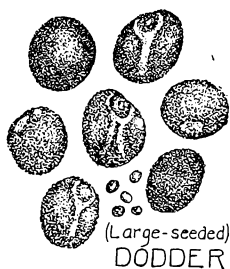
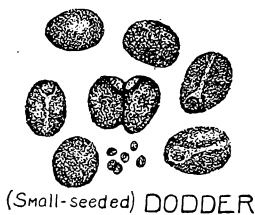


New York Agricultural Experiment Station.

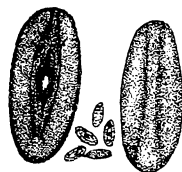
GENEVA, N. Y.



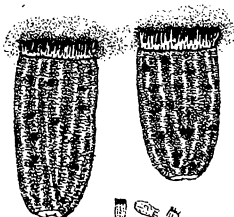
(Large-seeded)
DODDER



(Small-seeded) DODDER



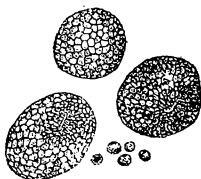
BUCKHORN



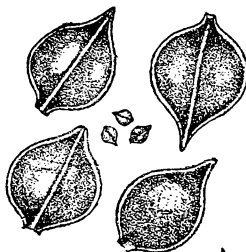
CHICORY



ALFALFA



MUSTARD



DOCK

M.T.M.

DOES THE FARMER GET PURE SEEDS?

SUMMARIZED BY

F. H. HALL

FROM BULLETIN BY

M. T. MUNN.

BOARD OF CONTROL.

GOVERNOR WILLIAM SULZER, Albany.
COMMISSIONER CALVIN J. HUSON, Albany.
THOMAS B. WILSON, Hall.
ALFRED G. LEWIS, Geneva.
BURT E. SMALLEY, Interlaken.
G. HYDE CLARKE, Cooperstown.
HENRY C. HARPENDING, Dundee.
EUGENE M. ANDREWS, Union.
C. WILLARD RICE, Geneva.

OFFICERS OF THE BOARD.

THOMAS B. WILSON,
President.

WILLIAM O'HANLON,
Secretary and Treasurer.

STATION STAFF.

WHITMAN H. JORDAN, Sc.D., LL.D., *Director.*

GEORGE W. CHURCHILL,
Agriculturist and Superintendent of Labor.

WILLIAM P. WHEELER,
First Assistant (Animal Industry).

HARRY A. HARDING, Ph.D.,
Bacteriologist.

HAROLD J. CONN, Ph.D.,
Associate Bacteriologist.

GODFREY L. A. RUEHLE, M.S.,
JAMES D. BREW, B.S.,
Assistant Bacteriologists.

FRED C. STEWART, M.S., *Botanist.*
WALTER O. GLOYER, A.M.,
Associate Botanist.

MANCIEL T. MUNN, B.S.,
Assistant Botanist.

LUCIUS L. VAN SLYKE, Ph.D.,
Chemist.

†ALFRED W. BOSWORTH, A.M.,
ERNEST L. BAKER, B.S.,
RUDOLPH J. ANDERSON, B.S.,
Associate Chemists.

ARTHUR W. CLARK, B.S.,
MORGAN P. SWEENEY, A.M.,
OTTO MCCREARY, B.S.,
ORRIN B. WINTER, B.S.,
ALFRED K. BURKE, B.S.,
Assistant Chemists.

GEORGE A. SMITH, *Dairy Expert.*
FRANK H. HALL, B.S.,
Vice-Director; Editor and Librarian.

PERCIVAL J. PARROTT, M.A.,
Entomologist.

WILLIAM J. SCHOENE, M.S.,
Associate Entomologist.

HAROLD E. HODGKISS, B.S.,
BENTLEY B. FULTON, B.A.,
Assistant Entomologists.

ULYSSES P. HEDRICK, M.S.,
Horticulturist.

RICHARD WELLINGTON, M.S.,
Associate Horticulturist.

GEORGE H. HOWE, B.S.A.,
CHARLES B. TUBERGEN, B.S.,
Assistant Horticulturists.

ORRIN M. TAYLOR,
Foreman in Horticulture.

JOSEPH F. BARKER, M.S.,
In Charge of Soil Investigations.

RICHARD F. KEELER, A.B.,
Assistant Chemist (Soils).

REGINALD C. COLLISON, M.S.,
Assistant Chemist (Soils and Horticulture).

*F. ATWOOD SIRRINE, M.S.,
Special Agent.

†FRED Z. HARTZELL, M.A.,
Associate Entomologist.

†FRED E. GLADWIN, B.S.,
Special Agent.

GERTRUDE S. MAYO,
Director's Secretary.

FRANK E. NEWTON,
WILLARD F. PATCHIN,
LENA G. CURTIS,
AGNES E. RYAN,
ESTHER F. HAWKINS,
Clerks and Stenographers.

ADIN H. HORTON,
Computer and Mailing Clerk.

Address all correspondence, not to individual members of the staff, but to the NEW YORK AGRICULTURAL EXPERIMENT STATION, GENEVA, N. Y.

The Bulletins published by the Station will be sent free to any farmer applying for them.

*Riverhead, N. Y. †Absent on leave. ‡Connected with the Chautauqua Grape Work.

POPULAR EDITION*

OF

BULLETIN No. 362.

DOES THE FARMER GET PURE SEEDS?

**Much poor
seed on
market.**

During the last six months of 1912 a seed inspection law was in force in New York State, and the examinations of samples, made at the Station under the law and otherwise, plainly show that some such inspection is necessary. Only 125 official samples were examined, but of these one-fifth were below the standard set by the law. This standard is by no means high, either; for the law merely requires that the presence in agricultural seeds of more than three per ct. of foul or foreign seeds must be plainly indicated by a label on the seed package. Of the ordinary weed seeds found in the inspection, three per ct. by count would involve the sowing of 125,000 weed seeds in the 20 pounds of alfalfa seed used on an acre, or three weeds for every square foot of land. If considerable of this impurity chanced to be dodder seed the result would be serious; for the grower of alfalfa should hesitate to sow even one seed to the acre of this pest. This official inspection may be made very helpful, as a check upon seed dealers, but it would not be safe for growers to accept without personal or expert examination seeds even well within the limit of the law, if they wish to avoid weed seeds.

Beside the official samples, the Station also examined, during 1912, more than 1,100 samples of seeds sent in by correspondents and found some marked cases of adulteration. Of 621 samples of alfalfa, 13 contained sand, crushed rock, broken seed, yellow trefoil or similar undesirable material in quantities beyond what would be present naturally. Of the 14 samples of hairy vetch examined, 12 contained seeds of other vetches as an adulterant, notably spring vetch which can not replace the winter vetch as a cover crop. Such adulteration may account for many of the failures of this crop reported. The percentages of dodder-infested samples were also increased over those found in 1911, as 13 per ct. of the alfalfa samples

* This is a brief review of Bulletin 362 of this Station on Seed Tests made at the Station in 1912, by M. T. Munn. Anyone interested in the details of the investigation will be furnished, on application, with a copy of the complete bulletin. The names of those who so request will be placed on our Station mailing list to receive future bulletins issued, popular or complete edition as desired. Bulletins are published at irregular intervals, not monthly.

and 19 per ct. of those of red clover contained seeds of this harmful weed.

**Methods of
official
inspection.**

Under the inspection law, samples of seeds were collected from dealers by agents of the Commissioner of Agriculture and sent to the Station for examination. Here the required weight of seed was carefully taken and the seeds therein counted, both crop seeds and weed seeds, so that the percentage "by count," as required by the law, could be ascertained. This process is a very tedious one, the law, in this requirement, differing from most, if not all, other seed inspection laws. Most of these laws specify percentages by weight.

In order to shorten this method, if possible, an attempt was made to establish standards of "count for weight" of the different agricultural seeds; but this was found impossible. The number of seeds in a sample of given weight of any of the farm seeds considered was found to vary, not only in different grades of seeds, but in seeds of the same grade grown in different localities or in different seasons, and even in samples made up of varying proportions of seeds of different color, as of the yellow, brown, or violet-colored seeds of red clover. As illustrations: Two samples of high-grade alfalfa seed contained respectively 213,000 and 250,000 seeds per pound, a difference of 8.2 per ct. above or below the mean for the two samples; and two samples of spring vetch seed varied nearly 25 per ct. from their mean. Since such variations made it impossible to use "count"

**Results of
official
counts.**

standards, all seeds in each official sample were counted. By such counting, it was found that all of the 11 alfalfa samples were well within the law, the highest percentage of other seeds found being less than one-half of one per ct., and the highest percentage of inert matter (sand, etc.) only one per ct. by weight. With alsike clover, conditions were much worse, since 5 of the 13 samples contained more than 3 per ct. of foreign seeds — one of them 45 per ct. — and two of these samples contained also 5 and 8 per ct. respectively of inert matter. Two of the five samples of Canadian blue grass contained more than the limit of other seeds, and all of them considerable amounts of other material so that the best sample showed only 95 per ct. pure seed and the poorest one only 87 per ct. The Kentucky blue grass was, however, of very much better quality, as the five samples contained very little other seed, though one sample showed 5 per ct., another 3 per ct. and another 2.8 per ct. useless matter. The single sample of crimson clover seed was fair in quality, with 1.2 per ct. of other seeds and 3 per ct. of dirt; but the one sample of rape was 99.1 per ct. pure. Of red clover, 5 samples out of 17 were over 99 per ct. pure, 3 others over 98 per ct. and 4 more over 97 per ct. pure, while the others ranged down to 92.8 per ct., 4 of them containing more than 3 per ct. of other seeds.

Redtop was generally fair in quality, as only one sample out of eight showed more than 3 per ct. of foreign seeds; but all but one ranged high in dirt, one sample showing $36\frac{1}{2}$ per ct. of such refuse.

Nearly 60 samples of timothy were examined, of which only four showed an excess of foreign seeds, but two of these contained respectively 17.1 and 38.9 per ct. of such seeds. The worst of these samples also contained 3.8 per ct. of dirt, but all the other samples were very good in this regard.

The summer vetch sample was very good, but the one of winter vetch was one-fourth summer vetch.

Two of the five samples of white clover were poor, showing 93 and 74 per ct. purity only; but the others were of good quality.

Voluntary examinations. Of 1,140 samples received from correspondents during 1912 and examined at the Station, 621 were of alfalfa, 170 of red clover, 150 of timothy, 96 of alsike clover and 47 of miscellaneous seeds. The

same general fault was shown in many of these samples as in those of previous years — small size. The small sample very frequently fails to represent accurately the seed from which it is drawn; and the same statement was found to hold true with regard to the advertising samples sent out by dealers as representative of the seeds they were handling. No sample of alfalfa seed or clover seed weighing *less than two ounces* can be considered satisfactory, nor a sample of grass seed or the smaller vegetable seeds that weighs *less than one ounce*. Quantitative examinations of the voluntary samples could not be made, owing to lack of time; but the principal impurities found in each sample were listed on the report blank, and, if necessary, attention was called to any particularly undesirable weed seeds or to adulterants.

For seeds in general, adulteration is becoming less common, but, as noted before, several samples of alfalfa, red clover and vetch showed that some foreign material had been added to make weight. Alsike clover seed also showed considerable yellow trefoil seed; but one very bad case of this was found due to presence of the trefoil in the clover field, rather than to addition of the seed.

Of practically all the kinds of seed examined, the samples indicated more good to excellent seed on the market than poor to fair seed; but in almost every class some samples showed very bad conditions. Among the kinds in which the number of poor samples was low were alfalfa, timothy, redtop, white clover and Kentucky blue grass; while red clover, alsike clover, and hairy vetch showed considerably larger percentages of low-grade samples. Care should be exercised in the purchase of any of these seeds. The poorest seeds on the market are probably the alsike and timothy mixtures. Of 17 samples of this mixture examined every one was graded poor to very poor, since the seed was poorly colored, shriveled and of light weight, and

TABLE I (continued).

NAMES OF FOREIGN SEED.	KIND OF CROP SEED.									
	Alfalfa.	Red clover.	Timothy.	Alsike clover.	Alsike and timothy mixture.	Redtop.	Hairy vetch.	White clover.	Kentucky blue grass.	Miscellaneous samples.
Number of samples examined	621	170	150	96	17	14	14	13	14	31
Galium sp	2									
Grass (<i>Poaceae</i> spp.)	49	21	16	8	1			1		3
Gum plant (<i>Grindelia squarrosa</i> (Pursh) Dunal)	8									
Hare's ear (<i>Conringia orientalis</i> (L.) Dumort)	6	2								1
Heal-all (<i>Prunella vulgaris</i> L.)	14	65	12	12	2			1		1
Hedge mustard (<i>Sisymbrium officinale</i> L.)			2	1		1				2
Hoary cress (<i>Lepidium draba</i> L.)	2									
Johnson grass (<i>Sorghum halepense</i> (L.) Pers.)	14	3								
Kidney vetch (<i>Anthyllis vulneraria</i> L.)	2									
Knot grass (<i>Polygonum aviculare</i> L.)	10	5								
Lady's thumb (<i>Polygonum persicaria</i> L.)	4	33						8		2
Lamb's quarters (<i>Chenopodium album</i> L.)	187	57	33	10	4					1
Lentil (<i>Ervum lens</i> L.)							1			
Mallow (<i>Malva rotundifolia</i> L.)	51	8								
Mallow, false (<i>Malvastrum coccineum</i> Gray)	3									
Mallow, whorled (<i>Malva verticillata</i> L.)	2									
Malva sp.	2									
Maple-leaved goose foot (<i>Chenopodium hy-</i> <i>bridum</i> L.)	9									
Marsh elder (<i>Iva xanthifolia</i> (Fresn.) Nutt.)	25	1								
Marsh spike grass (<i>Uniola latifolia</i> Michx.)	1									
May weed (<i>Anthemis cotula</i> L.)		12	4	7	4	1		1		1
Meadow fescue (<i>Festuca elatior</i> L.)			1							
Melilotus spp.	6									
Melilotus, slender (<i>Melilotus gracilis</i> D. C.)	1									
Millet (<i>Chaetochloa italica</i> (L.) Beauv.)	50	5	1		1					2
Moth mullein (<i>Verbascum blattaria</i> L.)			1							
Mustard (<i>Brassica</i> spp.)	105	20	1	3			1			7
Mustard, black (<i>Brassica nigra</i> (L.) Koch.)	6									
Mustard, tumble (<i>Sisymbrium altissimum</i> L.)	1									
Mouse-ear chickweed (<i>Cerastium vulgatum</i> L.)			8	5	2	1		1	2	2
Narrow-leaved hawk's-beard (<i>Crepis tectorum</i> L.)										1
Niger seed (<i>Guizotia abyssinica</i> Cass.)			1							
Night-flowering catchfly (<i>Silene noctiflora</i> L.)	25	49	10	36	5			9		3
Old witch grass (<i>Panicum capillare</i> L.)	7	10	2	3	5			1		
Oxeye daisy (<i>Chrysanthemum leucanthemum</i> L.)	3		14	12	2	1				2

TABLE I (concluded).

NAMES OF FOREIGN SEED.	KIND OF CROP SEED.									
	Alfalfa.	Red clover.	Timothy.	Alsike clover.	Alsike and timothy mixture.	Redtop.	Hairy vetch.	White clover.	Kentucky blue grass.	Miscellaneous samples.
Number of samples examined	621	170	150	96	17	14	14	13	14	31
Spring vetch (<i>Vicia sativa</i> L.)							12			
Spurry (<i>Spergula arvensis</i> L.)	1	1	1					4		
St. John's wort (<i>Hypericum perforatum</i> L.)					3					
Star thistle (<i>Centaurea cyanus</i> L.)	1									
Star thistle (<i>Centaurea jacea</i> L.)	6	4								
Star thistle (<i>Centaurea picris</i> L.)	5									
Star thistle (<i>Centaurea repens</i> L.)	50	2								
Star thistle (<i>Centaurea solstitialis</i> L.)	5	3		1						
Sow thistle (<i>Sonchus oleraceus</i> L.)				1						
Stick-seed (<i>Lappula echinata</i> Gilibert)	14	17		3						
Stink-grass (<i>Eragrostis megastachya</i> Link.)	1									
Sulla (<i>Hedysarium coronaria</i> (Tourn.) L.)	5									
Sweet clover (<i>Melilotus alba</i> Desr.)	63	2								
Switch grass (<i>Panicum virgatum</i> L.)	2									
Timothy (<i>Phleum pratense</i> L.)	101	68		84		9		5		9
<i>Trionema monogyna</i> L.	6									
Vervain, blue (<i>Verbena hastata</i> L.)		11	1			1				
Vervain, white (<i>Verbena urticifolia</i> L.)		1	1		1					
White clover (<i>Trifolium repens</i> L.)	15	35	34	69	8	4			7	5
White hoarhound (<i>Marrubium vulgare</i> L.)	1									
Wild buckwheat (<i>Polygonum convolvulus</i> L.)	5	3								
Wild carrot (<i>Daucus carota</i> L.)	25	40		3						2
Wild lettuce (<i>Lactuca canadensis</i> L.)	1					1				
Wild radish (<i>Raphanus raphanistrum</i> L.)	1		1			1				1
Wild vetch (<i>Lotus americanus</i> (Nutt.) Bisch.)							1			4
Willow herb (<i>Epilobum angustifolium</i> L.)			8		1	1				
Yarrow (<i>Achillea millefolium</i> L.)	1	8	2	1	2	3				
Yellow chamomile (<i>Anthemis tinctoria</i> L.)				1						
Yellow rocket (<i>Barbarea barbarea</i> (L.) MacM.)	1	2	4	11	1			1		