4	0.5438	0.5349	0.5518	0.5608	0.5682	0.5595	0.5488	0.5466	0.5518	0.000114	0.0107	1.9312
5	0.5241	0.5217	0.4961	0.5341	0.5405	0.5290	0.5134	0.5322	0.5239	0.000195	0.0140	2.6630
6	0.5131	0.5121	0.5064	0.5009	0.5172	0.5015	0.5097	0.5025	0.5079	0.000037	0.0060	1.1901
7	0.5996	0.5954	0.5667	0.5935	0.5624	0.5741	0.5546	0.5933	0.5800	0.000307	0.0175	3.0198
8	0.5183	0.4704	0.5135	0.5223	0.5194	0.5221	0.5333	0.5090	0.5135	0.000354	0.0188	3.6646
9	0.5671	0.5584	0.5360	0.5570	0.5656	0.5676	0.5608	0.5575	0.5588	0.000103	0.0102	1.8170
10	0.5744	0.5510	0.5215	0.5400	0.5418	0.5735	0.5320	0.5649	0.5499	0.000382	0.0195	3.5543
11	0.5406	0.5879	0.5408	0.5440	0.5601	0.5438	0.5511	0.5865	0.5569	0.000392	0.0198	3.5555
									Mean	0.5572		
Species: <i>Nicotiana glauca</i>												
100 seed weight												
Lot No.	1	2	3	4	5	6	7	8	mean	variance	SD	Var. Coeff.
1	0.0100	0.0110	0.0105	0.0100	0.0107	0.0100	0.0102	0.0100	0.0103	0.000000	0.0004	3.7780
2	0.0104	0.0104	0.0103	0.0102	0.0106	0.0109	0.0104	0.0107	0.0105	0.000000	0.0002	2.1885
3	0.0106	0.0109	0.0112	0.0112	0.0112	0.0109	0.0115	0.0115	0.0111	0.000000	0.0003	2.7913
4	0.0116	0.0115	0.0109	0.0117	0.0114	0.0114	0.0107	0.0112	0.0113	0.000000	0.0003	3.0656
5	0.0100	0.0102	0.0108	0.0103	0.0102	0.0102	0.0108	0.0104	0.0104	0.000000	0.0003	2.8223
6	0.0100	0.0100	0.0103	0.0101	0.0102	0.0102	0.0101	0.0102	0.0101	0.000000	0.0001	1.0463
7	0.0115	0.0110	0.0110	0.0115	0.0115	0.0114	0.0111	0.0110	0.0113	0.000000	0.0002	2.1773
8	0.0117	0.0121	0.0121	0.0109	0.0113	0.0119	0.0114	0.0112	0.0116	0.000000	0.0004	3.8290
9	0.0091	0.0093	0.0095	0.0096	0.0098	0.0098	0.0094	0.0098	0.0094	0.000000	0.0003	3.1503
10	0.0116	0.0116	0.0110	0.0113	0.0115	0.0110	0.0115	0.0115	0.0114	0.000000	0.0002	2.1915
11	0.0087	0.0089	0.0089	0.0088	0.0089	0.0091	0.0091	0.0093	0.0090	0.000000	0.0002	2.1452
									Mean	0.0106		
Species: <i>Nierembergia</i> spp.												
100 seed weight												
Lot No.	1	2	3	4	5	6	7	8	mean	variance	SD	Var. Coeff.
1	0.0157	0.0163	0.0158	0.0155	0.0169	0.0169	0.0169	0.0169	0.0164	0.000000	0.0006	3.7665
2	0.0148	0.0149	0.0149	0.0148	0.0149	0.0148	0.0152	0.0150	0.0149	0.000000	0.0001	0.9094
3	0.0162	0.0162	0.0158	0.0159	0.0161	0.0162	0.0163	0.0160	0.0161	0.000000	0.0002	1.0734
4	0.0164	0.0169	0.0173	0.0165	0.0165	0.0170	0.0168	0.0163	0.0167	0.000000	0.0003	2.0588
5	0.0162	0.0167	0.0171	0.0168	0.0167	0.0167	0.0167	0.0164	0.0167	0.000000	0.0003	1.6020
6	0.0158	0.0155	0.0150	0.0150	0.0148	0.0156	0.0148	0.0147	0.0152	0.000000	0.0004	2.7781
7	0.0134	0.0143	0.0137	0.0136	0.0136	0.0130	0.0131	0.0138	0.0136	0.000000	0.0004	2.9900
8	0.0167	0.0163	0.0169	0.0165	0.0164	0.0172	0.0166	0.0170	0.0167	0.000000	0.0003	1.8663
									Mean	0.0158		
Species: <i>Petunia</i> spp.												
100 seed weight												
Lot No.	1	2	3	4	5	6	7	8	mean	variance	SD	Var. Coeff.
1	0.0095	0.0096	0.0102	0.0097	0.0095	0.0094	0.0093	0.0097	0.0096	0.000000	0.0003	2.8592
2	0.0093	0.0096	0.0090	0.0091	0.0089	0.0095	0.0094	0.0094	0.0093	0.000000	0.0002	2.6877
3	0.0090	0.0096	0.0095	0.0092	0.0092	0.0092	0.0090	0.0096	0.0093	0.000000	0.0002	2.6647
4	0.0120	0.0118	0.0119	0.0119	0.0116	0.0120	0.0120	0.0119	0.0119	0.000000	0.0001	1.1409
5	0.0087	0.0086	0.0086	0.0091	0.0087	0.0088	0.0086	0.0086	0.0087	0.000000	0.0002	1.9821
6	0.0107	0.0104	0.0107	0.0104	0.0107	0.0104	0.0106	0.0103	0.0105	0.000000	0.0002	1.5858
7	0.0095	0.0091	0.0093	0.0093	0.0090	0.0093	0.0093	0.0093	0.0093	0.000000	0.0002	1.6258
8	0.0096	0.0095	0.0094	0.0094	0.0091	0.0092	0.0095	0.0092	0.0094	0.000000	0.0002	1.8881
9	0.0090	0.0087	0.0094	0.0094	0.0090	0.0090	0.0087	0.0087	0.0090	0.000000	0.0003	3.2268
10	0.0091	0.0086	0.0089	0.0088	0.0092	0.0090	0.0090	0.0090	0.0090	0.000000	0.0002	2.0689
11	0.0093	0.0090	0.0097	0.0096	0.0096	0.0092	0.0098	0.0098	0.0095	0.000000	0.0003	3.1327
12	0.0101	0.0101	0.0103	0.0101	0.0101	0.0101	0.0107	0.0104	0.0102	0.000000	0.0002	2.1488
13	0.0091	0.0090	0.0095	0.0090	0.0090	0.0088	0.0088	0.0090	0.0090	0.000000	0.0002	2.4240
14	0.0093	0.0089	0.0089	0.0089	0.0088	0.0092	0.0089	0.0089	0.0090	0.000000	0.0002	1.9527
15	0.0100	0.0100	0.0103	0.0103	0.0101	0.0101	0.0101	0.0105	0.0102	0.000000	0.0002	1.7224
16	0.0093	0.0092	0.0100	0.0100	0.0100	0.0095	0.0100	0.0099	0.0097	0.000000	0.0003	3.5548
									Mean	0.0096		

Species: <i>Physalis Alkekengi L.</i>												
100 seed weight												
Lot No.	1	2	3	4	5	6	7	8	mean	variance	SD	Var. Coeff.
1	0.1578	0.1544	0.1589	0.1504	0.1559	0.1514	0.1550	0.1510	0.1544	0.000010	0.0032	2.0628
2	0.1752	0.1785	0.1770	0.1795	0.1718	0.1768	0.1815	0.1725	0.1766	0.000011	0.0033	1.8907
3	0.1525	0.1525	0.1537	0.1510	0.1500	0.1495	0.1497	0.1503	0.1512	0.000002	0.0016	1.0322
4	0.1536	0.1531	0.1501	0.1580	0.1509	0.1538	0.1508	0.1481	0.1523	0.000009	0.0030	1.9816
5	0.1529	0.1503	0.1556	0.1492	0.1496	0.1480	0.1475	0.1488	0.1502	0.000007	0.0027	1.8124
6	0.1448	0.1482	0.1461	0.1460	0.1432	0.1459	0.1422	0.1451	0.1452	0.000003	0.0019	1.2782
7	0.1556	0.1504	0.1482	0.1563	0.1466	0.1465	0.1518	0.1474	0.1504	0.000015	0.0039	2.6038
8	0.1591	0.1584	0.1565	0.1569	0.1576	0.1545	0.1545	0.1540	0.1564	0.000004	0.0019	1.2310
9	0.1591	0.1545	0.1524	0.1500	0.1531	0.1499	0.1515	0.1518	0.1528	0.000009	0.0030	1.9442
10	0.1470	0.1470	0.1483	0.1496	0.1502	0.1518	0.1491	0.1471	0.1488	0.000003	0.0017	1.1726
11	0.1472	0.1517	0.1462	0.1496	0.1452	0.1536	0.1437	0.1460	0.1479	0.000012	0.0034	2.3105
12	0.1528	0.1511	0.1501	0.1497	0.1509	0.1498	0.1515	0.1516	0.1509	0.000001	0.0011	0.6984
13	0.1470	0.1439	0.1506	0.1528	0.1540	0.1531	0.1467	0.1508	0.1499	0.000013	0.0036	2.4112
14	0.1489	0.1454	0.1471	0.1460	0.1460	0.1496	0.1471	0.1515	0.1477	0.000004	0.0021	1.4312
15	0.1402	0.1415	0.1456	0.1464	0.1438	0.1447	0.1481	0.1459	0.1445	0.000007	0.0026	1.8072
								Mean	0.1520			
Species: <i>Salpiglossis sinuata</i>												
100 seed weight												
Lot No.	1	2	3	4	5	6	7	8	mean	variance	SD	Var. Coeff.
1	0.0215	0.0214	0.0213	0.0210	0.0204	0.0202	0.0200	0.0200	0.0207	0.000000	0.0006	3.1030
2	0.0263	0.0263	0.0271	0.0244	0.0244	0.0243	0.0244	0.0243	0.0252	0.000001	0.0012	4.6419
3	0.0242	0.0251	0.0234	0.0244	0.0243	0.0242	0.0240	0.0235	0.0241	0.000000	0.0005	2.2138
4	0.0252	0.0240	0.0243	0.0239	0.0239	0.0234	0.0234	0.0233	0.0239	0.000000	0.0006	2.6031
5	0.0221	0.0219	0.0212	0.0225	0.0215	0.0210	0.0220	0.0226	0.0219	0.000000	0.0006	2.6461
6	0.0200	0.0211	0.0202	0.0214	0.0215	0.0204	0.0216	0.0211	0.0209	0.000000	0.0006	2.9856
7	0.0227	0.0226	0.0224	0.0226	0.0225	0.0224	0.0224	0.0221	0.0225	0.000000	0.0002	0.8222
8	0.0211	0.0215	0.0217	0.0206	0.0219	0.0214	0.0205	0.0216	0.0213	0.000000	0.0005	2.4011
9	0.0261	0.0261	0.0256	0.0258	0.0255	0.0255	0.0253	0.0245	0.0256	0.000000	0.0005	2.0066
10	0.0258	0.0263	0.0262	0.0252	0.0242	0.0266	0.0254	0.0256	0.0257	0.000001	0.0008	2.9526
								Mean	0.0232			
Species: <i>Schizanthus spp.</i>												
100 seed weight												
Lot No.	1	2	3	4	5	6	7	8	mean	variance	SD	Var. Coeff.
1	0.0656	0.0666	0.0677	0.0660	0.0647	0.0677	0.0680	0.0670	0.0667	0.000001	0.0012	1.7456
2	0.0680	0.0675	0.0667	0.0683	0.0679	0.0660	0.0668	0.0652	0.0671	0.000001	0.0011	1.6043
3	0.0681	0.0670	0.0661	0.0628	0.0673	0.0659	0.0660	0.0682	0.0664	0.000003	0.0017	2.5923
4	0.0630	0.0613	0.0626	0.0611	0.0616	0.0600	0.0629	0.0583	0.0614	0.000003	0.0016	2.6094
5	0.0728	0.0722	0.0719	0.0706	0.0696	0.0724	0.0728	0.0721	0.0718	0.000001	0.0011	1.5704
6	0.0783	0.0766	0.0778	0.0775	0.0770	0.0743	0.0781	0.0754	0.0769	0.000002	0.0014	1.8181
7	0.0721	0.0703	0.0674	0.0685	0.0685	0.0684	0.0700	0.0685	0.0692	0.000002	0.0015	2.1575
8	0.0628	0.0633	0.0629	0.0637	0.0638	0.0633	0.0637	0.0650	0.0636	0.000000	0.0007	1.0833
9	0.0755	0.0766	0.0766	0.0760	0.0749	0.0765	0.0749	0.0749	0.0757	0.000001	0.0008	1.0347
10	0.0790	0.0748	0.0745	0.0764	0.0728	0.0731	0.0728	0.0753	0.0748	0.000004	0.0021	2.8309
								Mean	0.0694			
Species: <i>Thunbergia aiata</i>												
100 seed weight												
Lot No.	1	2	3	4	5	6	7	8	mean	variance	SD	Var. Coeff.
1	2.8521	2.7063	2.7880	2.8635	2.8471	2.7686	2.7983	2.8935	2.8147	0.003700	0.0608	2.1610
2	2.7693	2.8152	2.9200	2.9640	2.8568	2.8878	2.8460	2.8314	2.8613	0.003776	0.0615	2.1476
3	2.2235	2.1638	2.3542	2.2519	2.3535	2.3109	2.2202	2.2279	2.2632	0.004770	0.0691	3.0516
4	2.5489	2.5359	2.5958	2.5481	2.5644	2.6866	2.4180	2.6312	2.5661	0.006158	0.0785	3.0581
5	3.0816	2.9382	3.0373	3.1697	3.1213	3.1019	3.1851	3.0465	3.0852	0.006302	0.0794	2.5732
6	2.2100	2.1825	2.1509	2.2348	2.1394	2.1226	2.0564	2.1910	2.1610	0.003171	0.0563	2.6057
7	2.2865	2.5348	2.4251	2.3575	2.3372	2.3981	2.4853	2.3788	2.4004	0.006452	0.0803	3.3462
8	3.1753	3.0287	3.1675	3.1403	3.0909	3.0236	3.1713	3.1314	3.1161	0.003835	0.0619	1.9873
9	2.5215	2.5227	2.6290	2.6999	2.7016	2.6914	2.5186	2.7018	2.6233	0.007754	0.0881	3.3567
								Mean	2.6546			

Rule Proposal

Proposal Number Three

To adjust the minimum weight for purity analysis for 24 tree species in Table 1 based on seed counts from 1980 to present.

Present Rule

Table 1. Weights for workingsamples

Kind of seed	Minimum weight for purity analysis ^a	Approximate number of seeds per gram ^b	Approximate number of seeds per ounce ^c
	Grams	Number	Number
<i>Abies concolor</i> (Gordon & Gleninning) Hildebrand white fir	75	35	995
<i>Abies grandis</i> (D. Don) Lindley grand fir	50	50	1450
<i>Abies procera</i> Rehder noble fir	80	30	915
<i>Calocedrus decurrens</i> (Torrey) Florin incense cedar	75	32	900
<i>Cornus florida</i> L. flowering dogwood	300	10	280
<i>Fraxinus pennsylvanica</i> Marshall var. <i>lanceolata</i> (Borkhausen) Sargent green ash	60	40	1080
<i>Liquidamber styraciflua</i> L. sweetgum	15	180	5130
<i>Liriodendron tulipifera</i> L. yellow poplar	80	31	875
<i>Pinus banksiana</i> Lambert jack pine	10	290	8190
<i>Pinus caribaea</i> Morelet Caribbean pine	40	67	1900
<i>Pinus clausa</i> (Chapman) Vasey sand pine	15	165	4700
<i>Pinus contorta</i> Loudon (incl. var. <i>latifolia</i> Engelman) shore pine, lodgepole pine	10	225-300	6400-8440
<i>Pinus echinata</i> Miller shortleaf pine	25	105	3000
<i>Pinus elliottii</i> Engelman slash pine	70	30	905
<i>Pinus monticola</i> D. Don western white pine	40	60	1690

Table 1. Weights for working samples (cont.)

Kind of seed	Minimum weight for purity analysis ^a	Approximate number of seeds per gram ^b	Approximate number of seeds per ounce ^c
	Grams	Number	Number
<i>Pinus palustris</i> Miller longleaf pine	250	9	265
<i>Pinus ponderosa</i> P. & C. Lawson ponderosa pine, western yellow pine	90	25	750
<i>Pinus resinosa</i> Aiton red pine, Norway pine	20	1153	260
<i>Pinus strobus</i> L. eastern white pine	40	60	1690
<i>Pinus sylvestris</i> L. Scotch pine	15	155	4420
<i>Pinus taeda</i> L. loblolly pine	60	40	1150
<i>Pinus virginiana</i> Miller Virginia pine, scrub pine	20	115	3260
<i>Platanus occidentalis</i> L. American sycamore	6	425	12000
<i>Tsuga heterophylla</i> (Rafinesque) Sargent western hemlock	4	655	18600

Proposed Rule

1. Weights for working samples

Kind of seed	Minimum weight for purity analysis ^a	Approximate number of seeds per gram ^b	Approximate number of seeds per ounce ^c
	Grams	Number	Number
<i>Abies concolor</i> (Gordon & Gleninning) Hildebrand white fir	83	30	855
<i>Abies grandis</i> (D. Don) Lindley grand fir	66	38	1070
<i>Abies procera</i> Rehder noble fir	95	26	750
<i>Calocedrus decurrens</i> (Torrey) Florin incense cedar	87	29	815
<i>Cornus florida</i> L. flowering dogwood	190	13	375
<i>Fraxinus pennsylvanica</i> Marshall var. <i>lanceolata</i> (Borkhausen) Sargent green ash	50	50	1420
<i>Liquidamber styraciflua</i> L. sweetgum	10	247	7010
<i>Liriodendron tulipifera</i> L. yellow poplar	58	43	1215
<i>Pinus banksiana</i> Lambert jack pine	9	281	7965
<i>Pinus caribaea</i> Morelet Caribbean pine	45	55	1560
<i>Pinus clausa</i> (Chapman) Vasey sand pine	25	101	2875
<i>Pinus contorta</i> Loudon (incl. var. <i>latifolia</i> Engelman) shore pine, lodgepole pine	11	228	6455
<i>Pinus echinata</i> Miller shortleaf pine	28	88	2505
<i>Pinus elliotii</i> Engelman slash pine	96	26	735
<i>Pinus monticola</i> D. Don western white pine	47	53	1500
<i>Pinus palustris</i> Miller longleaf pine	224	11	315
<i>Pinus ponderosa</i> P. & C. Lawson ponderosa pine, western yellow pine	98	25	720

Species	Number of Samples	Average Sd/lb	2500 Seed Weight
<i>Fraxinus pennsylvanica</i> var. <i>lanceolata</i> green ash	55	22828	49.68
<i>Liquidambar styraciflua</i> sweetgum	101	112130	10.11
<i>Liriodendron tulipifera</i> . yellow poplar	43	19468	58.25
<i>Pinus banksiana</i> Lambert jack pine	79	127557	8.89
<i>Pinus caribaea</i> Caribbean pine	80	24943	45.46
<i>Pinus clausa</i> sand pine	228	45965	24.66
<i>Pinus contorta</i> (incl. var. <i>latifolia</i>) shore pine, lodgepole pine	60	103279	10.98
<i>Pinus echinata</i> shortleaf pine	331	40093	28.28
<i>Pinus elliottii</i> slash pine	3500	11791	96.17
<i>Pinus monticola</i> western white pine	51	24012	47.23
<i>Pinus palustris</i> longleaf pine	1256	5073	223.53
<i>Pinus ponderosa</i> ponderosa pine, western yellow pine	333	11540	98.27
<i>Pinus resinosa</i> red pine, Norway pine	99	50059	22.65
<i>Pinus strobus</i> eastern white pine	742	24417	46.44
<i>Pinus sylvestris</i> Scotch pine	49	63795	17.78
<i>Pinus taeda</i> loblolly pine	7317	17025	66.61
<i>Pinus virginiana</i> Virginia pine, scrub pine	214	48021	23.61
<i>Platanus occidentalis</i> American sycamore	124	139433	8.13
<i>Tsuga heterophylla</i> western hemlock	50	208432	5.44

Table 1. Weights for working samples (cont.)

Kind of seed	Minimum weight for purity analysis ^a	Approximate number of seeds per gram ^b	Approximate number of seeds per ounce ^c
	Grams	Number	Number
<i>Pinus resinosa</i> Aiton red pine, Norway pine	23	110	3130
<i>Pinus strobus</i> L. eastern white pine	46	54	1525
<i>Pinus sylvestris</i> L. Scotch pine	18	141	3990
<i>Pinus taeda</i> L. loblolly pine	67	38	1065
<i>Pinus virginiana</i> Miller Virginia pine, scrub pine	24	106	3000
<i>Platanus occidentalis</i> L. American sycamore	8	307	8715
<i>Tsuga heterophylla</i> (Rafinesque) Sargent western hemlock	5.5	460	13025

Supporting Evidence

The average weight of 2500 seed was calculated based on seed counts on all samples received at the National Tree Seed Laboratory since 1980. The number of samples with the seed count test and the average seed counts are listed in the following table, along with the average weight of 2500 seed. The first column gives the number of samples that the average seed per pound in the second column is based on.

Species	Number of Samples	Average Sd/lb	2500 Seed Weight
<i>Abies concolor</i> white fir	57	13700	82.77
<i>Abies grandis</i> grand fir	63	17119	66.24
<i>Abies procera</i> noble fir	132	11968	94.75
<i>Calocedrus decurrens</i> incense cedar	20	13050	86.90
<i>Cornus florida</i> flowering dogwood	43	5968	190.01

Example

The minimum weight for purity analysis of *Abies concolor* is 75 grams. Based on seed counts on 57 samples, 2500 seeds weigh 82.77 grams. The minimum weight for purity analysis should be 83 grams. The approximate number of seeds per gram is 30.2 for *Abies concolor*. 83 times 30.2 is 2507. In the table, 30.2 is rounded off to a whole number, 30. Because 83 times 30 is less than 2500, it appears that 83 grams is less than 2500 seeds. Actually 83 grams is greater than 2500 seeds.

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Date of Proposal

09-29-98

Present Rule:

none

Proposed Rule:

<u>Scientific/Common name</u>	<u>Family</u>	<u>Spp.</u> <u>Class</u>	<u>Classification</u>						
			<u>contaminating</u>						
			<u>A</u>	<u>E</u>	<u>H</u>	<u>R</u>	<u>S</u>	<u>T</u>	<u>V</u>
Lespedeza thunbergii ---Thundberg's lespedeza ---shrub lespedeza	(Fabaceae)	R	W	W	W	C	W	W	W

Supporting Evidence

Lespedeza thunbergii is used for revegetation and as a forage crop for wild life. It is grown and marketed in several southeastern states.

References

- Fernald, Lyndon Merritt. 1970. Gray's Manual of Botany. 8th ed. D. Van Nostrand Co.
- USDA, Natural Resources Conservation Service. 1997. National PLANTS Database. (<http://plants.usda.gov>). National Plant Data Center. Baton Rouge, LA 70874-4490 USA.
- USDA Soil Conservation Service. 1980. VA-70 Shrub Lespedeza. Program Aid Number 1277. US Government Printing Office.
- Vogel, Willis G. 1974. Lespedeza Michx. Seeds of Woody Plants in the United States. Handbook 450. Forest Service. US Government Printing Office.
- Wiersema, John H., Joseph H. Kirkbride, Jr., and Charles R. Gunn. 1990. Legume (Fabaceae) Nomenclature in the USDA Germplasm System. USDA, Technical Bulletin No. 1757.

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Date of Proposal: October 1, 1998

Rule Change Proposal: Handbook 25

Proposal Number Five

Present Rule:

none

Proposed Rule:

<u>Scientific/Common name</u>	<u>Family</u>	<u>Classification</u>							
		<u>Spp.</u>	<u>contaminating</u>						
		<u>Class</u>	<u>A</u>	<u>F</u>	<u>H</u>	<u>R</u>	<u>S</u>	<u>T</u>	<u>V</u>
Lespedeza virgata ---wand lespedeza	(Fabaceae)	R	W	W	W	C	W	W	W

Lespedeza virgata is used for revegetation and as a forage crop for wild life.

References

Pennington, Brooks. 1997. Seeds and Planting. Pennington Seeds, Inc.

USDA, Natural Resources Conservation Service. 1997. National PLANTS Database. (<http://plants.usda.gov>). National Plant Data Center. Baton Rouge, LA 70874-4490 USA.

Wiersema, John H., Joseph H. Kirkbride, Jr., and Charles R. Gunn. 1990. Legume (Fabaceae) Nomenclature in the USDA Germplasm System. USDA, Technical Bulletin No. 1757.

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Date of Proposal: October 1, 1998

Present Rule

none

Proposed Rule

<u>Scientific/Common name</u>	<u>Family</u>	<u>Spp.</u> <u>Class</u>	<u>Classification</u> <u>contaminating</u>						
			<u>A</u>	<u>F</u>	<u>H</u>	<u>R</u>	<u>S</u>	<u>T</u>	<u>V</u>
Aeschynomene americana ---American jointvetch ---deervetch	(Fabaceae)	R	W	W	W	C	W	W	W

Supporting Evidence

American jointvetch is used for forage and establishing game plots. It is considered a contaminating weed in crops.

References

Pennington, Brooks. 1997. Seeds and Planting. 3rd ed. Pennington Seeds, Inc.

Wiersema, John H., Joseph H. Kirkbride, Jr., and Charles R. Gunn. 1990. Legume (Fabaceae) Nomenclature in the USDA Germplasm System. USDA, Technical Bulletin No. 1757.

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Date of Proposal: October 1, 1998

Rule Change Proposal: Handbook 25

Proposal Number Seven

Present Rule

none

Proposed Rule

<u>Scientific/Common name</u>	<u>Family</u>	<u>Classification</u>							
		<u>Spp.</u>	<u>contaminating</u>						
		<u>Class</u>	<u>A</u>	<u>F</u>	<u>H</u>	<u>R</u>	<u>S</u>	<u>T</u>	<u>V</u>
Stenotaphrum secundatum ---St. Augustinegrass ---shore-grass	(Poaceae)	T	C	W	W	C	W	C	W

Supporting Evidence

St. Augustinegrass is used as a lawn and turf grass in southern and coastal Georgia and in Florida.

References

Pennington, Brooks. 1997. Seeds and Planting. 3rd ed. Pennington Seeds, Inc.

Silveus, W. A. 1933. Texas Grasses.

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PROPOSAL

Proposal Number Eight

Addition of revised procedures for *Hesperostipa comata*--needle-and-thread to the Rules

PRESENT RULE:

New rule.

PROPOSED RULE:

2.4, Table 1. Weights for working sample of agricultural, vegetable and herb, flower, and tree and shrub seeds

Kind of seed	Minimum weight for purity analysis	Minimum weight for noxious-weed seed or bulk examination	Approximate number of seeds per gram	Approximate number of seeds per ounce
AGRICULTURAL SEEDS	Grams	Grams	Number	Number
<i>Hesperostipa comata</i> (Trin. & Rupr.) Barkworth needle-and-thread	15	150	100-350 (200)	2,800- 9,900

4.10, Table 3. Methods of testing for laboratory germination.

Kind of seed	Substrata	Temperature ° C	First count days	Final count days	Additional Directions
<i>Hesperostipa comata</i> (Trin. & Rupr.) Barkworth needle-and-thread					
Method 1	P	15/25	10	21	see sec. 4.8(q)
Method 2	P	15/25	10	21	see sec. 4.8(q)

4.7d

For *Nasella viridula*, *Penstemon pendlandii*, *Penstemon eatonii*, *Penstemon* spp., and *Hesperostipa comata*, report results of Method 2 (see Table 3 and sections 4.8k, 4.8m, 4.8p, and 4.8q), as percentage germination. If the number in Method 2 is less than in Method 1, subtract results of Method 2 from Method 1 and report the difference as dormant seed percentage.

4.8q.

Needle-and-thread (*Hesperostipa comata*)--Two test methods as prescribed in Table 3 shall be used on each sample. For Method 1, place 400 seeds on blotters moistened with 0.055% (500 ppm) GA₃ and germinate for 21 days (15/25° C) in the dark. Post-test viability determination of ungerminated seeds is required (sec. 4.9k). As an alternative to Method 1, conduct a TZ test on 400 seeds. For Method 2, plant 400 seeds on water-moistened blotters, prechill for 14 days (2-5° C), and germinate in dark for 21 days (15/25° C); count normal seedlings. Seed treatment with fungicide may be beneficial for some seed lots. Refer to 4.7d for calculation and reporting of results.

SUPPORTING EVIDENCE:

Needle-and-thread (*Hesperostipa comata*) is a perennial bunchgrass with widespread distribution in the deserts, prairies, and mountains of western North America. Seeds are harvested for commercial sale from wildland populations in several states. A rule proposal based on results of an AOSA funded study titled, "An Investigation of Seed Dormancy and Germination Requirements for Needle-and-thread (*Stipa comata*)," was considered at the 1998 AOSA annual meeting (Kitchen et al 1998). Although the proposed rule received solid support at these meetings, we withdrew the proposal before final vote in order to restructure the proposal as recommended by the chairman of the Range Grass Committee. This proposal incorporates those recommendations. The following discussion summarizes the methods and results of our study (as previously published; Kitchen et al. 1998) which support the methods recommended in this proposal.

We assembled 22 needle-and-thread grass seed collections, including nine commercial lots, representing 6 states. Weights of fully developed seeds varied more than three-fold (100-350 seeds/g). We conducted laboratory experiments to evaluate variability in optimal germination temperature, primary dormancy, and germination response to prechill (14-56 days). Additional tests were conducted on five collections identified as having a large dormant-seed fraction. Procedures used were similar to those currently used for green needlegrass (*Nasella viridula*);

acid scarification (concentrated H_2SO_4), and growth hormone (GA_3). Results were compared to those derived from TZ tests.

Maximum germination percentage after 21 days of incubation occurred at 15/25° C (mean 54 %). Mean germination response to 10/20 and 20/30° C was 46 and 35 %, respectively. After-ripened seed lots were less temperature sensitive and had generally higher germination percentages than did fresh lots. Germination response to prechill was mixed and even though some collections responded positively to a 2-week prechill, response to longer prechill periods was frequently negative.

Acid scarification was effective in reducing seed dormancy but also caused reductions in seed-lot viability (8 to 100 %). For the seed-lots tested, GA_3 treatment (500 ppm) was effective in breaking dormancy with a mean germination of 76 % compared to 30 % for the control.

Mean seed-lot viability, as determined by TZ test, was 87 %. Viability percentage of unchilled seeds germinated at 15/25° C (mean 81%) was significantly lower than values determined by TZ test for four of 22 seed lots. However, viability values of seed lots that were prechilled for 2 weeks and then germinated at 15/25° C were consistent with those from TZ tests (mean 89 %).

Germination rate of unchilled seeds was relatively slow at all temperatures. With several collections, fungal growth was associated with both viable and dead seeds. We attribute apparent losses in seedling viability to rapid fungal growth at the higher temperatures coupled with slow germination rates. Germination rate of prechilled seeds was considerably faster than unchilled seeds, minimizing this problem.

Four of eight labs responded to our referee request. Referee purity results were consistent among labs (mean 90 %). Total viable (germ + dorm) values for three of the four labs (mean of 57 %) were similar to our results (58 %). Results for the fourth lab were higher (77 %). Results from TZ tests (mean of 80 %) were consistently higher than viability estimates generated by germination tests. We attributed this difference to difficulty in evaluating germinants due to fungal damage. Fairly extensive fungal growth for this lot was reported by the labs and observed in our test. For this reason, we have added the clause, "Seed treatment with fungicide may be beneficial for some seed lots," to instructions for germination procedures (sec. 4.8-q).

In summary, needle-and-thread grass seeds are highly variable in size, initial dormancy, and response to prechill, acid scarification, and GA_3 treatments. This variability reflects the wide range of habitats and climatic patterns to which populations of the species are adapted. It also presents problems in developing a uniform procedure for seed testing. The rule proposed here employs two methods; an approach that is used successfully for other species. In Method 1, GA_3 is used to break dormancy for determining seed-lot viability. Method 2 is used to determine the fraction of seeds that are germinable (nondormant). The difference is reported as "dormant seed".

Literature Cited

Kitchen, S. K., R. Stevens, and R. G. Wilson. 1978. Addition of *Hesperostipa comata* needle-and-thread grass to the Rules. The Seed Technologist Newsletter. 72: proposal #53.

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DATE OF PROPOSAL:

October 2, 1998

Table 1. Germination responses of 22 needle-and-thread collections to germination temperature and prechill treatments (2° C). Incubation was for 21 days. Incubation temperature following prechill was 15/25° C. Germination percentages are expressed as a fraction of total viable seeds.

Collection (County, State)	Germination Temperature ©					Days of Prechill (2° C)			
	15	10/20	15/25	25	20/30	14	28	42	56
	----- Germination Percentage -----								
Mohave (1), AZ	79	79	84	61	52	92	80	78	87
Mohave (2), AZ	87	76	72	52	51	64	79	87	85
Weld, CO	07	09	47	14	09	95	90	88	83
Butte, ID	19	44	47	25	28	65	63	48	43
Clark (1), ID	73	90	96	99	97	84	84	93	88
Clark (2), ID	21	56	51	23	14	50	50	39	32
Elmore (1), ID	02	08	14	04	09	29	15	13	10
Elmore (2), ID	03	00	03	01	03	04	01	02	08
Lemhi, ID	01	06	16	06	09	12	10	05	05
Unknown, MT	23	46	55	34	37	42	57	60	70
Richland, MT	45	83	92	78	86	85	65	85	84
Elko, NV	28	49	45	16	11	77	56	36	27
Beaver, UT	27	50	46	04	12	69	64	75	83
Duchesne, UT	14	25	34	04	10	33	22	15	28
Emery, UT	54	53	71	43	36	63	54	54	63
Iron, UT	49	52	67	38	36	59	48	52	43
Juab, UT	12	21	30	08	09	45	45	44	46
Kane, UT	59	45	73	28	34	33	26	37	29
Millard, UT	58	68	76	48	72	68	66	66	65
Sevier, UT	49	46	62	48	40	68	59	71	73
Utah, UT	07	12	11	08	08	24	16	28	31
Washington, UT	94	99	93	90	98	96	99	100	97
means	37	46	54	33	35	57	52	53	54

Table 2. Germination, dormancy, TZ evaluation, and purity for a referee sample of needle-and-thread grass seeds as determined by four state seed labs and the Forest Service, Shrub Sciences Laboratory.

Lab	Germination	Dormant	Total Viable	Abnormal	TZ	Purity
----- Percentage -----						
1	47	10	57	10	80	85.96
2	38	17	55	9	71	90.29
3	48	29	77	6	81	91.94
4	44	14	58	3	87	90.71
F.S.	43	15	58	7	79	-----

PROPOSAL

Proposal Number Nine

Addition of *Ephedra nevadensis*--Nevada ephedra to the Rules

PRESENT RULE:

New Rule

PROPOSED RULE:

2.4, Table 1. Weights for working sample of agricultural, vegetable and herb, flower, and tree and shrub seeds

Kind of seed	Minimum weight for purity analysis	Minimum weight for noxious-weed seed or bulk examination	Approximate number of seeds per gram	Approximate number of seeds per ounce
TREE and SHRUB SEEDS	Grams	Grams	Number	Number
<i>Ephedra nevadensis</i> Wats. Nevada ephedra	60	500	45	1,280

4.10, Table 3. Methods of testing for laboratory germination.

Kind of seed	Substrata	Temperature ° C	First count days	Final count days	Additional Directions
<i>Ephedra nevadensis</i> Nevada ephedra	B, T	15		28	Prechill dormant lots 28 days. Light not required for maximum germination.

SUPPORTING EVIDENCE:

Nevada ephedra (*Ephedra nevadensis*) is a common shrub of the valleys of the Basin and Range Province of the Western United States. It is considered a valuable forage species for wildlife and

livestock and is commonly seeded on disturbed sites where it is adapted.

Commercial seed needs are met by hand collections from wild populations. Opportunities for making commercially successful collections occur every 5 to 10 years due to poor seed production or quality. Subsequently, on 'good years' adequate quantities of seeds are harvested and stock-piled to meet industry needs for several years. Due to the infrequency of seed production and to the relatively few preferred collection sites, the number of collections that could be assembled to facilitate rule development for this species was quite limited. One species of this genus, green Mormon tea or green ephedra (*Ephedra viridis*), has AOSA approved procedures for testing seeds. Our treatments included these procedures in an attempt to determine if they might also be suitable for Nevada ephedra.

We assembled five collections of Nevada ephedra, two of which were collected during the most recent 'good year' for commercial seed harvest (1995). Seed weights were determined on four replications of 100 seeds for each collection. Replicated germination trials were conducted in 1998 on four collections (the fifth was collected in 1962 and considered too old for germination trials), to determine the level of seed dormancy, optimal germination temperature(s), and response to prechill (2, 4, and 6 weeks). Seeds were placed in petri dishes between blotters and checked weekly for 4 weeks. Fully germinated seeds were scored and removed at each observation event. Post-test viability for all ungerminated seeds was determined by evaluating embryo firmness and color. TZ evaluations of untreated seeds were included for comparison.

Mean seed weight for the five collections was 45 seeds/gram. This is identical to that reported for green Mormon tea reported in the AOSA Handbook suggesting the seeds of the two species are indistinguishable by seed weight.

Seed-lot viability in response to germination treatments and as determined by TZ is reported in table 1. Mean viability percentages for 10-20, 15-25° C, and all prechill treatments were somewhat lower than for the 15° C and TZ treatments. We attribute this primarily to fungal growth in the 10-20 and 15-25° C treatments and to prechill-induced mortality for the low vigor 1971 and 1976 collections in the prechill treatments. This response to prechill does not cause us concern because seed of this age is much older than any that might be marketed (these collections were from research files).

Only two viable seeds remained ungerminated after 28 days at 15, 10-20, and 15-25° C incubation. No viable seeds remained ungerminated when prechill treatments preceded incubation at 15° C for 28 days. These results suggest that Nevada ephedra seeds (at least of this age) are largely, if not entirely, nondormant. Similar results were reported for green Mormon tea (Meyer et al. 1988). In that study, some seed dormancy was encountered in a few recently harvested seed-lots and was easily eliminated with a 28 day pre-chill.

Results of an inter-lab referee were not available before the submission deadline for this proposal. Results can be obtained from the author upon request.

Literature Cited

Meyer, S. E., S. G. Kitchen, G. R. Wilson, and R. Stevens. 1988. Addition of *Ephedra viridis*--green Mormon tea to the Rules. AOSA Newsletter 62:18-19.

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October 2, 1998

Table 1. Viability of five collections of Nevada ephedra in response to six germination treatments and as determined by TZ. Post prechill germination temperature was 15° C.

Collection (Year)	Germination Temperature ©			Days of Prechill (2° C)			TZ
	15	10/20	15/25	14	28	42	
	----- Viability Percentage -----						
1971	75	76	77	25	9	6	74
1976	74	68	70	33	10	6	74
1995a	92	86	84	87	90	81	96
1995b	54	48	40	50	54	57	50
means	73.8	69.5	67.8	48.8	40.8	40.8	73.5

PRESENT RULE

Table 1. Weights for working samples.

New Rule

PROPOSED RULE

Table 1. Weights for working samples.

Kind of seed	Minimum weight for purity analysis (grams)	Minimum weight for noxious weed seed or bulk examination (grams)	Approximate number of seeds per gram	Approximate number of seeds per ounce
<i>Collinsia heterophylla</i> Buist Chinese-houses	3	30	810	22,964
<i>Consolida ajacis</i> (L.) Schur Larkspur, annual	6	60	405	11,482

SUPPORTING EVIDENCE

Seed data obtained according to the ISTA seed weight determination method.

SUBMITTED BY

Participants of the Northeast Seed Analyst Workshop: MD State Seed Lab, NC Dept of Agriculture, OH Seed Improvement, PA State Seed Lab, USDA Seed Examination Facility, Southern States Coop., Inc., VA State Seed Lab.

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October 13, 1998

Species:	Consollida	100 seed weight											SD	Var. Coeff.			
		1	2	3	4	5	6	7	8	mean	variance						
Lot No.	Variety																
1		0.2190	0.2189	0.2183	0.2117	0.2197	0.2203	0.2228	0.2202	0.2189	0.000010	0.0032	1.4623				
2		0.2719	0.3048	0.2892	0.3048	0.2941	0.2982	0.2979	0.2947	0.2945	0.000111	0.0105	3.5768				
3		0.2406	0.2464	0.2402	0.2394	0.2445	0.2469	0.2473	0.2276	0.2416	0.000042	0.0065	2.6906				
4		0.3142	0.3162	0.2876	0.2917	0.3162	0.3005	0.3084	0.3037	0.3048	0.000121	0.0110	3.6117				
5		0.2498	0.2436	0.2591	0.2431	0.2370	0.2449	0.2539	0.2618	0.2492	0.000074	0.0086	3.4430				
6		0.2097	0.2000	0.2068	0.2095	0.2088	0.1997	0.2086	0.2050	0.2060	0.000017	0.0041	1.9919				
7		0.2734	0.2650	0.2560	0.2749	0.2640	0.2702	0.2685	0.2598	0.2685	0.000043	0.0066	2.4659				
8		0.2345	0.2120	0.2175	0.2156	0.2159	0.2197	0.2220	0.2309	0.2273	0.000068	0.0083	3.7541				
9		0.2111	0.2319	0.2272	0.2283	0.2312	0.2224	0.2351	0.2323	0.2274	0.000059	0.0076	3.3630				
10		0.2622	0.2629	0.2569	0.2662	0.2627	0.2656	0.2615	0.2609	0.2624	0.000008	0.0029	1.1005				
11		0.2160	0.2232	0.2241	0.2218	0.2180	0.2282	0.2242	0.2252	0.2226	0.000016	0.0039	1.7700				
									Mean	0.2467							
Species	Collinsia																
1		0.1118	0.1077	0.1164	0.1168	0.1186	0.1164	0.1111	0.1204	0.1149	0.000018	0.0043	3.7208				
2		0.1477	0.1513	0.1427	0.1433	0.1449	0.1529	0.1467	0.1425	0.1465	0.000016	0.0039	2.6901				
3		0.1323	0.1311	0.1277	0.1291	0.1274	0.1330	0.1295	0.1241	0.1293	0.000008	0.0029	2.2498				
4		0.1339	0.1382	0.1339	0.1337	0.1277	0.1380	0.1375	0.1368	0.1350	0.000012	0.0035	2.6011				
5		0.1237	0.1276	0.1209	0.1224	0.1169	0.1229	0.1224	0.1255	0.1228	0.000010	0.0032	2.5734				
6		0.1248	0.1254	0.1188	0.1229	0.1229	0.1248	0.1248	0.1242	0.1236	0.000005	0.0021	1.7284				
7		0.1235	0.1295	0.1270	0.1234	0.1314	0.1205	0.1247	0.1226	0.1253	0.000014	0.0037	2.9438				
8		0.1178	0.1210	0.1155	0.1260	0.1196	0.1230	0.1238	0.1254	0.1215	0.000014	0.0037	3.0564				
9		0.1145	0.1098	0.1052	0.1107	0.1124	0.1103	0.1091	0.1111	0.1104	0.000007	0.0027	2.4329				
10		0.1278	0.1360	0.1280	0.1305	0.1262	0.1338	0.1380	0.1290	0.1312	0.000018	0.0043	3.2622				
11		0.1084	0.1092	0.1086	0.1096	0.1095	0.1104	0.1116	0.1025	0.1087	0.000007	0.0027	2.4956				
12		0.1151	0.1103	0.1123	0.1179	0.1158	0.1231	0.1125	0.1125	0.1149	0.000017	0.0041	3.5497				
13		0.1267	0.1204	0.1218	0.1163	0.1243	0.1204	0.1165	0.1248	0.1214	0.000014	0.0038	3.1171				
									Mean	0.1235							

RULE CHANGE PROPOSAL FORM**Proposal Number Eleven**

PROPOSAL: Change the minimum weight for purity analysis in Table 1 for *Lactuca sativa* from 3 grams to 2.5 grams. Change the minimum weight for noxious weed seed or bulk examination in Table 1 for *Lactuca sativa* from 50 grams to 25 grams.

PRESENT RULE:**Section 2.4. Table 1. Weights for working samples**

Kind of seed	Minimum weight for purity analysis (grams)	Minimum weight for noxious weed seed or bulk examination (grams)	Approximate number of seeds per gram	Approximate number of seeds per ounce
<i>Lactuca sativa</i> L. lettuce	3	50	890	25,175

PROPOSED RULE:**Section 2.4. Table 1. Weights for working samples**

Kind of seed	Minimum weight for purity analysis (grams)	Minimum weight for noxious weed seed or bulk examination (grams)	Approximate number of seeds per gram	Approximate number of seeds per ounce
<i>Lactuca sativa</i> L. lettuce	2.5	25	1,036	29,371

SUPPORTING EVIDENCE:

This change will make the amount examined in the purity analysis for lettuce approximately 2500 seeds. This change will make the noxious weed seed exam amount for lettuce consistent with noxious weed seed exam amounts for other species in the table. The noxious weed seed exam amount is normally 10 times the purity exam amount or approximately 25,000 seeds. The seed count data shows that 25 grams of lettuce seed contains approximately 25,000 seeds.

Table 1 shows data from 20 samples of different varieties received in 1997
Table 2 shows data from 20 samples of different varieties received in 1998

TABLE 1

<u>Sample no.</u>	<u>Seeds per lb</u>	<u>Seeds per gram</u>	<u>Seeds per oz</u>	<u>Seeds in 25 grams</u>
1	440,945	972	27,559	24,303
2	504,669	1,113	31,542	27,815
3	440,008	970	27,501	24,251
4	478,743	1,055	29,921	26,386
5	479,908	1,058	29,994	26,451
6	420,941	928	26,309	23,201
7	468,208	1,032	29,263	25,806
8	513,471	1,132	32,092	28,300
9	479,989	1,057	29,962	26,422
10	509,388	1,123	31,837	28,075
11	437,883	965	27,368	24,134
12	475,565	1,048	29,723	26,211
13	536,401	1,183	33,525	29,564
14	402,698	888	25,169	22,195
15	494,900	1,091	30,931	27,277
16	436,938	963	27,309	24,082
17	442,754	976	27,672	24,403
18	463,761	1,022	28,985	25,561
19	494,179	1,089	30,886	27,237
20	495,629	1,093	30,977	27,317
Average	471,049	1,038	29,441	25,950

TABLE 2

<u>Sample no.</u>	<u>Seeds per lb</u>	<u>Seeds per gram</u>	<u>Seeds per oz</u>	<u>Seeds in 25grams</u>
1	457,046	1,008	28,565	25,190
2	447,417	986	27,964	25,660
3	458,413	1,011	28,651	25,266
4	547,628	1,207	34,227	30,183
5	435,144	959	27,197	23,983
6	446,440	984	27,903	24,606
7	476,226	1,050	29,764	26,248
8	466,403	1,028	29,150	25,706
9	476,804	1,051	29,800	26,279
10	394,526	870	24,658	21,745
11	498,901	1,100	31,181	27,497
12	495,729	1,093	30,983	27,323
13	462,103	1,019	28,881	25,469
14	511,953	1,129	31,997	28,217
15	464,846	1,025	29,053	25,620
16	477,700	1,053	29,856	26,329
17	469,823	1,036	29,364	25,895
18	427,441	942	26,715	23,559
19	423,504	934	26,469	23,342
20	560,554	1,236	35,035	30,895
Average	469,930	1,036	29,371	25,901

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DATE OF PROPOSAL:

October 15, 1998

Present Rule:

- 2.7g(1) Intact burs of buffalograss (*Buchloe dactyloides*) shall be considered pure seed whether or not a caryopsis is present. Refer to section 2.10a(9) for the classification of burs which are visibly empty.
- 2.10a(9) Broken seed units of Chenopodiaceae and fruit portions of fragments of monogerm beets (*Beta vulgaris*), New Zealand spinach (*Tetragonia tetragonioides*), buffalograss (*Buchloe dactyloides*) and families in which the seed unit may be a dry, indehiscent one-seeded fruit which visibly do not contain a seed. Refer to sections 2.6g, 2.7f., 2.7g(1) and 2.7i.

Proposed Rule:

add new section:

- 2.6b(10) Hardened involucre in *Coix lacryma-jobi*.

add to sections:

- 2.7g(1) Intact burs of buffalograss (*Buchloe dactyloides*) and intact involucre of Job's tears (*Coix lacryma-jobi*) shall be considered pure seed whether or not a caryopsis is present. Refer to section 2.10a(9) for the classification of burs and involucre which are visibly empty.
- 2.10a(9) Broken seed units of Chenopodiaceae and fruit portions of fragments of monogerm beets (*Beta vulgaris*), New Zealand spinach (*Tetragonia tetragonioides*), buffalograss (*Buchloe dactyloides*), Job's tears (*Coix lacryma-jobi*), and families in which the seed unit may be a dry, indehiscent one-seeded fruit which visibly do not contain a seed or caryopsis. Refer to sections 2.6g, 2.7f., 2.7g(1) and 2.7i.

Supporting Evidence:

The recognized seed unit in the seed trade is the hardened bead-like involucre containing three pistillate spikelets, 1 fertile and 2 sterile.

In the ISTA Rules the seed unit is described as follows: ISTA PSD 37

Spikelets (one fertile, two sterile) enclosed in a bead-like involucre.

Caryopsis.

Piece of caryopsis larger than one-half the original size.

References

- Hitchcock, A. S. 1951. Manual of the Grasses of the United States. 2nd Ed. 1051 pp.
ISTA. 1996. International Rules for Seed Testing. Seed Sci. & Technol. 24, Supplement. 335 pp.

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Date: Submitted October 15, 1998, revised December 22, 1998

Present Rule:

2.6e Fruits and half fruits in the carrot family (Apiaceae);

Proposed Rule:

2.6e Schizocarps and mericarps in the Apiaceae and Tropaeolaceae;

Supporting Evidence:

The seed unit in the seed trade consists of schizocarpic fruits which may or may not separate into one-seeded mericarps. This family would be covered by 2.7f and 2.10a(9) with present wording.

In the ISTA Rules the seed units in this family are described as follows: ISTA PSD 16

Mericaip, unless it is obvious that no seed is present
Piece of mericaip larger than one-half the original size, unless it is obvious that no seed is present.
Seed, with the pericaip/testa partially or entirely removed.
Piece of seed larger than one-half the original size, with the pericaip/testa partially or entirely removed.

References

Heywood, V.H. 1978. Flower Plants of the World. Prentice Hall, Inc. 335 pp.

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Mabberley, D.J. 1997. The Plant Book, a Portable Dictionary of the Vascular Plants. 2nd Ed. 858 pp.

Spjut, R.W. 1994. A Systematic Treatment of Fruit Types. Memoirs of the New York Botanical Garden 70:1-182.

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Date: Submitted October 15, 1998, revised December 22, 1998

Rule Change Proposal **Proposal Number Fourteen**

Present Rule:

- 2.6c Dry indehiscent fruits in the following plant families: Aceraceae, Asteraceae, Betulaceae, Brassicaceae, Casuarinaceae, Chenopodiaceae, Fabaceae, Fagaceae, Geraniaceae, Juglandaceae, Magnoliaceae, Nyssaceae, Oleaceae, Plantanaceae, Polygonaceae, Rosaceae, Simaroubaceae, Ulmaceae and Valerinaceae;

Proposed Rule:

- 2.6c Dry indehiscent fruits in the following plant families: Aceraceae, Asteraceae, Betulaceae, Brassicaceae, Casuarinaceae, Chenopodiaceae, Fabaceae, Fagaceae, Geraniaceae, Juglandaceae, Magnoliaceae, Nyctaginaceae, Nyssaceae, Oleaceae, Plantanaceae, Polygonaceae, Rosaceae, Simaroubaceae, Ulmaceae and Valerinaceae;

Supporting Evidence:

The seed unit of *Mirabilis jalapa* (Nyctaginaceae) consists of a one seeded, dry indehiscent fruit surrounded by a persistent and hardened calyx.

This family would be covered by 2.7f and 2.10a(9) with present wording.

In the ISTA Rules the seed unit for *Mirabilis jalapa* is described as follows: ISTA PSD 1

Achene, unless it is obvious that no seed is present.

Piece of achene larger than one-half the original size, unless it is obvious that no seed is present.

Seed, with the pericarp/testa partially or entirely removed.

Piece of seed larger than one-half the original size, with the pericarp/testa partially or entirely removed.

References

ISTA. 1996. International Rules for Seed Testing. Seed Sci. & Technol. 24, Supplement. 335 pp.

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Present Rule:

2.7k Refer to section 2.10a(6) for classification of tree and shrub seed and fruit wings.

Proposed Rule:

2.7k True seeds with attached structures such as arils, caruncles, wings, except as specified in section 2.10a(6). Refer to section 2.10a(6) for classification of tree and shrub fruit wings.

Supporting Evidence:

True seeds with various natural attachments such as are found in Euphorbiaceae (*Ricinus communis*), Violaceae (*Viola*), Iridaceae (*Gladiolus* sp.), Polemoniaceae (*Cobaea* sp.), and various tree and shrub seeds. These natural attachments are not usually removed during post harvest conditioning and are part of the seed unit common in the seed trade. To remove such structures would be a tedious and time consuming process.

In the ISTA Rules seed units from these families are described as follows: ISTA PSD 13 & 14

- 13 Seed, with or without testa, with or without strophiole/caruncle.
- 14 Seed, with or without testa, with or without wing.

References

- Felföldi, E.M. 1983. Handbook of Pure Seed Definitions with Illustrations. International Seed Testing Association, Zurich, Switzerland.
- ISTA. 1996. International Rules for Seed Testing. Seed Sci. & Technol. 24, Supplement. 335 pp.
- Larsen, A. (ed.). 1997. Photographs of Selected Crop and Weed Seeds. Colorado State University, Fort Collins, Co. Refer to Plate 191 - *Ricinus*.
- Miller, A. (ed.). 1996. Seeds of Cultivated Flowers. Front Range Seed Analysts, Fort Collins, Co. Refer to Plates V2-25 - *Gladiolus* and V2-100 *Viola*.

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Rule Change Proposal

Proposal Number Sixteen

Present Rule:

None.

Proposed New Rule:

Table 1. Weights for working samples

Kind of seed	Minimum weight for purity analysis ^a	Minimum weight for noxious-weed seed or bulk examination	Approximately number of seeds per gram ^b	Approximately number of seeds per ounce ^c
<i>Ocimum basilicum</i> L. basil	4	40	702	19,902

Supporting Evidence:

Basil is a member of the Lamiaceae and as such the seed units are described under Sec.2.6f. Seed counts were conducted by the Purity Subcommittee following the ISTA 100 seed replicate method. See the attached data sheet. The mean purity weight based on 40 samples tested was 3.7 grams. This figure was rounded to the nearest whole number. The noxious weed seed or bulk exam weight was calculated at ten times this value. By comparison the purity working weight in the ISTA Rules is 4 grams.

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Lot #	Mean Wt. (gm) per 100 seed	Mean # Seed/gm	Mean # Seed/oz	Minimum Purity Working Wt. (gm)	Minimum Noxious Working Wt. (gm)
*7/8 reps of 100, **/16 reps of 100					
9345*	0.155	645	18286	3.9	39
89585*	0.151	662	18768	3.8	38
A2064-A*	0.071	1408	39917	1.8	18
A7007*	0.175	571	16188	4.4	44
4828*	0.171	585	16585	4.3	43
5720*	0.165	606	17180	4.1	41
33414**	0.125	800	22680	3.1	31
D2827**	0.107	935	26507	2.7	27
A-2064*	0.104	962	27273	2.6	26
31335*	0.152	658	18654	3.8	38
4826*	0.147	680	19278	3.7	37
6987*	0.169	592	16783	4.2	42
4316*	0.158	633	17946	4	40
5479*	0.127	787	22311	3.2	32
4645*	0.151	662	18768	3.8	38
A7007*	0.173	578	16386	4.3	43
3879*	0.128	781	22141	3.2	32
3634-000*	0.166	602	17067	4.2	42
5720*	0.165	606	17180	4.1	41
3507*	0.112	893	25317	2.8	28
4761*	0.148	676	19165	3.7	37
3634-00*	0.165	606	17180	4.1	41
4761*	0.151	662	18768	3.8	38
4641*	0.107	935	26507	2.7	27
4635*	0.152	658	18654	3.8	38
33414*	0.136	735	20837	3.4	34
4637*	0.171	585	16585	4.3	43
3879*	0.129	775	21971	3.2	32
BD04285*	0.149	671	19023	3.7	37
AA07086-1*	0.151	662	18768	3.8	38
QE08137-1*	0.152	658	18654	3.8	38
84368a*	0.168	595	16868	4.2	42
114307*	0.148	676	19165	3.7	37
114302*	0.134	746	21149	3.4	34
84368b*	0.163	613	17379	4.1	41
84368c*	0.162	617	17492	4.1	41
A7007*	0.171	585	16585	4.3	43
3634000a*	0.161	621	17605	4	40
114302b*	0.134	746	21149	3.4	34
3634000b*	0.163	613	17379	4.1	41
Mean	0.147	702	19902	3.7	37

Std. Dev. 0.023

Mean + std. dev. 0.17

Mean - std. dev. 0.124

Mean + 2(std.dev.) 0.193

Mean - 2(std.dev.) 0.101

Rule Change Proposal Proposal Number Seventeen

Present Rule: None.

Proposed New Rule:

Table 1. Weights for working samples

Kind of seed	Minimum weight for purity analysis ^a	Minimum weight for noxious-weed seed or bulk examination	Approximately number of seeds per gram ^b	Approximately number of seeds per ounce ^c
<i>Borago officinalis</i> L. borage	48	480	53	1,503

Supporting Evidence:

Borage is a member of the Boraginaceae and as such the seed units are described under Sec.2.6f. Seed counts were conducted by the Purity Subcommittee following the ISTA 100 seed replicate method. See the attached data sheet. The mean purity weight based on 10 samples tested was 47.3 grams. The purity weight was rounded to the next whole number to provide for minimum of 2500 seeds. The noxious weed seed or bulk exam weight was calculated at ten times this value. By comparison the purity working weight in the ISTA Rules is 45 grams.

Lot # <small>*8 reps of 100, **16 reps of 100</small>	Mean Wt. (gm) per 100 seed	Mean # Seed/gm	Mean # Seed/oz	Minimum Purity Working Wt. (gm)	Minimum Noxious Working Wt. (gm)
2808*	1.836	54	1531	45.9	459
7557*	1.943	51	1446	48.6	486
2808*	1.784	56	1588	44.6	446
LDPRO1-96*	1.53	65	1843	38.3	383
B06066-2*	1.966	51	1446	49.2	492
H02067-1*	1.967	51	1446	49.2	492
B04212*	2.093	48	1361	52.3	523
113202a*	1.944	51	1446	48.6	486
113202b*	1.883	53	1503	47.1	471
113202c*	1.981	50	1418	49.5	495
Mean	1.893	53	1503	47.3	473

Std. Dev. 0.153

Mean + std. dev. 2.046

Mean - std. dev. 1.74

Mean + 2(std.dev.) 2.199

Mean - 2(std.dev.) 1.587

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Rule Change Proposal **Proposal Number Eighteen**

Present Rule: None.

Proposed New Rule:

Table 1. Weights for working samples

Kind of seed	Minimum weight for purity analysis ^a	Minimum weight for noxious-weed seed or bulk examination	Approximately number of seeds per gram ^b	Approximately number of seeds per ounce ^c
<i>Anthriscus cerefolium</i> (L.) Hoffmann chervil	6.5	65	405	11,487

Supporting Evidence:

Chervil is a member of the Apiaceae and as such the seed units are described under Sec.2.6c. Seed counts were conducted by the Purity Subcommittee following the ISTA 100 seed replicate method. See the attached data sheet. The mean purity weight based on 16 samples tested was 6.4 grams. This figure was rounded to the nearest half gram to provide a minimum of 2500 seed. The noxious weed seed or bulk exam weight was calculated at ten times this value. By comparison the purity working weight in the ISTA Rules is 6 grams.

Lot # <small>*1/8 reps of 100, **1/16 reps of 100</small>	Mean Wt. (gm) per 100 seed	Mean # Seed/gm	Mean # Seed/oz	Minimum Purity Working Wt. (gm)	Minimum Noxious Working Wt. (gm)
6866**	0.152	658	18654	3.8	38
7270*	0.314	318	9015	7.9	79
7271*	0.266	376	10660	6.7	67
4644*	0.192	521	14770	4.8	48
4650*	0.274	365	10348	6.9	69
7238*	0.256	391	11085	6.4	64
35817*	0.239	418	11850	6	60
5819*	0.233	429	12162	5.8	58
4382*	0.254	394	11170	6.4	64
7271c*	0.263	380	10773	6.6	66
7238a*	0.257	389	11028	6.4	64
7271a*	0.26	385	10915	6.5	65
7238b*	0.259	386	10943	6.5	65
7271b*	0.263	380	10773	6.6	66
7238c*	0.258	388	11000	6.5	65
7270*	0.328	305	8647	8.2	82
Mean	0.254	405	11487	6.4	64
Std. Dev.		0.041			
Mean + std. dev.		0.295			
Mean - std. dev.		0.213			
Mean + 2(std.dev.)		0.336			
Mean - 2(std.dev.)		0.172			

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Rule Change Proposal **Proposal Number Nineteen**

Present Rule: None.

Proposed New Rule:

Table 1. Weights for working samples

Kind of seed	Minimum weight for purity analysis ^a	Minimum weight for noxious-weed seed or bulk examination	Approximately number of seeds per gram ^b	Approximately number of seeds per ounce ^c
<i>Eruca sativa</i> Miller roquette	4.5	45	575	16,301

Supporting Evidence:

Roquette is a member of the Brassicaceae and as such the seed units are described under Sec.2.6a. Seed counts were conducted by the Purity Subcommittee following the ISTA 100 seed replicate method. See the attached data sheet. The mean purity weight based on 10 samples tested was 4.5 grams. This figure was rounded to the nearest half gram to provide a minimum of 2500 seed. The noxious weed seed or bulk exam weight was calculated at ten times this value. By comparison the purity working weight in the ISTA Rules is 4 grams.

Lot #	Mean Wt. (gm)	Mean #	Mean #	Minimum Purity	Minimum Noxious
^{*/8} reps of 100, ^{**/16} reps of 100	per 100 seed	Seed/gm	Seed/oz	Working Wt. (gm)	Working Wt. (gm)
84367*	0.157	637	18059	3.9	39
93904*	0.163	613	17379	4.1	41
84367*	0.139	719	20384	3.5	35
84367*	0.182	549	15564	4.6	46
4434*	0.164	610	17294	4.1	41
93904*	0.172	581	16471	4.3	43
94020**	0.168	595	16868	4.2	42
7769a*	0.214	467	13239	5.4	54
7810*	0.181	552	15649	4.5	45
7769b*	0.234	427	12105	5.9	59
Mean	0.177	575	16301	4.5	45

Std. Dev. 0.028

Mean + std. dev. 0.205

Mean - std. dev. 0.149

Mean + 2(std.dev.) 0.233

Mean - 2(std.dev.) 0.121

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Present Rule:

None.

Proposed New Rule:

Table 1. Weights for working samples

Kind of seed	Minimum weight for purity analysis ^a	Minimum weight for noxious-weed seed or bulk examination	Approximately number of seeds per gram ^b	Approximately number of seeds per ounce ^c
<i>Coriandrum sativum</i> L. coriander	27	270	95	2,703

Supporting Evidence:

Coriander is a member of the Apiaceae and as such the seed units are described under Sec.2.6e. Seed counts were conducted by the Purity Subcommittee following the ISTA 100 seed replicate method. See the attached data sheet. The mean purity weight based on 42 samples tested was 26.7 grams. This figure was rounded to the nearest whole number. The noxious weed seed or bulk exam weight was calculated at ten times this value. By comparison the purity working weight in the ISTA Rules is 40 grams.

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Lot #	Mean Wt. (gm) per 100 seed	Mean # Seed/gm	Mean # Seed/oz	Minimum Purity Working Wt. (gm)	Minimum Noxious Working Wt. (gm)
A7975*	1.053	95	2693	26.3	263
95-55-P5720*	1.125	89	2523	28.1	281
AB6108*	0.869	115	3260	21.7	217
4871*	1.005	100	2835	25.1	251
95-55-RL730*	1.084	92	2608	27.1	271
25911*	1.171	85	2410	29.3	293
6609-000-VC8CI*	1.076	93	2637	26.9	269
15816*	1.251	80	2268	31.3	313
95ER04*	0.913	110	3119	22.8	228
95-55-P5720*	0.9925	101	2863	24.8	248
5VCR10*	1.145	87	2466	28.6	286
V63CI-1*	0.965	104	2948	24.1	241
V63CI-A*	1.331	75	2126	33.3	333
D2796*	1.281	78	2211	32	320
95-55JK715*	1.481	68	1928	37	370
D2796-A*	1.066	94	2665	26.7	267
4VCR08*	1.445	69	1956	36.1	361
BD04285-2*	1.041	96	2722	26	260
09032*	1.03	97	2750	25.8	258
26034-2621**	1.067	94	2665	26.7	267
96-55-RL830**	0.978	102	2892	24.5	245
95CR04**	1.128	89	2523	28.2	282
96-55-RL830**	1.003	100	2835	25.1	251
4871**	1.036	97	2750	25.9	259
431999**	1.103	91	2580	27.6	276
4VCR08**	1.067	94	2665	26.7	267
6607-000-V65C**	1.092	92	2608	27.3	273
95CR03**	1.001	100	2835	25	250
4251-000**	1.157	86	2438	28.9	289
6608-000-V69C**	0.851	118	3345	21.3	213
V61CI**	0.921	109	3090	23	230
6608-00-V69CI**	0.74	135	3827	18.5	185
V61CI-2**	0.978	102	2892	24.5	245
V6ICT2**	1.045	96	2722	26.1	261
6607-000-V65C**	1.132	88	2495	28.3	283
6610-000-V65C**	1.112	90	2552	27.8	278
TLL0296C**	1.248	80	2268	31.2	312
95CR01**	0.971	103	2920	24.3	243
96-55-EF880**	0.964	104	2948	24.1	241
4J02216**	0.984	102	2892	24.6	246
BD08315**	1.035	97	2750	25.9	259
BD04023-1**	0.928	108	3062	23.2	232
Mean	1.068	95	2703	26.7	267

Std. Dev. 0.146

Mean + std. dev. 1.214

Mean - std. dev. 0.922

Mean + 2(std.dev.) 1.36

Mean - 2(std.dev.) 0.776

Rule Change Proposal Proposal Number Twenty-one

Present Rule: None.

Proposed New Rule:

Table 1. Weights for working samples

Kind of seed	Minimum weight for purity analysis ^a	Minimum weight for noxious-weed seed or bulk examination	Approximately number of seeds per gram ^b	Approximately number of seeds per ounce ^c
<i>Origanum majorana</i> L. sweet marjoram	0.6	6	4335	122,910

Supporting Evidence:

Sweet marjoram is a member of the Lamiaceae and as such the seed units are described under Sec.2.6f. Seed counts were conducted by the Purity Subcommittee following the ISTA 100 seed replicate method. See the attached data sheet. The mean purity weight based on 9 samples tested was 0.6 grams. This figure was not rounded to the nearest whole number because increasing the purity weight to 1gm would nearly double the amount of seed tested. The noxious weed seed or bulk exam weight was calculated at ten times the value of the recommended purity weight. By comparison the purity working weight in the ISTA Rules is 0.5 grams.

Lot #	Mean Wt. (gm) per 100 seed	Mean # Seed/gm	Mean # Seed/oz	Minimum Purity Working Wt. (gm)	Minimum Noxious Working Wt. (gm)
7558*	0.023	4348	123266	0.6	6
5074*	0.023	4348	123266	0.6	6
4524*	0.024	4167	118134	0.6	6
4524*	0.024	4167	118134	0.6	6
B011225**	0.023	4348	123266	0.6	6
2H05173-1**	0.021	4762	135003	0.5	5
HER3010*	0.024	4167	118134	0.6	6
I-149	0.022	4545	128851	0.6	6
I-153	0.024	4167	118134	0.6	6
Mean	0.023	4335	122910	0.6	6

Std. Dev. 0.001

Mean + std. dev. 0.024

Mean - std. dev. 0.022

Mean + 2(std.dev.) 0.025

Mean - 2(std.dev.) 0.021

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Present Rule

None

Proposed Rule

<u>Scientific /Common Name</u>	<u>Family</u>	<u>Spp.</u> <u>Class</u>	<u>Classification</u>						
			<u>contaminating</u>						
			<u>A</u>	<u>F</u>	<u>H</u>	<u>R</u>	<u>S</u>	<u>T</u>	<u>V</u>
Achnatherum thurberianum --needlegrass, Thurber	(Poaceae)	R	W	W	W	C	W	W	W

Supporting Evidence

This species was added to the Rules for Testing Seeds in June of 1998, however no provision was made for species classification or contaminant classification for Handbook 25. As mentioned in the supporting evidence submitted in 1998, Thurber needlegrass is an important bunchgrass native to semiarid regions of the western United States. The Purity Subcommittee Chair therefore recommends that the species class "R" be assigned and further that the contaminating classification for this species be "C" under the "R" category.

References

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- Kitchen, S.G. and Stevens, R. 1998. AOSA rule change proposal #54, addition of *Achnatherum thurberianum* -- Thurber needlegrass. The Seed Technologist Newsletter, 72(1).

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Rule Change Proposal (Handbook 25)

Proposal Number Twenty-three

Present Rule

<u>Scientific /Common Name</u>	<u>Family</u>	<u>Spp.</u> <u>Class</u>	<u>Classification</u>						
			<u>contaminating</u>						
			<u>A</u>	<u>F</u>	<u>H</u>	<u>R</u>	<u>S</u>	<u>T</u>	<u>V</u>
Machaeranthera tanacetifolia --aster, tansy --daisy, tahoka	(Asteraceae)	F	W	C	W	W	W	W	W

Proposed Rule

<u>Scientific /Common Name</u>	<u>Family</u>	<u>Spp.</u> <u>Class</u>	<u>Classification</u>						
			<u>contaminating</u>						
			<u>A</u>	<u>F</u>	<u>H</u>	<u>R</u>	<u>S</u>	<u>T</u>	<u>V</u>
Machaeranthera tanacetifolia --aster, tansy --daisy, tahoka	(Asteraceae)	F	W	C	W	C	W	W	W

Supporting Evidence

Machaeranthera tanacetifolia is a native wildflower species of Utah, Nevada, South Dakota, Nebraska, Kansas, Texas and Mexico. Therefore it is the recommendation of the Purity Subcommittee that this species be considered other crop when found as a contaminant in revegetation seed lots.

References

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USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network (GRIN). [Online Database] National Germplasm Resources Laboratory, Beltsville, Maryland.

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Rule Change Proposal

Proposal Number Twenty-four

Present Rule

(Handbook 25)

<u>Scientific /Common Name</u>	<u>Family</u>	<u>Spp. Class</u>	<u>Classification</u>						
			<u>contaminating</u>						
			A	F	H	R	S	T	V
<i>Pisum sativum</i> ---pea, field ---pea, garden	(Fabaceae)	A,V	C	C	C	C	C	C	C

(Rules for Testing Seeds)

Table 1. Weights for working samples

Kind of seed	Minimum weight for purity analysis ^a	Minimum weight for noxious-weed seed or bulk examination	Approximate number of seeds per gram ^b	Approximate number of seeds per ounce ^c
<i>Pisum sativum</i> L. field pea	500	500	4	115
<i>Pisum sativum</i> L. garden pea	500	500	3	85

Table 3. Methods of testing for laboratory germination. (cont.)

	<u>Substrata</u>	<u>Temperature °C</u>	<u>First count days</u>	<u>Final count days</u>	<u>Additional Directions</u> See Sec. 4.2 and 4.9
<i>Pisum sativum</i> field pea	B,T,S	20	3	8	Hard seeds: see sec. 4.2 d and 4.9 k(6).
<i>Pisum sativum</i> garden pea	B,T,S	20	5	8	Hard seeds: see sec. 4.2 d and 4.9 k(6).

Proposed Rule

(Handbook 25)

<u>Scientific /Common Name</u>	<u>Family</u>	<u>Spp. Class</u>	<u>Classification</u>						
			<u>contaminating</u>						
			A	F	H	R	S	T	V
<i>Pisum sativum</i> subsp. <i>sativum</i> var. <i>arvense</i> ---pea, field	(Fabaceae)	A	C	C	C	C	C	C	C
<i>Pisum sativum</i> subsp. <i>sativum</i> var. <i>sativum</i> ---pea, garden	(Fabaceae)	V	C	C	C	C	C	C	C

(Rules for Testing Seeds)

Table 1. Weights for working samples

Kind of seed	Minimum weight for purity analysis ^a	Minimum weight for noxious-weed seed or bulk examination	Approximate number of seeds per gram ^b	Approximate number of seeds per ounce ^c
<i>Pisum sativum</i> L. subsp. <i>sativum</i> var. <i>arvense</i> (L.) Poir. field pea	500	500	4	115
<i>Pisum sativum</i> L. subsp. <i>sativum</i> var. <i>sativum</i> garden pea	500	500	3	85

Table 3. Methods of testing for laboratory germination. (cont.)

Substrata	Temperature °C	First count days	Final count days	Additional Directions See Sec. 4.2 and 4.9
<i>Pisum sativum</i> subsp. <i>sativum</i> var. <i>arvense</i> B,T,S field pea	20	3	8	Hard seeds: see sec. 4.2 d and 4.9 k(6).
<i>Pisum sativum</i> subsp. <i>sativum</i> var. <i>sativum</i> B,T,S garden pea	20	5	8	Hard seeds: see sec. 4.2 d and 4.9 k(6).

Supporting Evidence

The present listing of common names for *Pisum sativum* given in Handbook 25 implies field pea and garden pea are equal, and interchangeable kind names for the species. These two kinds are in fact different and utilized for different purposes.

References

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Present Rule

<u>Scientific /Common Name</u>	<u>Family</u>	Spp. Class	Classification						
			A	F	H	R	S	T	V
Sanguisorba minor --burnet, small (little)	(Rosaceae)	A	C	W	W	W	W	W	W

Proposed Rule

<u>Scientific /Common Name</u>	<u>Family</u>	Spp. Class	Classification						
			A	F	H	R	S	T	V
Sanguisorba minor --burnet, little --burnet, small	(Rosaceae)	A	C	W	W	C	W	W	W

Supporting Evidence

Sanguisorba minor is a perennial, deep-rooted and palatable species used commercially for revegetative purposes in pasture, rangeland, wildlife habitat, mine lands, etc. where permanent cover and erosion control is desired. The Purity Subcommittee therefore recommends this species be considered a "C" under "R". The common name "little burnet" is used in the Federal Seed Act.

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