GERMINATION OF SEED OF FARM CROPS IN COLORADO AFTER STORAGE FOR VARIOUS PERIODS OF YEARS

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The knowledge that farm seeds maintain their viability over a long period of years may assist in solving the seed situation in years of drouth or of complete crop failure. Little is known of the viability of seeds after storage for several years under arid conditions. The data reported in this paper are from a study carried on with seeds stored for periods varying from 1 to 15 years.

The literature on storage of farm seeds was reviewed in a previous paper by the authors and will not be discussed here. Previous results have shown that seeds of wheat, oats, and barley exhibit a gradual decline in germination rate for a 10-year period. At the end of this time their germination was approximately 10% lower than when 1 year old. Germination of Rosen rye and Wisconsin Black soybeans decreased more rapidly. About 10% of their original germination was lost in a 5-year period. Germination of Black Amber sorghum dropped only 2% in 6 years. Yellow dent corn germinated well for the first 5 years but decreased rapidly after the sixth year. The results reported in this paper are a continuation of the previous work reported by the authors.

EXPERIMENTAL METHODS AND RESULTS

The first tests were made on the 1920 crop. The grains were threshed, cleaned, and stored in 100-pound sacks, which were then placed in an unheated room. They were stored in the same room during the entire period of the test. Samples were taken in February of each succeeding year. Composite samples from each sack were made by mixing grain drawn from the sacks by a grain probe and by taking off a portion with a small scoop. Germination tests were made before July 1 of each year. Crops from the succeeding years, 1920-1929, were saved when grown and placed in the storage room. Only perfect seeds were used for germination, broken and damaged seeds being discarded. In the later years of the experiment considerable damage was done by the dermestid beetle (Trogoderma tarsale). All damaged seeds were discarded. The storage room was sprayed with an ethylene dichloride-carbon tetrachloride mixture to control insect pests. The crops used were the standard varieties of cereals shown in Table 1.

1Contribution from the Colorado Agricultural Experiment Station, Fort Collins, Colo. Received for publication July 10, 1937.
2Agronomist and Seed Analyst, respectively.
4The mixture used was ethylene dichloride 3 parts, carbon tetrachloride 1 part by volume, according to Roark, R. C., and Cotton, R. T. Tests of various Ali-pathic compounds as fumigants. U. S. D. A. Tech. Bul. 162. 1929.