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University of Vermont and State Agricultural College
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AGRICULTURAL SEED

By ANNA S. LUTMAN

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The agricultural seed sold in Vermont in 1937 was of good quality. About 550 samples were tested. The percentage of failure to meet guaranty was higher than for many years, the figures being 3.5 percent purity, 2.4 percent viability.

The discriminating farmer should see to it that the seed he buys is properly labeled and that its purity and germination guaranties are high.

BULLETIN 427: AGRICULTURAL SEED

ANNA S. LUTMAN

This bulletin sets forth the results secured in the inspection of seed samples collected during the spring of 1937, when sampling agents visited many Vermont towns and cities and collected about 750 samples of agricultural seed offered for sale by local dealers. Five hundred and fifty-three of these were tested, about 200 duplicates being discarded. These group as follows.

Alfalfa	33	Corn	64	Rye	6
Barley	27	Millet, Hungarian ...	13	Soy bean	17
Bluegrasses	9	Millet, Japanese	19	Sudan grass	9
Buckwheat	7	Mixtures	25	Timothy	52
Clover, alsike	46	Oats	45	Vetch	13
Clover, red	84	Peas, Canada field... 15		Wheat	7
Clover, sweet	8	Rape	3	Miscellaneous	11
Clover, white	11	Redtop	29		

No samples were secured of 30 licensed brands listed below.

Barber and Bennett, Inc. Buckwheat, Rye.

P. E. Davis, Granby, Mass. Corn (Davis Yellow Flint).

Albert Dickinson Co. Millet (Golden), Spring Rye, Wheat, Rape (Dwarf Essex).

Eastern States Farmers' Exchange. Rye-Vetch mixture, Upland Meadow mixture, Lowland Meadow mixture.

Holbrook Grocery Co. Millet (Hungarian), Oats, Corn, Timothy and Alsike mixture.

E. T. and H. K. Ide. Corn (Eight-row Field).

Park and Pollard Co., Buffalo, N. Y. Oats (Overall 40/42 lb.).

Wm. G. Scarlett & Co. Timothy.

Stanford Seed Co., Inc. Red Clover (Honor), Timothy (Honor), Speltz, Buckwheat, Alsike and White Clover mixture.

R. P. Webster, Barton, Vt. Oats.

Whitney-Eckstein Co. Alsike Clover (Imperator), Timothy (Gold Medal), Alfalfa (Pan-American), Millet (Golden), Rape (Dwarf Essex).

F. H. Woodruff and Sons. Alfalfa, Corn.

Concerning these unsampled brands it may be said that seed sampling is an exceptionally seasonal job. Seed usually comes into the State and is bought and sown within a few weeks. Sampling agents who are in the field in early April find little on sale. When sent out in May to secure samples of commercial fertilizer brands which have come into the State somewhat late in the spring, they find seed on sale and sample it, taking each year many hundreds of samples; but obviously they can not find every brand. It is fair to assume, moreover, that in several instances relatively few sales were made. In the present inspection 194 of the 224 licensed brands were sampled and analyzed. Samples are taken in every instance by men who have been trained in and had experience in seed-sample taking. The fact

that no error in any case has been made in sampling is determined, so far as may be, by correspondence with the local seed dealer; that is to say, if doubt arises in any case it is ascertained that he actually did have for sale the brand in question at the time of sampling. No statement indicating failure to meet guaranty is published that is not amply substantiated by repeated analysis. Of course the Station can not assert in any given case that the material which is being offered for sale is what was furnished by the original vendor. Substitution may have been made. A lot of seed may be put into a bag bearing the label of another seed which may have been entirely sold out and the sampling agent not advised of the fact that the bag has been thus used and that the stencil or attached tag does not represent its contents. All that the Station can assert in respect to its report on samples failing substantially to fulfill the guaranties made by purveyors is that the analyses represent goods which were being offered for sale during the spring of the current year—only this and no more.

BRANDS SAMPLED AND ANALYZED

The following tables set forth the results secured in the 1937 inspection. Detailed purity tests were not made in most cases, being carried only so far as to give assurance that the vendor's guaranty was maintained in fact and within the latitude of variation established by the Association of Official Seed Analysts. Analyses are always completed in doubtful cases, of which there were few. As was said above, retests were always made of samples found to yield figures below those of the guaranties made in their behalf.

Tables I to IV (pages 6 to 14) list brands (I and II, single seeds; III and IV, mixtures) of agricultural seed which have been tested.

In table I are listed those brands of single seeds which substantially complied with guaranties. The table sets forth:

1. The name and address of the purveyor.
2. The common name of the seed, i.e., ALFALFA, BARLEY, TIMOTHY.
3. The brand name and numerical designation of the seed, i.e., Blue Ribbon, B-378.¹
4. The purity guaranty made by the vendor, setting forth the percentage of pure seed guaranteed to be present.
5. The germination guaranty made by the vendor, setting forth the viability of the seed as determined by his tests, usually made by him

¹The "numerical designation" is placed upon the package by the vendor and serves to identify the lot of seed.

between December 1936 and March 1937 preceding local sales. The hard seed content, if any (such occurs in alfalfa, clovers, vetch, or mixtures of these seeds), claimed by the vendor is indicated after the percentage of germination, e.g., 87+8, 87 indicating the germination guaranty or "sprouts" and 8 the number of hard seed present in 100. This means that 87 percent of the seed germinated after it had been under test for the prescribed number of days, and an additional 8 percent of the seeds remained hard or impermeable. Just when, if ever, these hard seeds will germinate can not be stated and for this reason their value is somewhat uncertain.

6. In certain cases, indicated by the * or **, slight shortages were noted in meeting the germination guaranties. A single asterisk (*) indicates that the Station germination test fell short of the guaranty made by the vendor by from two to four percent; the double asterisk (**) that it fell short by from four to six or more percent. *These shortages are within the tolerance limits prescribed by the Association of Official Seed Analysts.* They were established because of the variation which is bound to occur in a natural product, because it inevitably happens that Station germination tests are made from two to six months or more after the vendors' tests are made, and, finally, because seed viability lessens as the seed grows older. Hence it is that wherever the * or ** are used the seed is deemed to have substantially complied with the guaranties made in its behalf.

Table I has to do with brands which have proved to be as good as or better than the guaranties made for them.

I. BRANDS SUBSTANTIALLY COMPLYING WITH GUARANTIES

Seed, brand name, and numerical designation	Guaranties		Seed, brand name, and numerical designation	Guaranties	
	WHOLESALE DEALER	Purity		WHOLESALE DEALER	Purity	Germi-nation
ALLIED SEED CO., INC., Philadelphia, Pa.			ARTHUR R. CONE, P. O. Box 3, Buffalo, N. Y. (continued)		
MILLET, Japanese, Blue Ribbon, 81-6...	97.51	85	BARLEY, 6-row, 35-83	98	94
TIMOTHY, Blue Ribbon, B-950	99.6	90	6-row, 35-92	98.99	94
E. W. BAILEY & Co., Montpelier, Vt.			BUCKWHEAT, Beechnut, 65-35		
BARLEY, 6-row, Seed,	96	95	Silver-hulled, 65-37	99	90
6-row, Seed,	96	95	CLOVER, Alsike, Anchor, 25-74		
OATS, Seed, Pennant	99.5	98	Alsike, Anchor, 25-83	97.6	80 + 15**
Seed, Pennant	99.5	98	Alsike, Anchor, 25-116	97	80 + 10
Seed, Pennant	99.5	98	Alsike, ———, 25-124	98.1	77 + 17*
BARBER & BENNETT, INC., P. O. Box 247, Albany, N. Y.			Alsike, Anchor, 25-127	98.25	80 + 10
ALFALFA, Grimm, Certified, 27-732	99.66	81 + 11	Alsike, Arco, 25-62	98.7	82 + 12
BARLEY, Alpha, 124	99	90	Alsike, Arco, 25-83	97.6	80 + 10
6-row, 71-17	96.42	95	Alsike, Arco, 25-105	98	82 + 10
CLOVER, Alsike, Pine Tree, 21-5227	98.15	81 + 14	Alsike, Arco, 25-108	98.26	80 + 12
Red, Idaho, 24-5154	99.08	80 + 12	Alsike, Arco, 25-111	98.3	80 + 10
OATS, Seed, Northwestern, 4692	98.5	95	Medium Red, Imported, 15-133	99.4	91 + 5
PEAS, Canada Field, 85-24	99	90	Medium Red, Anchor, 15-105	99.34	80 + 12
WHEAT, Spring, 850	99	95	Medium Red, Anchor, 15-130	99.39	87 + 7
G. N. BALDWIN, Hinesburg, Vt.			Medium Red, Anchor, 15-131	99	82 + 10
BARLEY Baldwin's	99.8	89	Medium Red, Anchor, 15-137	94.18	85 + 10
G. N. BARTEMUS CO., Concord, N. H.			Medium Red, Anchor, 15-142	99	90 + 8
OATS, Seed, Barco	99.5	96	Mammoth Red, ———, 20-42	97.46	84.5 + 11.5
BELT SEED CO., Baltimore, Md.			Mammoth Red, Arco, 20-48	99.8	84 + 8
CLOVER, Alsike, Trinity	99	90 ¹	Medium Red, Arco, 15-110	99.5	87 + 5
TIMOTHY Trinity, 576	99.6	90	Medium Red, Arco, 15-116	99.73	92 + 3
BERKSHIRE COAL & GRAIN CO., INC., North Adams, Mass.			Medium Red, Arco, 15-128	99.5	82 + 10
OATS, Seed, Swedish Type	98	95	Medium Red, ———,	99.39	87 + 7
COMMUNITY FEED STORES, INC., Westminster Station, Vt.			Sweet, White Blossom, 29-59	99.02	82 + 10**
OATS, Seed, Community	99.04	95	White Dutch, 32-22	98.35	82 + 8
ARTHUR R. CONE, P. O. Box 3, Buffalo, N. Y.			CORN, Cornell 11, Arco 80-258		
ALFALFA, Grimm, 28-72	99.45	84 + 8	Early August, Arco, 80-276	98	90
Grimm, 28-99	99.85	85 + 8	Early Eureka, ———, 80-275	98	90
Grimm, Affidavit, 28-104	99.62	80 + 12	Early Lycoming, Arco, 80-298	98	90
Grimm, Arco, 28-76	99.26	82 + 10	8-row Flint, Arco, 83-73	98	93
BARLEY, 2-row, 35-77	98	94	8-row Yellow Flint, Arco, 83-75	98	92
2-row, 35-87	98	97	Ensilage, Arco, 80-284	98	91
6-row, 35-69	98	92	Golden Nugget, Arco, 83-77	98	92
			Minnesota 13, Arco, 80-272	98	92
			MILLET, Hungarian, Arco, 38-88		
			Japanese, Arco, 38-94	99.12	88
			Japanese, Arco, 38-97	98.6	88
			Japanese, Arco, 38-97	98	90
			OATS, Swedish Type, Arco, 36-44		
			Swedish Type, Arco, 36-45	98	95
			Swedish Type, Arco, 36-48	98	95
			Swedish Type, Arco, 36-50	99	95
			PEAS, Canada Field, 40-37		
			Arco, 30-34	98	92
			Arco, 30-35	92.1	90
			Arco, 30-36	93	90*
			Fancy, 30-38	91	90
			Fancy, 30-40	95.2	90
			Fancy, 30-40	95.2	90*
			RYE, Winter, 85-45		
			Black Wilson, 42-68	98	92
			Black Wilson, 42-70	98	92
			Manchu, 42-60	98	92
			SUDAN GRASS, ———, 70-38		
			———, 70-38	97.49	85

¹ Including hard seed. The Belt Seed Co. states that this lot tested 78.5 + 16. The label on the goods offered for sale was as indicated in the table.

I. BRANDS SUBSTANTIALLY COMPLYING WITH GUARANTIES—Continued

Seed, brand name, and numerical designation	Guaranties		Seed, brand name, and numerical designation	Guaranties	
	WHOLESALE DEALER	Purity Germination		WHOLESALE DEALER	Purity Germination
ARTHUR R. CONE, P. O. Box 3, Buffalo, N. Y. (concluded)			ALBERT DICKINSON CO., Chicago, Ill. (continued)		
TIMOTHY,			CLOVER,		
Arco, 10-120	99.6	92	Mammoth Red, Pine Tree,		
Arco, 10-121	99.6	92	23231	99.34	86+9
Arco, 10-127	97.65	94	Medium Red, Pine Tree, 24274	99	88+6
Arco, 10-128	99.7	92	Red, Pine Tree, 24-5264	99.3	82+10
Arco, 10-129	99.75	92	Medium Red, Pine Tree,		
Arco, 10-130	99.6	92	24598	99.26	80+13
VETCH,			Red, Pine Tree, 24609	99.18	82+8
Hairy, 43-37	98	80+10	Medium Red, Pine Tree, 24696	99.34	85+5
WHEAT,			Imported Red, 24-26	99.1	91+5
Spring, 60-44	99.25	90	Red, 24-4203	99.12	81+15
CRAVER-DICKINSON SEED Co., INC., Buffalo, N. Y.			Red, 24658	98.86	87+7
CORN,			White, 026308	99.05	86+7
Cradisco Ensilage, 72-333	99.5	90	White, 26-320	98	78+12*
DANVILLE GRAIN Co., INC., Danville, Vt.			White Sweet, Ace	99.56	84
OATS,			White Sweet, Ace	98	92
Seed, Swedish Type	98	95	White, Sweet, Ace	98.98	85+?
DELTA SALES Co., Delta, Pa.			CORN,		
CORN,			Golden Nugget Flint, Pine		
Kato, 19	99	90	Tree, 72-22	99.5	93
Ensilage, Kato-Korn, 22	99	90	Pride of North, Pine Tree,		
Growrite, Ensilage, Kato-Korn	99	90	72-32	99.5	90
ALBERT DICKINSON Co., Chicago, Ill.			Luce's Favorite, Pine Tree,		
ALFALFA,			72-36	99	89
Grimm, ———, 27-732	99.66	81+11	Smoky Dent, Pine Tree, 72-38	99	88
Grimm, Pine Tree, 27-759	99	79+13	Conklin's Early Wonder, Pine		
Grimm, Pine Tree 27-936	99	71+20**	Tree, 72-344	99	90
Grimm, Pine Tree, 27-979	99.14	80+14	Ensilage, Pine Tree, 72-357	99.5	90
BARLEY,			MILET,		
Alpha, 71-26	97.32	94	Hungarian, 8337	99.88	90
6-row, 71253	98.05	95	Hungarian, 83-53	98.38	93
2-row, 71762	98.86	94	Japanese, 81-2	98.09	91
BLUEGRASS (KENTUCKY),			Japanese, 81-10	98.8	93
————, 32686	84.3	80*	Japanese, 81186	98	80
BUCKWHEAT,			OATS,		
Japanese, 86125	98.5	84	Swedish Type, 73206	99.03	94
CLOVER,			White Seed, 73207	98.41	93
Alsike, Ace, 21140	96.55	87+7	————	99	90
Alsike, Ace, 21-550	98.35	94+2	PEAS,		
Alsike, ———	98	90	Field, 85-25	99	92
Alsike Pine Tree, 21-224	95	94	Canada Field, 85402-4-5	99	90
Alsike, Pine Tree, 21-312	97.3	88+7	Canada, 85408	99	85
Alsike, Pine Tree, 21-5222	98.3	82+13	Field, 85412	99	90
Alsike, ———, 21-5227	98.15	81+14	Canada Field	99	90*
Alsike, Pine Tree, 21198-9	98	86+9	REDTOP,		
Alsike, Pine Tree	98.1	77+17	Ace, 041246	90.6	90
Imported Red, Ace, 23-46	99	79+13	Ace, 041247	91.1	90*
Imported Red, Ace, 23-54	98	85+10	Ace, 41-451	90.1	90*
Medium Red, Ace, 24-272	98.14	83+9	Ace, 41256	91.3	90*
Imported Red, Ace, 24-278	99	90+2	Pine Tree, 41-423	95.2	90
Medium Red, Ace, 24-4155	97.76	79+14	SOY BEANS,		
Medium Red, Ace, 024608	98.46	71+23	Manchu, 84-18	99	93
Red, Ace, 24646	98.58	83+10	Manchu, 84-24	99	93
Medium Red	98	90	Manchu, 84340	99	90
Red, Ace	98.5	82+8	Illini, 84372	99	90
Adaptable European Red, Ace	99	80+10	Black Wilson	99	93
Medium Red, Pine Tree, 23-45	99.04	71+22	SUDAN GRASS,		
			————, 98210	98.93	82*
			098236	98.04	84**
			TIMOTHY,		
			Pine Tree, 66-518	99.6	94
			Pine Tree, 66-531	99.6	92
			Pine Tree, 66-534	99.6	93
			Pine Tree, 66-538	99.6	93
			Pine Tree, 66-545	99	93

I. BRANDS SUBSTANTIALLY COMPLYING WITH GUARANTIES—Continued

Seed, brand name, and numerical designation	Guaranties		Seed, brand name, and numerical designation	Guaranties	
	WHOLESALE DEALER	Purity Germination		WHOLESALE DEALER	Purity Germination
ALBERT DICKINSON Co., Chicago, Ill. (concluded)			EASTERN STATES FARMERS' EXCHANGE, Springfield, Mass. (concluded)		
TIMOTHY,			REDTOP,		
Pine Tree, 66-562	99.6	92	Fancy Solid	96.5	94*
Pine Tree, 66-583	99.65	93	Fancy Solid	96.5	94**
Blue String Globe, 66-755	99.8	93	Fancy Solid	96.5	94**
Pine Tree, 69-769	99.65	94	Fancy Solid	96.5	94*
Pine Tree, 69800	99.65	93	RYE,		
Pine Tree, 69845	99.6	93	Selected Winter	96	85
Pine Tree, 69900	99.65	93	Selected Winter, Cover Crop or Roughage	96	80
Pine Tree, _____	99.65	93	SOY BEANS,		
VETCH,			Cayuga	99.25	85
Winter, 099122	99.08	80+12	Cayuga	99.25	85
Hairy, 99164	99.26	93	Dunfield	99.25	90
EASTERN STATES FARMERS' EXCHANGE, Springfield, Mass.			SUDAN GRASS,		
ALFALFA,			_____	98.5	83
Grimm	99.35	75+20	_____	98.5	83
Grimm	99.35	75+20	SUNFLOWER,		
Grimm	99.35	73+20	_____	99.6	85
Variegated	99.4	70+20	TIMOTHY,		
Variegated	99.4	40+50	_____	99.5	90
Variegated	99.4	40+50	_____	99.5	90
BARLEY,			VETCH,		
Selected Seed	98	90	Hairy	99	75+15
Selected Seed, for Cover Crop or Roughage	98	90	Hairy	99	75+15
Selected Seed	98	90	Pearl	99	85+5
Wisconsin 38 Smooth Bearded —Treated	98.75	90	WHEAT,		
BUCKWHEAT,			Selected Winter, for Cover Crop or Roughage	98.5	90
Japanese	99.25	85	ELMORE MILLING Co., Inc., Oneonta, N. Y.		
Selected	98.75	85	OATS,		
CLOVER,			Seed, Elmore	98	95
Alsike	98.5	70+20	THOMAS W. EMERSON Co., Boston, Mass.		
Alsike	98.5	70+20	CLOVER,		
Alsike	98.5	70+20	Alsike	99.21	95
Alsike	98.5	70+20	Red	98.85	93
Alsike	98.6	70+20	Medium Red	99.4	95
Crimson	98.5	85+2	Red	98.85	93
Medium Red	99	75+15	Red	99.4	95
Medium Red	99	75+15	White	97.71	93
Medium Red	99	75+15	OATS,		
Mammoth Red	99.2	83+7	Seed, Swedish Type	98	95
White Blossom Sweet	99.25	80+10	SOY BEANS,		
White Blossom Sweet	97	74+11	Manchu	99.83	93
White Dutch	98.25	75+15	TIMOTHY,		
CORN,			_____	99.52	94
Minnesota 13	99.25	90	_____	99.6	94
Golden Nugget	99.25	90	_____	99.6	94
West Branch Sweepstakes	99.25	90	_____	99.6	94
Hybrid Canada Leaming	99.25	90	_____	99.8	95
Virginia Eureka	99.25	90	JOHN W. ESHELMAN & SONS, Lancaster, Pa.		
Cornell 11	99.25	90	OATS,		
MILLET,			Seed, Red Rose	98	98
Hungarian	98.6	80	Seed, Red Rose	98	98
Hungarian	98.6	80	CHAS. C. HART SEED Co., Wethersfield, Conn.		
Japanese	98	90	CORN,		
Japanese	98	80	Ensilage, Golden Nugget	99	90
OATS,			HOLBROOK GROCERY Co., Keene, N. H.		
Upright	99.2	90	CLOVER,		
Selected Seed—Treated	98	90	Medium Red, Special	95.26	83+10
Cornellian	99.2	90	Medium Red, Special, 2432	96.26	83+10
Selected for Cover Crop or Roughage	98	90	Red, Adaptable European	99	80+10
Ithacan	99.2	90	Medium Red, Special	95	85
Selected Seed	98	90*	MILLET,		
ORCHARD GRASS,			Japanese	98	85*
_____	93.5	95			
PEAS,					
Chang Field	99.4	85			
Canada Field	99.25	90			
RAPE,					
Dwarf Essex	99.5	95			

I. BRANDS SUBSTANTIALLY COMPLYING WITH GUARANTIES—Continued

Seed, brand name, and numerical designation	Guaranties		Seed, brand name, and numerical designation	Guaranties	
	WHOLESALE DEALER	Purity Germination		WHOLESALE DEALER	Purity Germination
HOLBROOK GROCERY Co., Keene, N. H. (concluded)			A. D. PEASE GRAIN Co., Burlington, Vt.		
REDTOP, XX Fancy	85	90	OATS, Seed, Peasco, Swedish Type	97	95
White Mountain Fancy	95	90	RACE MILLING Co., Granville, N. Y.		
TIMOTHY,			OATS, N. W. Seed	97	96
Pine Tree	99.65	93	RALSTON-PURINA Co., St. Johnsbury, Vt.		
Pine Tree, 6993	99.7	93	OATS, Seed, Selected	97	94
Special	97	90	Seed, Selected	97	94
	98	91	Seed, Selected	97	94
VETCH,			DAVID H. RISING, Easton, Pa.		
Spring	98	85	CORN, Dent, Early King Seed	99	96
E. T. & H. K. IDE, St. Johnsbury, Vt.			ST. ALBANS GRAIN Co., St. Albans, Vt.		
OATS, Seed, Ideal	98	99	BARLEY, Fancy 6-rowed Seed	96	95
Seed, Ideal	98	96	Fancy 6-rowed Seed	96	95
W. B. JOHNSON & SON, Essex Junction, Vt.			Fancy 6-rowed Seed	96	95
OATS, Recleaned Seed, Swedish Type, Johnson's Fancy	97	95	OATS,		
F. W. KELLEY, St. Johnsbury, Vt.			Fancy Seed, Hygrade	97	92
OATS, Seed, Recleaned, Swedish Type, Xtragood	97	95	Fancy Seed, Hygrade	97	92
Seed, Recleaned, Swedish Type, Xtragood	97	95	Fancy Seed, Hygrade	97	92
J. O. MIDDLEBROOK & SONS, Burlington, Vt.			Fancy Seed, Wirthmore	98	95
CORN, Golden Nugget Flint	99	90	Fancy Seed, Wirthmore	98	95
West Branch Sweepstakes	99	90	Fancy Seed, Wirthmore	98	95
PAGE SEED Co., Greene, N. Y.			WM. G. SCARLETT & Co., Baltimore, Md.		
ALFALFA, Grimm, J21-6037	99.26	82+10**	CLOVER, Alsike, 3218	96.5	70+20
BARLEY, 6-row, J 96037	98.53	92	Red, 2842	99	80+5
CLOVER,			CORN,		
Mammoth Red, Marvel, L 73037	99	90	Golden Dent, A	98	90
Medium Red—Domestic L 9.3137	99	88	West Branch Red Sweep- stakes A	98	90
CORN,			MILLET,		
Page's Improved Leaming, Pa-Se-Co, 1020	99	90	Japanese, 716	97	80
Dover Mastodon, Pa-Se-Co, 1080	99	90	CHAS. M. SEAVER & Co., Williamstown, Vt.		
Mammoth Yellow Flint, Pa-Se-Co, 1105	99	90	OATS, Fancy Swedish Type	98	96
Page's West Branch Sweep- stakes, Pa-Se-Co, 1125	99	90	STANFORD SEED Co., INC., Buffalo, N. Y.		
N. Y. State 8-row Yellow Flint, Pa-Se-Co, 1230	99	90	ALFALFA, Grimm, 2495	99.6	83+7
Cornell 11, 1245	99	90	Grimm, 3132	99.62	85+7
Sanford White Flint, Pa-Se-Co, 5115	99	90	Grimm, 3201	99.74	78+15
Page's Schoharie County Flint, 5240	99	90	Grimm, 6402	98.25	80+10
Perry's Hybrid	99	90	BARLEY,		
MILLET,			Wisconsin 38, 3092	99.71	92
Hungarian, J 66037	99	88	2-row, Alpha, 6054	99.09	90**
Japanese, Pa-Se-Co, J 5A37	97	87*	2-row, Alpha, 6119	97.65	90
REDTOP,			6-row Seed, 6315	97.5	90
L 1.2637	93.2	90*	6-row Seed, 6400	98.5	92
TIMOTHY,			BLUEGRASS (KENTUCKY), 1847		
Marvel, L 32637	99.6	92	CLOVER, Alsike, Honor, 6118	98	84+9
			Alsike, Liberty, 2352	98	91+3
			Alsike, Liberty, 6299	98.17	85+5
			Alsike, Liberty, 6300	98.64	86+6
			Alsike, Liberty, 6300	98.64	86+6
			Alsike, Liberty, 6410	97.5	85+5
			Medium Red, Imported, 3230	99.5	87+3

I. BRANDS SUBSTANTIALLY COMPLYING WITH GUARANTIES—Continued

Seed, brand name, and numerical designation	Guaranties		Seed, brand name, and numerical designation	Guaranties	
	WHOLESALE DEALER	Purity Germination		WHOLESALE DEALER	Purity Germination
STANFORD SEED CO., INC., Buffalo, N. Y. (continued)			STANFORD SEED CO., INC., Buffalo, N. Y. (concluded)		
CLOVER,			TIMOTHY,		
Red, Imported, 6314	99.5	92.5+2.5	Liberty, 5689	99.6	92
Red, Imported, 6240	99.25	82+11	Liberty, 5705	99.64	93
Medium, Red Hungarian, 6310	99.56	84+9	Liberty, 6348	99.6	93
Medium Red, Liberty, 3203	98.75	93.5+4.5	VETCH,		
Medium Red, Liberty, 3282	99	90+3	Spring, 3202	94.57	95
Red, Liberty, 6359	99	85+7	WHEAT,		
Medium Red, Liberty, 6367	99	85+8	Marquis Spring, 6391	99.55	93
Red, Liberty, 6466	98.5	87+5	SUN-FIELD SEED SERVICE, Chicago, Ill.		
Mammoth Red, Liberty, 6711	99	85+5	OATS,		
Medium Red, 6162	99	80+12	Seed, Royal Banner, 509	99.5	95
Red, 5723	97	83+5	THOMPSON & HOAGUE CO., Concord, N. H.		
White, 2710	98.78	82+10	CLOVER,		
CORN,			Medium Red, 24594	99	94
C. P. Ensilage, 1253	98	90	WHITNEY-ECKSTEIN SEED CO., Buffalo, N. Y.		
Sweepstakes, Honor, 1260	98	90	ALFALFA,		
Golden Nugget, Honor, 1272A	98	92	Grimm, Minnesota Affidavit,		
Longfellow Flint, Honor, 1299	98	92	2136	99.25	78+12
C. P. Ensilage, Honor, 1302	98	90	Grimm, Minnesota Affidavit,		
Pride of North, Honor, 1303	98	90	2165	99.46	80+10
Minnesota 13, Honor, 3111	98	92	Grimm, Affidavit, 2173	99.25	80+10
Golden Nugget, Honor, 6177	98	94	Grimm, Affidavit, 2186	98	80+10
Cornell 11, Honor, 6407	98	85	Grimm, Affidavit, Glacier 2115	99.53	80+10
Pride of Nishua, Honor, 6011	98	92	Grimm, Minnesota Affidavit,		
Sanford Flint, Honor, 6420	98	90	Glacier, 2165	99.46	80+10
Bloody Butcher, Honor, 6427	98	90	Grimm, Certified Utah, 2144	99.5	80+10
Sanford Flint, 6433	98	90	BARLEY,		
Early August, Honor, 6443	98	90	Alpha, 8093	97	84
Smoky Dent, Honor, 6444	98	90	BLUEGRASS (CANADA),		
Improved Leaming, Honor, 6455	98	93	3470	85	80
MEADOW GRASS,			BUCKWHEAT,		
Rough-stalked, 3340	90.04	90	Japanese, 8104	99.79	97
MILLET,			Japanese	99.5	95
Hungarian, 5675	99.13	93.5	CLOVER,		
Hungarian, 6065	99.62	91*	Alsike, Herald, 1984	95.75	80+12
Hungarian, 6344	98	91	Alsike, Herald	94.67	80+12
Hungarian, 6390	98	90	Alsike, Herald	95	61+29
Japanese, 1040	98.04	90	Alsike, Pan-American	98.04	80+12
Japanese, 5809	98.46	96	Alsike, Pan-American	98.04	80+12
Japanese, 6394	98	85	Alsike, Pan-American	98.04	80+15
OATS,			Alsike, Pan-American, 1854	98.3	73+17
Seed, Swedish Select, 6436	98	93	Alsike, Pan-American	98	86+10
PEAS,			Alsike, Pan-American	98	80+10
Canada, 2576	99.8	87.5	Medium Red, Herald, 5676	97	81+15
Canada, 3338	99	90	Medium Red, Emperor, 5676	97	81+15
Canada, 3454	98	92	Medium Red, Emperor, 5776	98	90
RAPE,			Medium Red, Emperor	97	90
3183	99.59	84	Medium Red, Pan-American,		
3327	99.53	90	5576	99.25	90
REDTOP,			Medium Red, Domestic, Pan-		
Fancy, 3192	92.63	90	American, 5654	99	90
Fancy, 3193	92.63	90*	Medium Red, Domestic, Pan-		
Fancy, 3274	94	90*	American, 5659	99.25	87+8
RYE,			Medium Red, Domestic, Pan-		
Rosen, 6353	97.86	91	American, 5683	99	80+10
RYEGRASS,			Medium Red, Domestic, Pan-		
3199	99	90**	American, 5684	99	87+8
Domestic, 3234	99.23	93	Medium Red, Domestic, Pan-		
SOY BEANS,			American, 5768	99	90
Black Wilson, 6311	99.92	94	Medium Red, Domestic, Pan-		
Black Wilson, 6311	99.92	94	American	99	80+12
SUDAN GRASS,			Medium Red, Domestic, Pan-		
2419	98.08	82	American	99	85+5
3170	96.98	83	Medium Red, Pan-American	98.54	80+10
TIMOTHY,			Red, Pan-American	99	82+8
Lark, 2675	98.5	90	Medium Red, Domestic, Pan-		
Lark	98.84	94*	American	99	80+10
Liberty, 2437	99.6	93	Red, Imported, 5711		
Liberty, 2587	99.6	93	(Hungary)	99.13	85+5
Liberty, 2590	99.6	90			
Liberty, 2927	99.6	93			
Liberty, 2961	99.6	92			
Liberty, 3088	99.6	93			

I. BRANDS SUBSTANTIALLY COMPLYING WITH GUARANTIES—*Concluded*

Seed, brand name, and numerical designation	Guaranties		Seed, brand name, and numerical designation	Guaranties	
	WHOLESALE DEALER	Purity		WHOLESALE DEALER	Purity	Germination
WHITNEY-ECKSTEIN SEED CO., Buffalo, N. Y. (continued)			WHITNEY-ECKSTEIN SEED CO., Buffalo, N. Y. (concluded)		
CLOVER,			RYE,		
Medium Red, Domestic, 5767	97	80 + 10	Spring, Pan-American	98	85
Medium Red, Imported (Hungary)	99.22	90	Winter, Rosen, 8120	96.61	85
Red, Canadian, 5722	98.57	94 + 1	RYEGRASS,		
Red, Canadian, 5723	97	83 + 5	English Perennial	99.16	88
Red, Canadian, 5783	97	83 + 5	SOY BEANS,		
Fancy Sweet, 4022	99.4	85 + 4	Black Wilson, 9523	98	92
White Dutch, 6026	98.24	75 + 13	Manchu, 9524	98	89
White Dutch, 6031	98.34	80 + 7	Manchu	98	89
White Dutch, 6032	99.02	77 + 13	SUDAN GRASS,		
Choice White, 6033	98.48	85 + 6*	9704	98.96	90
			9704	98.96	90
CORN,			SUNFLOWER,		
Excelsior Ensilage	99	85		99.5	91
Golden Nugget	98	88	TIMOTHY,		
Improved Leaming, Pan-American	99	90	Frontier, 570	98	90
Sanford Flint	99	85	Herald, 570	98	90
FESCUE,			Imperator	99.25	94
Meadow (English Bluegrass)			Imperator	99.25	90
2659	98.7	92	Pan-American, 577	99.7	94
Red	98.75	85**	Pan-American	99.6	90
			Pan-American	99.6	94
MILLET,			Pan-American	99.6	90
Hungarian, 9046	99	90	Pan-American	99.6	90
Hungarian, 9052	98.37	90	VETCH,		
Hungarian Fancy	98.5	86	Winter, 9425	99.18	75 + 15
Japanese, Pan-American, 9030	98.96	90*	Hairy Winter	99	92
Japanese, 9040	98.2	88	Hairy Winter	99	92
Japanese, Fancy, 9042	99	90	Spring	98.7	90
Japanese	98.52	95	WHEAT,		
Japanese	97.49	90	Spring, Marquis, 8098	99	96
OATS,			Spring, Marquis	99.25	90
Seed, Swedish Selected	98	90	Spring, Marquis	98	94*
ORCHARD GRASS,			T. W. WOOD & SONS CO., Richmond, Va.		
Fancy, 2536	90.08	90	CORN,		
Fancy, 2544	90.08	90	West Branch Sweepstakes,		
PEAS,			765	99	90
Canada Field, 9522	99	96	Early August	99	90
Canada Field, 9526	99	90	F. H. WOODRUFF & SONS CO., Milford, Conn.		
REDTOP,			CLOVER,		
Imperator	90	90**	Fancy White	97.35	80 + 5
Imperator	90.98	88	S. D. WOODRUFF & SON, Orange, Conn.		
Pan-American, 4226	93	90*	CORN,		
Pan-American, 4240	92.28	90*	Woodruff's Select Beauty	99	90
Pan-American, 4254	92.2	90			
Pan-American, 4255	92.25	90			
Pan-American	92.7	90			
Pan-American	92.28	90**			

In table II are listed those brands of single seed, 19 in number, which failed substantially to comply with guaranties or which contained, as compared with the germination guaranties, inordinate proportions of hard seed.

Ten brands failed to make good in respect to guaranty, two in respect to purity, five in respect to viability, three in respect to both purity and viability. Nine contained inordinate amounts of hard seed.

II. BRANDS OF SINGLE SEED FAILING SUBSTANTIALLY TO COMPLY WITH GUARANTIES (OR CONTAINING INORDINATE AMOUNTS OF HARD SEED)

Seed, brand name, and numerical designation	Purity		Germination	
	Guaranty	Found	Guaranty	Found
BARBER & BENNETT, INC., Albany, N. Y.				
*Clover, Alsike, 279	99	OK	80+10	69+18
ARTHUR R. CONE, Buffalo, N. Y.				
*Alfalfa, Grimm, 28-86	97.76	OK	82+10	64+32
ALBERT DICKINSON Co., Chicago, Ill.				
*Vetch, Winter, 99-26	99.06	OK	90	71+18
EASTERN STATES FARMERS' EXCHANGE, Springfield, Mass.				
*Alfalfa, Variegated	99.25	OK	70+20	55+39
Bluegrass, Canada	84	78	70	OK
Bluegrass, Kentucky	90	79	85	78
HOLBROOK GROCERY Co., Keene, N. H.				
Clover, Alsike, 2T553	95	OK	92	78+2
WM. G. SCARLETT & Co., Baltimore, Md.				
Redtop, ———, 639	94	OK	90	82
STANFORD SEED Co., INC., Buffalo, N. Y.				
*Alfalfa, Ontario Variegated, 6354	99	OK	83+8	64+32
*Alfalfa, Grimm, 6460	99.1	OK	80+11	62+43
Bluegrass, Canada, ———, 6073	85	83	80	77
*Clover, Red, Imported, 6412	99	OK	90+2	80+15
Clover, Sweet, 6373	98.41	OK	78+16	81+4
WHITNEY-ECKSTEIN SEED Co., Buffalo, N. Y.				
*Alfalfa, Grimm, Affidavit, 2178	98.5	OK	80+10	71+25
Bluegrass, Kentucky, Fancy, 3625	85	77	80	OK
Bluegrass, Kentucky, Fancy, 3632	85	76	80	73
Bluegrass, Kentucky, Fancy, ———	85.97	83	85	79
Corn, Sweepstakes	98	OK	85	77

* In the cases where the asterisk (*) is used the question raised has to do with the inordinate proportion of hard seed present.

In tables III and IV are set forth results secured with timothy and alsike mixtures and complex mixtures of many seeds. Both guaranties and analyses are shown.

Timothy and alsike.—Three lots were low in purity, one in both purity and viability; the single lot of alsike and white clover was low in purity.

Complex mixtures.—These were found to be in relatively poor condition. Seven of the 13 were deficient in purity, two in viability, two in both, and only two passed. However, the comment made below should be taken into account. The purity lapses in the main represent the presence of inert matter which is apt to be light in weight and tends to accumulate at the top of the bag, whereas the heavier seeds tend to settle.

III. TIMOTHY AND ALSIKE MIXTURES

Brand name and numerical designation	Purity guaranties			Germination guaranties		Relation to guaranties	
	Timothy	Alsike	Total	Timothy	Alsike	Purity	Germination
ARTHUR R. CONE, Buffalo, N. Y.							
Arco, 10-132	Guar.	74.91	21.9	96.81	90	66+12	OK OK
	Found	76.5	21	97.5	92	86+10	
ALBERT DICKINSON Co., Chicago, Ill.							
Pine Tree, 69856	Guar.	72.18	26.53	98.71	92	80	OK OK
	Found	81.5	17	98.5	93	76+9	
66861	Guar.	78.24	20.21	98.45	90	80+13	Low Low
	Found	77	20	97	90	64+20	
69874	Guar.	70.86	25.98	96.84	90	70+23	OK OK
	Found	83	15	98	90	80+10	
69921	Guar.	77.86	20.08	97.94	92	90	OK OK
	Found	81	17	98	95	70+14	
EASTERN STATES FARMERS' EXCHANGE, Springfield, Mass.							
	Guar.	78.4	19.8	98.2	89	70+20	Low OK
	Found	80	11	91	93	64+22	
	Guar.	78.4	19.8	98.2	89	70+20	Low OK
	Found	72	25	97	90	74+17	
STANFORD SEED Co., INC., Buffalo, N. Y.							
6349	Guar.	77.32	20.13	97.45	92	80+12	OK OK
	Found	82	15	97	95	82+15	
6527a	Guar.	76.64	21.1	97.74	92	82+10	OK OK
	Found†	92	6	98	96	68+20	
WHITNEY-ECKSTEIN SEED Co., Buffalo, N. Y.							
4574	Guar.	76.86	20.25	97.11	90	75+15	Low OK
	Found	73	22	95	93	90+8	
4577	Guar.	69.75	24.96	94.71	89	85	OK OK
	Found	70	25.5	95.5	90	85+4	
HOLBROOK GROCERY Co., Keene, N. H.							
		White clover	Alsike clover	Total	White clover	Alsike clover	Low OK
	Guar.	11.86	87.34	99.2	73		
	Found	12	85	97	84+12	84+10	

† Mostly timothy; see statement near bottom page 14.

The guaranty statements in table IV, insofar as they relate to purity of the several ingredients, are not strictly purity guaranties. They indicate the proportions of the various seed used in making up the mixtures. Thus, for example, in Hayland mixture No. 1, the figures 32, 20, and 48 represent the number of pounds in 100 respectively of red clover, alsike clover, and timothy. The purity guaranty for the mixture is 99. There were found present, in the first of the two samples analyzed, 30, 27, and 41.5 pounds in 100, or a total of 98.5.

IV. COMPLEX MIXTURES

Brand name and numerical designation	Purity guaranties and analyses							Totals	Total germination guaranties and analyses	Relation to guaranty		
	Red clover	Alsike clover	Timothy	Redtop	Kentucky blue grass	Ladino clover	Sundry seed			Purity	Germination	
EASTERN STATES FARMERS' EXCHANGE, Springfield, Mass.												
Hayland, No. 1	Guar.	32	20	48	..	..	..	99	74+16		
	Found	30	27	41.5	..	..	..	98.5	85+5		
	Found	20	17.5	60.5	..	..	..	98	92+1	OK	OK
No. 2	Guar.	24	16	40	20	..	..	98	93+4	Low	OK
	Found	23	15	37	21	..	..	96	78+12		
	Found	16	12.5	50	20	..	..	98.5	89+5	Low	OK
	Found	10	12	39	35	..	..	96	88+4	OK	OK
No. 3	Guar.	24	12	40	8	..	16 Alf.	98.75	89+2	Low	OK	
	Found	17	10	45	9	..	16 Alf.	97	73+17			
	Found	23	10	44	13	..	7 Alf.	97	90+4	Low	OK	
No. 4	Guar.	12	8	20	..	..	60 Alf.	99.2	92+2	Low	OK
	Found	16	8	25	..	..	49.5 Alf.	98.5	58+32		
	Found	8	9	30	..	..	51.5 Alf.	98.5	87+8	Low	OK
Pasture soils, Light	Guar.	24	16	..	20	12	4	24 Orch.	94.1	81+9		
	Found	20	12	..	16	18	6	25 Orch.	97	84+1	OK	OK
Medium	Guar.	24	20	16	8	28	4	..	95.6	78+12		
	Found	19	21	17	8	28	3	..	96	71+6	OK	Low
Heavy	Guar.	16	24	16	16	24	4	..	95.6	79+11		
	Found	9	14	14	9	46	2	..	94	63+2	Low	Low
ALBERT DICKINSON Co., Chicago, Ill.												
Upland, 36892	Guar.	9	9	19	12	12	..	14 Rye 10 Orch. 15 Inert, etc.	85	65		
	Found	10	7	14	8	12	..	12 Rye 10 Orch. 27 Inert, etc.	73	59	Low	Low

The germination guaranties are those made by the purveyors. The germination "found" represents a calculation in each case, in which the proportions found of the several seed and the germination guaranties of each were used. To publish the multitudinous figures would be confusing rather than illuminating. Hence the calculations have been made using the actual proportions of the various ingredients found and the actual germination figures found, the result being expressed as a single figure, for example, 92 + 1.

The sampling of mixtures, whether complex or simple, is not an easy job. The various seed tend to separate in the bag, the heavier settling towards its bottom and sides. A fine example of this separation is seen in table III in the case of the lot marked †. There seems to be every reason to believe that each bag of every lot as shipped contained the proportions of the several seeds indicated on its tag. Yet, on the other hand, the Station analyses accurately set forth the composition of the samples submitted by the sampling agents. Buyers will do well to look at total purity and total germination results rather than at the details.

SUMMARY OF 1937 INSPECTION

The violations of the law are usually due :

1. *To failure to declare guaranties.*—It seems safe to say that the original container almost always carries a guaranty, but sometimes, perhaps often, the figures are not furnished as required by law to the ultimate purchaser, the farmer, when smaller lots are drawn from the original package. A very few lots are sampled each year whereon no guaranties whatsoever appeared. Local dealers sometimes lose, mislay, or destroy the tags furnished by the original vendors; sometimes they are torn off in transit; and, rarely, the vendor neglects to furnish the tags.

2. *To failure to maintain purity guaranty.*—Nineteen samples in 552 (3.5 percent) were below guaranty in purity.

3. *To failure to maintain germination guaranty.*—This lapse is usually more common than is failure to maintain a purity guaranty, 13 (2.4 percent) having been observed this year.

This represents the worst result secured in several years of inspection at this Station. However, it is the writer's judgment that the vendors as a class have not necessarily been at fault. The seed situation was exceptionally difficult last year. Drouth and other untoward circumstances made the seed supply very short. Furthermore, in view of the fact that many of the lapses occurred in the complex mixtures, which are exceptionally difficult to sample (page 14), there is reason to believe that, as a matter of fact, the situation as represented by the percentage figures 3.5 and 2.4 is really not so bad as it seems to be.

Alfalfa and red clover and the several cereals were found to be quite free from weed seeds, but alsike clover less so. No traces of dodder were found. The situation seemed to be normal in respect to the weed seed content of agricultural seed sold in Vermont in 1937. When weed seeds or inert matter in more than the usual amounts are present, vendors are apt to lower their guaranties to meet this situation. Much has been accomplished during recent years by seed legislation, inspection, and the use of improved seed cleansing facilities. Good, clean, viable seed may be readily bought throughout Vermont; yet relatively poor and weedy seed is sometimes sold. Buyers should see to it that dealers supply them with the information which the law specifies should be furnished as to the quality of the seed which is offered for sale. It is almost always exhibited on the original seed bag and should be placed on every lot of more than 10 pounds which is bought. If it is furnished, a prospective buyer may then readily discriminate between seed of high and low quality.

Section 7874 of the Public Laws requires, in case agricultural seed contains certain weed seeds, that their names and approximate number per ounce must be stated. In this respect the law resembles that in most other states where seed laws exist.

CONCERNING THE VERMONT AGRICULTURAL SEED LAW
(SECS. 7065-7091 P. L.)

The Vermont law aims to give the farmer information enough so that he can, if he desires, secure good seed. It seeks to protect both purveyors and farmers against the practices of seedsmen who may be dishonest, careless, or irresponsible. This end is not always attained when farmers buy, as sometimes they do, from fly-by-night concerns, from mail-order houses, from which they may—not always, but they may—get inferior seed. Seed sold at attractively low prices, advertised by so-called bargain seed houses, shipped in small lots, unguaranteed, directly to consumers or bought from a trucker or stranger is apt to be a costly purchase, that is to say, costly in the long run. The annual inspection service comparing promise and performance and the state-wide distribution of analytical results should prove helpful in combating a situation of this kind.

Variations.—No matter how carefully samples are taken or analyses made, variations occur in purity and germination tests. Fertilizers and feeds are manufactured products, reasonably well standardized, whereas seed is a natural and, necessarily, a variable product. A dozen samples of fertilizer or of feed, taken by trained sampling agents from the same shipment and tested by a dozen skilled analysts, should afford closely comparable results. A dozen seed samples similarly taken and analyzed might afford quite unlike results. Furthermore, whereas fertilizers and feeds change slightly, if at all, in stock, the viability of seed lessens as it ages. The germination results secured in September are sometimes lower than those arrived at in the preceding March. Hence it is that the Association of Official Seed Analysts has adopted tolerances or allowances for variation. Shipments which fail to meet purveyors' guaranties, so be it the lapse is within the limits of allowable variation, are not looked upon as being misbranded. These allowances are:

Purity, 0.20 percent plus 20 percent of the mass other than the pure seed.

Germination, 6-10 percent allowance successively for seed guaranteed 90 and plus, 80-89.9, 70-79.9, 60-69.9, and less than 60 percent.

Hard seed—Whenever a seed law official thinks about these he has a headache. Vendors and analysts do not always look at this problem from the same angle. The phrase “minimum percentage of germination” is interpreted at this Station to mean the actual percentage of the seed that sprouts or germinates at the end of the time usually allowed for germination tests. In the case of legumes containing hard seed the actual percentage of germination should be given on the label and this figure should be followed by the percentage of hard seed. For example, a given sample may show a germination test of 85 percent, and in addition contain 10 percent of hard seed. In such a case the guaranty should be stated as 85 percent germination and 10 percent hard seed, and not as 95 percent germination and 10 percent hard seed.

“Agricultural seed.”—The term as used in the law includes sundry grasses, legumes, cereals, and forage plants used for seeding purposes, whether single or mixed. However, certain seeds are not included within the purview of the law, namely, those used for food only; those sold for or in stock for recleaning before exposing for sale; those sold and delivered on the farm on which they are grown. In the latter case, if the seed is advertised for sale (except it be on the farm on which it is grown, by placard or by sign), or is delivered from the farm to a merchant by a common carrier, or is sold by the grower to a local dealer for sale on his (the grower’s) account, or otherwise, the farmer is looked upon as a vendor and either he or the local dealer to whom the seed was sold must guarantee it as to its purity and germination and must license it for sale.

Sampling.—Farmers sometimes send seed to the Station for testing under the mistaken notion that such work is done without charge. Section 7877 P. L. provides that fees “not to exceed the actual cost” must be charged for such analyses and covered into the State Treasury. Samples taken by hand should be drawn by securing approximately equal parts from at least three different places in each sack, if the seed is sacked, including the top and opposite sides near the bottom, and, if there are several sacks available, from at least five, or from a smaller number if there are less than five in stock. The samples from these various locations and sacks should be mixed by tumbling over on a paper and the following quantities sent: Grass seed, clovers, alfalfa, millets: one cupful. Cereals: one pound.

Anyone can make a reasonably satisfactory germination test for himself if he so desires. Bulletin 205, sent on request without charge, gives directions.

Stained seed.—Several sorts of seed are in scanty supply this year. It is to be hoped that farmers have exercised more than the usual care in buying. The Federal Seed Act requires that all imported alfalfa and red clover seed be stained as follows: Red clovers from Italy and of unknown origin, 10 percent stained red; from Canada, one percent stained violet; of known origin, other than Italy and Canada, one percent green. Alfalfa of unknown origin and from Africa, 10 percent stained red; from Turkestan, 10 percent stained purple red; from South America, 10 percent stained violet; of known origin, other than from Canada, Africa, Turkestan, and South America, one percent stained green. Much green-stained clover seed was sold in Vermont in 1937. The green stain advertised the fact that it was imported. It is to be hoped that when sown it grew a crop which will succeed under Vermont conditions.

Oats, when sown for seeding purposes, come under the provisions of the Vermont law. To offer them as feed oats, when actually being sold for seeding purposes in the attempt to evade the provisions of the law, constitutes sharp practice and, doubtless, is illegal. The fact that the vendor says that he sells them as feed, when it is generally known and he himself knows perfectly well that they are to be used for seeding purposes, does not relieve him from the responsibility of complying with the law.

Certified seed is that vouched for by some state or similar agency certifying as to its purity, viability, and variety. Such seed is usually shipped in sealed sacks, with a certifying tag attached.

Verified origin seed is that the origin of which is attested by dealers under governmental supervision but is not vouched for as to purity, viability, or variety. For example, "Affidavit Grimm" is an alfalfa vouched for as being of the Grimm variety by its grower.

SEEDING RATES FOR CERTAIN FIELD CROPS

Dr. A. J. Pieters and associates in the Federal Department of Agriculture say that: "A number of factors determine the best rate of seeding for field seeds . . . especially . . . of legumes and pasture and hay grasses. Consequently, it is not possible to specify any given rate and say that this rate is in all cases the best.

"Some of (these) factors . . . are size and quality, i.e., the number of pure live seed . . . method of seeding, and, if in rows, the distance between rows, preparation of seedbed, and climatic factors. Some of these factors may be evaluated for groups of varieties, such as the

varying size of soybean seeds of different varieties, but others, such as the quality of the seed, can be determined only for each sample. A broadcast seeding requires a heavier rate than if the same variety is seeded in close drills. Careful preparation of the seedbed will make possible a good stand with less seed than is commonly used.

"The seeding rates commonly practiced by farmers are based on experience and vary widely for the same seed even in the same locality. Experience has shown that the heavier rate of seeding often is good insurance and that the chances for a profitable crop, all things considered, are better if plenty of seed is used. In a year when seed is scarce and high in price it may be well, however, to turn to more careful preparation of the seedbed to make it possible to secure good stands.

"The real quality of the seed based on the germination and purity is an important factor . . . Obviously if seed is low in germination, or contains an unusual amount of 'hard seed,' or dirt, or weed seeds, more seed per unit area will be necessary than if . . . (it) is of high purity and germination. The rates of seeding advised herein are based on the assumption that the seed used is of reasonably good grade for its kind. . . . Account has been taken of the factors referred to as well as of known farmer's practices and the rates given represent the best judgment of the specialists in each group in the Bureau of Plant Industry and must be taken as average seeding rates to be decreased or increased as conditions may indicate. The seeding rate will naturally be affected by the size of the seed and usually seeds of a similar size as shown by the number of seed per pound will require the same seeding rate.

"For a crop that spreads by runners, such as white clover, less seed is needed than for a crop of similar seed size but which does not spread. Very small seeds, such as those of the fine grasses, white or alsike clover, are adversely affected by an improper seedbed more readily than large seed, hence more seed per unit area is required.

"The table gives rates varying within a certain range. The user must determine whether the factors in his locality warrant the lower or the higher rate. In the case of cereals the lower rate is generally used in dry regions, the higher in humid regions. . . . The number of seeds per pound and the weight per bushel where these are known (are indicated) . . . the number . . . given . . . (being) an average or an approximation.

"No rates can be given for seeding in mixtures as these vary with the mixture and the conditions under which the mixture is used. For

seeding rates of mixtures see Pasture Handbook, Miscellaneous Publication 194, U. S. Department of Agriculture."

SEEDING RATES, SEED PER POUND, BUSHEL WEIGHTS

Crop	Pounds per acre		Numbers per acre (1,000s)	Weight per bushel	Crop	Pounds per acre		Numbers per acre (1,000s)	Weight per bushel
	Close drills	Rows 3'-3½'				Close drills	Rows 3'-3½'		
Alfalfa	15-20	....	220	60	Oats	48-128	....	19	32
Barley	72-96	....	13	48	Orchard grass	20-25	....	590	14
Bluegrass,					Rape	2-3*	....	104	50
Canada	15-25	....	2,500	14	Redtop	10-12	....	5,100	14
Kentucky	15-25	....	2,200	14	Rye	28-112	....	18	56
Buckwheat	36-60	....	20	48-52	Ryegrass	25-30	....	227-330	24
Clover,					Soybeans,				
Alsike	6-8	....	700	60	Small	60	15-20	7¾	60
Red	8-12	....	250	60	Medium	90	20-30	2½	60
Sweet	12-15	....	250	60	Large	120	30-45	1¼	60
White	5-7	....	700	60	Sudan grass	20-25	4-6	55	40
Alsike and timothy	2-4	....	....	..	Sunflowers	....	8-10	....	24
Corn,					Timothy,				
Grain	....	6-10	1¼	56	Spring	8-12	....	1,230	45
Silage	....	8-18	1½	56	Fall	3-4	....	....	..
Fescue,					Vetch,				
Meadow	20-25	....	230	24	Hairy	20-40	....	20¾	60
Sheep's	16-20	....	680	14	Spring	40-80	....	6¾	60
Field peas	30-90	....	4½	60	Wheat	30-120	....	16	60
Millet,									
Hungarian	20-30	....	220	50					
Japanese	20-25	....	155	35					

* Broadcast, 4-6.

SPECIAL NOTICE

The Federal Bureau of Agricultural Economics advises northern farmers to "know the origin of the alfalfa and red clover seed purchased," saying that "there is need of extreme caution because of the short supply of adapted seed . . . and the wide differential in price between unadapted and adapted seed."

The alfalfa carry-over is very small; Northern and Central state production is below and Southwestern state production above average; and much of the latter is likely to be shipped north and, perhaps, misrepresented as to its origin. Such seed rarely withstands Vermont winters. Full identification as to locality of production should be obtained and, if possible, blends should not be bought. "Certified" and "verified" seed, if truly such, is to be preferred to other types of seed, provided it is certified or verified as a product adapted to Vermont conditions.

The red clover carry-over is very small, and domestic production insufficient. Domestic seed will be high and imported seed relatively low in price. Buyers of domestic red clover seed may be protected by obtaining seed of known origin. Those who buy imported seed, which is grown in regions where conditions are unlike those obtaining in Vermont, are likely to spend their money to no avail.

Do not buy unadapted seed.