

THE DORMANT PERIOD OF TIMOTHY SEED AFTER HARVESTING.

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The suggestion for this study came in August, 1916, through a request from the Illinois Seed Company, Chicago, Illinois, asking for data as to the length of time after harvesting until timothy seed reached its maximum germinating power. No such data were at hand and a very careful search of all the available literature revealed but one mention of any previous work on the subject. In Fuhling's *Landwirtschaftliche Zeitung* for March 15, 1894, there was reported such a study of several different kinds of seeds, and from that study a conclusion had been drawn that timothy seed reaches its maximum germinating percent in four weeks after harvest.

At the time of receiving the above inquiry it was too late to make an investigation for the season of 1916. In the season of 1917 an investigation was begun. Heads of timothy were harvested from a lot back of the Agricultural Building at Purdue University. It was decided to make the study in two parts.

1. A study of the germinating qualities of individual heads was made to see if there was such a thing as individuality in heads.

2. A number of heads were shelled together for a mass selection and this was used in duplicate. The shelled seed was allowed to stand in an open pan in the laboratory. The timothy heads were not ripe enough to shatter from the spikes, but were easily shelled. The culms below the spikes were still green. The heads were harvested August 11th, and the first tests set at once. The second test was set August 20th, and the third test September 5th. For the individual head testing, five heads were selected. A small amount of seed was shelled from the base of the spikes and one hundred seeds (more or less accurately) counted out for testing. For the mass tests duplicate lots of one hundred seeds (more or less accurately counted) were taken. The seeds were tested on blotters in moist chambers formed by turning one plate over another. The following tables show the results of these tests:

TABLE 1.

Dormancy of Timothy Seed—Details of Results.

SERIES	Date Set	Period Germ. Days	Head 1			Head 2			Head 3			Head 4			Head 5			Mass 1			Mass 2		
			No. Germ.	Hard Seed	%	No. Germ.	Hard Seed	%	No. Germ.	Hard Seed	%	No. Germ.	Hard Seed	%	No. Germ.	Hard Seed	%	No. Germ.	Hard Seed	%	No. Germ.	Hard Seed	%
Series I	8-11	29	25	65	27.7	27	76	26.2	25	64	28	38	50	39.7	17	75	18.4	5	84	5.6	3	89	3.2
Series II	8-20	26	57	40	58.7	47	51 [*]	46.5	39	54 [*]	41	91	12	88.3	51	45	53.1	60	33	64.5	76	19	80
Series III	9-6	16	96	4	96	99	1 [*]	99	98	2 [*]	98	100	0	100	98	2	98	88	10 [*]	88	88	11 [*]	88
Hard seed from Mass Series I	9-10	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	46	28 [*]	60.5	.....	.....	.....
Hard seed from Series II	9-29	20	31	8	79.4	2	47	4.0	41	13	75.9	3	7	30	31	11	73.8	4	29	12.1	12	6	66.6

*Rotten.

TABLE II—SUMMARY OF TABLE I.

	Series I From harvest, days—none.		Series II From harvest, days—10		Series III From harvest, days—25		Hard seed from Series I From harvest, days—31, plus first test	Hard seed from Series II From harvest, days—50, plus first test
	%	%	%	%	%	%	%	%
Head 1...	27.7	.....	58.7	.....	96.0	.....	.....	90.7
Head 2...	26.2	.....	46.5	.....	99.0	.....	.....	48.5
Head 3...	28.0	.....	41.0	.....	98.0	.....	.....	84.4
Head 4...	39.7	.....	88.3	.....	100.0	.....	.....	91.2
Head 5...	18.4	.....	53.1	.....	98.	.....	.....	85.4
Mass 1...	.....	5.6	.....	64.5	.....	88	78.8	.....
Mass 2...	.....	3.2	.....	89.0	.....	88	.....	.....
Ave.....	28.0	4.4	57.5	72.2	98.2	88	78.8	80.3

In Table 1 are given the detailed results obtained from the individual heads and from the duplicates in the mass tests. In Series I it is to be observed that in every case there was a large percentage of hard seed. After the first five days, or first count, very few seed germinated. The majority of the seed that germinated did so during the first five days. After twenty-four days had passed and no germination had taken place for several days this series was broken up. However, upon a second thought it was decided to see what effect letting these seed dry out and then retesting would have. The hard seed from one of the mass tests was used for this purpose, and the table shows that 60.5% of the hard seed germinated. However, after a period of seventeen days no more seed would germinate in this lot. In Series II it was decided to try out the hard seed from all of the tests by first letting them dry out on the pads. The data in the table show the results of these tests. In Series III there was so small a percentage of hard seed that it was not deemed necessary to retest. In Table 2 is shown the summarized results of the tests. From the data presented above we may make the following observations:

1. Immediately after harvesting only a very small percentage of germination may be expected from timothy seed. In the case of the individual heads tested, an average of 28 percent was obtained, while in the mass selections only an average of 4.4 percent was obtained. In ten days after harvesting the individual heads had practically doubled their germinating power, averaging 57.5 percent. The mass selections had very greatly improved, averaging 72.2 percent. In twenty-five days

after harvesting the individual heads had practically reached their maximum percent, averaging 98.2%, while the mass selections had reached a satisfactory germinating percentage—88% (U. S. Gov. standard being 85–90 percent). (Yr. Bk. U. S. D. A. 1896, p. 623.)

2. Alternate drying and wetting increases the germinating percentage. However, where seed was kept wet throughout the period no further germination took place in the hard seeds.

3. The testing of the five individual heads showed that there is some variation in the germinating quality of the single heads, as illustrated by head No. 4 in the test.

4. The individual heads reached a higher percentage of germination than the mass selections. Possibly this was due to the fact that in individual heads the seed remained attached to the spikes until shelled off for testing, while in the case of mass selections the seed was shelled off of the spikes as soon as harvested. The first condition is the one which would prevail under farm practice.

5. Seed alternately wetted and dried will eventually reach a high percentage of germination.

6. It seems reasonable to conclude from the data obtained that between three and four weeks from the time of harvesting is necessary for timothy seed to reach its maximum germinating power.

7. If timothy seed which has been harvested and threshed before it has reached its maximum germinating power is kept from heating and sown at once it would eventually give a fair stand of plants.

BIBLIOGRAPHY.

Fühling's *Landwirthschaftliche Zeitung*, March 15, 1894.