

OCTOBER, 1935

BULLETIN 398

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University of Vermont and State Agricultural College  
Vermont Agricultural Experiment Station  
BURLINGTON, VERMONT

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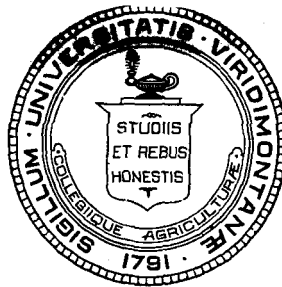
AGRICULTURAL SEED

By ANNA S. LUTMAN

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The agricultural seed sold in Vermont in 1935 was as a whole of excellent quality, comparing well with that sold during most of the years since the seed law first went into effect in 1913. More than 600 samples were tested. Only 3 lots were deficient in respect to purity and 29 in respect to viability.

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

## BULLETIN 398: AGRICULTURAL SEED

By ANNA S. LUTMAN

This bulletin sets forth the results of inspection of seed samples collected during the spring of 1935, when the Station sampling agents visited many Vermont towns and cities and collected more than 700 samples of agricultural seed offered for sale by local dealers. More than 600 of these were tested, nearly 100 duplicates being discarded. These group as follows:

Alfalfa .....	29	Millet, Golden .....	2	Soy beans .....	16
Barley .....	30	Millet, Hungarian ...	27	Sudan grass .....	10
Bluegrass .....	12	Millet, Japanese ....	43	Timothy .....	56
Buckwheat .....	6	Mixtures .....	28	Vetch .....	10
Clover, alsike .....	41	Oats .....	62	Wheat .....	10
Clover, red .....	52	Orchard grass .....	3	Miscellaneous .....	8
Clover, sweet .....	11	Peas, Canada Field ..	17		
Clover, white .....	7	Redtop .....	43		
Corn .....	99	Rye .....	6		

No samples were secured of 44 licensed brands listed below:

- Allied Seed Co.* Sweet Clover (Blue Ribbon).  
*E. W. Bailey & Co.* Corn; Alfalfa (Lyman's Certified Grimm).  
*P. E. Davis.* Corn.  
*Eastern States Farmers' Exchange.* Rape; Rye; Sunflower; Light Pasture Mixture; Upland Meadow Mixture; Lowland Meadow Mixture; Hayland Mixture No. 1; Wheat-Vetch Mixture; Rye-Vetch Mixture.  
*Holbrook Grocery Co.* Alfalfa (White Mountain); Alsike Clover (White Mountain Special); Corn (White Mountain); Oats (White Mountain); Red Top (White Mountain); Timothy and Alsike.  
*E. T. & H. K. Ide.* Corn.  
*W. B. Johnson & Son.* Oats.  
*Larrow Buckwheat Flour Corp.* Buckwheat.  
*Ralston Purina Co.* Barley; Corn.  
*St. Albans Grain Co.* Corn.  
*C. H. Stearns & Son Co.* Oats.  
*Wm. G. Scarlett & Co.* Alsike; Timothy.  
*Stanford Feed Co., Inc.* Alsike (Honor); Timothy (Honor).  
*Washington County Farmers' Exchange.* Corn.  
*N. Wertheimer & Sons.* Mammoth Clover.  
*Whitney-Eckstein Feed Co.* Buckwheat; Red Clover (Eureka); White Clover; White Blossom Sweet Clover; Golden Millet; Rape; Red Top (Eureka Fancy); Rye Grass; Timothy (Frontier; Gold Medal).  
*F. H. Woodruff & Sons.* Corn; Field Peas.

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 five-sixths of the 272 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 1935 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 to III (pages 6 to 13) list those brands (I, single seed; II and III 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.

between December to March preceding local 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 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 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 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 with increasing age. Hence these samples are listed as "substantially complying with guaranties."

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

Table IV, pages 13-14, 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 hold also for this table. In addition it sets forth:

6. The actual percentage of purity found (in the upper section), germination tests indicating that guaranties were maintained.

7. The germination percentage found (in the lower section), purity tests indicating that guaranties were maintained.

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 V, pages 14-15, lists the mixtures which have *failed to fulfill the guaranties made for them by their vendors.*

## 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 SEED CO., INC., Philadelphia, Pa.			E. W. BAILEY & Co., Montpelier, Vt. (concluded)		
ALFALFA,			OATS,		
Grimm, Idaho, Blue Ribbon,			Pennant .....	99.5	97
B-179 .....	99.61	80-10	Pennant .....	99.5	97
Grimm, Idaho, Blue Ribbon,			Pennant .....	99.5	97
B-378 .....	99.25	86-6	Pennant .....	99.5	97
Northwestern, Blue Ribbon,			BARBER & BENNETT, INC., Albany, N. Y.		
B-212 .....	99.54	85-5	BARLEY,		
Common, Blue Ribbon, B-356...	99.7	88-4	Alpha 2-row .....	99	95
CLOVER,			Alpha 2-row .....	99	95
Alsike, Blue Ribbon, B-166			OATS,		
(1934) .....	98.5	84-7	Northwestern, 318 .....	96.5	95
Alsike, Blue Ribbon, B-166			WHEAT,		
(1934) .....	98.5	84-7	Marquis Type Spring, 490 ....	98.5	95
Alsike, Blue Ribbon, B-166...	98.5	85-5	BELT SEED Co., Baltimore, Md.		
Alsike, Blue Ribbon, H-363....	98.58	75-17	TIMOTHY,		
Alsike, Blue Ribbon, B-475....	98.5	80-12	(1934) .....	96.75	90
Medium Red, Blue Ribbon,			BERKSHIRE COAL & GRAIN CO., INC. North Adams, Mass.		
B-1287 (1934) .....	99.5	88	OATS,		
Medium Red, Blue Ribbon,			Pacific Coast .....	95	90
B-1294 (1934) .....	95.71	86	CHAMBERLAIN BEAN Co., Port Huron, Mich.		
Medium Red, Blue Ribbon,			PEAS,		
B-1287 .....	99.5	90	Canada Field .....	99	1
Medium Red, Blue Ribbon,			Canada Field .....	99	1
B-1924 .....	95.71	86	COMMUNITY FEED STORES, INC., Westminster Station, Vt.		
Medium Red, Blue Ribbon,			OATS,		
B-1372 .....	99.5	85-5	Community .....	98	95
Medium Red, Blue Ribbon,			ARTHUR R. CONE, Buffalo, N. Y.		
B-1613 .....	99.7	85-7	ALFALFA,		
Medium Red, Blue Ribbon,			Grimm, Idaho Fancy, 28-40 ...	99.75	80-14
B-1659 .....	99.5	88-4	Grimm, Genuine, 28-42 .....	99.75	80-17
Medium Red, Blue Ribbon,			Grimm, Affidavit, 28-49 .....	99.3	78-12
B-1659 .....	99.5	88-4	Grimm, Genuine, 28-49 .....	99.3	78-12
White, Blue Ribbon, B-920....	98.63	80-10	BARLEY,		
CORN,			35-25 .....	96	89
Lancaster Co. Surecrop, Blue			BUCKWHEAT,		
Ribbon .....	99	90	65-16 .....	98	91*
Yellow Sweepstakes, Blue			CLOVER,		
Ribbon .....	99	90	Alsike, Anchor, 25-29 .....	98	92-6
MILLET,			Alsike, Anchor, 25-31 .....	98.97	86-7
Hungarian, Fancy, Blue Ribbon	98.06	90	Medium Red, Arco, 15-48 .....	99.5	78-12
Hungarian, Blue Ribbon .....	99	90	White Blossom Sweet, 29-26 ..	99.74	74-14
Hungarian, .....	99	90	CORN,		
Japanese, Fancy, Blue Ribbon..	98.27	87	Arco Early Lycoming .....	98	92
Japanese, .....	98.27	84	Arco Ensilage .....	98	92
OATS,			Arco Red Robin .....	98	90
Sunshine, Re-cleaned .....	97	95	Arco Smoky Dent .....	98	90
REDTOP,			Arco Golden Nugget .....	98	90
Blue Ribbon, B-23 .....	92	90	Improved Leaming .....	98	92
Blue Ribbon, B-29 .....	90	93	West Branch Sweepstakes, 80-154	98	90
Blue Ribbon, B-50 .....	90.34	90	MILLET,		
Blue Ribbon, 37 .....	92	90	Hungarian, 38-40 .....	99	88
Blue Ribbon, 37 .....	92	90	Japanese, 38-49 .....	97.6	86
SOY BEANS,			Japanese, 38-54 .....	98.67	88
Black Wilson, Blue Ribbon, C-3	99	90	Japanese, 38-54 .....	98.67	88
Black Wilson, Blue Ribbon, C-3	99	90	Japanese .....	98.4	90
TIMOTHY,			OATS,		
Blue Ribbon, B-475 (1934) ...	99.6	92	Swedish Type, 36-24 .....	98	90
Blue Ribbon, B-475 .....	99.6	90	PEAS,		
Blue Ribbon, B-552 .....	99.6	90	Canada Field, 40-29 .....	98	90
Blue Ribbon, B-597 .....	99.5	90	Canada Field, 40-30 .....	98	90
Blue Ribbon, B-597 .....	99.5	90			
Blue Ribbon .....	99.6	90			
VETCH,					
Winter, Blue Ribbon, B-4012					
(1934) .....	97.43	86			
E. W. BAILEY & Co., Montpelier, Vt.					
ALFALFA,					
Lyman Grimm, GRM427-1 .....	99.25	94			

<sup>1</sup> Vendor acknowledged error in failing to make germination guaranty; the two samples tested 92 and 94, respectively.

I. BRANDS SUBSTANTIALLY COMPLYING WITH GUARANTIES—Continued

Seed, brand name and numerical designation	Guaranties		Seed, brand name and numerical designation	Guaranties	
	WHOLESALE DEALER	Germi- Purity nation		WHOLESALE DEALER	Germi- Purity nation
ARTHUR R. CONE, Buffalo, N. Y. (concluded)			CRAVER-DICKINSON SEED Co., INC., Buffalo, N. Y. (concluded)		
REDTOP,			OATS,		
Fancy, 30-18 .....	92.8	88	73-14 .....	97.5	92
Fancy, 30-18 .....	92.8	88	73-14 .....	97.5	92
Fancy, 30-18 .....	92.8	88	Heavy Domestic, 73-115 .....	98.48	93
SOY BEANS,			Heavy Domestic, 73-118 .....	97	93
Black Wilson, 42-21 .....	98	88	Swedish Type, Pine Tree, 73-17 .....	97	94
SUDAN GRASS,			Swedish Type, Pine Tree, 73-17 .....	97	94
70-23 .....	98.5	90	PEAS,		
70-25 .....	97.2	85**	Canada Field, 87-22 .....	99	90
TIMOTHY,			Canada Field, 87-25 .....	99	90
Arco, 10-38 .....	99.65	92	REDTOP,		
Arco, 10-40 .....	99.7	90	Ace, 30-440 .....	92.5	90
Arco, 10-61 .....	99.6	90	Ace, 30-440 .....	92.5	90
CRAVER-DICKINSON SEED Co., INC., Buffalo, N. Y.			Ace, 30-440 .....	92.5	90
ALFALFA,			Pine Tree, 30-440 .....	92.5	90
Grimm, 27-7115 .....	99.6	85-7	Pine Tree, 30-437 .....	94.6	90
Pine Tree, 28-574 .....	99.53	80-12	SOY BEANS,		
BARLEY,			Manchu, 83-717 .....	99.5	88
6-row, 71-113 .....	98.54	90	SUDAN GRASS,		
BUCKWHEAT,			.....	97	84
Japanese, Pine Tree, 76-24 (1934) .....	99.64	95	TIMOTHY,		
Japanese, Pine Tree, 76-24 .....	99.64	95	....., 66 x 57 .....	98.5	90
CLOVER,			....., 66 x 59 .....	99.04	90
Alsike, Ace, 21 x 28 .....	96.1	78	Pine Tree, 66-555 .....	99.65	90
Alsike, Pine Tree, 21-516 .....	97.5	79-20	Pine Tree, 66-558 .....	99.6	90
Alsike, Pine Tree, 21-516 .....	97.5	79-20	Pine Tree, 66-596 .....	99.6	90
Alsike, Pine Tree, 21-519 .....	98.5	81-12	VETCH,		
Alsike, Pine Tree, 21-535 .....	98.5	71	Winter, 99-23 .....	99.61	88-9
Medium Red, Pine Tree, 23-565 .....	99.14	89-8	Winter, 99-23 .....	99.61	88-9
Medium Red, Pine Tree, 24-5162 .....	99.62	93	DANVILLE GRAIN Co., Danville, Vt.		
Medium Red, Pine Tree, 24-5206 .....	99.06	84-12	OATS,		
Medium Red, Pine Tree, 24-5171 .....	99.5	88	Swedish Type .....	98	95
Medium Red, Pine Tree, 24-5181 .....	99.26	76-20	Swedish Type .....	98	95
Medium Red, Pine Tree, 24-5191 .....	99.25	88-9	DAVIS FEED Co., Rutland, Vt.		
Medium Red, Pine Tree, 24-5191 .....	99.25	88-9	TIMOTHY,		
Medium Red, Pine Tree, 24-5191 .....	99.25	88-9	11251 .....	99.65	93
Medium Red, Pine Tree, 24-5198 .....	99.25	87-8	DELTA SALES Co., Bergenfield, N. J.		
White Blossom Sweet, Pine Tree, 25-16 .....	99.58	83.7	CORN,		
White Blossom Sweet, Pine Tree, 25-16 .....	99.58	83.7	Kato Korn Growsrite Ensilage 26 .....	99	90
CORN,			Kato Korn Growsrite Ensilage 37a .....	99	90
Bloody Butcher, Pine Tree, 72-319 .....	99	90	A. DICKINSON Co., Chicago, Ill.		
Conklin's Early Wonder, 72-317 .....	99	90	ALFALFA,		
Cornell No. 11, Dent, Pine Tree, 72-333 .....	99	90	Grimm, Pine Tree, 27745-6 .....	99	94
Cradisco Ensilage, 72-325 .....	99	90	BARLEY,		
Ensilage, Pine Tree, 72-317 .....	99	90	6-row, 71305 .....	99.08	96
Golden Nugget, Flint, Pine Tree, 72-324 .....	99.5	90	CLOVER,		
Improved Leaming, Pine Tree, 72-342 .....	99	90	Alsike, Ace, 21577 .....	96.3	70-10
Improved Leaming, Pine Tree, 72-354 .....	99	90	Alsike, Ace, 21881 .....	98.75	80-15
Red Sweepstakes, Pine Tree, 72- 324 .....	99.5	90	Alsike, Ace, 21881 .....	98.75	80-15
MILLET,			Alsike, 21559 .....	97.7	84-12
Golden, 46-34 .....	98.4	87	Medium Red, Ace, 24-1071 .....	99.04	83-8
Hungarian, 47-56 .....	98.48	86	Medium Red, Ace, 24-1224 .....	97.5	85-11
Hungarian, 47-56 .....	98.48	86	Medium Red, Ace, 24-1292 .....	96.88	83-13
Japanese, Pine Tree, 44-111 .....	98.24	91*	Medium Red, Pine Tree, 24-89 .....	99.3	85
Japanese, Pine Tree, 44-111 .....	98.24	91	Medium Red, Pine Tree, 24-89 .....	99.3	85
Japanese, Pine Tree, 44-113 .....	97.46	92	Medium Red, Pine Tree, 24-5204 .....	90.36	88-6
Japanese, Pine Tree, 44-113 .....	97.46	92	Medium Red, Pine Tree .....	99	98
Japanese, Pine Tree, 44-117 .....	97.45	87	White, Choice .....	97	90
Japanese, Pine Tree, 44-117 .....	97.45	87	Sweet, Grundy County .....	99	90-4
Japanese, Pine Tree, 44-121 .....	98	87	CORN,		
			Pride of North, Pine Tree, 72-35 .....	99.5	90
			MILLET,		
			Hungarian, 8311 .....	99.6	88

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. (concluded)			EASTERN STATES FARMERS' EXCHANGE Springfield, Mass. (concluded)		
REDTOP,			REDTOP,		
Ace, 54562	91.3	90	Fancy Solid	97.75	95
Ace, 4141	92.8	90	Fancy Solid	97.75	95
Ace, 4141	92.8	90	SOY BEANS,		
Pine Tree, 54561	95.4	91	Manchu	99.4	84
Pine Tree, 54561	95.4	91	Dunfield	99.5	80
Pine Tree, 54561	95.4	91	Dunfield	99.5	80
Pine Tree, 04124	92	90	SUDAN GRASS,		
RYE,			_____	98.1	91
Spring, 07455	98	90	_____	98.1	91
SOY BEANS,			_____	98.1	91
Manchu, 84324	99.5	90	TIMOTHY,		
TIMOTHY,			_____	99.55	88
Pine Tree, 69256	99.6	92	_____	99.55	88
WHEAT,			_____	99.57	89
Marquis, 07574, 75108	99.21	97*	VETCH,		
DICKINSON FEED & SEED Co., Minneapolis, Minn.			Harry	99.4	80
BARLEY,			Harry	99.3	86-5
6-row, 71305 (1934)	99.08	96	WHEAT,		
EASTERN STATES FARMERS' EXCHANGE, Springfield, Mass.			Selected Winter	98.75	90
ALFALFA,			ELMORE MILLING Co., Oneonta, N. Y.		
Grimm	99.35	76-16	OATS,		
Grimm	99.35	76-16	Elmore	95	96
Variegated Nebraska	92.2	68-23	THOS. W. EMERSON Co., Boston, Mass.		
Variegated Nebraska	92.2	68-23	ALFALFA,		
BARLEY,			Grimm	99	95
Selected	99.75	90	CLOVER,		
Selected	99.75	90	Alsike	99.21	95
Alpha, 2-row	99	90	Alsike	99.21	97
Wisconsin, 38, Smooth Bearded	99.4	92	Red	99.22	95
Wisconsin, 38, Smooth Bearded	99.4	92	White Blossom Sweet	96	89
BUCKWHEAT,			CORN,		
Selected, New York	99.5	85	Leaming	98	92*
CLOVER,			Mammoth Prize	98	94
Alsike	98.75	75-17	MILLET,		
Alsike	98.75	75-17	Japanese	97.91	88
Alsike	98	75	Japanese	98.75	88
Medium Red, Idaho	99.4	68-28	OATS,		
Medium Red	99.4	68-28	Swedish	99	99*
Medium Red	99.3	73-23	TIMOTHY,		
Medium Red	99.3	73-23	Bay State	99.74	85
White Blossom Sweet	99.5	85-6	JOHN W. ESHELMAN & SONS, Lancaster, Pa.		
White Blossom Sweet	99.5	86-6	OATS,		
White Dutch	98.2	88-3	Red Rose	98	95
CORN,			Red Rose	98	95
Cornell 11	99.25	90	Red Rose	98	95
Cornell 11	99.25	90	FREDERICK SEED Co., Murray, Neb.		
Golden Nugget	99.25	90	CORN,		
Improved Leaming	99.25	92	Minnesota 13 (1934)	100	90
Lancaster Sure Crop	99.25	90	Minnesota 13 (1934)	100	90
West Branch Sweepstakes	99.25	90	CHAS. C. HART SEED Co., Weathersfield, Conn.		
West Branch Sweepstakes	99.25	90	CORN,		
MILLET,			Eureka Ensilage	99	96**
Hungarian	98.75	85	Eureka Ensilage	99	96**
Hungarian	98.75	85	Improved Leaming	99	92
Hungarian	98.75	85	Improved Leaming	99	92
Japanese	97.9	90	Luce's Favorite Field	99	92
Japanese	98	90	Early Yellow Canada Field	99	94
OATS,			Sanford White Flint	99	95
Cornellian	99.5	95	HOLBROOK GROCERY Co., Keene, N. H.		
Cornellian	99.4	95	CLOVER,		
Ithacan	99.4	85	Medium Red, White Mountain		
Selected	98.5	90	Extra Fancy	99	93
Selected	98.5	90	Medium Red, Special	95	85
Selected	99	90			
Selected	99.5	90			
Selected	99.5	90			
ORCHARD GRASS,	89	80			
PEAS,					
Chang Field	99.4	85			
Chang Field	99.4	85			



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)			PHILADELPHIA SEED Co., Philadelphia, Pa.		
REDTOP,			CORN,		
XX .....	90	90	Imperial Broadgrained Sweep-		
XX .....	90	90	stakes, M83R .....	99.8	95
.....	90	92	TIMOTHY,		
TIMOTHY,			Arrow, R2R .....	99	82
Extra Fancy, White Mountain,			I. L. RADWANER SEED Co., New York, N. Y.		
T-69099 (1934) .....	99.65	94	REDTOP,		
Monadnock .....	99.65	94	.....	95	80
Special .....	99	90	TIMOTHY,		
Special .....	99	90	Radway's .....	95	80
E. T. & H. K. IDE, St. Johnsbury, Vt.			.....	97.5	80
OATS,			.....	97	80
Ideal .....	100	98	RALSTON-PURINA Co., St. Johnsbury, Vt.		
F. W. KELLEY, St. Johnsbury, Vt.			OATS,		
OATS,			Fancy Swedish Select .....	98	95
Recleaned .....	97	95	DAVID H. RISING, Easton, Pa.		
Recleaned .....	97	95	CORN,		
J. O. MIDDLEBROOK & SONS, Burlington, Vt.			Big Ben .....	99	96
CORN,			Early King .....	99	96*
Sanford .....	98	90	Early King .....	99	96
O. & M. SEED Co., Green Springs, Ind.			Early State .....	99	90
BARLEY,			Eighty-Day Special .....	99	90
6-row, Oderbrucker, O. & M. 98	92		Gold Dollar .....	99	96
6-row, Oderbrucker, O. & M. 98	92		Happy Jack .....	99	90*
CORN,			Ross Bros. Co., Worcester, Mass.		
Select Beauty, O. & M. ....	99	94	CORN,		
Improved Leaning, O. & M. ....	99	92	Eureka Ensilage .....	99	96
Improved Leaning, O. & M. ....	99	92	Eureka Ensilage .....	99	96
PAGE SEED Co., Greene, N. Y.			Smoky Dent .....	99	96
CORN,			Worcester Co. Sweepstakes .....	99	95
Cornell 11, 1200, Paseco .....	99	90	Worcester Co. Sweepstakes .....	99	95
Early Mastodon, 5195, Paseco .....	99	90	Worcester Co. Sweepstakes .....	99	95
Early Triumph, 1250, Paseco .....	99	92	St. Albans Grain Co., St. Albans, Vt.		
Golden Ensilage, 1140, Paseco .....	99	94	BARLEY,		
Golden Nugget, 1230, Paseco .....	99	91	6-row, Fancy .....	99	95
Improved Leaning, 1085, Paseco .....	99	92	6-row, Fancy .....	99	95
New York State 8-row Yellow,			OATS,		
1320, Paseco .....	99	90	Hygrade, Fancy .....	97	92
Pride of Nishua, 1280, Paseco .....	99	93	Hygrade, Fancy .....	97	92**
True Virginia Eureka, 1235,			Hygrade, Fancy .....	97	92
Paseco .....	99	90*	Hygrade, Fancy .....	97	92
West Branch Sweepstakes, 1010,			Hygrade, Fancy .....	97	92
Paseco .....	99	93	Hygrade .....	97	92
MILLET,			Hygrade .....	97	92
Hungarian, J6-6035 .....	99.6	82	Hygrade .....	97	92
Hungarian, J6-6035 .....	99.6	82	Wirthmore, Fancy .....	98	95
Hungarian, J6-6035 .....	99.6	82	Wirthmore, Fancy .....	98	95
Japanese, J5D35 .....	98.39	90	Wirthmore, Fancy .....	98	95
Japanese, J5D35 .....	98.39	90	Wirthmore, Fancy .....	98	95
Japanese, J5F35 .....	97.82	85	Wirthmore, Fancy .....	98	95
Japanese, J5G35 .....	98.45	81	WM. G. SCARLETT & Co., Baltimore, Md.		
Japanese, J5G35 .....	98.45	85	CI.Over,		
Japanese, J5D34 (1934) .....	99.08	91	Red, 2307 .....	95	80
SOY BEANS,			MILLET,		
Early Manchu, S-35 .....	98	90	Hungarian, 7224 .....	98	90
A. D. PEASE Co., Burlington, Vt.			REDTOP,		
BARLEY,			....., 607 .....	90	90
.....		2	CHAS. M. SEAVER & Co., Williamstown, Vt.		
PARK & POLLARD Co., Buffalo, N. Y.			OATS,		
OATS,			Fancy Swedish Type .....	98	96
Selected .....	90	95			

\* Vendor thought erroneously that because the seed was bought locally no guaranty or license fee were needed; tested 98.5 and 98.

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.			STANFORD SEED CO., INC., Buffalo, N. Y. (concluded)		
<b>ALFALFA.</b>			<b>MILLET.</b>		
Grimm, 1256	99.66	77-19	Japanese, Fancy, 5118	98.42	88.75
Grimm, 1318	99.7	86-7.5	Japanese, Fancy, 5118	98.42	88.75
Grimm, 1343	99.78	71-5	Japanese, Fancy, 5118	98.42	88.75
Grimm, 5312	99.25	78-14	Japanese, Fancy, 5233	98.38	82
Grimm, 5312	99.25	78-14	Japanese, Fancy, 5233	98.38	82
<b>BARLEY.</b>			Japanese, Fancy, 5233		
6-row, 5288	98	92	Japanese, Fancy, 5233	98.38	82
6-row, 5288	98	92	Japanese, Fancy, 5302	98.49	83
6-row, 5288	98	92	Japanese, Fancy, 5302	98.49	83
6-row, 5317	98	92	<b>OATS.</b>		
6-row, 5317	98	92	Fancy Selected, 5285	97.5	93
2-row, Alpha, 6804	98	94	Fancy Selected, 5285	97.5	93
<b>BUCKWHEAT.</b>			Fancy Selected, 5304	97.5	93
Japanese, 6869	99.8	95	Fancy Selected, 5304	97.5	93
<b>CLOVER.</b>			<b>PEAS.</b>		
Alsike, Liberty, 5064	98.88	82-11	Canada Field, 1049	98	96
Alsike, Liberty, 5166	97	85-6.5	Canada Field, 1049	98	96
Alsike, Liberty, 5167	97	82-6.5	Canada Field, 5153	99.8	96
Alsike, Liberty, 5167	97	82-6.5	Canada Field, 5153	99.8	96
Alsike, Liberty, 5290	97	84-8	Canada Field, 5614	99.23	90
Alsike, Liberty, 5290	97	84-8	Canada Field, 5614	99.23	90
Alsike, Liberty, 8928	98.28	81-15	<b>REDTOP.</b>		
Medium Red, Liberty, 5180	99.06	88-4.5	Choice, 4173	95.98	88
Medium Red, Liberty, 5184	99.01	89	Fancy, 4098	91.77	88
Medium Red, Liberty, 5200	99.06	85.5-10	Choice, 4098	91.77	88
Medium Red, Liberty, 5200	99.06	85.5-10	Fancy, 4098	91.77	88
Medium Red, Liberty, 5200	99.06	85.5-10	Fancy, 4098	91.77	88
Medium Red, Liberty, 5214	99.14	85.5-9	Honor, 4198	95.89	93.5
Medium Red, Liberty, 5214	99.14	85.5-9	<b>SOY BEANS.</b>		
Medium Red, Liberty, 6691	99.5	93-4	Black Wilson, 2286	99.89	95.5
Medium Red, Liberty, 8927	99.5	86.5	Fancy Eastern Grown, Black		
Medium Red, Reliable, 5209	98.66	82.5-11	Wilson, 1529	99.25	90
Sweet, 1225	99.76	88.5-5.25	Early Manchu, 1399	98	90
Fancy White, 1113	99.42	84	<b>SPELTZ.</b>		
Fancy White, 1113	99.42	84	5391	98	85
<b>CORN.</b>			<b>SUDAN GRASS.</b>		
Bloody Butcher, Honor, 1491	98	93	1152	96.28	96.5
Bloody Butcher, Honor, 1491	98	93	1152	96.28	96.5
Cornell 11, 5036	98	95	<b>TIMOTHY.</b>		
Cornell 11, 5143	98	92.5	Lark, 5265	98.5	90
C. P. Special, Honor, 5041	98	95	Lark, 5280	98.2	90
C. P. Special, Honor, 5323	98	92	Lark, 5306	98.5	90
Early August, Honor, 5239	98	93.5	Liberty, 1350	99.6	91.5
Early Eureka, Honor, 5055	98	93	Liberty, 1350	99.6	91.5
Early Eureka, Honor, 5055	98	93	Liberty, 5138	99.6	90
Early Eureka, Honor, 5055	98	93	Liberty, 5138	99.6	90
Genesee Valley, Honor, 5247	98	94	Liberty, 5163	99.65	93.75
Golden Glow, Honor, 5089	98	95	Liberty, 5163	99.65	93.75
Golden Nugget, Honor, 1074A	98	92.5	<b>VETCH.</b>		
Improved Leaming, Honor, 5270	99	92	Spring, 5110	98.94	94.5
Improved Leaming, Honor, 5270	99	92	Spring, 5110	98.94	94.5*
Improved Leaming, Honor, 5257	98	92	<b>WHEAT.</b>		
Improved Leaming, Honor, 5307	98	92	Spring, 5291	99.25	90
Improved Yellow Sweepstakes, Honor, 5041	98	95	J. G. TURNBULL CO., Orleans, Vt.		
Luca's Favorite, Honor, 1075	98	95	<b>SUNFLOWER.</b>		
Minnesota 13, Honor, 5052	99	92	99 90**		
New York State Flint, Honor, 1067	98	92	RAY P. WEBSTER, Barton, Vt.		
Sanford Flint, Honor, 5295	98	92	<b>OATS.</b>		
West Branch Sweepstakes, Honor, 1033	98	92	Mammoth Cluster	.. <sup>3</sup>	
White Cap Dent, Honor, 5086	98	94	Mammoth Cluster	.. <sup>3</sup>	
<b>MEADOW GRASS.</b>			Mammoth Cluster	.. <sup>3</sup>	
Rough Stalked, 1317	95.05	86	N. WERTHEIMER & SONS, Ligonier, Ind.		
<b>MILLET.</b>			<b>ALFALFA.</b>		
Golden, 5316	98	90	Grimm, Idaho, Blue Tag B	99.6	90
Hungarian, 5240	99.3	90	<b>CLOVER.</b>		
Hungarian, 5240	99.3	90	Alsike 68	98.91	87-5
Hungarian, 5240	99.3	90	Alsike 68	98.91	87-5
Hungarian, 5240	99.3	90			

<sup>3</sup> Vendor thought erroneously because the seed was bought locally that neither guaranty nor license fee were needed; tested respectively 95.9, 56; 99.1, 92; 97, 93. The first lot listed was very inferior.

I. BRANDS SUBSTANTIALLY COMPLYING WITH GUARANTIES—*Concluded*

Seed, brand name and numerical designation	Guaranties		Seed, brand name and numerical designation	Guaranties	
	WHOLESALE DEALER	Purity Germination		WHOLESALE DEALER	Purity Germination
N. WERTHEIMER & SONS, Ligonier, Ind. ( <i>concluded</i> )			WHITNEY-ECKSTEIN Co., Buffalo, N. Y. ( <i>concluded</i> )		
<b>CLOVER.</b>			<b>MILLET.</b>		
Alsike, Fullwerth 71	98.05	90-2	Hungarian, Fancy	99	90
Alsike, Fullwerth 71	98.05	90-2	Hungarian	99	90
Medium Red, Fullwerth, 229	99.5	88	Hungarian, Fancy	99	90
Medium Red, Fullwerth, 230	99.5	90	Hungarian	98.27	86
Medium Red, Fullwerth, 230	99.5	90	Hungarian	98	90
Medium Red, Fullwerth, 234	99.38	88	Hungarian	98	90
White Blossom Sweet	99.5	80-10	Japanese	98.32	80
White Blossom Sweet	99.5	80-10	Japanese	98.27	84
White Blossom Sweet	99.57	91	Japanese, Fancy, B-473	98	86
<b>MILLET.</b>			Japanese, Fancy		
Hungarian, Fullwerth, 34702	99.56	92	Japanese	97.39	87
Hungarian, Fullwerth, 34703	99.6	92	Japanese	97.39	87*
Hungarian, Fullwerth, 34703	99.6	92	Japanese	97.39	87**
Japanese, Fullwerth, 34701	98.57	81	Japanese	97.39	87
Japanese, Fullwerth, 34701	98.57	81	Japanese	97.39	87
<b>PEAS.</b>			<b>OATS.</b>		
Canada Field, Fullwerth, C	99	95	Swedish Select	97	94
<b>REDTOP.</b>			<b>ORCHARD GRASS.</b>		
Fullwerth, 34821	95.06	87	2526	89	82*
Fullwerth, 34821	95.06	87	<b>PEAS.</b>		
<b>TIMOTHY.</b>			Canada Field		
Fullwerth, 34512	99.35	90*	Canada Field	98	90
Fullwerth, 34512	99.35	90	<b>REDTOP</b>		
Fullwerth, 34514	99.51	90	Fancy	94	90
Fullwerth, 34516	99.55	91	Imperator	90	90
Fullwerth, 34516	99.55	91	Imperator	90	90
WHITNEY-ECKSTEIN Co., Buffalo, N. Y.			Pan-American		
<b>ALFALFA.</b>			Pan-American, RT-670		
Grimm, State Sealed, 2080	99.72	80-10	Pan-American	92	90
Grimm, Wyoming Blue Tag, 27-7103	99.3	82-12	Pan-American	92	90
Grimm, Affidavit	99.35	80-10	Pan-American	92	90
Grimm	99	80-10	Pan-American	92	90
Variegated Ontario, 2087	99.36	80-10	<b>RYE.</b>		
<b>BARLEY.</b>			Spring		
2-row	98	90	Spring	96.05	92
6-row	98	90	Winter Rosen	98	85
6-row, Oderbrucker	98	90	Winter Rosen	98	85**
6-row, 3092	97	90	<b>SOY BEANS.</b>		
6-row	97	90	Black Wilson	98	85
6-row	97	90	Black Wilson	98	85
6-row	97	90	Manchu	98	85
6-row	97	90	Manchu	98	85
<b>CLOVER.</b>			<b>SUDAN GRASS.</b>		
Alsike, Fancy	98.02	73-17		98.56	75
Alsike (1934)	98.41	87		98.56	75
Alsike, Herald	96	90	<b>TIMOTHY.</b>		
Alsike, Imperator	97	90	Herald	98	90
Alsike, Imperator	97	90	Herald	97.48	90
Alsike, Pan-American, 284	98.13	80-16	Herald	97.48	90
Alsike, Pan-American, 284	98.13	80-16	Imperator	99	88
Alsike, Pan-American	98	80-10	Imperator	99	88
Alsike, Pan-American	98	80-10	Imperator	99	88
Medium Red, Herald	98	90	Imperator	99	88
Medium Red, Imperator	98	80-10	Pan-American	99.6	90
Medium Red, Imperator	98	80-10	Pan-American	99.5	90
Medium Red, Pan-American	99	96	Pan-American	99.5	90
Medium Red, Pan-American	99.07	80-10	Pan-American	99.5	90
Medium Red, Pan-American	99.08	90	Pan-American	99.5	90
Medium Red, Pan-American	99.08	90	Pan-American	99.35	90
Medium Red, Pan-American	99.08	90	<b>VEITCH.</b>		
Medium Red, Pan-American	99.08	90	Spring	99.7	94
Medium Red, Pan-American	99.12	90	Winter	99.7	84
Medium Red, Pan-American	99.72	93	<b>WHEAT.</b>		
<b>CORN.</b>			Marquis Spring		
Bloody Butcher	98	90	Marquis Spring	98.66	90
Early 8-row Yellow Flint	98	90	Marquis Spring	98	90
Excelsior	98	94	Marquis Spring	98	90
Golden Nugget	98	90	F. H. WOODRUFF & SONS. Milford, Conn.		
Improved Leaming	98	90	<b>CLOVER.</b>		
Improved Leaming	98	90	White	95.25	55-35
Improved Pride of the North	98	90	S. D. WOODRUFF & SONS, Orange, Conn.		
Yellow Sweepstakes	98	90	<b>CORN</b>		
			Select Beauty	99	4
			Beauty		90

\* Tested 98.7, 96.

II. TIMOTHY AND ALSIKE MIXTURES SUBSTANTIALLY COMPLYING WITH GUARANTIES

Brand name and numerical esignation	WHOLESALE DEALER	Purity guarantees			Germination guarantees	
		Timothy	Alsike	Total	Timothy	Alsike
ALLIED MILLS, INC., Philadelphia, Pa.						
B-598		74.25	90	94.9	90	80-12
B-598		74.25	90	94.9	90	80-12
ARTHUR R. CONE, Buffalo, N. Y.						
10-48		80.5	17.79	98.3	88	80
10-48		80.5	17.79	98.3	88	80
10-48		80.5	17.79	98.3	88	80
10-49		79.15	18.25	97.4	78	90-5
10-49		79.15	18.25	97.4	78	90-5
CRAVER-DICKINSON SEED CO., INC., Buffalo, N. Y.						
66-830		76.25	22.45	98.7	92	93
66-845		69.8	27.55	97.4	90	78-12
66-845		69.8	27.55	97.4	90	78-12
EASTERN STATES FARMERS' EXCHANGE, Springfield, Mass.						
		79.62	19.8*	99.42	90	85-10
STANFORD SEED CO., INC., Buffalo, N. Y.						
5165		77.25	20.51	97.8	90	81-8
5165		77.25	20.51	97.8	90	81-8
5165		77.25	20.51	97.8	90	81-8
5165		77.25	20.51	97.8	90	81-8
5165		77.25	20.51	97.8	90	81-8
WHITNEY-ECKSTEIN SEED CO., Buffalo, N. Y.						
4546		74.9	21.2	96.1	90	78-13
4551		72.15	23.98	96.1	88	80

III. MIXTURES OTHER THAN TIMOTHY AND ALSIKE SUBSTANTIALLY COMPLYING WITH GUARANTIES

Brand names	Purity						Germination					
	Red clover	Alsike clover	Timothy	Redtop	Alfalfa	Total	Red clover	Alsike clover	Timothy	Redtop	Alfalfa	
EASTERN STATES FARMERS' EXCHANGE, Springfield, Mass.												
Hayland No. 2..	G.	23.76	15.79	39.7	19.16	..	98.41	86-10	77-19	88	90	....
	F.	32.5	15	41	10	..	98.5	93-5	81-15	89	91	....
	F.	36.5	15.5	40	6	..	98	93.4	82-16	88	89	....
	F.	27.5	17	46	7.5	..	98	86-10	84-15	93	89	....
	F.	17.5	16	47	17	..	97.5	92-7	77-17	89	90	....
Average ....	F.	28.5	16	43.5	10	..	98	91-7	81-16	90	90	....
Hayland No. 3..	G.	23.81	11.84	15.89	7.87	39.77	99.18	86-9	77-19	87	95	62-29
	F.	29	10	32.5	2.5	24	98	96-3	86-9	93	93	87-11
	F.	25.5	6	40	2	24.5	98	97-2	79-19	91	92	85-12
	F.	31	9	32.5	2	24	99	95.4	80-8	90	94	80-17
	F.	28.5	8.5	35	2	24	98	96-3	82-12	91	93	84-13
Hayland No. 4..	G.	11.89	7.91	19.86	..	59.54	99.2	79-16	77-20	87	..	72-20
	F.	12.5	4	7	..	75.5	99	84-15	84-13	88	..	75-23
Pasture, medium soil .....	G.	23.88	19.92	15.88	7.87	.. <sup>1</sup>	96.44	60-36	72-20	87	95	....
	F.	38.5	19	13	2	..	99	82-15	82-15	88	94	....
Pasture, heavy soil .....	G.	..	..	..	..	..	96.5 <sup>2</sup>	..	78 <sup>2</sup>	..	..	....
	F.	16	25	17.5	13	.. <sup>3</sup>	98.5	87-12	88-9	90	89	....

<sup>1</sup> Also Kentucky bluegrass: guaranty purity 24.92, viability 80; found 24.5, 50. Also Ladino clover: guaranty purity 3.9, viability 55-40; found 2, 64-32.

<sup>2</sup> Blanket guaranty.

<sup>3</sup> Also white clover: purity found 3, viability found 56-43; also Kentucky bluegrass: purity found 24, viability found 50.

IV. SINGLE SEEDS FAILING SUBSTANTIALLY TO COMPLY WITH GUARANTIES

IN PURITY (GERMINATION GUARANTIES MAINTAINED)

E. T. & H. K. IDE, St. Johnsbury, Vt.			
Oats, Ideal	G. 100	F. 96.5	germination 98
STANFORD SEED CO., INC., Buffalo, N. Y.			
Rye, Rosen, 5031 (1934)	G. 96.5	F. 95.4	germination 90

IN VIABILITY (PURITY GUARANTIES MAINTAINED)

ARTHUR R. CONE, Buffalo, N. Y.			
Bluegrass, Kentucky, 34-25	Purity 83.5	G. 75	F. 46
CRAVER-DICKINSON SEED CO., INC., Buffalo, N. Y.			
Alfalfa, Affidavit, 27-7108	Purity 99.37	G. 78-15	F. 67-22
Bluegrass, Kentucky, 32-19	Purity 80	G. 75	F. 41
DAVIS SEED CO., Rutland, Vt.			
Oats, Fancy North Western, 4320	Purity 98.11	G. 97	F. 90
Oats, Fancy North Western, 4320	Purity 98.11	G. 97	F. 86
Oats, Fancy North Western, 4320	Purity 98.11	G. 97	F. 90
DOUGHTEN SEED CO., Jersey City, N. J.			
Timothy, Fame T382R	Purity 97.65	G. 85	F. 73
EASTERN STATES FARMERS' EXCHANGE, Springfield, Mass.			
Bluegrass, Kentucky	Purity 89	G. 80	F. 70
THOS. W. EMERSON CO., Boston, Mass.			
Bluegrass, Kentucky	Purity 86.44	G. 80	F. 52
RALSTON-PURINA CO., St. Johnsbury, Vt.			
Oats, Fancy Swedish Select	Purity 98	G. 95	F. 82
Oats, Fancy Swedish Select	Purity 98	G. 95	F. 84
ROSS BROS. CO., Worcester, Mass.			
Corn, Sheffield Flint	Purity 99	G. 96	F. 56
Corn, Sheffield Flint	Purity 99	G. 96	F. 66
STANFORD SEED CO., INC., Buffalo, N. Y.			
<del>Bluegrass, Canada, 5441</del>	<del>Purity 89.28</del>	<del>G. 77.5</del>	<del>F. 32</del>
<del>Bluegrass, Kentucky, 1456</del>	<del>Purity 87</del>	<del>G. 87</del>	<del>F. 54</del>
<del>Bluegrass, Kentucky, 1456</del>	<del>Purity 85</del>	<del>G. 85</del>	<del>F. 52</del>
<del>Bluegrass, Kentucky, 1456</del>	<del>Purity 85</del>	<del>G. 85</del>	<del>F. 55</del>
<del>Buckwheat, Silverhull, 6931</del>	<del>Purity 99.75</del>	<del>G. 90</del>	<del>F. 56</del>
<del>Sheep Fescue, 5372</del>	<del>Purity 98.5</del>	<del>G. 90</del>	<del>F. 82</del>
<del>Rye Grass, Domestic, 1174</del>	<del>Purity 99.31</del>	<del>G. 90</del>	<del>F. 53</del>
WHITNEY-ECKSTEIN SEED CO., Buffalo, N. Y.			
Bluegrass, Fancy Kentucky	Purity 86	G. 75	F. 65
Bluegrass, Fancy Kentucky	Purity 80	G. 75	F. 56
Bluegrass, Fancy Kentucky	Purity 80	G. 75	F. 59
Bluegrass, Fancy Re-cleaned Kentucky	Purity 82	G. 80	F. 56
Corn, Early Sanford Flint	Purity 98	G. 90	F. 77
Millet, Japanese	Purity 98.32	G. 80	F. 58
Orchard Grass, 2526	Purity 89.72	G. 84	F. 75
Vetch, Spring	Purity 99.7	G. 94	F. 18

G = Guaranteed. F = found.

## V. MIXTURES FAILING SUBSTANTIALLY TO COMPLY WITH GUARANTIES.

		Purity		Germination		
		Timothy	Alsike	Total	Timothy	Alsike
N. WERTHEIMER & SONS, Ligonier, Ind.						
35411	Guaranteed	70.61	25.76	96.37	90	86
	Found	70	23.5	93.5	88	80-15

<sup>1</sup> G=Guaranteed. F=found.

The Stanford Seed Company's pasture mixture is so complicated a proposition, containing seven ingredients and necessitating the printing of 28 figures, that it does not fit into a tabulation. Suffice it to say that guaranteed purity figures total 93.11 percent and found purity figures 98 percent, and that, with the exception of redtop, the amounts found equalled or exceeded the individual content guaranties (which were approximately, Canada bluegrass  $\frac{1}{4}$ , domestic and perennial rye grasses each  $\frac{1}{4}$ , timothy, redtop, sweet and white clovers each  $\frac{1}{10}$ ).

The germination results were somewhat less satisfactory. Six ingredients were guaranteed 90 percent and one (Canada bluegrass) 85 percent viable. The two rye grasses tested 83 and the bluegrass 78 percent viable or 7 percent low of guaranty, which is just on the tolerance borderline. The white clover tested 44 percent viable. Since these four seed constituted approximately two-thirds of the entire mass, the average germination found was low of the average guaranteed and the lot must be listed among the mixtures which did not comply with guaranty.

The total purity guaranties and analyses in most of the mixtures 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 difficult to sample because mechanical separation may and often does take place within the bag. The quality of the seed used in these mixtures seems to be excellent.

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 or quite equivalent to the guaranty made by the purveyor. This statement holds even though the percentages of germination and of hard seed in guaranty and 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. Hard seed are a nuisance to both vendor and seed analyst. Just how results should be reported is still a moot question. 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 1936, requiring all purveyors to state the number of hard seeds in all such brands.

## SUMMARY OF 1934 INSPECTION

The violations of the law are usually due:

1. *To failure to declare guaranties.*—The original container almost always carries these statements, but sometimes, perhaps often, the figures

are not furnished as required by law when smaller lots are drawn from the original package. A few lots were sampled this year whereon no guaranties appeared. In some cases local dealers seem to have lost or mislaid or destroyed tags furnished by the original vendor and in a few the vendor seems to have neglected to furnish the tags.

2. *To failure to maintain purity guaranty.*—This rarely occurs. Only three samples in over 600 were below guaranty in purity, one oats, one rye and one mixture.

3. *To failure to maintain germination guaranty.*—This lapse is more common than is failure to maintain a purity guaranty. Tables IV and V list 28 and 1 samples respectively, a total of 29. Marked improvement has occurred in correct labeling during the last few years.

Alfalfa and red clover and the several cereals were found to be very free and alsike clover comparatively free from weed seeds. No traces of dodder were found. Some weed seeds were present in a few samples of redtop and timothy but almost no noxious weeds. When weeds 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 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 furnish 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 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 obtain. The weed seeds mentioned in the section are "quack grass, wild mustard and other Brassica, Canada thistle, dodder, ergot, corn cockle and poison hemlock."

It appears that 43 states have seed laws and that "quack grass, wild mustard and other Brassica, Canada thistle, dodder . . . corn cockle" are listed as weeds which must be declared in the case of seed sales in from 17 to 42 of these seed laws. The Vermont list seems to be a reasonably representative one.

## CONCERNING THE 1935 BLUEGRASS SEED SITUATION

Twelve samples of bluegrass, 11 Kentucky, 1 Canada, were drawn and tested. Every one was as pure as it was said to be, but not a single one was within gunshot of being as good as it was said to be in respect to its ability to grow. In one case 70 percent of the seed was viable, in one 65 percent, in 7 cases from 52 to 59 percent, in three less than 50 percent.

The viability of the 1934 crop of Kentucky bluegrass was seriously weakened because of the severe drought. Much undeveloped seed was formed. Its viability is said to have declined constantly during its holding period, much more so than in normal years. Growing conditions during the season of seed production decidedly affect the agricultural value of a seed. Undoubtedly the viability of this seed was lowered decidedly between the time of its harvest and of its planting and, especially, before the time when station germination tests were made in midsummer.

## THE 1936 SEED SITUATION

A Federal Department of Agriculture press release of mid-August indicates that supplies of the principal grass seeds seem likely to be considerably larger than in 1935. Timothy seed should be relatively plentiful, in much larger quantities than for many years, and of good quality. Prices should be much lower than during the past spring, in spite of the fact that there is almost no carry-over. The Kentucky bluegrass seed crop is many times larger than it was in 1934, but the carry-over is the smallest since 1931. The redtop seed crop is somewhat larger than in 1934 and seems likely to be of better quality.

A similar report from the same source issued in mid-September indicates a less favorable outlook for red and alsike clovers. Many red clover seedlings were killed by 1934's extreme drought, thus diminishing both the 1934 and 1935 crops. It is feared that the production will be even lower than last year, with quality fair to good. The carry-over is small. Alsike clover seed yields seem likely to be slightly larger than in 1934, while white clover seed yields will be very small.

The sweet clover seed crop is estimated at one-third greater than last year's, which was very short. The carry-over is small. Supplies of vetch seed will probably be somewhat more plentiful.