

---

University of Vermont and State Agricultural College

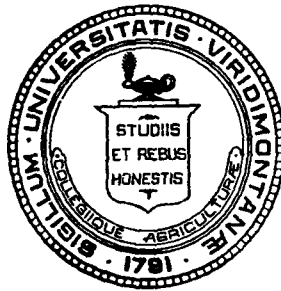
Vermont Agricultural Experiment Station

BURLINGTON, VERMONT

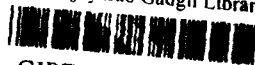
---

AGRICULTURAL SEED

By ANNA S. LUTMAN



Dhananjayrao Gadgil Library



GIPE-PUNE-047262

The agricultural seed sold in Vermont in 1934 was of good quality comparing well with that sold during most of the years since the seed law first went into effect in 1913. Almost 700 samples were tested. Their quality was excellent, only four being deficient in respect to purity and 30 deficient in respect to viability.

It is evident that good seed may be purchased. The discriminating farmer should be sure that the seed he buys is properly labeled and that its purity and germination guaranties are high.

## BULLETIN 384: AGRICULTURAL SEED

By ANNA S. LUTMAN

This bulletin sets forth the results of inspection of seed samples collected during the spring of 1934, when the Station sampling agents visited a large number of Vermont towns and cities and collected 697 samples of agricultural seed offered for sale by local dealers, as follows:

Alfalfa .....	29	Meadow grass .....	1	Redtop .....	47
Barley .....	42	Millet, golden .....	1	Rye .....	5
Bluegrass .....	4	Millet, Hungarian ...	25	Rye grass .....	3
Buckwheat .....	6	Millet, Japanese ....	57	Soy beans .....	9
Clover, alsike .....	58	Mixtures .....	28	Sudan grass .....	13
Clover, red .....	74	Oats .....	57	Timothy .....	72
Clover, sweet .....	10	Orchard grass .....	2	Vetch .....	15
Clover, white .....	6	Peas, Canada field...	25	Wheat .....	11
Corn .....	96	Rape .....	1		

No samples were secured representing about two score brands which were licensed for sale, as follows:

*Allied Seed Co.* Crimson Clover; White Clover; Timothy and Alsike Mixture; Oats.

*Barber & Bennett, Inc.* 2-row Barley.

*Cleveland Grain Co.* White Oats (Elwoods).

*Craver-Dickinson Seed Co., Inc.* Rape; Rye.

*Perley E. Davis, Granby, Mass.* Corn (Davis Yellow Flint).

*A. Dickinson Co.* Hungarian Millet (\*\*\*) ; Japanese Millet; Wheat.

*Eastern States Farmers' Exchange.* Buckwheat; Hungarian Millet; Mixtures; Rye-Vetch, Wheat-Vetch, Hayland No. 4, for light pasture, for heavy pasture, for lowland meadow, for upland meadow; Soy Beans (Wilson); Sunflower; Wheat.

*Holbrook Grocery Co.* Corn (White Mountain); Oats (White Mountain); Timothy and Alsike Mixture.

*W. B. Johnson & Son, Essex Junction, Vt.* Oats (Johnson's Fancy Swedish).

*F. W. Kelley, St. Johnsbury, Vt.* Oats (Xtragoood).

*Larrowe Buckwheat Flour Corp., Cohocton, N. Y.* Buckwheat (Larrowe).

*R. H. McEwen Milling Co., Ogdensburg, N. Y.* Oats (Swedish).

*Page Seed Co.* Peas (Canada Field).

*Jerome B. Rice, Jr.* Alsike Clover; Red Clover; Timothy.

*David H. Rising.* Corn (Gold Dollar).

*St. Albans Grain Co.* Corn (Improved Yellow Leaming, Minnesota 13, Early August).

*Chas. M. Seaver & Co., Williamstown, Vt.* Oats (Fancy Swedish).

*Washington County Farmers' Exchange, Montpelier, Vt.* Corn (Minnesota 13).

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. The "clean up" men sent out in May to secure samples of commercial fertilizer brands which have come into the State somewhat late in the spring, find seed on sale and sample it; but obviously they can not find every brand. It is fair to assume, moreover, that in several instances rela-

tively few sales were made. In the present inspection four-fifths of the 226 licensed brands were sampled and analyzed. Samples are taken in every instance by men who have been trained 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, it is ascertained that he actually did have for sale the brand in question at the time of sampling. No analysis 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 purveyor. 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 reports on samples failing substantially to fulfill the guaranties made by their purveyors is that the analysis represents what was being offered for sale—only this and no more.

#### BRANDS SAMPLED AND ANALYZED

The following tables set forth the results secured in the 1934 inspection. Detailed purity tests were not made in most cases, being carried only so far as to give assurance that the purveyor's guaranty was maintained in fact and within the latitude of variation established by the Association of Official Seed Analysts. Analyses were completed in all doubtful cases. Retests were always made of samples found to yield figures below those of the guaranties made in their behalf.

Tables I and II, pages 6 to 12, list those brands (I, single seed; II, mixtures) of agricultural seed which, as judged by the samples drawn from dealers' stocks and analyzed at the Station, have *substantially fulfilled the guaranties* made by the wholesalers. These tables furnish the following information:

1. The common name of the seed, i. e., ALFALFA, BARLEY, TIMOTHY and ALSIKE.

2. The brand name and numerical designation of the seed, i. e., Pine Tree, 68531.<sup>1</sup>

3. The purity guaranty made by the vendor setting forth the percentage of pure seed guaranteed to be present.

4. The germination guaranty made by the vendor setting forth the viability of the seed as determined by his tests, usually made by him

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

from December to March preceding the Vermont sales. The hard seeds content, if any, claimed by the vendor is indicated after the percentage of germination, i. e., 87-8, 87 indicating the germination guaranty and 8 the number of hard seed in 100.

5. In certain cases, indicated by the \* or \*\*, slight shortages in meeting the germination guaranties. The appearance of a single asterisk (\*) at the right of the germination percentage indicates that, as a matter of fact, the station germination test fell short of the guaranty made by the vendor by from two to four percent; of the double asterisk (\*\*) that it fell short by from four plus to six percent. *These shortages are within the tolerance limits prescribed by the Association of Official Seed Analysts.* They were established because of the inevitable variation occurring in a non-manufactured but natural product, because it inevitably happens that station germination tests are made anywhere from two to six months or more after the vendor's tests are made, and, finally, because the viability of a seed lessens as it grows older. Hence these samples are listed as "substantially complying with guaranties."

*Tables I and II have to do with brands which have proven to be as good as or better than the guaranties made for them.*

Table III, page 13, lists those brands of agricultural seed (other than mixtures) which as judged, by the samples drawn from dealers' stocks and analyzed by the Station, *have failed to fulfill the guaranties made for them by the vendors.*

The numbered items 1 to 5 above holds also for this table. In addition it sets forth:

6. The actual percentage of purity found. When up to guaranty the fact is indicated by the usage of the letters "OK"; when below guaranty to an extent beyond the regular tolerance limits set forth by the Association of Official Seed Analysts, the figures are given.

7. The germination percentage found.

8. The number of hard seed found by the station analyses in alfalfa, clovers and vetch is indicated after the germination percentage found, i. e., 87-8. 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 these hard seeds will germinate can not be stated and for this reason their value is uncertain.

Table IV, page 14, lists the mixtures which have *failed to fulfill the guaranties made for them* by their vendors. The failures are indicated in *italics*. The table resembles table III in all other respects.

## I. BRANDS SUBSTANTIALLY COMPLYING WITH GUARANTIES

Seed, brand name and numerical designation	Guaranties		Seed, brand name and numerical designation	Guaranties	
	WHOLESALE DEALER	Purity Germination		WHOLESALE DEALER	Purity Germination
ALLIED MILLS, Buffalo, N. Y.			E. W. BAILEY & Co., Montpelier, Vt.		
OATS, Heavy, Recleaned .....		.. (a)	CORN, Leaming .....	99	95
ALLIED SEED Co., INC., Philadelphia, Pa.			Longfellow, Flint .....	99	93
ALFALFA, Grimm, Idaho, 214 .....	99.8	76-16	Longfellow, Flint .....	99	93
Grimm, Idaho, 214 .....	99.8	76-16	Minnesota 13 .....	99	95
Grimm, Idaho, B-179 .....	99.6	80-12	OATS, Pennant .....	99.5	98**
Grimm, Idaho, B-179 .....	99.6	80-12	Pennant .....	99.5	98
Grimm, Idaho, B-179 .....	99.6	80-12	Pennant .....	99.5	98*
Grimm, Idaho, B-179 .....	99.6	80-12	Pennant .....	99.5	98**
CLOVER, Alsike, Ohio .....	97	86-6	Pennant .....	99.5	98**
Alsike, Ohio, B-291 .....	97	86-6	Pennant .....	99.5	98
Alsike .....	98.5	84.7	Pennant .....	99.5	98*
Alsike, B-341 .....	98.75	82-10	Pennant .....	99.5	98**
Alsike, Ohio and Mich., B-166 .....	98.5	84.7	Pennant .....	99.5	98
Alsike, B-166 .....	98.5	84.7*	Pennant .....	99.5	98*
Alsike, B-166 .....	98.5	84.7	Pennant .....	99.5	98*
Alsike, B-166 .....	98.5	84.7	REDTOP, Fancy, 30345 .....	93.1	90
Medium Red, B-1303 .....	99.6	87.4	BARBER & BENNETT, INC., Albany, N. Y.		
Medium Red, B-1303 .....	99.6	87.4	BARLEY, 6-row, Oderbrucker, 139 .....	98.5	96
Medium Red, B-1303 .....	99.6	87.4	6-row, Oderbrucker, 139 .....	98.5	96
Medium Red, B-1294 .....	95.71	86.4	BUCKWHEAT, 300 .....	98	.. (e)
Medium Red, B-1287 .....	99.5	88.3	300 .....	98	.. (f)
Medium Red, B-1287 .....	99.5	88.3	OATS, Choice Northwestern, 4434 .....	98.5	97
Medium Red, B-1287 .....	99.5	88.3	Choice Northwestern, 4434 .....	98.5	97
White Blossom Sweet, B-318 .....	99.6	87	RYE, 323 .....	98	92
CORN, Golden Nugget .....	99	91	WHEAT, Marquis Spring, 1179 .....	99	97
Lancaster Co. Sure Crop, S.C.1 .....	99	95	Marquis Spring, 1179 .....	99	97
Leaming .....	99	90	BELT SEED Co., Baltimore, Md.		
MILLET, Hungarian, B-8 .....	99.38	90	BARLEY, Beardless Spring, 2943 .....	95	90
Hungarian, B-8 .....	99.38	90	CLOVER, Medium Red, Trinity, 129 .....	99.5	85
Japanese, 15 .....	97.4	90	CORN, Eureka, 2685 .....	98	90*
Japanese, 15 .....	97.4	90	Leaming .....	98	90
Japanese, 15 .....	97.4	90	Reed's Yellow Dent, 2695-R .....	98	90
Japanese, Ind., B-15 .....	97.4	85	Sweepstake, 2688 .....	98	90
PEAS, Canada Field, 10 .....	99.5	90	TIMOTHY, 565 .....	99.8	92
REDTOP, Illinois, 23 .....	92	90	JOSEPH BRECK & SONS, Boston, Mass.		
23 .....	92	90	SUDAN GRASS, Breck's .....	98	90**
23 .....	92	90	CHAMBERLAIN BEAN Co., Port Huron, Mich.		
23 .....	92	90	PEAS, Canada Field, Wisconsin .....	99	99**
25 .....	99	90	Canada Field .....	99	99
SUDAN GRASS, 12 .....	99.25	90	Canada Field .....	99	99
TIMOTHY, Illinois, B-495 .....	99.6	92	CHAMPLAIN SEED Co., Burlington, Vt.		
B-484 .....	99.6	92	CORN, Burlington Dent .....	98	92
B-484 .....	99.6	92	Clark's Red Dent .....	98	96
Iowa, B-484 .....	99.6	92	(c), (d) Unguaranteed as found on sale, tested 99.5, 87-2; 98.9, 85.4.		
B-475 .....	99.6	92	(e), (f) Unguaranteed by vendor as to germination, tag stating that his test was "not completed";		
Iowa, B-471 .....	99.6	92	tested 95, 98.		
Iowa, B-471 .....	99.6	92			
B-449 .....	99	90			
VETCH, Winter, Blue Ribbon, B-4012 .....	97.43	86			
E. W. BAILEY & Co., Montpelier, Vt.					
ALFALFA, Grimm, A. B. Lyman .....		.. (c)			
Grimm, Selected .....		.. (d)			

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
COMMUNITY FEED STORES, INC., Westminster Station, Vt.			CRAVER-DICKINSON SEED CO., INC., Buffalo, N. Y.		
OATS, Community .....	98.51	94	CLOVER		
ARTHUR R. CONE, Buffalo, N. Y.			Medium Red, Pine Tree, 24-5159	99.42	86-9
ALFALFA,			Medium Red, Pine Tree, 24-5155	99.08	88-6
Grimm, Mich. Affidavit, 28-18	99.4	77-16	Medium Red, Pine Tree, 24-5155	99.08	88-6
Grimm, Mich. Affidavit, 2810	99.25	68-22	Medium Red, Pine Tree, 24-5146	99.25	85-8
BARLEY,			Medium Red, Pine Tree, 24-5127	99.46	87-5
6-row, 35-18 .....	98	94	Red, Pine Tree, 24-5120	99.14	85-12
CLOVER,			Medium Red, Pine Tree, 24-5111	99.32	72-24
Alsike, Anchor, 25-14 .....	97.85	89-6	White Blossom Sweet, 25-15	99.56	84-6
Alsike, Anchor, 25-14 .....	97.85	89-6	CORN,		
Alsike, Arco, 25-21 .....	98.5	82-9*	Conklin's Early Wonder	99	90
Medium Red, Anchor 20-12	99.02	87-7	Early Eureka	99	90
Medium Red, Anchor 20-12	99.02	87-7	Improved Leaming	99	90
Medium Red, Arco, 15-29	99.25	84-6	Improved Leaming	99	90
CORN,			Improved Leaming	99	90
Arco, Red Robin, 80-57	98	92	Early Canada Flint	99	90
Arco, West Branch Sweep-			Minnesota 13	99	90
stakes, 8076 .....	98	90	West Branch Sweepstakes	99	90
Arco, Arco Ensilage, 80-66	98	90	MILLET,		
Golden Glow, 80-73 .....	98	90	Golden, 46-310 .....	99.76	83
Golden Nugget, 83-28 .....	98	90	Hungarian, 47-54 .....	99.28	84
Improved Leaming, 80-40	98	90	Hungarian, 47-51 .....	99.4	85
Improved Pride of the North,			Japanese, 44-112 .....	98.72	91
80-30 .....	98	92	Japanese, 44-112 .....	98.72	91
Pride of the North, 80-40	98	90	Japanese, 44-18 .....	99.3	85
Minnesota 13 .....	98	90	Japanese, 44-18 .....	99.3	85
MILLET,			Japanese, 44-18 .....	99.3	85
Hungarian, 38-29 .....	99.6	90	OATS,		
Hungarian, 38-29 .....	99.6	90	Domestic, 73-17 .....	98	90
Japanese, 38-31 .....	99	92	Swedish, 73-16 .....	98	90
Japanese, 38-31 .....	99	92	PEAS,		
Japanese, 38-31 .....	99	92	Field, 87-29 .....	99	90
Japanese, 38-31 .....	99	92	Canada Field, 87-22	98	90
Japanese, 38-31 .....	99	92	Field, 87-21 .....	99	92
Japanese, 38-31 .....	99	92	REDTOP,		
REDTOP,			Ace, 30-433 .....	92	94*
Fancy, 30-16 .....	93.1	90	Ace, 30-433 .....	92	94
TIMOTHY,			Ace, 30-417 .....	95.57	93
Arco, 10-24 .....	99.8	92	Pine Tree, 30-545 .....	96.1	90
Arco, 10-23 .....	99.76	91	SOY BEANS,		
COUNCIL BLUFFS SEED CO., Council Bluffs, Ia.			Manchu, 83-74 .....	99.5	90
CORN,			Wilson, 83-79 .....	99.14	89
Improved Leaming .....	99	94	Wilson .....	98	90
Minnesota 13 .....	99	95	SUDAN GRASS,		
Northwestern Red .....	99	91	98-810 .....	97.71	88
Pride of Nishua .....	99	94		98	90
CRAVER-DICKINSON SEED CO., INC., Buffalo, N. Y.			TIMOTHY,		
ALFALFA,			Bison, 66X68 .....	98.35	92
Grimm, 27-750 .....	99.73	76-22	Pine Tree, 66-5100 .....	99.6	92
Grimm, Pine Tree, 27-735	99.1	77-15	Pine Tree, 66-591 .....	99.6	92
Grimm, Mich. Affidavit, 27-734	99.44	73-17	Pine Tree, 66-577 .....	99.6	92
Grimm, 27-729 .....	99.26	79-15	Pine Tree, 66-577 .....	99.6	92
BARLEY,			Pine Tree, 66-577 .....	99.6	92
Oderbrucker, 6-row, 71-110	98	90	Pine Tree, 66-577 .....	99.6	92
6-row, 71-17 .....	99.56	93	Pine Tree, 66-554 .....	99.6	93*
BUCKWHEAT,			66-513 .....	99.65	91
Japanese, Pine Tree, 76-24	98.18	96	66-512 .....	99.6	92
Japanese, Pine Tree, 76-24	98.18	90	VETCH,		
CLOVER,			Winter, 99-27 .....	98	90
Alsike, Pine Tree, 21-535	98.5	85-9*	Winter, 99-27 .....	98	90
Alsike, 21-534 .....	98.65	82-12	DAVIS FEED CO., Rutland, Vt.		
Alsike, Pine Tree, 21-59	97.5	70-22	OATS,		
Alsike, Pine Tree, 21-59	97.5	70-22			..(a)
Alsike, Pine Tree, 21-59	97.5	70-22	DELTA SALES CO., Bergenfield, N. J.		
Alsike, Pine Tree, 21-59	97.5	70-22	CORN,		
Mammoth Red, 23-540	99.1	93	Kato-Korn Ensilage, 3 Star K	99	90
			Growrite, 21 .....		

(a) Unguaranteed: tested 97.76, 87.

## 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
A. DICKINSON Co., Chicago, Ill.			EASTERN STATES FARMERS' EXCHANGE, Springfield, Mass.		
ALFALFA, Pine Tree, 28237 .....	99.2	77-18	BARLEY, 2-row, Alpha, Eastern States..	99.5	92
BARLEY, .....		..(a)	Selected, Eastern States .....	98.5	86
CLOVER, .....			Selected, Michigan .....	99.4	90
Alsike, Ace, 21501 .....	96.55	91*	BLUEGRASS, Kentucky .....	89	74*
Alsike, Ace, 21501 .....	96.55	91	CLOVER, Alsike .....	98.6	75-19
Alsike, 21930 .....	98.15	83-11	Alsike .....	98.6	75-19
Alsike, Pine Tree, 21560 .....	98	78-12	Alsike .....	98.5	84-12
Alsike, Pine Tree, 21499 .....	98.7	82-13	Medium, Red, Eastern States..	99.47	81-14
Mammoth Red, Pine Tree, 2360	99.36	88-8	Medium Red .....	99.38	90
Medium Red, Ace, 24-1073 .....	98.6	90	White Blossom Sweet, Eastern States .....	99.35	75-17
Medium Red, Ace, 24-1073 .....	98.6	90	White Blossom Sweet .....	99.25	85-4
Medium Red, Pine Tree, 24- 5151 .....	99.86	94	White, Dutch .....	98.75	73-22
Medium Red, Pine Tree, 24- 5111 .....	99.32	72-24	White, Ladino .....	99.2	40-50
Medium Red, Pine Tree, 24- 1213 .....	99.5	95	CORN, Cornell 11 .....	99.25	91
Medium Red, Pine Tree, 24- 1213 .....	99.5	95	Cornell 11, Eastern States .....	99.25	91
Medium Red, Pine Tree, 24- 1213 .....	99.5	95	Cornell 11, Eastern States .....	99.25	91
Medium Red, Pine Tree, 24- 1070 .....	99.06	84-12	Index XX Canada Leaming, Eastern States .....	99.25	92
Medium Red, Pine Tree, 24- 1070 .....	99.06	84-12	Improved Leaming, Eastern States .....	99.5	91
MILLET, Hungarian, 47167 .....	98.5	88	Minnesota 13, Eastern States..	99.25	91
ORCHARD GRASS, 03719 .....	82.9	90**	West Branch Sweepstakes .....	99.25	90
REDTOP, Ace, 30261 .....	92.5	90†	MILLET, Japanese .....	98.75	90
Ace, Fancy, 3091 .....	95.57	93**†	Japanese .....	98.75	90
Globe, Fancy, 30109 .....	99	94	Japanese .....	98.75	90
Pine Tree, 375 .....	95	91	OATS, Cornellian, Eastern States .....	99.45	95
30128 .....	95.6	92†	Cornellian .....	99.45	95
TIMOTHY, Globe, 66-767 .....	99.8	94‡	Ithacan, Eastern States .....	98.5	86
Pine Tree, 69125 .....	99.6	93*	Selected, Eastern States .....	98.5	86
Pine Tree, 69125 .....	99.5	93	Selected, Ohio .....	98.5	85
Pine Tree, 69125 .....	99.6	93	Selected, Ohio .....	98.5	86
Pine Tree, 68970 .....	99.6	94	Selected .....	98.5	85
Pine Tree, 68967 .....	99.6	94	Selected .....	98.5	86
Pine Tree, 68867 .....	99.6	94	PEAS, Chang Field, Eastern States ...	99.4	90
Pine Tree, 67495 .....	99.6	94‡	Chang Field, Eastern States ..	99.4	90
DICKINSON FEED & SEED Co., Minneapolis, Minn.			RAPE, Dwarf Essex .....	99.55	85
BARLEY, 6-row, 71306 .....	99.59	97	REDTOP, Fancy Solid, Eastern States .....	97.25	95
6-row, 71306 .....	99.59	97	Fancy Solid, Eastern States .....	97.25	95
6-row, 71306 .....	99.59	97	RYE, Selected Winter, Eastern States	96.5	86
6-row, 71306 .....	99.59	97	SOY BEANS, Dunfield, Eastern States .....	99.4	88
6-row, 71306 .....	99.59	97	Indiana, Dunfield .....	99.4	88
6-row, 71306 .....	99.59	97	SUDAN GRASS, Eastern States .....	98.15	90
6-row, 71306 .....	99.59	97	Texas, Mo. .....	98.15	90
6-row, 71305 .....	99.08	96	.....	98.15	90
WHEAT, Marquis, 75303 .....	99.08	96	.....	98.15	90
Marquis, 75303 .....	99.08	96	TIMOTHY, Midwest, Eastern States .....	99.5	90
EASTERN STATES FARMERS' EXCHANGE, Springfield, Mass.			.....	99.5	90
ALFALFA, Grimm .....	99.34	83-7	.....	99.5	90
Virgated, Eastern States .....	99.4	80-11	VETCH, Hairy, Eastern States .....	98.85	86-6
			Hairy .....	99.2	88-5

(a) Unguaranteed as offered for sale; probably guaranteed by the original vendor but apparently not by the subsidiary who furnished to the local dealer; tested 99.2, 98.

† Carried over from 1933.



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
THOS. W. EMERSON CO., Boston, Mass.			O. & M. SEED CO., Green Springs, Ind.		
CLOVER, Medium Red	99.5	93*	BARLEY, 6-row, Oderbrucker, O. & M...	98	92
White Blossom Sweet	99	92*	6-row, Oderbrucker, O. & M...	98	92
MILLET, Japanese	98.75	88	CORN, Beauty, O. & M.	99	94
REDTOP,	95	90	Improved Leaming, O. & M...	99	92
TIMOTHY,	99.5	93	Minnesota 13, O. & M.	99	94
			Minnesota 13, O. & M.	99	94
JOHN W. ESHELMAN & SONS, Lancaster, Pa.			PAGE SEED CO., Greene, N. Y.		
OATS, Red Rose	..	(a)	CORN, Bloody Butcher, 1040	99	94
L. P. GUNSON & Co., INC., Rochester, N. Y.			Cornell 11, 5025	99	93
CORN, Golden Ensilage	99	90	Cornell 11, 5025	99	93
OATS, Giant Cluster	99	93	Early Leaming, 5115	99	94
GEO. K. HIGBEE & Co., Rochester, N. Y.			Early Triumph, 5035	99	94
CORN, Red Robin, 5253	98	90	Genesee Flint, 5185	99	90
HOLBROOK GROCERY CO., Keene, N. H.			Golden Glow	99	92
ALFALFA, White Mountain, 27649	98	90	Golden Nugget, 5415	99	90
CLOVER, Alsike, Special	95	92	Improved Leaming, 5115	99	94
Alsike, Special	95	92	Minnesota 13, 1055	99	94
Medium Red, White Mountain	99.5	94	New York 8-row Yellow, 5240	99	94
Medium Red, 740	95	85-10	Pride of Nishua, 5055	99	94
Medium Red, 113	95	85-10	Smoky Dent	99	95
Medium Red, Special	97	92	True Eureka, 5280	99	93
Medium Red, Special	95	85-10	West Branch Sweepstakes 1125	99	93
White	96	90	MILLET, Hungarian, J66034	99	95
OATS, Swedish White Mountain 73-178	96.5	93	Japanese, J5A34	99	92
REDTOP, Extra Fancy, White Mountain	95	90	Japanese, J5D34	99.08	91
White Mountain	90	92	Japanese	99	92
Fancy, 30-444	92.7	90	PARK & POLLARD CO., Buffalo, N. Y.		
	90	92	OATS, Overall	..	(e)
TIMOTHY, Extra Fancy, White Mountain 69099	99.65	94	JEROME B. RICE, JR., Cambridge, N. Y.		
Extra Fancy, White Mountain	99.65	94	CORN, Golden Nugget	..	(f)
Special	97	90	Longfellow	..	(g)
E. T. & H. K. IDE, St. Johnsbury, Vt.			MILLET, Japanese	..	(h)
BARLEY, 6-row, Fancy Ideal	100	99	DAVID H. RISING, Easton, Pa.		
CORN, 6-row, Natural Grown	100	94	CORN, Early King	99	95*
OATS, Select Swedish, Ideal	99	99	ROSS BROS. CO., Worcester, Mass.		
Natural	..	(c)	CORN, Eureka	99	96**
NOYES & COLBY, Boston, Mass.			Eureka	99	98
OATS, Heavy Recleaned	..	(d)	Sheffield	99	92
O. & M. SEED CO., Green Springs, Ind.			ST. ALBANS GRAIN CO., St. Albans, Vt.		
JOHN W. ESHELMAN & SONS, Lancaster, Pa.			BARLEY, 6-row, Fancy	99	95
L. P. GUNSON & Co., INC., Rochester, N. Y.			6-row, Fancy	99	95
GEO. K. HIGBEE & Co., Rochester, N. Y.			6-row, Fancy	99	95
HOLBROOK GROCERY CO., Keene, N. H.			6-row, Fancy	99	95
HOLBROOK GROCERY CO., Keene, N. H.			6-row, Fancy	99	95
HOLBROOK GROCERY CO., Keene, N. H.			6-row, Fancy	99	95

(a), (c), (d), (e) Unguaranteed; tested 98.33, 96; 97.21, 91; 98.38, 98; 93.49, 93.

(a) Vendor claims to have furnished guaranty labels with shipment.

(f), (g), (h) Unguaranteed; tested 100, 94; 100, 92; 99.4, 96. Vendor says shipments were made in spring of 1933, guaranty tags being supplied. The seed was being sold in 1934 unguaranteed.

## 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
	St. Albans Grain Co., St. Albans, Vt.			STANFORD SEED CO., Buffalo, N. Y.	
OATS,			CORN,		
Hygrade, Fancy .....	97	92	Honor, Cornell 11, 6258 .....	98	95
Hygrade, Fancy .....	97	92**	Honor, Giant Eureka, 5296 .....	98	95.5
Hygrade, Fancy .....	97	92	Honor, Golden Nugget, 5382 .....	98	94
Hygrade, Fancy .....	97	92**	Honor, Improved Leaming, 6792 .....	98	92
Hygrade, Fancy .....	97	92	Honor, Improved Leaming, 6753 .....	98	95
Wirthmore, Fancy .....	98	95	Honor, Luce's Favorite, 5313 .....	98	93
Wirthmore, Fancy .....	98	95	Honor, Pride of Nishua, 6652 .....	98	95
Wirthmore, Fancy .....	98	95	Honor, Improved, Pride of North, 5360 .....	98	92
	Wm. G. Scarlett & Co., Baltimore, Md.		Honor, West Branch Sweep- stakes, 6766 .....	98	92
CLOVER,			Honor, 6753 .....	98	95
Mammoth Red, Empire, 2889 ..	98	90-5	Honor, 6582 .....	98	90.5
Medium Red, Empire, 2873A ..	95.7	90-5	MEADOW GRASS, Rough Stalked, 4815 .....	95.5	80
SOY BEANS,			MILLET,		
8499 .....	98	90	Hungarian, 6659 .....	99.66	91.5
	STANFORD SEED CO., Buffalo, N. Y.		Hungarian, 6659 .....	99.66	91.5
ALFALFA,			Hungarian, 5172 .....	99.42	88
Grimm, Growers Affidavit, 6799 .....	99.16	82-12**	Hungarian, 5172 .....	99.42	88
Grimm, Growers Affidavit, 6676 .....	99	78-16	Hungarian, 5172 .....	99.42	88
Grimm, Growers Affidavit, 6676 .....	99	78-16	Hungarian, 5172 .....	99.42	88
Grimm, Idaho, 5629-167 .....	99.6	82-13**	Hungarian, 4759 .....	98.21	91
BARLEY,			Hungarian .....	99.42	88
6-row, 5430 .....	98	94	Japanese, 5346 .....	99.05	92.5
6-row, 5430 .....	98	94	Japanese, 5346 .....	99.05	92.5
6-row, 5430 .....	98	94	Japanese, 5346 .....	99.05	92.5
6-row, 5430 .....	98	94	Japanese, 5346 .....	99.05	92.5
6-row, 5362 .....	98	93	Japanese, 5201 .....	99.02	94.25
6-row, 5362 .....	98	93	Japanese, 5201 .....	99.02	94.25
6-row, 5362 .....	98	93	Japanese, 5201 .....	99.02	94.25
6-row, 5362 .....	98	93	Japanese, 5201 .....	99.02	94.25
6-row, 5362 .....	98	93	Japanese, 5201 .....	99.02	94.25
6-row, 5362 .....	98	93	Japanese, 5201 .....	99.02	94.25
6-row, 1028 .....	97.5	90	Japanese, 1113 .....	99.04	94
2-row, Alpha, 6804 .....	98	93	Japanese, 1075 .....	98.53	93
2-row, Alpha, 6771 .....	98	93	Japanese, 1075 .....	98.53	93
2-row, Alpha, 6771 .....	98	93	Japanese, 1062 .....	99.38	95
			Japanese, 1062 .....	99.38	95
CLOVER,			Japanese, 1062 .....	99.38	95
Alsike, Liberty, 6783 .....	98.35	82-11	OATS,		
Alsike, Liberty, 6783 .....	98.35	82-11	Fancy Selected, 5436 .....	97.5	95
Alsike, Liberty, 6783 .....	98.35	82-11**	Fancy Selected, 5370 .....	97.5	95*
Alsike, Liberty, 6776 .....	97.82	80-10	Fancy Selected, 5129 .....	97	97*
Alsike, Liberty, 6776 .....	97.82	80-10	PEAS,		
Alsike, Liberty, 6776 .....	97.82	80-10	Canada Field, 5210 .....	99	96*
Alsike, Liberty, 6776 .....	97.82	80-10	Canada Field, 5210 .....	99	96
Alsike, Liberty, 6776 .....	97.82	80-10	Canada Field, 5210 .....	99	96
Alsike, Liberty, 6776 .....	97.82	80-10	Canada Field, 5210 .....	99	96
Alsike, Liberty, 6776 .....	97.82	80-10	Canada Field, 4363 .....	96	94
Alsike, Liberty, 6648 .....	98	83-10.5	Canada Field .....	99	96
Alsike, Liberty, 6776 .....	97.82	80-10	REDTOP,		
Alsike, Liberty, 4865 .....	98.5	87-4	Honor, 6794 .....	93	91
Mammoth Red, Liberty, 6711 ..	99.16	92.5-2.5	Honor, 6794 .....	93	91*
Mammoth Red, Liberty, 6711 ..	99.16	92.5-2.5	Honor, 6707 .....	93.52	93*
Medium Red, Liberty, 6709 .....	99.18	92-4.5	Honor, 6707 .....	93.52	93*
Medium Red, Liberty, 6709 .....	99.18	92-4.5	Honor, 6707 .....	93.52	93*
Medium Red, Liberty, 6671 .....	99.13	86-6	Honor, 6705 .....	95.5	92*
Medium Red, Liberty, 6671 .....	99.13	86-6	Honor, 6705 .....	95.5	92
Medium Red, Liberty, 6671 .....	99.13	86-6	Honor, 6705 .....	95.5	92
Medium Red, Liberty, 6253 .....	99.5	83-12	Honor, 6705 .....	95.5	92
Medium Red, Liberty, 6253 .....	99.5	83-12	Honor, 6705 .....	95.5	92
Medium Red, Liberty, 6253 .....	99.5	83-12	RYE,		
Medium Red, Liberty, 6253 .....	99.5	83-12	Spring, 5299 .....	96.26	91
Medium Red, Liberty, 6253 .....	99.5	86-6	Spring, 5299 .....	96.26	91
Medium Red, Reliable, 6746 .....	98.59	92.5-4	RYE GRASS,		
Medium Red, Reliable, 6746 .....	98.59	92.5-4	Domestic, 3213 .....	99.39	90
Sweet 6744 .....	99.64	87.5-4	SOY BEANS,		
White, 4790 .....	98.34	79-6	Black Wilson, 6704 .....	98	96
White, 4790 .....	98.34	79-6	SUDAN GRASS, 5282 .....	99.08	87

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., Buffalo, N. Y.			WHITNEY-ECKSTEIN Co., Buffalo, N. Y.		
<b>TIMOTHY,</b>			<b>ALFALFA,</b>		
Liberty, 6733	99.6	93	Grimm, Idaho, Blue Tag, 2089	99.73	73-22**
Liberty, 6733	99.6	93	Grimm, Michigan Affidavit, 2099	99.5	60-30
Liberty, 6559	99.66	93.5	Grimm, Affidavit, 2077	99.5	87-4
Liberty, 6559	99.66	93.5	Grimm, Affidavit	99	80-10
Liberty, 6558	99.6	94	Pan-American, 2091	99.71	60-30
Liberty, 5180	99.6	95	Pan-American, Idaho	99.82	70-22**
Liberty, 5040	99.68	90	<b>BARLEY,</b>		
Liberty, 5039	99.66	90	6-row	98	90
Liberty, 5039	99.66	90	6-row	98	90
Liberty, 5039	99.66	90	<b>BLUE GRASS,</b>		
Liberty, 5037	99.6	93.5	Kentucky, Fancy	83.96	80
Liberty, 5007	99.7	92.5	Kentucky	88.75	80
Liberty, 5007	99.7	92.5	Kentucky	88.75	80*
Liberty, 5007	99.7	92.5	<b>BUCKWHEAT,</b>		
Liberty, 4999	99.6	94.5	Japanese	98	90
Liberty, 4999	99.6	94.5	Silver Hulled	98	95
Liberty, 4999	99.6	94.5	<b>CLOVER,</b>		
Liberty, 6559	99.66	93.5	Alsike, Emperor	97.39	93
<b>VETCH,</b>			Alsike, Pan-American, B-125	98.58	79-10
Spring, 2327	98	94	Alsike, Pan-American	98.59	76-14
Spring, 2327	98	94	Alsike, Pan-American	98.55	79-18
Spring		†	Alsike, Pan-American	98.11	84-11
Winter, 5435	99.76	76	Alsike, Pan-American	98.11	84-11
<b>WHEAT,</b>			Alsike, Pan-American	98.4	80-12
Spring, 5390	98	94	Alsike, Pan-American	98.4	80-12
Spring, 5390	98	94	Alsike, Pan-American	98.4	80-12
Marquis Spring, 5363	99.5	93	Alsike, Pan-American	98.11	84-11
			Alsike, Pan-American	98.55	79-18
N. WERTHEIMER & SONS, Ligonier, Ind.			Mammoth Red, Pan-American	99.5	92
<b>CLOVER,</b>			Mammoth Red, Pan-American	99.06	90
Alsike, Matrix, 33108	91.15	87-6*	Mammoth Red, Pan-American	99.06	90
Alsike, Matrix, 33108	91.15	87-6	5458	99.5	90
Alsike, Matrix, 33107	92.11	81-9**	Medium Red, Eureka	99.37	96
Alsike, Matrix, 33107	92.11	81-9	Medium Red, Emperor	98.37	96
Alsike, Matrix, 33103	94.4	88.5-7.5	Medium Red, Emperor	98.37	96
Alsike, Matrix, 33103	94.4	88.5-7.5	Medium Red, Pan-American	99.25	93
Medium Red, Matrix, 543	99.88	90	5457	99.25	93
Medium Red, Matrix, 504	97.72	90	Medium Red, Pan-American,		
Medium Red, Matrix, 504	97.72	90	5357	99.25	93
Medium Red, Matrix, 504	97.72	90	Medium Red, Pan-American,		
Medium Red, 33314	99.2	90	5421	99.5	94
<b>MILLET,</b>			Medium Red, Pan-American	99.34	82-12
Hungarian, Fullwerth, 33700	99	84	Medium Red, Pan-American	99.5	94
Hungarian, Fullwerth, 33700	99	84	Medium Red, Pan-American	99.18	94
Hungarian, Fullwerth, 33700	99	84	Medium Red, Pan-American	99.3	90
Hungarian, Fullwerth, 33700	99	84**	Medium Red, Pan-American	99.25	81-12
Japanese, Fullwerth, 33703	98.4	88	Medium Red, Pan-American	99.25	81-12
Japanese, Fullwerth, 33703	98.4	88	White Blossom Sweet	99.5	86-4
Japanese, Fullwerth, 33702	98.42	88	White Blossom Sweet	99.5	86-4
Japanese, Fullwerth, 33702	98.42	88	Sweet	99.5	84-4
Japanese, Fullwerth, 33702	98.42	88	White, B-430	98.45	81-11
<b>REDTOP,</b>			White	97.44	90
Fullwerth, 33821	90.55	90	<b>CORN,</b>		
Fullwerth, 33821	90.55	90	Bloody Butcher	98	90
Fullwerth, 33821	90.55	90	Bloody Butcher	98	90
33820	94.3	86	Early August	98	90
<b>TIMOTHY,</b>			Excelsior	98	94
Illinois 3351	99.6	94	Improved Leaming	98	90
Matrix, 33548	99.6	94	Improved Leaming	98	90
Matrix, 33538	99.67	90	Improved Leaming	98	90
Matrix, 33538	99.67	90	Minnesota 13	98	90
Matrix, 33538	99.67	90	Minnesota 13	98	90
			Red Robin	98	90
WEST-NEBBITT, INC., Oneonta, N. Y.			Sanford Flint	98	90
<b>OATS,</b>			Smoky Dent	98	90
Swedish	99.17	98*	<b>MILLET,</b>		
			Hungarian	99	85

† Bought in 1933; guaranty tag lost by local dealer; tested 99.82, 98.

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
WHITNEY-ECKSTEIN Co., Buffalo, N. Y.			WHITNEY-ECKSTEIN Co., Buffalo, N. Y.		
<b>MILLET,</b>			<b>SOY BEANS,</b>		
Hungarian	99.66	85	Black Wilson	98	90
Hungarian	99.5	85	Black Wilson	98	90
Hungarian	99	85	<b>SUDAN GRASS,</b>		
Hungarian	99	85	_____	97	80
Japanese, 2443	98.71	90	_____	97.22	80
Japanese	98.23	90	_____	97	80
Japanese	98.23	90	_____	97.22	80
Japanese	98.23	90	<b>TIMOTHY,</b>		
Japanese	98.23	90	Frontier	98	90
Japanese	99.54	93	Gold Medal, 274	99.75	92
Japanese	99	90	Herald, 830	99.05	90
Japanese	98.45	90	Imperator, P-540	99.05	90
Japanese	99	90	Imperator	99.05	90
Japanese	99.07	87	Pan-American, 33516	99.6	90
<b>ORCHARD GRASS,</b>			Pan-American, P-591	99.6	90
_____	84.71	85	Pan-American, P-591	99.6	90
<b>PEAS,</b>			Pan-American	99.6	90
Canada Field	98	90	Pan-American	99.6	90
Canada Field	98	90	Pan-American	99.76	90
Canada Field	98	90	Pan-American	99.7	90
Canada Field	98	90	Pan-American	99.6	90
Canada Field	98	90	<b>VETCH,</b>		
Canada Field	98	90	Hairy, B-159	99.76	76-17
Canada Field	98	90	Hairy	98	90*
Canada Field	98	90	Spring	99	90
<b>REDTOP</b>			<b>WHEAT,</b>		
Imperator	92.02	94	Marquis Spring	98	90
Pan-American, 2850	93.57	90	Marquis Spring	98	90
Pan-American	92.02	90	Marquis Spring	98	90
Pan-American	94	90	White Winter	98	90
Pan-American	95	90			
Pan-American	95	90			
Pan-American	93	90			
Pan-American	95	90			
Pan-American	95	90			
Pan-American	95	90			
Pan-American	..	..†			
<b>RYE,</b>					
Spring	96	90			
<b>RYE GRASS,</b>					
Perennial	99.46	85			
Domestic	98.9	92			

† Unguaranteed; tested 95.5, 90. The party in whose hands the seed was found claims that it was "floor stock" "not offered for sale (since no) retail business" is done at the point where the sample was drawn.

II. MIXTURES SUBSTANTIALLY COMPLYING WITH GUARANTIES

		Timothy	Alsike clover	White clover	Red clover	Redtop	Totals	
ARTHUR R. CONE, Buffalo, N. Y.								
Timothy and Alsike, Arco 10-25,	Purity—G.	76.2	23.2	....	....	....	99.4	
		F. 81.3	17.9	....	....	....	99.2	
	Germination—G.	93	87	....	....	....	....	
		F. 91	84-12*	....	....	....	....	
	CRAVER-DICKINSON SEED CO., INC., Buffalo, N. Y.							
	Timothy and Alsike, Fine Tree 66845,	Purity—G.	74.41	21.4	....	....	....	95.81
F. 76.9			19.5	....	....	....	96.4	
F.		76.2	21.25	....	....	....	97.45	
		82.6	14.75	....	....	....	97.35	
Germination—G.		91	90	....	....	....	....	
		F. 94	84-12**	....	....	....	....	
F.		95	89-8	....	....	....	....	
		95	86-6*	....	....	....	....	
EASTERN STATES FARMERS' EXCHANGE, Springfield, Mass.								
Timothy and Alsike (80-20),		Purity—G.	80	20	....	....	....	99.5
	F. 76.25		23.25	....	....	....	99.5	
	Germination—G.	85	85	....	....	....	....	
		F. 92	89-10	....	....	....	....	
Hayland Mixture No. 2,	Purity—G.	40	16	....	24	20	98.41	
		F. 41	15.8	....	23.2	19	99	
	F.	50.5	10.5	....	21	16	98	
		90	75-21	93	82-14	....	86-5	
	Germination—G.	90	79-15	91*	95-3	....	....	
		F. 93	83-15	91*	95-3	....	....	
Medium Soil Pasture Mixture,	Purity—G.	16	20	4	24	8½	96.25	
		F. 13.1	9	0.5	19.8	1.8†	99	
	Germination—G.	90	81-15	89-5	82-14	93‡	82-6	
		F. 96	92-6	90-1	92-5	90‡	....	
	STANFORD SEED CO., INC., Buffalo, N. Y.							
	Timothy and Alsike, 6743,	Purity—G.	81.17	15.11	....	....	....	96.28
F. 81.45			14.75	....	....	....	96.20	
Germination—G.		93	75-8	....	....	....	....	
		F. 94	75-12	....	....	....	....	
Timothy and Alsike, 6735,	Purity—G.	73.76	21.67	....	....	....	95.43	
		F. 79	16.25	....	....	....	95.25	
	F.	89.3	8.4	....	....	....	97.7	
		88.3	7.5	....	....	....	95.8	
	F.	81.8	14.5	....	....	....	96.3	
		89	78-10	....	....	....	....	
	Germination—G.	91	74-10**	....	....	....	....	
		F. 93	77-10	....	....	....	....	
	F.	92	76-12*	....	....	....	....	
		92	72-10**	....	....	....	....	
N. WERTHEIMER & SONS, Ligonier, Ind.								
Timothy and Alsike 7, Fullwerth 33522,	Purity—G.	75.45	19	....	....	....	94.45	
		F. 77.9	18	....	....	....	95.9	
	Germination—G.	90	87	....	....	....	....	
		F. 91	82-7	....	....	....	....	
WHITNEY-ECKSTEIN SEED CO., Buffalo, N. Y.								
Timothy and Alsike, 4539.	Purity—G.	81.69	15.05	....	....	....	96.74	
		F. 83.45	15.8	....	....	....	99.25	
	F.	89.35	7.4	....	....	....	96.75	
		84	13	....	....	....	97	
	F.	76.9	21.6	....	....	....	98.5	
		94	84	....	....	....	....	
	Germination—G.	92*	83-16	....	....	....	....	
		F. 93	82-8*	....	....	....	....	
	F.	93	79-14**	....	....	....	....	
		94	83-10	....	....	....	....	

†† Kentucky bluegrass 28, 54.8. ‡‡ Kentucky bluegrass 74, 69. G=Guaranty. F=Found.

II. MIXTURES SUBSTANTIALLY COMPLYING WITH GUARANTIES  
 —Concluded

	Timothy	Alsike clover	White clover	Red clover	Redtop	Totals
WHITNEY-ECKSTEIN SEED CO., Buffalo, N. Y.—Concluded						
Timothy and Alsike,						
	Purity—G.	73.45	24.28	.....	.....	97.73
	F.	77.45	20.5	.....	.....	97.95
	Germination—G.	89	75-14	.....	.....	.....
	F.	94	76-11	.....	.....	.....
Timothy and Alsike,						
	Purity—G.	72.75	24.95	.....	.....	97.7
	F.	86.85	11.5	.....	.....	98.35
	Germination—G.	92	79-18	.....	.....	.....
	F.	93	75-18**	.....	.....	.....

G = Guaranty. F = Found.

## III. BRANDS FAILING SUBSTANTIALLY TO COMPLY WITH GUARANTIES

Seed, brand name and numerical designation	WHOLESALE DEALER	Purity		Germination	
		Guaranty	Found	Guaranty	Found
ALLIED SEED Co., Philadelphia, Pa.					
ALFALFA, Idaho Grimm, B-179		99.6	OK	80-12	69-30
MILLET, Hungarian, B-9		99.38	OK	90	70
CRAVER-DICKINSON SEED Co., Inc., Buffalo, N. Y.					
CLOVER, Alsike, Pine Tree, 21-535		98.5	OK	85-9	72-25
White Blossom Sweet, 25995		99.65	OK	90	63-5
A. DICKINSON Co., Chicago, Ill.					
CLOVER, Alsike, Pine Tree, 21556		97.3	OK	97	82-11
Alsike, Pine Tree, 21556		97.3	OK	97	83-14
THOS. W. EMERSON Co., Boston, Mass.					
CLOVER, Medium Red, 1601		97	OK	92	79-21
MILLET, Hungarian		99	OK	96	76
O. & M. SEED Co., Green Springs, Ohio					
OATS, Fancy Swedish, O. & M.		99	OK	93	80
Fancy Swedish, O. & M.		99	OK	93	74
Fancy Swedish, O. & M.		99	OK	93	76
Fancy Swedish, O. & M.		99	OK	93	74
Swedish, O. & M.		99	OK	93	78
Swedish, O. & M.		99	OK	93	76
PAGE SEED Co., Greene, N. Y.					
CORN, Golden Nugget, 5415		99	OK	90	83
RALSTON-PURINA Co., St. Johnsbury, Vt.					
OATS, Fancy Swedish		98.5	OK	95	74
Fancy Swedish		98.5	OK	95	72
Fancy Swedish		98.5	OK	95	70
ST. ALBANS GRAIN Co., St. Albans, Vt.					
OATS, Hygrade, Fancy		97	OK	92	77
Wirthmore, Fancy		98	OK	95	77
Wirthmore, Fancy		98	OK	95	82
STANFORD SEED Co., Inc., Buffalo, N. Y.					
ALFALFA, Grimm, Michigan Affidavit, 6799		99.16	OK	82-12	74-9
N. WERTHEIMER & SONS, Ligonier, Ind.					
BARLEY, Fullwerth		99	87.86	95	91
WHITNEY-ECKSTEIN Co., Buffalo, N. Y.					
CLOVER, Alsike, Imperator		97.39	OK	93	85-11
Alsike, Pan-American		98.8	OK	94	80-18
VETCH, Hairy		99.76	OK	76	58-12
Hairy		99.76	OK	94	84-13

IV. MIXTURES FAILING SUBSTANTIALLY TO COMPLY WITH GUARANTIES

		Timothy	Alsike clover	White clover	Red clover	Redtop	Totals
ARTHUR R. CONE, Buffalo, N. Y.							
Alsike and White Clovers, Arco 25-19	Purity—G.	....	74.1	23.15	....	....	97.25
		F.	....	74.5	22.35	....	....
	Germination—G.	....	82-9	80-10	....	....	....
		F.	....	80-12*	67-32	....	....
EASTERN STATES FARMERS' EXCHANGE, Springfield, Mass.							
Hayland Mixture No. 1,	Purity—G.	48	20	....	32	....	99.38
		F.	49.5	12.5	....	36	....
	Germination—G.	90	81-14	....	82-14	....	....
		F.	91	86-10	....	90.5	....
Hayland Mixture No. 2,	Purity—G.	40	16	....	24	20	98.41
		F.	48.7	12	....	19	18
	Germination—G.	90	75-21	....	82-14	93	86-5
		F.	91	74-20	....	91-6	90*
Hayland Mixture No. 3,	Purity—G.	40	12	....	24	8¶	99.14
		F.	45.9	8.8	....	21.4	6.5†
	Germination—G.	90	82-15	....	82-14	93‡	85-7
		F.	89	88-11	....	94-5	90*§
	F.	93	86-10	....	96-3	90*§	....
STANFORD SEED CO., INC., Buffalo, N. Y.							
Alsike and White Clovers, Reliable 6777,	Purity—G.	....	90.08	....	8.34	....	98.42
		F.	....	90.5	....	7.6	....
	Germination—G.	....	81-95	....	86-5.5	....	....
		F.	....	79-18	....	68-30	....
WHITNEY-ECKSTEIN Co., Buffalo, N. Y.							
Timothy and Alsike,	Purity—G.	79	20.1	....	....	....	99.1
		F.	80.95	17.75	....	....	....
	Germination—G.	91	90	....	....	....	....
		F.	93	78-20	....	....	....

¶ Alfalfa 16, 15.7, 21.6. † Alfalfa 75-15, 88-9, 82-15. G. = Guaranty. F. = Found.

As listed in table III one brand was below guaranty in purity and 26 in respect to viability.

In most of the mixtures (table II, IV) the total purity guaranties and analyses agree closely, even though the percentages of the several ingredients actually found to be present may not have checked closely with the guaranties. Mixtures are hard to sample because of mechanical separation which may take place within the bag. Five samples were somewhat below the tolerance limit in purity and four were below the tolerance limit in germination (table IV). The quality of the seed used in these mixtures is much better than it was several years ago.

Alfalfa, clover and vetch seed usually contain more or less so-called hard seed. If to the percentage of germination of the samples as found and reported is added in each case the percentage of hard seed, the combined result usually is nearly equivalent to the guaranty made by the purveyor. This statement holds even though the per-

centages of germination and of hard seed in guaranty analysis may vary. In some cases, the difference in analysis and guaranty may be ascribed to the lapse of time between the date of the test made by the purveyor and the test made by the station's seed analyst. As has been pointed out in previous bulletins, hard seed constitutes a problem to purveyor and seed analyst alike. There is still considerable lack of unanimity of opinion as to just how results should be reported.

Most vendors selling in Vermont state the number of hard seed present in the goods they sell. A ruling is likely to be made, effective in 1935, requiring all vendors to state the number of hard seeds in all brands of alfalfa, clovers and vetch they register.

#### TOLERANCE FOR PURITY

The Association of Official Seed Analysts has agreed that in determining the tolerance for purity the sample shall be considered as being made up of two parts: (1) Pure seed and (2) everything not pure seed. The tolerance allowed shall be two-tenths of one percent plus 20 percent of the lesser part. Example: Seed labeled 98 percent pure, the lesser part is 100 minus 98, or two. Twenty percent of 2 equals .4. Therefore, the tolerance allowed would be 0.2 plus 0.4, or 0.6.

#### TOLERANCE FOR GERMINATION

Claimed germination	Allowable variation
Percent	Percent
90 or over .....	6
80 or over but less than 90 .....	7
70 or over but less than 80 .....	8
60 or over but less than 70 .....	9
Less than 60 .....	10

The Vermont Station has set up no purity or germination standards. The time does not seem ripe at present to set them up. However, both producers and consumers sometimes seek information as to what are reasonable purity and viability figures for various seeds. It happens that the seed control officials in Alabama, Connecticut, Indiana, New York, North Carolina, Oklahoma, Oregon, South Dakota, Tennessee and Virginia have separately established such standards. The following figures, the averages of these 10 standards, are offered for what they are worth. Only seeds commonly sown in Vermont are included in this list:



Seed	Purity	Germination	Seed	Purity	Germination
Alfalfa .....	96	83	Japanese Millet ...	92	86
Alsike Clover .....	93	78	Oats .....	98	90
Red Clover .....	94	85	Field Peas .....	97	93
Sweet Clover .....	95	88	Red Top .....	90	80
White Clover .....	93	77	Rye .....	98	90
Field Corn .....	99	92	Timothy .....	97	88
Common, German and Hungarian Millets.	94	86			

SUMMARY OF 1934 INSPECTION

The violations of the law are usually due:

1. *To failure to declare purity guaranty.*—The original container almost always carries this statement; but sometimes, perhaps often, it is not furnished as required by law with smaller lots drawn from the original package. Fourteen lots were sampled this year whereon no purity guaranty appeared. Six of these were “oats” (see p. 18); sold in disregard of the law; in four cases local dealers seem to have lost or mislaid or destroyed tags furnished by the original vendor; in one case the seed was “floor stock,” not on sale at the point where it was sampled; and in three cases the vendor seems to have neglected to furnish guaranty tags to the local dealer.

2. *To failure to maintain purity guaranty.*—This rarely occurs. Only four samples in 697 were below guaranty in purity, one barley and three mixtures.

3. *To failure to declare germination guaranty.*—Sixteen lots failed in this respect. In two cases the tag bore the statement “not completed” but gave the purity guaranty; the other lapses are as indicated above under 1.

4. *To failure to maintain germination guaranty.*—This lapse is more common than failure to maintain a purity guaranty. Tables III and IV list 26 and 4 samples respectively, a total of 30.

Marked improvement has occurred in correct labeling during the last few years.

Alfalfa and red clover were very free from weed seeds. No traces of dodder were found. Some weed seeds were present in redtop and timothy but almost no noxious weeds. Whenever weed seeds or inert matter in more than the usual amounts were present, vendors lowered their guaranties to meet this situation. Much has been accomplished during the past decade by seed legislation, inspection and the use of improved seed cleansing facilities. Good, clean, viable seed may be readily bought all over Vermont; yet relatively poor and weedy seed

is sometimes sold. Buyers should see to it that dealers offer them the information the law specifies should be furnished as to the quality of the seed which is offered for sale. It is almost always on the original seed bag, but he who buys less than a bag does not always secure the information to which he is entitled. If it is furnished him a prospective buyer may easily discriminate between seed of high and low quality.

#### CONCERNING THE SALE OF "OATS"

Five feed manufacturers and one feed broker sold "oats" unguaranteed "at buyer's risk," the word "seed" sometimes being included and sometimes omitted in the name of the goods. Their point of view is that these oats are sold "as is" for whatever use the buyer may want to make of them. This is an evasion of the law and has recently been declared so to be by the State's Attorney General. Five samples were 97-98 percent pure, one only 93.5 percent, their viabilities being, two, 87 percent; two, 91, 93 percent; two, 96, 98 percent. The 15 guaranteed brands sold by the seed houses—omitting the O. & M. oats and those sold by three local feed concerns who bought from them (table III)—averaged 98 percent purity guaranty and 94 germination as compared with averages of 97 and 92 for the unguaranteed goods. If the O. & M. seed is included, the average viability difference is eliminated. The houses selling these unguaranteed oats have been advised that strict compliance with the law will be insisted upon in 1935.

#### DIFFICULTIES IN CONNECTION WITH THE EXECUTION OF THE LAW

Excellent illustrations of some of the dangers incident to the operation of the seed law have been afforded this year.

A sample of winter vetch was drawn from the stock of a local dealer. The bag bore a label (tag) conforming in all respects to the law, the vendor's germination guaranty being 87-6 and the test date "Jan. 1934." The sample was drawn on June 5, and the station test made in midsummer. The viability was extremely low. The test was repeated with somewhat higher results. Taking the higher result as correct (44-14), less than half the seed was viable.

The seed firm—a thoroughly reputable one which has sold in Vermont for many years—was promptly notified and at the same time, in order to make certain that the sampling agent had made no error, the local dealer was asked whether he had offered this vetch for sale this spring. The seed house promptly tested its reserve sample of the same reference

number and found it fully equal to guaranty and it very properly and vigorously protested. The local dealer stated that he did have the seed on sale in June and that he thought he had carried it over from 1933.

The local dealer's statement that this was 1933 seed is a most interesting one in view of the fact that the sampling agent reports that the bag bore a 1934 tag. The station analysis, which was amply confirmed by repeated analyses by the Station as well as by the original vendor, indicates that the naive statement of the local dealer was probably correct, that it was old seed he had carried over from 1933. Yet when offered for sale it was labelled by him as 1934 seed. Farmers who bought and sowed this vetch got half or less than half a crop.

Another instance might be cited of a lot of unlabelled alfalfa seed exposed for sale at a point in eastern Vermont which was frankly said by the dealer to be six years old. Yet another lot of alsike was being offered for sale which was 1931 seed yet up to its viability guaranty.

A seed house which has sold for long years in Vermont makes several points that seem pertinent in connection with the difficulties it is encountering under 1934 conditions. It claims that the wrong seed may have been supplied in a given order by one of the emergency help used in the warehouse during the rush season and that, because of code limitations in respect to working hours, it became necessary at times to use inexperienced help. A lapse of this kind may very well occur in the best regulated of seed houses.

They, furthermore, point out a danger, against which neither the seed house, the local dealer nor the Station can guard. Seed bags exposed for sale in local dealers' stores are usually kept open so that buyers can see and handle their contents. A bag of seed oats, a bag of wheat and a bag of barley may be standing side by side. A farmer takes up, let us say, a scoopful of barley, looks at it and then carelessly pours it back into the bag of wheat instead of the bag of barley. The sampling agent a few days later draws an official sample of the wheat and in due time the station seed analyst reports that this wheat contains much barley. The case being reported by the Station to the seed house, it forthwith tests its reserve sample of the same reference number and finds no barley whatsoever. The inspection agency is between the traditional devil and deep sea in such cases. Mixed seed, that is to say, a cereal containing not over large quantities of other crop seed, is sometimes sold "as is." A substitution, intentional or unintentional, may have been made in the vendor's warehouse or some careless farmer

may have queered things in the local dealer's store, and no one can hazard a guess as to what happened. More than 50 years ago Gilbert and Sullivan declared that "a policeman's life is not a happy one"—and in respect to the seed trade, a station seed analyst is a policeman.

#### THE 1934 SEED SITUATION

Due to the prolonged drought throughout the entire country, the harvest has been one of the poorest in our history. Reports from seedsmen in various parts of the country are that almost all kinds of seed will be extremely scarce in 1935. Higher prices for all crop seeds may be expected and 1935 buyers will need to be more careful than ever before in making their purchases. The AAA is urging all farmers to hold any seed they have for planting next spring. Unless available seed is conserved, much of the suitable seed grain may be fed to livestock or mixed with lower grades, thus becoming relatively ill suited to seeding purposes.