

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

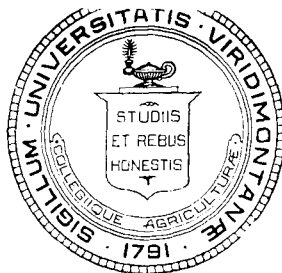
AGRICULTURAL SEED

By ANNA S. LUTMAN

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The agricultural seed sold in Vermont in 1933 as a whole was of good quality comparing well with that sold during most of the years since the law went into effect in 1913.

Only one sample was short in respect to purity and less than 7 percent of the entire number were deficient in respect to viability. Several of the failures in viability are to be charged up to over-large numbers of hard seed and, perhaps, in some cases to the length of time between the vendor's test and that made during the past summer by the Station's seed analyst.

BULLETIN 365: AGRICULTURAL SEED

By ANNA S. LUTMAN

This bulletin gives the results of inspection of seed samples collected during the spring of 1933, when the Station sampling agents visited 81 Vermont towns and cities and drew 452 samples of agricultural seed offered for sale by local dealers representing 172 of the 226 brands licensed for sale, as follows:

Alfalfa	20	Millet, Hungarian ...	21	Redtop	39
Barley	27	Millet, Japanese ...	39	Rye	4
Buckwheat	2	Mixtures	29	Soy beans	9
Clover, alsike	38	Oats	35	Sudan grass	6
Clover, red	50	Orchard grass	4	Timothy	50
Clover, sweet	10	Peas, Canada	19	Vetch	10
Clover, white	2	Rape	2	Wheat	5
Corn	31				

No samples representing 54 brands named below were secured.

LIST OF UNSAMPLED BRANDS

- Barber & Bennett, Inc.* Barley, 6-row; Buckwheat, Japanese; Oats; Rye, Winter.
- Perley E. Davis, Granby, Mass.* Corn, Davis Yellow Dent.
- Delta Sales Co.* Corn, Kato Korn.
- Doughton Seed Co.* Alsike Clover, Freedom; Red Clover, Freedom; Redtop, Freedom; Timothy, Freedom.
- Eastern States Farmers' Exchange.* Barley, 2-row, 6-row; Buckwheat; Mixtures: Rye-Vetch, Wheat-Vetch, for light, for medium, for heavy pastures, for lowland, for upland meadows; Peas; Rape; Seed Rye; Sunflower; Seed Wheat.
- Holbrook Grocery Co.* Alsike Clover, White Mountain; Red Clover, White Mountain; Seed Corn, White Mountain; Redtop, White Mountain.
- E. T. & H. K. Ide, St. Johnsbury, Vt.* Barley, 6-row Ideal Fancy.
- F. W. Kelley, St. Johnsbury, Vt.* Oats; Tylers' Re-cleaned Seed.
- Page Seed Co.* Alsike Clover, Paseco; Millet, Hungarian, Paseco; Peas, Canada Field Paseco; Soy Beans, Paseco; Timothy, Marvel.
- Chas. M. Scorer & Co., Williamstown, Vt.* Seed Oats, Fancy Swedish.
- St. Albans Grain Co., St. Albans, Vt.* Seed Corn, Improved Yellow Leaming, Minn. No. 13, Early August.
- Stanford Seed Co.* Alsike Clover, Honor; Barley, 2-row; Rye; Timothy, Honor.
- John B. Varick Co., Manchester, N. H.* Corn.
- N. Wertheimer & Sons.* Alsike Clover, Matrix; Red Clover, Matrix.
- Whitney-Eckstein Seed Co.* Kentucky Blue Grass; Millet Golden; Rye Grass; Timothy: Herald, Imperator; Redtop, Eureka.

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 mid-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 relatively few sales were made. In the present inspection three-fourths of the 226 licensed brands were sampled and analyzed. The trade in commercial fertilizers is not so intensely seasonal and from 80 to 85 percent of the brands are usually sampled, representing 95 percent of the usage by Vermont farmers. The commercial feeding stuffs trade is a twelve-months affair and of late years samples representing over 90 percent of the licensed brands have been secured. Furthermore, it should be remembered that whereas the conduct of the fertilizer and feed inspections is not hampered by insufficient income that of the seed inspection is seriously restricted in this respect.

BRANDS SAMPLED AND ANALYZED

The following tables set forth the results secured in the 1933 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. In doubtful cases analyses were completed. Retests were always made of samples found to yield figures below those of the guaranties made in their behalf.

Table 1, pages 7 to 13, lists those brands 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. This table furnishes the following information:

1. The common name of the seed, i. e., ALFALFA, BARLEY.
2. The brand name and numerical designation of the seed, i. e., Pine Tree, 68531.¹
3. The name and address of the local dealer from whose stocks the sample was drawn.
4. The purity guaranty made by the vendor setting forth the percentage of pure seed guaranteed to be present.
5. The germination guaranty made by the vendor setting forth the viability of the seed as determined by his tests, usually made by him from December to March preceding the Vermont sales. The number of hard seeds 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.

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

6. 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."

Table 1 has to do with the brands which have proven to be as good or better than the guaranties made for them.

Table 2, pages 14 and 15, lists guaranties and analyses of mixtures of timothy and alsike, or of timothy and alsike with other seed found on sale by station sampling agents. In this table all of the mixtures are listed whether or not the guaranties are maintained.

Table 3, page 16, 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 table sets forth:

1. The common name of the seed, i. e., ALFALFA, BARLEY.
2. The brand name and numerical designation of the seed, i. e., Pine Tree, 68531.
3. The name and address of the local dealer from whose stocks the sample was drawn.
4. The purity guaranty made by the vendor setting forth the percentage of pure seed guaranteed to be present.
5. 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.
6. The germination guaranty made by the vendor setting forth the viability of the seed as determined by his tests, usually made from December to March preceding the Vermont sales. The number of hard seeds is indicated after the germination percentage, i. e., 87-8.
7. The germination percentage found.

8. The number of hard seeds 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.

I. BRANDS SUBSTANTIALLY COMPLYING WITH GUARANTIES

Seed, brand name and numerical designation	WHOLESALE DEALER Local dealer	Guaranties		1(See footnote below)
		Purity	Germination	
E. W. BAILEY & CO., MONTPELIER, VT.				
OATS, Pennant	E. W. Bailey & Co., Swanton	99.5	98	
Pennant	Brattleboro Grain Store, Brattleboro	99.5	98*	
Pennant	C. S. Howard, Fairfax	99.5	98	
Pennant	C. E. Lanpher, Morrisville	99.5	98	
Pennant	Richmond Feed Co., Richmond	99.5	98	
Pennant	Mt. Mansfield Cooperative Creamery and Grain Assoc., Inc., Stowe	99.5	98	
Pennant	J. E. Foster, Underhill	99.5	98	
BARBER & BENNETT, INC., ARCH AND CHURCH STS., ALBANY, N. Y.				
WHEAT, Spring, 226	Mintzer Bros., Rutland	99	96	
White Winter, 339	Mintzer Bros., Rutland	98.5	98	
G. N. BARTEMUS CO., CONCORD, N. H.				
OATS, Barco	G. F. Robinson, West Woodstock	99.5	96	
BELT SEED CO., CHEAPSIDE, CALVERT AND PRATT STS., BALTIMORE, MD.				
CORN, Reid's Yellow Dent, 2684	M. F. Proctor, Ludlow	98	90	
CALEDONIA MILLS, INC., ST. JOHNSBURY, VT.				
OATS, Fancy Swedish, 40-42	Caledonia Mills, Inc., St. Johnsbury	98.5	95	
Fancy Swedish	Parina Feed Store, Albany	98.5	95	
CHAMPLAIN SEED CO., BURLINGTON, VT.				
CORN, Early Leaming	Champlain Seed Co., Burlington	97	97	
Early Butter	Champlain Seed Co., Burlington	97	98	
Early Smoky Dent	Champlain Seed Co., Burlington	97	93*	
CLEVELAND GRAIN CO., CLEVELAND, OHIO				
OATS, White. Elwood	J. H. Spaulding, Ludlow	99.17	98**	Oct., '32
ARTHUR R. CONE, P. O. BOX 3, BUFFALO, N. Y.				
CLOVER, Medium Red, 24-522	E. C. Crosby, Danby	99.62	80-15	
TIMOTHY, Arco, 10-10	E. C. Crosby, Danby	99.6	94	Dec., '32
CRAYER-DICKINSON SEED CO., INC., P. O. BOX 175, BUFFALO, N. Y.				
CLOVER, White Blossom Sweet, 25-17	R. W. Simonds & Co., Fair Haven	99.62	85-12	Nov., '32
CORN, Conklin's Early Wonder	E. M. Bixby, & Co., Inc., Poultney	99	90	
Leaming	Field & Lawrence, Bellows Falls	99	90	
PEAS, Field, 87-213	Brattleboro Grain Store, Brattleboro	98	96*	
Field, 87-28	A. D. Pease Grain Co., Shelburne	98	90	Oct., '32
RAPE, D	Brattleboro Grain Store, Brattleboro	97	97	
RYE, Rosen, 74-24	H. A. Slayton Estate, Morrisville	98	80	July, '32
SUDAN GRASS, 98-85	Brattleboro Grain Store, Brattleboro	97.29	89	Nov., '32
98-85	Mintzer Bros., Rutland	97.29	89	Nov., '32
A. DICKINSON CO., 2750 WEST 35TH ST., CHICAGO, ILL.				
ALFALFA, Grimm Pine Tree, 28165	E. W. Bailey & Co., Montpelier	99	82-10	
Grimm Pine Tree, 27545	F. H. Gillingham & Sons, Woodstock	99.5	90	
Grimm Pine Tree, 28141	J. O. Middlebrook & Sons, Burlington	99.75	84.10*	
Grimm Pine Tree, 28954	J. O. Middlebrook & Sons, Burlington	99.32	88.3	
Grimm Blackfoot, 027477	Mintzer Bros., Rutland	99.2	80.14	
Grimm Pine Tree, 27532-3	Mintzer Bros., Rutland	99.04	71-20	
Grimm Pine Tree, 27573	E. G. & A. W. Norton, Vergennes	99.36	83-8	
Grimm Pine Tree, 28125	E. G. & A. W. Norton, Vergennes	99.68	83-10	
Grimm Pine Tree, 27569	W. J. Rogers, Middlebury	99.54	87-6	
BARLEY, 6-row, 71395	E. W. Bailey & Co., Montpelier	99.42	96	
6-row, 71395	C. E. Lanpher, Morrisville	99.42	96	
6-row, 71395	Skeels & Weidman, Swanton	99.42	96	
6-row, Pine Tree, 71237	H. A. Squires, Lyndonville	99.75	94	
6-row, Velvet, 71385	A. N. Washburn Estate, Bethel	99.45	97	Nov., '32
6-row, 71395	A. N. Washburn Estate, Bethel	99.42	96	
CLOVER, Alsike, Pine Tree, 21479	J. F. Curtis, Sharon	98.95	85-8	
Alsike, Pine Tree, 21361	C. S. Howard, Fairfax	98.1	86-9	Dec., '32
Alsike, Pine Tree, 21-560	A. B. Kilbourne, Bristol	98	78-12	

1 Purveyor's germination test date (if before Jan., '33).

§ Unguaranteed as to germination; tested 94.

† Unguaranteed as to purity; tested 100.

‡ Unguaranteed; tested 99.7, 99. Local vendor stated that guaranty tag was lost and that seed was imported from Japan.

I. BRANDS SUBSTANTIALLY COMPLYING WITH GUARANTIES—Continued

Seed, brand name and numerical designation	WHOLESALE DEALER Local dealer	Guaranties		1(See footnote below)
		Purity	Germination	
A. DICKINSON CO., 2750 WEST 55TH ST., CHICAGO, ILL.				
CLOVER, Alsike, Pine Tree, 21375-6.....	Manchester Plumbing & Hardware Co., Manchester Center.....	98.15	88.8**	Nov., '32
Alsike, Pine Tree, 21456.....	J. O. Middlebrook & Sons, Burlington.....	98.85	86-7	.....
Alsike, Ace, 21377.....	Mintzer Bros., Rutland.....	96.8	84-9	Nov., '32
Alsike, Pine Tree, 21456.....	E. G. & A. W. Norton, Vergennes.....	98.85	86-7	.....
Alsike, Pine Tree, 21454-57.....	Powell & Comings Co., Richford.....	98.45	96	.....
Alsike, Pine Tree, 21375-6.....	W. J. Rogers, Middlebury.....	98.15	88.8**	Nov., '32
Mam. Red, Pine Tree, 23980-81.....	Manchester Plumbing & Hardware Co., Manchester Center.....	99.56	87-8	.....
Medium Red, Ace, 24744.....	E. C. Crosby, Danby.....	.....	.....	Nov., '32
Medium Red, Ace, 24694.....	H. A. Skayton Estate, Morrisville.....	98.2	83-10	Oct., '32
Med. Red, Pine Tree, 24782.....	E. W. Bailey & Co., Montpelier.....	99.52	88-6	Dec., '32
Med. Red, Pine Tree, 241017.....	Elliott & Churchill, Middlebury.....	99	85-8	.....
Med. Red, Pine Tree, 24988.....	F. H. Gillingham & Sons, Woodstock.....	99.5	92	.....
Med. Red, Pine Tree, 24782.....	C. S. Howard, Fairfax.....	99.52	88-6	Dec., '32
Med. Red, Pine Tree, 24-584.....	A. B. Kilbourne, Bristol.....	99.2	83.11	.....
Med. Red, Pine Tree, 24723.....	Manchester Plumbing & Hardware Co., Manchester Center.....	99.5	83.10	Nov., '32
Med. Red, Pine Tree, 24950.....	J. O. Middlebrook & Sons, Burlington.....	99.24	82-13	.....
Med. Red, Pine Tree, 241017.....	E. G. & A. W. Norton, Vergennes.....	99	85-8	.....
Med. Red, Pine Tree, 24963.....	Powell & Comings Co., Richford.....	99	94	.....
Med. Red, Pine Tree, 241017.....	W. J. Rogers, Middlebury.....	99	85-8	.....
Medium Red.....	Lyon Hardware Co., Inc., Brattleboro.....	99.5	95	.....
CORN, Southern White.....	Champlain Seed Co., Burlington.....	99.5	94	.....
MILLET, Hungarian, 47133.....	E. W. Bailey & Co., Montpelier.....	99.5	85	Nov., '32
Hungarian, 47133.....	E. W. Bailey & Co., St. Albans.....	99.5	85*	Nov., '32
Hungarian, 47-520.....	Brattleboro Grain Store, Brattleboro.....	99.68	86	Dec., '32
Hungarian, 47-520.....	H. A. Skayton Estate, Morrisville.....	99.68	86	Dec., '32
Hungarian, 47160.....	E. J. Davis Hardware Co., Chester Depot.....	99.64	85	.....
Hungarian, 47-520.....	Field & Lawrence, Bellows Falls.....	99.68	86	.....
Hungarian, 4291.....	LaFountain, Wootson & Co., Springfield.....	99.56	90	.....
Hungarian, 47160.....	A. D. Pease Grain Co., Burlington.....	99.64	81	.....
Japanese, 44137.....	R. L. Clark Store, Barre.....	97.32	95	Nov., '32
Japanese.....	E. J. Davis Hardware Co., Chester Depot.....	98	90	.....
Japanese, 4419.....	Field & Lawrence, Bellows Falls.....	98.33	92	.....
Japanese, 44139.....	Maple Hills Creamery Co., East Berkshire.....	98.77	90	.....
Japanese, 4419.....	Mintzer Bros., Rutland.....	98.53	92	.....
Japanese, 44139.....	R. H. Pond, East Berkshire.....	98.77	90	.....
Japanese, 44139.....	Powell & Comings Co., Richford.....	98.77	90	.....
Japanese, 44139.....	Richford Feed Co., Richford.....	98.77	90	.....
Japanese, 44141.....	Richmond Feed Co., Richmond.....	99.4	95	.....
Japanese, 44137.....	W. S. Rublee, East Berkshire.....	97.32	95	Nov., '32
Japanese, 44136.....	H. A. Squires, Lyndonville.....	98.6	90	Nov., '32
OATS, Re-cleaned, Heavy Domestic, 73177.....	H. A. Squires, Lyndonville.....	98.7	94	.....
Swedish, Pine Tree, 07341.....	H. A. Squires, Lyndonville.....	99.22	94	.....
ORCHARD GRASS, 37277.....	F. H. Gillingham & Sons, Woodstock.....	87	85	.....
PEAS, Canada Field, 85301.....	F. H. Gillingham & Sons, Woodstock.....	99.5	90*	.....
White, Field, 085127.....	R. H. Pond, East Berkshire.....	99.5	94	.....
REDTOP, Ace, 30129.....	Mintzer Bros., Rutland.....	90.2	90	.....
Ace, 30176.....	E. G. & A. W. Norton, Vergennes.....	90.6	90*	.....
Ace, 30187.....	Powell & Comings Co., Richford.....	91.2	90**	.....
Ace, 30208.....	Richmond Feed Co., Richmond.....	92.4	92**	.....
Ace, 30998.....	E. L. Thompson, Poultney.....	90.7	90*	.....
Pine Tree, 30128.....	Manchester Plumbing & Hardware Co., Manchester Center.....	95.6	92*	.....
Pine Tree, 30128.....	V. W. Race, Pawlet.....	95.6	92**	.....
Pine Tree, 30121.....	Field & Lawrence, Bellows Falls.....	95.6	92*	.....
Pine Tree, 30-411.....	W. J. Rogers, Middlebury.....	95.72	92**	.....
SOY BEANS, Manchu, 84289.....	F. H. Gillingham & Sons, Woodstock.....	99.5	90	.....
Wilson, 84288.....	F. H. Gillingham & Sons, Woodstock.....	99.5	92	.....
TIMOTHY, Globe, 68333.....	Powell & Comings Co., Richford.....	99.8	94	.....
Globe, 68333.....	Richford Feed Store, Richford.....	99.8	94	.....
Pine Tree, 68568.....	E. M. Bixby & Co., Inc., Poultney.....	99.7	94	Nov., '32
Pine Tree, 68531.....	E. M. Bixby & Co., Inc., Poultney.....	99.65	95	Nov., '32
Pine Tree.....	E. J. Davis Hardware Co., Chester Depot.....	99.65	94	.....
Pine Tree, 68783.....	Field & Lawrence, Bellows Falls.....	99.6	94	.....
Pine Tree, 67423.....	C. S. Howard, Fairfax.....	99.65	94	Dec., '32
Pine Tree, 60530.....	Manchester Plumbing & Hardware Co., Manchester Center.....	99.7	95	Nov., '32
Pine Tree, 68826.....	E. G. & A. W. Norton, Vergennes.....	99.7	94	.....
Pine Tree, 68826.....	W. J. Rogers, Middlebury.....	99.7	94	.....
Pine Tree, 68484.....	H. A. Skayton Estate, Morrisville.....	99.7	94	Oct., '32
Pine Tree, 68797.....	I. G. Turnbull Co., Newport Center.....	99.7	95	.....
Square Deal, 066359.....	Mintzer Bros., Rutland.....	99.25	94	.....

* Purveyor's germination test date (if before Jan., '33).

† No guaranty on package; tested 97.5, 96-3.

I. BRANDS SUBSTANTIALLY COMPLYING WITH GUARANTIES—Continued

Seed, brand name and numerical designation	WHOLESALE DEALER Local dealer	Guaranties		1(See footnote below)
		Purity	Germination	
EASTERN STATES FARMERS' EXCHANGE, SPRINGFIELD, MASS.				
ALFALFA, Grimm	Carl Field, Vergennes	99.36	91.5	Nov., '32
CLOVER, Alsike	G. A. Webster, Randolph	99.45	65.30	
Medium Red	Carl Field, Vergennes	99.35	63.31	Dec., '32
White Blossom Sweet	C. M. Byington, Charlotte	99.45	83.4	Nov., '32
CORN, Lancaster Sure Crop	D. B. Bromley, Danby	99.5	93	
Cornell, 11	Carl Field, Vergennes	99.25	95	Dec., '32
Cornell, 11	Windsor County Farmers' Cooperative Exchange, Inc., White River Junction	99.25	90	
MILLET, Hungarian	G. A. Webster, Randolph	99.25	90	Nov., '32
Japanese	Carl Field, Vergennes	98.8	94	
Japanese	G. A. Webster, Randolph	98.8	94	Dec., '32
OATS, Selected Michigan	H. K. Westall, Richmond	99.2	92*	
Selected	Windsor County Farmers' Cooperative Exchange, Inc., White River Junction	99.2	92	
REDTOP, Fancy Solid	G. A. Webster, Randolph	96.05	95**	Nov., '32
SOY BEANS, Dunfield	G. A. Webster, Randolph	99.45	90	
Wilson	Windsor County Farmers' Cooperative Exchange, Inc., White River Junction	99.4	85	
SUDAN GRASS	G. A. Webster, Randolph	99.3	85	June, '32
TIMOTHY, Midwest Certified	D. B. Bromley, Danby	99.65	91†	Dec., '32
Midwest	C. M. Byington, Charlotte	99.65	91	Dec., '32
	Carl Field, Vergennes	99.65	91	
	G. A. Webster, Randolph	99.65	91	Dec., '32
THOS. W. EMERSON CO., 315 STATE ST., BOSTON, MASS.				
ALFALFA, Northwestern 28988	Lyon Hardware Co., Inc., Brattleboro	99.1	90	
MILLET, Hungarian	C. H. Utley, Hardwick	99.6	96	
OATS	Howard Hardware Co., Bellows Falls	99	97	
PEAS, Canada Field	C. H. Utley, Hardwick	98	95	
REDTOP, No. 1	Howard Hardware Co., Bellows Falls	93.8	90	
TIMOTHY, Bay State	Lyon Hardware Co., Inc., Brattleboro	99.7	94	
HALES & HUNTER CO., 166 WEST JACKSON BLVD., CHICAGO, ILL.				
CORN, Minnesota 13	Richmond Feed Co., Richmond	99	95	
HOLBROOK GROCERY CO., KEENE, N. H.				
ALSIKE, Special XX, 21490	R. P. Webster, Barton	93	90**	
XX, 21442	Elwell & Clark, East Arlington	96	90**	
Medium Red, Special, 24995	Elwell & Clark, East Arlington	97	92	
OATS, Swedish, 07360	F. H. Gillingham & Sons, Woodstock	98.07	95	
PEAS, Dwarf Telephone	Elwell & Clark, East Arlington	92	90*	
REDTOP, Monadnock	E. J. Davis Hardware Co., Chester Depot	92	90*	
Monadnock, 30187	Elwell & Clark, East Arlington	92	90*	
TIMOTHY, Special, T68414	Elwell & Clark, East Arlington	97	91	
Special, T68414	M. F. Proctor, Ludlow	97	91	
Special, T68444	Brasor & Barber, Guilford	97	91	
White Mountain, 68782	M. F. Proctor, Ludlow	99.65	95	
E. T. & H. K. IDE, ST. JOHNSBURY, VT.				
OATS, Ideal Swedish	E. T. & H. K. Ide, St. Johnsbury	99	..§	
W. B. JOHNSON & SON, ESSEX JUNCTION, VT.				
OATS, Johnson's Fancy Re-cleaned	Johnson Grain Co., Winooski	98	94	
K. & A. SEED CO., INC., HARRISBURG, PA.				
CLOVER, Alsike, B-74 (O., Ind., Mich. grown)	Amco Service Store, Richmond	98.54	80-12	
Alsike, AA, B-74	Sunshine Feed Store, Bradford	98.54	80-12	
MILLET, Japanese, AA, B-1	Amco Service Store, Richmond	96.13	85	
Japanese, AA, B-1	Sunshine Feed Store, Bradford	96.13	85**	
PEAS, Canada Field, AA, 9	Sunshine Feed Store, Bradford	99.5	90	
REDTOP, AA, B-15 (Ill. grown)	Amco Service Store, Richmond	92.29	91*	
AA, B-15	Sunshine Feed Store, Bradford	92.29	91*	
SOY BEANS, Black Wilson	Sunshine Feed Store, Bradford	98	90	
TIMOTHY, AA, B-198 (Iowa grown)	Amco Service Store, Richmond	99.68	92	
AA, B-198	Sunshine Feed Store, Bradford	99.68	92	
VETCH, Winter, Lot 2	Sunshine Feed Store, Bradford	99.5	88**	

† Purveyor's germination test date (if before Jan., '33).

‡ Unguaranteed as to germination; tested 96.

§ Unguaranteed; tested 99.61, 88.

§ Unguaranteed as to germination; tested 99.

I. BRANDS SUBSTANTIALLY COMPLYING WITH GUARANTIES—Continued

Seed, brand name and numerical designation	WHOLESALE DEALER Local dealer	Guaranties		1(See footnote below)
		Purity	Germination	
F. W. KELLEY Co., ST. JOHNSBURY, VT.				
OATS, Xtragood Recleaned.....	J. G. Turnbull Co., Orleans.....	97	93	.....
NORTHROP, KING & Co., 1500 JACKSON ST., N. E., MINNEAPOLIS, MINN.				
BARLEY, 6-row, U. V. 2, 32J2.....	T. J. McGovern, Cambridge.....	99.34	99	.....
6-row, U. V. 2, 32J2.....	T. J. McGovern, Jeffersonville.....	99.34	99	.....
6-row (Minn., 1932), UV2, 32J2.....	Richmond Feed Co., Richmond.....	99.34	99	.....
6-row (Minn., 1932) UG1.....	W. J. Rogers, Middlebury.....	99.75	95	.....
6-row, UV2.....	Underhill Mills, Underhill.....	99.34	99	.....
6-row, UG1.....	A. N. Washburn Estate, Bethel.....	99.75	95	.....
2-row, UT1.....	A. N. Washburn Estate, Bethel.....	99.08	98	Nov., '32
RYE, Spring, R. S. 1.....	E. W. Bailey & Co., Montpelier.....	98.54	90	.....
WHEAT, Marquis, WMS.....	E. I. Claffin, Randolph.....	99.94	98	Nov., '32
O. & M. SEED Co., GREEN SPRINGS, OHIO				
BARLEY, 6-row, O. & M.....	Checkerboard Grain Warehouse, Newport.....	98.5	94	.....
6-row, O. & M.....	L. A. Darling, East Burke.....	98.5	94	.....
CLOVER, Alsike, Ohio grown.....	Davis Feed Co., Rutland.....	98.3	85	Oct., '32
Medium Red, Ohio grown.....	Davis Feed Co., Rutland.....	99.7	88	.....
CORN, O. & M. Westbranch Sweepstakes.....	E. C. Crosby, Danby.....	99	95*	.....
Pride of the North.....	E. C. Crosby, Danby.....	99	94	.....
Minnesota 13.....	Elwin Holt, Northfield.....	99	95	.....
Minnesota 13.....	McIndoes Cash Grain Store, McIndoe Falls.....	99	95	.....
Lucc's Favorite.....	Mintzer Bros., Rutland.....	99	90	.....
OATS, O. & M. Fancy Swedish.....	Davis Feed Co., Rutland.....	99	95	.....
O. & M. Fancy Swedish.....	Dennison & Phillips, Pittsford.....	99	95	.....
O. & M. Fancy Swedish.....	G. E. Eldred, East Wallingford.....	99	95	.....
PAGE SEED Co., GREENE, N. Y.				
CORN, Paseco Golden Nugget, 1250.....	W. T. Simonds, Brandon.....	99	92*	.....
MILLET, Japanese, Fancy J-5B33.....	A. J. Clark, Hyde Park.....	95	90	.....
Japanese, J-5B33.....	LaFountain, Woolson & Co., Springfield.....	95	90	.....
Japanese, J-5B33.....	H. A. Slayton Estate, Morrisville.....	95	90	.....
JEROME B. RICE, JR., CAMBRIDGE, N. Y.				
CORN, Golden Nugget.....	LaFountain, Woolson & Co., Springfield.....	98	90	.....
MILLET, Japanese.....	LaFountain, Woolson & Co., Springfield.....	96.2	92	.....
DAVID H. RISING, LOCK BOX 143, EASTON, PA.				
CORN, Early King.....	F. H. Gillingham & Sons, Woodstock.....	99	95	.....
ROSS BROS. Co., 179-181 COMMERCIAL ST., WORCESTER, MASS.				
CORN, Sheffield.....	E. J. Davis Hardware Co., Chester Depot.....	99	94	.....
Worcester Co. Sweepstakes.....	M. F. Proctor, Ludlow.....	99	90	.....
ST. ALBANS GRAIN Co., ST. ALBANS, VT.				
BARLEY, 6-row, Fancy.....	Davis Seed Co., Rutland.....	99	95	.....
6-row, Fancy.....	C. H. Stearns & Son Co., Johnson.....	99	95 [†]
6-row, Fancy.....	Wirthmore Feed Store, Enosburg Falls.....	99	95	.....
OATS, Hygrade Fancy.....	Caswell & O'Rourke Store Co., Derby Line.....	97	92*	.....
Hygrade Fancy.....	Johnson Grain Co., Winooski.....	97	92	.....
Hygrade Fancy.....	St. Albans Grain Co., St. Albans.....	97	92	.....
Hygrade Fancy.....	H. Waite & Son, Morrisville.....	97	92	.....
Wirthmore Fancy.....	McIndoes Cash Grain Store, McIndoe Falls.....	98	95	.....
Wirthmore Fancy.....	St. Albans Grain Co., St. Albans.....	98	95	.....
Wirthmore Fancy.....	Star Feed Store, Burlington.....	98	95	.....
Wirthmore Fancy.....	H. Waite & Son, Morrisville.....	98	95	.....
Wirthmore Fancy.....	Wirthmore Feed Store, Enosburg Falls.....	98	95	.....
STANFORD SEED Co., INC., P. O. BOX 366, BUFFALO, N. Y.				
ALFALFA, Grimm, 4380.....	W. H. Adams, Vergennes.....	99.62	84-6	.....
Grimm, 4380.....	C. M. Seaver & Co., Williamstown.....	99.62	84-6	.....
Grimm, 5946.....	Nelson-Warner Co., Springfield.....	99	78-12	Dec., '32
BARLEY, 6-row, 4497.....	Goddette Bros., Essex Center.....	98	93	.....
6-row, 4497.....	Nelson-Warner Co., Springfield.....	98	93	.....
6-row, 4497.....	C. M. Seaver & Co., Williamstown.....	98	93	.....
6-row, 4497.....	R. W. Simonds & Co., Fair Haven.....	98	93	.....
6-row, 4573.....	C. S. Brush & Son, Jericho.....	98	92	.....
6-row, 4573.....	Chester Grain Co., Chester Depot.....	98	92	.....

¹ Purveyor's germination test date (if before Jan., '33).

[†] Unguaranteed; tested 99.49, 99.

I. BRANDS SUBSTANTIALLY COMPLYING WITH GUARANTIES—Continued

Seed, brand name and numerical designation	WHOLESALE DEALER Local dealer	Guaranties		1(See footnote below)
		Purity	Germination	
STANFORD SEED CO., INC., P. O. BOX 366, BUFFALO, N. Y.				
BARLEY, 6-row, 4573	Mt. Mansfield Cooperative Creamery and Grain Association, Inc., Stowe	98	92	
6-row, 4615	H. W. Myers & Son, Inc., Bennington	98	92	
BUCKWHEAT, Japanese, 4522	Nelson-Warner Co., Springfield	98	85	
CLOVER, Alsike, Liberty, 6281	W. H. Adams, Vergennes	97.31	88.8	
Alsike, Liberty, 6281	E. C. Crosby, Danby	97.31	88.8	
Alsike, Liberty, 6281	E. L. Thompson, Poulney	97.31	88.8	
Alsike, Liberty, 6378	Farmers' Grain & Feed Co., Windsor	98	85*	
Alsike, Liberty, 4343	G. E. Eldred, East Wallingford	98.08	83.5-11	
Alsike, Liberty, 4542	R. W. Simonds & Co., Fair Haven	98	85.7	
Alsike, Liberty, 4542	W. T. Simonds, Brandon	98	85.7	
Alsike, 4467	C. M. Seaver & Co., Williamstown	98.2	88.5-7*	
Mammoth Red, Liberty, 3247	C. H. Stearns & Son Co., Johnson	99.56	86.8	
Red, Honor, 6103	C. M. Seaver & Co., Williamstown	99.5	85.7	Oct., '32
Red, Honor, 6103	Windsor County Farmers' Cooperative Exchange, Inc., White River Junction	99.5	85.7	Oct., '32
Medium Red, Honor, 6129	E. L. Thompson, Poulney	99.5	85-10.5	
Medium Red, Liberty, 6126	G. E. Eldred, East Wallingford	99.12	84-10	
Medium Red, Liberty, 6126	W. T. Simonds, Brandon	99.12	84-10	
Medium Red, Liberty, 6126	R. J. Whitman North Bennington	99.12	84-10	
Red, Liberty, 6131	H. O. Rand, South Royalton	99.34	89.7	
Medium Red, Liberty, 6247	E. T. Chatterton, Middlebury	99.12	90.5-5	
Medium Red, Liberty, 6247	Dennison & Phillips, Pittsford	99.12	90.5-5	
Medium Red, Liberty, 6247	Miles & Vaughn, Arlington	99.12	90.5-5	
Medium Red, Liberty, 6247	Nelson-Warner Co., Springfield	99.12	90.5-5	
Medium Red, Liberty, 6247	Richmond Feed Store, Richmond	99.12	90.5-5	
Medium Red, Liberty, 6247	H. Waite & Son, Morrisville	99.12	90.5-5	
Medium Red, Liberty, 6247	H. M. Brown & Co., Castleton	99.28	84.8	
Medium Red, Reliable, 6336	G. H. McFarren, Fair Haven	98.08	88.4-5	
Sweet, 4322	C. M. Seaver & Co., Williamstown	99.62	82.8	
Sweet, 4322	F. M. Sherman & Co., Newport	99.62	82.8	
Sweet, 4322	R. W. Simonds & Co., Fair Haven	99.62	82.8	
Sweet, 6329	Nelson-Warner Co., Springfield	99.7	83.8	
CORN, Cornell 11, 4508	E. L. Thompson, Poulney	98	93	
Honor	G. E. Eldred, East Wallingford	98	93	
Honor, Early Eureka, 6308	H. W. Myers & Son, Inc., Bennington	98	92	
Honor, Improved Leaming, 6382	J. H. Spaulding, Ludlow	98	93	
MILLET, Hungarian, 4291	C. S. Brush & Son, Jericho	99.56	90	
Hungarian, 4291	Hartland Grain Co., Hartland	99.56	90	
Hungarian, 4291	C. H. Stearns & Son Co., Johnson	99.56	90	
Japanese, 1253	LaFountain, Woolson & Co., Springfield	97.82	90.25	
Japanese, 1263	G. E. Eldred, South Wallingford	98.27	89.5	
Japanese, 4506	E. T. Chatterton, Middlebury	97.42	93.25*	
Japanese, 4506	A. B. Kilbourne, Bristol	97.42	93.25*	
Japanese, 4506	H. W. Myers & Son, Inc., Bennington	97.42	93.25	
Japanese, 4545	Goddette Bros., Essex Center	97.65	88.5	
Japanese, 4545	W. C. Landon & Son, Rutland	97.65	88.5	
Japanese, 4626	Hartland Grain Co., Hartland	97.7	85*	
Japanese, 6372	Chester Grain Co., Chester Depot	97.1	85	
Japanese	H. M. Brown & Co., Castleton	97.1	85**	
OATS, Stanford Fancy, 4503	Nelson-Warner Co., Springfield	97.5	95	
PEAS, Canada Field, 4363	Chester Grain Co., Chester Depot	96	94	
Canada Field, 4363	Nelson-Warner Co., Springfield	96	94*	
Canada Field, 4347	Windsor County Farmers' Cooperative Exchange, Inc., White River Junction	96	95**	Dec., '32
REDTOP, Fancy, 3480	W. C. Landon & Son, Inc., Rutland	92.21	85	Dec., '32
Honor, 3480	H. Waite & Son, Morrisville	92.21	85*	
Honor, 3517	Windsor County Farmers' Cooperative Exchange, Inc., White River Junction	92	88.75	July, '32
Honor, 3385	Chester Grain Co., Chester Depot	95	88.25*	July, '32
Honor, 3385	A. B. Kilbourne, Bristol	94	88.25**	July, '32
Honor, 3385	Miles & Vaughn, Arlington	94	88.25**	July, '32
Honor, 3385	R. W. Simonds & Co., Fair Haven	94	88.25	July, '32
Honor, 3385	W. T. Simonds, Brandon	94	88.25	July, '32
Honor, 3385	I. H. Spaulding, Ludlow	94	88.25**	July, '32
SOY BEANS, Black Wilson, 4484	Windsor County Farmers' Cooperative Exchange, Inc., White River Junction	99	90	
SUDAN GRASS, 4425	Windsor County Farmers' Cooperative Exchange, Inc., White River Junction	99.05	88**	
TIMOTHY, Dandy, 6184	Chester Grain Co., Chester Depot	99.02	94	
Lark, 6379	H. W. Demick, Inc., Derby Center	98	90	
Liberty, 5724	I. H. Spaulding, Ludlow	99.67	90	
Liberty, 5776	Danville Grain Co., Danville	99.6	94	
Liberty, 5776	Nelson-Warner Co., Springfield	99.6	94	

* Purveyor's germination test date (if before Jan., '33).

I. BRANDS SUBSTANTIALLY COMPLYING WITH GUARANTIES—Continued

Seed, brand name and numerical designation	WHOLESALE DEALER Local dealer	Guaranties		1 (See footnote below)
		Purity	Germination	
STANFORD SEED CO., INC., P. O. BOX 366, BUFFALO, N. Y.				
TIMOTHY, Liberty, 6192	E. C. Crosby, Danby	99.6	92	
Liberty, 6248	Miles & Vaughn, Arlington	99.6	92	
Liberty, 6307	Tracy & Macek, Shelburne	99.6	92	
Liberty, 6352	W. C. Landon & Son, Inc., Rutland	99.6	92	
Liberty, 6352	G. H. McFarren, Fair Haven	99.6	92	
Liberty, 6352	R. G. Whitman, North Bennington	99.6	92	
Liberty, 6373	G. E. Eldred, East Wallingford	99.6	92	
WHEAT, Spring, 4427	E. T. Chatterton, Middlebury	98	90	
WASHINGTON COUNTY FARMERS' EXCHANGE, MONTPELIER, VT.				
CORN, Minnesota 13	A. M. Greaves, Montpelier	98	90	
N. WERTHEIMER & SONS, LIGONIER, IND.				
CLOVER, Alsike, Fullwerth, 31107	A. N. Washburn Estate, Bethel	99.2	90**	
Mammoth Red, Fullwerth, 77	J. A. Ryan Co., Milton		†	
Medium Red, Fullwerth, 114	Price Grain Co., Middlesex	99.75	90	
Medium Red, Fullwerth, 113	A. N. Washburn Estate, Bethel	99.4	90	
MILLET, Hungarian, 32701	Clark's Grist Mill, Wells River	99.72	90	
Japanese, 32703	Price Grain Co., Middlesex	95.86	89	
PEAS, Canada Field, 309 (Mich., 1932)	City Feed Co., St. Albans	99	95	
Canada Field, 309	McIndoes Cash Grain Store, McIndoes Falls	99	95	
Canada Field, 309	Wirthmore Feed Store, Enosburg Falls	99	95	
REDTOP, Fullwerth, 32824	I. F. Curtis, Sharon	94.45	90*	
TIMOTHY, 32538	I. F. Curtis, Sharon	99.7	94	
32538 (Northern Ill., 1932)	Farmers' Exchange, Franklin	99.7	94	
WHITNEY-ECKSTEIN CO., P. O. BOX 77, BUFFALO, N. Y.				
ALFALFA, Grimm, 2053	Elliott & Churchill, Middlebury	99.25	75-15	
Northern, Pan-American	E. T. & H. K. Ide, St. Johnsbury	99.35	60-27	
Grimm, Idaho	H. W. Myers & Son, Inc., Bennington	99.83	91-1	
Grimm	V. W. Race, Pawlet	99.3	83-8	
BARLEY, Oderbrucker	W. S. Wright, Lyndonville	98	90	
BUCKWHEAT, Japanese	Checkerboard Grain Warehouse, Newport	98	90	
CLOVER, Alsike, Herald	Checkerboard Grain Warehouse, Bradford	96.37	76-8	
Alsike, Herald	Checkerboard Grain Warehouse, Brattleboro	96.37	76-8	
Alsike, Emperor	E. H. Mason, Randolph	97.44	83-11	
Alsike, Pan-American	Community Feed Stores, Inc., Westminster	98.94	76-22	
Alsike, Pan-American	E. C. Crosby, Danby	97.76	83-11	
Alsike, Pan-American	G. E. Eldred, East Wallingford	98.01	81-10	
Alsike, Pan-American	Elliott & Churchill, Middlebury	98.48	79-15	
Alsike, Pan-American	W. E. Frost, Middletown Springs	97.76	83-11	
Alsike, Pan-American	G. H. McFarren, Fair Haven	98.01	81-10	
Alsike, Pan-American	H. A. Myers & Son, Inc., Bennington	98.01	81-10	
Alsike, Pan-American	V. W. Race, Pawlet	97.76	83-11	
Alsike, Pan-American	Thomas & White, Pittsford Mills	97.76	83-11	
Mammoth Red, Domestic Pan-American, 5298	Champlain Seed Co., Burlington	99.1	90	
Mammoth Red, Pan-American	V. W. Race, Pawlet	99.1	90	
Red, Herald, 5300	Checkerboard Grain Warehouse, Brattleboro	97.48	90	
Red, Herald, 5300	Checkerboard Grain Warehouse, Lyndonville	97.48	90	
Red, Domestic Emperor	E. I. Claffin, Randolph	98	90	
Medium Red, Pan-American 5297	C. S. Brush & Son, Jericho	99.37	88-2	
Medium Red, Pan-American 5297	Champlain Seed Co., Burlington	99.06	90	
Red, Pan-American	Community Feed Stores, Inc., Westminster	99.5	90	
Medium Red, Pan-American	G. E. Eldred, East Wallingford	99.3	87-5	
Medium Red, Pan-American	Elliott & Churchill, Middlebury	99.28	95	
Medium Red, Pan-American	W. E. Frost, Middletown Springs	99.06	90	
Medium Red, Pan-American	H. W. Myers & Son, Inc., Bennington	99.18	80-12	
White Blossom Sweet	R. H. Brown & Co., Brattleboro	99.59	60-28	
White Blossom Sweet	Elliott & Churchill, Middlebury	99.59	60-28	
White Blossom Sweet	W. H. Jackman, Vergennes	99.59	60-28	
White Blossom Sweet	H. W. Myers & Son, Inc., Bennington	99.59	60-28	
White, 5259	Elliott & Churchill, Middlebury	97.37	85-7	
White	H. W. Myers & Son, Inc., Bennington	98.33	86-10	

† Purveyor's germination test date (if before Jan., '33).

† Unguaranteed; tested 97.5, 84-16.

I. BRANDS SUBSTANTIALLY COMPLYING WITH GUARANTIES—*Concluded*

Seed, brand name and numerical designation	WHOLESALE DEALER Local dealer	Guaranties		1(See footnote below)
		Purity	Germination	
WHITNEY-ECKSTEIN CO., P. O. BOX 77, BUFFALO, N. Y.				
CORN, Golden Nugget.....	Gates Bros., Chelsea.....	98	90*	
MILLET, Hungarian.....	Champlain Seed Co., Burlington.....	98.94	87	
Hungarian.....	Checkerboard Grain Warehouse, Brattleboro.....			
Hungarian, A L 1692.....	Gates Bros., Chelsea.....	99.45	88	
Hungarian.....	H. W. Myers & Son, Inc., Bennington.....	98.59	88**	
Japanese.....	C. E. & F. O. Burt Co., Stowe.....	98.59	88**	
Japanese.....	Champlain Seed Co., Burlington.....	97.23	90	
Japanese.....	Checkerboard Grain Warehouse, Brattleboro.....	97.36	87	
Japanese.....	Elliott & Churchill, Middlebury.....	97.94	92	
Japanese.....	Farmers' Feed & Grain Co., St. Albans.....	97.87	90	
Japanese.....	Gates Bros., Chelsea.....	97.23	90	
Japanese.....	W. B. Johnson & Son, Essex Junction.....	97.23	90	
Japanese.....	T. J. McGovern, Cambridge.....	97.82	90	
Japanese.....	Thomas & White, Pittsford Mills.....	97.23	90	
OATS, Mammoth Cluster.....	Brattleboro Grain Store, Brattleboro.....	98	90	
ORCHARD GRASS, Fancy.....	E. T. & H. K. Ide, St. Johnsbury.....	88.39	89**	
PEAS, Canada Field.....	E. W. Bailey & Co., Swanton.....	98	90	
Canada Field.....	Checkerboard Grain Warehouse, Brattleboro.....	98	90	
Canada Field.....	Gates Bros., Chelsea.....	98	90	
Canada Field.....	W. B. Johnson & Son, Essex Junction.....	98	90	
Canada Field.....	Miles, McMahon & Co., Inc., Stowe.....	98	90	
RAPE, Dwarf Essex.....	H. W. Myers & Son, Inc., Bennington.....	99.84	96	
REDTOP, Imperator.....	Checkerboard Grain Warehouse, Bradford.....	90.92	90*	
Imperator.....	Checkerboard Grain Warehouse, Brattleboro.....			
Pan-American.....	R. H. Brown & Co., Brattleboro.....	90.92	90*	
Pan-American.....	C. S. Brush & Son, Jericho.....	92.9	90*	
Pan-American.....	Champlain Seed Co., Burlington.....	92.9	90*	
Pan-American.....	E. C. Crosby, Danby.....	92.9	90*	
Pan-American.....	Elliott & Churchill, Middlebury.....	92.9	88	
Pan-American.....	W. H. Jackson, Vergennes.....	92.9	88*	
Pan-American.....	H. W. Myers & Son, Inc., Bennington.....	92.23	90*	
Pan-American.....	Community Feed Stores, Inc., Westminster.....	96.31	90*	
Fancy.....	E. T. & H. K. Ide, Bradford.....	93.47	90**	
RYE, Winter Rosen.....	E. W. Bailey & Co., Montpelier.....	98	90	
SOY BEANS, Black Wilson.....	E. W. Bailey & Co., Montpelier.....	98	90	
Manchu.....	E. T. & H. K. Ide, St. Johnsbury.....	98	90	
Black Wilson.....	H. W. Myers & Son, Inc., Bennington.....	98	90	
SUDAN GRASS.....	Elliott & Churchill, Middlebury.....	97.84	88	
TIMOTHY, Frontier.....	H. W. Myers & Son, Inc., Bennington.....	98.43	85	
Frontier, 721.....	Checkerboard Grain Warehouse, Bradford.....	98	90	
Gold Medal.....	Checkerboard Grain Warehouse, Brattleboro.....			
Pan-American.....	Farmers' Feed & Grain Co., St. Albans.....	99.78	92	
Pan-American.....	Brattleboro Grain Store, Brattleboro.....	99.6	90	
Pan-American.....	R. H. Brown & Co., Brattleboro.....	99.6	90	
Pan-American.....	Champlain Seed Co., Burlington.....	99.6	90	
Pan-American.....	G. E. Eldred, East Wallingford.....	99.6	90	
Pan-American.....	Elliott & Churchill, Middlebury.....	99.6	90	
Pan-American.....	W. E. Frost, Middletown Springs.....	99.6	90	
Pan-American.....	A. D. Pease Grain Co., Shelburne.....	99.6	90	
Pan-American.....	V. W. Race, Pawlet.....	99.6	90	
WHEAT, Marquis Spring.....	E. T. & H. K. Ide, Bradford.....	98	90	
F. H. WOODRUFF & SONS, MILFORD, CONN.				
CORN, Sweepstakes.....	Brattleboro Grain Store, Brattleboro.....	99	96*	
S. D. WOODRUFF & SONS, ORANGE, CONN.				
CORN, Woodruff's Select Beauty.....	E. C. Crosby, Danby.....	100	90	
Early Wonder.....	V. W. Race, Pawlet.....	100	91	
Woodruff's Select Beauty.....	H. O. Rand, South Royalton.....	100	90	

1 Purveyor's germination test date (if before Jan., '33).

II. MIXTURES, WHICH, WITH A FEW EXCEPTIONS, SUBSTANTIALLY COMPLIED WITH GUARANTIES

Seed, brand name and numerical designation	WHOLESALE DEALER Local dealer	Guaranties		Found	
		Purity	Germination	Purity	Germination
A. DICKINSON CO., 2750 WEST 35TH ST., CHICAGO, ILL. ^a					
Timothy and Alsike, 68769..	E. G. & A. W. Norton, Vergennes....	T 75.25	93	86	93
		A 20.29	90	11.25	75-19†
Timothy and Alsike, 68416..	Powell & Comings Co., Richford.....	T 77.48	94	84.25	94
		A 20.67	80-13	12.5	76.14*
Timothy and Alsike, 68416..	Richford Feed Co., Richford.....	T 77.48	94	78.25	94
		A 20.67	80-13	19	76-15*
Timothy and Alsike, 68522..	H. A. Squires, Lyndonville.....	T 82.09	93	53.5	95
		A 15.5	80-16	43.5	81.9
EASTERN STATES FARMERS' EXCHANGE, SPRINGFIELD, MASS. ^b					
Timothy and Alsike.....	Carl Field, Vergennes.....	99	85	T 73.5	89
		..	..	A 25.5	84.8
Hayland Mixture No. 1....	Carl Field, Vergennes.....	99.21	90	T 56.5	97
		..	84-12	A 19.5	88-5
		..	88-8	RC 22.5	91-7
Hayland Mixture No. 1....	A. M. Greaves, Montpelier.....	99.21	90	T 47.5	94
		..	84-12	A 19	88-5
		..	88-8	RC 32.5	92-8
Hayland Mixture No. 1....	A. R. Warren, Morrisville.....	99.21	90	T 52	95
		..	84-12	A 19.5	88-6
		..	88-8	RC 27.5	91-9
Hayland Mixture No. 2....	Carl Field, Vergennes.....	98.6	90	T 52	95
		..	79-14	A 8.5	94-3
		..	81-14	RC 17.5	94-3
		..	94	Redtop 21	89
Hayland Mixture No. 2....	G. A. Webster, Randolph.....	98.6	90	T 40.25	97
		..	79-14	A 17.5	86-13
		..	81-14	RC 22.5	89-11
		..	94	Redtop 19	89
Hayland Mixture No. 2....	J. K. Westall, Richmond.....	98.6	90	T 41.25	96
		..	79-14	A 17.5	86-12
		..	81-14	RC 22	88-11
		..	94	Redtop 18	90
Hayland Mixture No. 3....	G. A. Webster, Randolph.....	99.05	88-4	T 53.5	98
		..	..	A 8	87-12
		..	..	Alf 13	96-3
		..	..	RC 13	93-6
		..	..	Redtop 11.5	90
Hayland Mixture No. 4....	Carl Field, Vergennes.....	99.33	85-6	T 5	98
		..	..	A 2.5	92-8
		..	..	Alf 85.5	95
		..	..	RC 6	95-5
THOS. W. EMERSON CO., 315 STATE ST., BOSTON, MASS.					
Timothy and Alsike.....	Lyon Hardware Co., Inc., Brattleboro..	98	92	T 79.25	94
		..	..	A 19	84-10
HOLBROOK GROCERY CO., KEENE, N. H.					
Clover, Special, Ohio, 1825..	LaFountain, Woolson & Co., Spring- field	98	93	RC 91.2	88-11
		..	..	Alf 7-8	..
Clover, Beautiful, 68416....	F. H. Gillingham & Sons, Woodstock..	T 77	90	T 88	94
		A 20	..	A 10	73-8†
Clover, Special.....	Elwell & Clark, East Arlington.....	A 81	96	84.25‡	82-1†
		WC 18	..	13.5‡	..
STANFORD SEED CO., INC., P. O. BOX 366, BUFFALO, N. Y.					
Timothy and Alsike.....	W. H. Adams, Vergennes.....	T 77.55	90	81.25	91
		A 20.48	80-7	17.5	87-8
Timothy and Alsike, 6340..	E. W. Bailey & Co., Montpelier.....	T 77.55	90	88.25	92
		A 20.48	80-7	10	80-9
Timothy and Alsike.....	Chester Grain Co., Chester Depot....	T 77.25	90	93.5	90
		A 20.48	80-7	4	81-11
Timothy and Alsike, 6309....	E. C. Crosby, Danby.....	T 82.2	92	89	88*
		A 15.09	80-11	8.5	83-5
Alsike and White, 6267....	W. C. Landon & Son, Inc., Rutland..	A 88.38	83-10	92.5	86-7
		WC 7.9	75.5-11	4	94-3
Timothy and Alsike, 6340....	H. O. Rand, South Royalton.....	T 77.55	90	86.75	95
		A 20.48	80-7	11.5	79-8

^a Three of four purveyor's germination guaranties made on basis of tests made in October, 1932.

^b Purveyor's germination guaranties made on basis of tests made in November and December, 1932.

† Germination below tolerance limits.

* Total purity below tolerance limit.

II. MIXTURES, WHICH, WITH A FEW EXCEPTIONS, SUBSTANTIALLY COMPLIED WITH GUARANTIES—*Concluded*

Seed, brand name and numerical designation	WHOLESALE DEALER Local dealer	Guaranties		Found	
		Purity	Germi- nation	Purity	Germi- nation
STANFORD SEED CO., INC., P. O. BOX 306, BUFFALO, N. Y.					
Timothy and Alsike, 6340...	Richmond Feed Co., Richmond.....	T 77.55	90	84.75	91
		A 20.48	80-7	13.5	81-7
Timothy and Alsike, 8000...	Tracy & Macek, Shelburne.....	T 81.58	92	75	95
		A 15.2	80-10	22.5	76-1*
Timothy and Alsike, 6141...	Tracy & Macek, Shelburne.....	T 76.58	92	81.75	95
		A 20.2	80-11	15.5	69-8†
N. WERTHEIMER & SONS, LIGONIER, IND.					
Timothy and Alsike, 32525...	City Feed Store, St. Albans.....	T 67.3	92	70.5	89
		A 26.7	86	26	74-7†
WHITNEY-ECKSTEIN CO., P. O. BOX 77, BUFFALO, N. Y.					
Timothy and Alsike.....	Champlain Seed Co., Burlington.....	T 77.33	90	74	97
		A 20.45	77-15	24.3	85-8
Timothy and Alsike.....	W. B. Johnson & Son, Essex Junction	T 77.33	89	78.5	95
		A 20.45	78-16	19.5	88-9

† Germination below tolerance limits.

A glance at table 2 will show that in nearly all these mixtures the total purity of the guaranties and the analyses agree very closely, even though the percentages of each ingredient may differ in some cases.

One sample was below the tolerance limit in purity as noted by ¹. One sample, Holbrook's Special, Ohio 1825, was labeled clover but contained 7.8 percent of alfalfa and so is placed in the list of mixtures. This sample also contained 17 dodder in approximately 50 grams, which, of course, is undesirable. Taken as a whole, the mixtures were much better than usual.

III. BRANDS FAILING SUBSTANTIALLY TO COMPLY WITH GUARANTIES

Seed, brand name and numerical designation	WHOLESALE DEALER Local dealer	Purity		Germination	
		Guaranty	Found	Guaranty	Found
CRAVER-DICKINSON SEED CO., INC., P. O. BOX 175, BUFFALO, N. Y.					
RYE, Rosen, 506.....	Mintzer Bros., Rutland.....	98	OK	93	81 Aug., '32
A. DICKINSON CO., 2750 WEST 35TH ST., CHICAGO, ILL.					
ALFALFA, Pine Tree, 28141.....	City Feed Co., St. Albans...	97.76	OK	84-10	65-31
CLOVER, Alsike, Ace.....	Lyon Hardware Co., Inc., Brattleboro	99.5	OK	95	84-12
Red, Ace.....	Howard Hardware Co., Bel- lows Falls	99.5	OK	95	84-13
ORCHARD GRASS, Pine Tree, 03719.....	E. W. Bailey & Co., Mont- pelier	82.9	OK	90	79 Aug., '32
Pine Tree, 03719.....	Brattleboro Grain Store, Brattleboro	82.9	OK	90	81
VETCH, Winter, 99139.....	R. W. Pond, East Berkshire	99.76	OK	94	84-14
EASTERN STATES FARMERS' EXCHANGE, SPRINGFIELD, MASS.					
VETCH, Hairy	G. A. Webster, Randolph...	98.85	OK	86-4	75-11
Hairy	H. K. Westall, Richmond...	99.85	OK	86-4	76-14
THOS. W. EMERSON CO., 315 STATE ST., BOSTON, MASS.					
REDTOP, No. 1.....	Lyon Hardware Co., Inc., Stowe	93.8	OK	90	79
VETCH, Winter	Lyon Hardware Co., Inc., Brattleboro	99	OK	92	46-16
K. & A. SEED CO., INC., HARRISBURG, PA.					
MILLET, Hungarian, AA (Ind. grown).....	Amco Service Store, Rich- mond	98.91	OK	90	82
Hungarian, Lot 3.....	Sunshine Feed Store, Brad- ford	98.91	OK	90	82
O. & M. SEED CO., GREEN SPRINGS, OHIO					
MILLET, Hungarian (Ind. grown).....	Davis Feed Co., Rutland....	99.15	OK	90	78 Dec., '32
OATS, O. & M. Fancy Swedish.....	White's Cash Feed Store, Wallingford	99	OK	95	88
STANFORD SEED CO., P. O. BOX 366, BUFFALO, N. Y.					
ALFALFA, Honor, 4564.....	W. T. Simonds, Brandon....	99	OK	85-7	59-40
PEAS, Canada Field, 4363.....	W. T. Simonds, Brandon....	96	OK	94	84
REDTOP, Honor, 3385.....	Goddette Bros., Essex Center	94	OK	88.25	78 July, '32
VETCH, Winter, 4651.....	E. T. Seabury Grain Co., Waterbury	99	OK	88	52-18
Winter, 4601.....	Windsor County Farmers' Cooperative Exchange, Inc., White River Junction....	99	OK	88	80-6
N. WERTHEIMER & SONS, LIGONIER, IND.					
CLOVER, Alsike, Fullwerth, 32102.....	Wirthmore Feed Store, Enos- burg Falls	99.4	OK	90	81-18
REDTOP, 32824	A. N. Washburn Est., Bethel	94.45	OK	90	82
WHITNEY-ECKSTEIN CO., P. O. BOX 77, BUFFALO, N. Y.					
VETCH, Winter	E. W. Bailey & Co., Mont- pelier	99.36	OK	80-4	70-12
Winter	Champlain Seed Co., Burling- ton	99.36	OK	80-4	68-15
Winter	Checkerboard Grain Ware- house, Newport.....	99.36	OK	80-4	72-9

All of the samples in the above table were up to guaranty in purity but all failed to maintain the guaranty in germination if the same is strictly construed.

Alfalfa, clover and vetch seed contain usually more or less so-called hard seed. If to the percentage of germination as found is added that of hard seeds, the combined result usually is very nearly equivalent to the guaranty made by the purveyor. This statement holds even though the percentages of germination and of hard seeds in the two analyses may vary. In some cases, this difference 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, the hard seed situation is a particularly difficult one from the standpoint both of the purveyor and of the seed analyst, and there is yet lack of unanimity of opinion as to just how results should be reported.

W. O. Whitcomb of the Montana Grain Inspection Laboratory interprets the value of hard seeds as follows:

"A number of suggestions have been made from time to time relative to how much value should be credited to hard seeds when a laboratory germination test is made. It is believed that the present knowledge of the behavior of hard seeds under varying conditions warrants the continuation of the recommendations of the Association of Official Seed Analysts, *viz.*, that all hard seeds be reported separately from germination by seed laboratories, but that seed dealers be permitted to add the hard seed to the germination, provided the hard seeds are also stated separately. This method of reporting hard seeds gives the buyer of the seed the detailed information so that he can interpret the results according to his particular conditions."

TOLERANCE FOR PURITY

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 Alabama, Connecticut, Indiana, New York, North Carolina, Oklahoma, Oregon, South Dakota, Tennessee and Virginia have recently 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.

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 1933 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 it is not furnished with smaller lots drawn from the original package. Only eight samples were taken this year which did not state the purity guaranty, a reasonably good record.

2. *To failure to maintain purity guaranty.*—This rarely occurs. Only one sample, a mixture, failed to make good its purity guaranty.

3. *To failure to declare germination guaranty.*—Only seven samples failed in this respect, a good record.

4. *To failure to maintain germination guaranty.*—This lapse is more common than failure to maintain a purity guaranty. Table 3 lists 25 samples which were found to be below the tolerance limits in germination. Table 2 includes several samples which proved to be from two to six percent below viability guaranty and four which were beyond the tolerance limits. As has been stated elsewhere, if the hard seeds are added to the actual germination the guaranties are made good in nine samples.

There has been a marked improvement in the correct labeling of seeds in the last few years.

The alfalfa and red clover samples were very free from weed seeds. Only one sample of alfalfa and two of red clover contained

any trace of dodder. Two lots of redtop contained a few ergotized seeds and seven samples of timothy traces of ergotized seeds. Some weed seeds were present in redtop and timothy but almost no noxious weeds. Whenever weed seeds or inert matter were present, the guaranty was placed low enough to cover them. Much has been accomplished during the past decade by seed legislation, inspection and the use of improved seed cleansing facilities to place better seed on the market.

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 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 he is furnished it the prospective buyer can easily discriminate between seed of high and low quality.

The usual disclaimers from certain seed purveyors have been received. They come in every year when advance reports of failures to meet guaranty are sent them. Most seed merchants are courteous and—as viewed from the standpoint of the seed control official—sensible in such matters; but not all of them. There is simply this to be said: That samples are taken in every instance by men who have been specially trained in seed sample taking and who are usually employed year after year; that the fact that no error has been made in sampling is, so far as may be, determined by correspondence with the local seed dealers, that is to say, it is ascertained that he actually did have for sale the brand in question at the time of sampling; that 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. Substitutions 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 agents 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 the reports on samples failing substantially to fulfill the guaranties made by their purveyors is that the analysis represents what was being offered on sale—only this and no more.

Some states adjacent to Vermont have adopted laws governing the sale of vegetable seed. In these days when the home garden is so vital a factor in home economy, prospective buyers naturally want to know whether the packets of vegetable seed they buy contain a sufficient quantity of seed of good quality, correctly labelled and reasonably priced. Bulletin 618 of the New York (State) Station at Geneva, N. Y., sets forth the results of the inspection of vegetable seed sold in that State during 1932. These ought to be of value to those grocers and other merchants in Vermont who sell vegetable seed packets since seed from the same companies are freely sold in the two states. In neither State is there a law requiring published statements of purity or germination.

THE WEED PROBLEM

The weed problem is always with us. If every farmer knew the seeds of our common grasses and clovers as well as he does those of oats, wheat and corn, there would be fewer weeds bought. It is not a difficult task to learn the appearance of these seeds. Some controls with more ample funds than are available in Vermont report at length as to the numbers and kinds of weed seeds found. So far as the farmer is concerned, it is only necessary to know what seeds are weed seeds. The use of a common reading glass and the employment of a few minutes time may save a would-be buyer and, indeed, his neighbors much future trouble.

How pure should seed be? The annual inspections furnish ample proof of the statement that dealers are able to furnish seed of high percentages of purity. They are glad to do so, they prefer to do so as a rule, for such seed gives better satisfaction than does a low grade brand, and a satisfied customer is one's best advertisement. A farmer who is buying seed may get some notion, in fact a pretty clear notion, of what sort is offered him by his dealer by observing the brand name and guaranty and then looking up the quality record of the brand as found on sale during preceding years.

Unfortunately in the seed trade, as in feed and fertilizer trade, some wholesalers feel that they must meet the demands of those farmers who insist on buying only the lowest grades, on getting the most possible for a dollar regardless of quality. The law does not protect such a buyer against the consequences of his own poor judgment, the results of which may affect others as well as himself; for he who buys weedy seed endangers his more thrifty neighbors, whereas the

man who buys a low grade fertilizer or a cheap feed damages only himself.

The cost of the labor involved in an adequate combat with weeds is so serious a matter that it is vitally necessary that the supply be stopped so far as may be at its source. Many weeds are multiplied by means of underground roots, witch grass being a well-known example of this sort. Weeds that normally reproduce by seed are not inclined toward race suicide. Some of these seeds are most persistent as well as pernicious, growing after lying dormant for many years. The late Dr. W. J. Beal buried certain weed seeds almost 50 years ago and some of these are still viable. They do not all spring up at once. It is their ability to survive in the seed form for a long period of years and gradually to germinate which makes some weeds so dangerous. It is this inherent power to perpetuate themselves which makes some plants weeds.

Some of the ways in which weeds are spread are interesting. A weed seed may be sent a thousand miles in the packing of a box. Then there are the parachutes of the dandelion and the thistle; the prickly spines of the burs; the tumble weed plants which are rolled along by the wind, scattering their seed as they go. It is discouraging to a farmer who fights weeds on his own premises while his neighbor makes no attempt to combat them; to have the wind and the animals carry seed onto his property again to infest it. It is discouraging for him to see his neighbor sow low grade, weedy agricultural seed, bought at an apparently low price but actually at a relatively high figure in view of the small proportion of good seed actually present.

The following paragraphs from bulletin 200 apply today as well as when they were written:

When we seed a field we usually want to grow only one kind of plant and the seed of any other plant which may be sown will produce weeds. Most of our crops should be raised in "pure culture," that is to say we should not grow oats in wheat fields, barley in oat fields, ragweeds in corn fields, etc. This should be especially true of areas which are producing crops which will be used for seed. There are associated usually with the crop-plants many undesirable varieties—weeds—which resemble the crop-plants so much in manner of growth, especially in time of seeding, that their seeds commonly are found in those of our crop-plants.

Some of the more striking characteristics which enable weeds to grow in spite of the efforts to kill them are shown below. Any attempt

to destroy them must be based on a thorough knowledge of these characteristics.

1. A single plant sometimes will produce enormous numbers of weed seeds.

2. Many weed seeds show great viability, living 30 years or more in the soil.

3. Some weed plants ripen and scatter their seed before the crop matures, and others when the crop becomes ripe and is harvested, often being harvested with it.

4. Some weed seeds are difficult to separate from the seed of the crop with which they are grown.

5. Some weed seeds are so small and the seed of some weed plants is so inconspicuous as to escape notice.

6. Some weed plants break from the soil and become tumble weeds and at times travel long distances—sometimes over the snow; others are furnished with a parachute or sail, which enables them to travel with the wind; while others are furnished with grappling hooks wherewith to fasten upon passing animals.

There are many channels for the introduction of weeds—in certain feeding stuffs, in city manure, in box packing; they come in by way of the railroad, the threshing machine and other farm mechanisms; they are bought and paid for in agricultural seed. Not only are their numbers multiplied, but the species have increased. It is quite safe to say that within the last 50 years the numbers of weed plants in Vermont have increased manifold, and the number of species has at least doubled and probably trebled.

How can a farmer best fight weeds?

1. He should know his enemies. He should learn how they look. He should discover their habits. He should know what remedial treatments to apply. He should realize that methods which will work with such annuals as pigweed will not work with such biennials as the bull thistle or with perennials like quack grass or Canada thistle.

2. He should know what weed seeds look like in order that he may do what he can to keep them out. In view of the fact that agricultural seed is perhaps the most common means whereby weeds are introduced upon a farm, it is particularly important that he carefully scrutinize his seed purchases, buying only those brands which bear a high purity guarantee.

3. He should strive to prevent weeds from ripening their seed, especially late in the season.

4. He should so plan his rotations as to make the killing of weeds an important item, using cultivated crops for this purpose.
5. He should in some cases use smother crops—quick growing, heavily seeded crops such as rye, buckwheat and clover.
6. He should keep the land occupied, crop-covered throughout the growing season.
7. He should clean up fence rows, along the highways, etc.
8. He should spray oat fields with a solution of iron sulphate (75 pounds in 50 gallons of water) to kill kale.
9. He should protect birds which eat weed seeds.
10. He should plow in the fall, thus stirring up the ground and causing seed to germinate.
11. He should keep everlastingly at it, by machine labor if possible, by hand labor if necessary.

There is no royal road to weed killing. A weed infested farm can not be made weed free except at considerable expense. However, it is for each farmer to say whether or not he will enlist in this fight.

THE 1933 SEED SITUATION

According to the United States Crop Reporting Board the expected yields of most crops are below normal because of extreme heat and dry weather during the summer. Corn is estimated to be the smallest crop since 1901, wheat a smaller crop than has been recorded in the present century, oats and barley at little more than half of last year's production. In view of these partial crop failures in several sections of the country and the decreased acreages of other crops, seed prices are likely to be higher next year, irrespective of the possibility of monetary inflation. Such conditions will tend to bring into the market surplus field and grass seed carried over from previous years. On this account, he who buys seed next year should be especially careful in his purchases. He should read the labels before he buys. He should realize that good seed is not sold below the prevailing market price and that good seed is the cheapest in the end. The data and other information in this bulletin can be of benefit to Vermont farmers only in so far as they use them as a guide.

Many of the following bulletins dealing with agricultural seed, field crops and weeds are as useful today as when they were issued. Any or all of them will be sent without charge to any address on application. Tear off the bottom of this page, state what you want (using bulletin numbers), mail it, and your wishes will be met.

Agricultural Seed

No.	Date	
146	1909	The Grass and Clover Seed Trade of Vermont.
205	1917	Concerning the Germination of Seed.
322	1930	Fifteen Years of Seed Inspection.

Field Crops

No.	Date	
94	1902	Vermont Grasses and Clovers.
171	1913	Concerning the Vermont Hay Crop.
189	1915	Concerning the Corn Crop.
190	1915	Concerning Crop Rotation.
197	1916	Concerning the Oat Crop.
204	1917	Concerning Alfalfa and Soy Beans.

Weeds

No.	Date	
138	1909	The Viability of Weed Seeds in Feeding Stuffs.
149	1910	A Practicable Method of Killing Witch Grass.
170	1912	Pasture Weeds; Moss as a Pasture Weed; the Ensiling of Weeds.
200	1916	Concerning Weeds and Weed Seeds.

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