LABORATORY GERMINATION OF HARD ALFALFA SEED AS A RESULT OF CLIPPING

Anna M. Lute

HARD seeds have been the subject of much discussion in connection with enforcement of state seed laws. Label requirements in regard to germination of alfalfa seeds are not uniform in the various states. However, regulations in the majority of the states and under the federal seed act require that the percentage of germination and of hard seed be stated separately on the label. In a few states the sum of the two may be designated as live seed in addition to the separate statements.

The requirement that the percentage of hard seed be stated is based on the fact that their behavior is somewhat different from and more varied than that of the live seeds which take up water promptly.

Designation of hard seed plus seed which germinates promptly as the total live seed is based on the premise that hard seeds if scarified will germinate readily, i.e., hard seeds are live seed.

It is the purpose of this paper to bring out certain pertinent facts regarding the behavior of hard seeds when fresh and after storage.

The term "hard seeds" as used in this paper refers to those alfalfa seeds which do not take up moisture in 6 days when placed between moist blotters in chambers at 20°C.

Much work has been done on the behavior of hard seeds in germination chambers and in the field. The Colorado Seed Laboratory has been carrying on hard-seed studies for more than 20 years and has published one bulletin on the subject. The writer has been unable to find any published work dealing with the following characteristics: (1) whether fresh alfalfa seeds which have taken up no water in blotters at 20°C in 6 days are all live seeds; (2) whether all hard seeds become permeable in storage, resulting in prompt germination, or whether some remain hard over a long period of years; and (3) whether seeds which do remain hard in storage are live seeds.

MATERIALS AND METHODS

The materials used consisted of five separate sets of alfalfa seed as follows: (1) Fresh seeds containing varying percentages of hard seeds and with fully mature and somewhat immature seeds; (2) old seeds, the original germination and hard seed content of which are known; (3) mature and immature seeds selected from the same bulk; (4) hard seeds taken from blotters in 1921; and (5) seeds treated with heat before storing. All seeds used have had laboratory storage in loosely stoppered vials.

All germination tests were made by placing seeds between folds of moist blotting paper and keeping them at a temperature of 20°C in germination chambers for 6 days. Preliminary and final counts of seeds considered as germini-

1Contribution from the Seed Laboratory, Colorado Agricultural Experiment Station, Fort Collins, Colo. Received for publication August 28, 1941.

2Seed Analyst.