HIGH germinating power of the seed is one among several important factors in obtaining a good stand of flax. The viability of Kansas-grown flaxseed, some of the causes of low germination, and the effect of treating seed on emergence and yield are discussed in this paper.

REVIEW OF LITERATURE

Landon (11) stated that good flax seed should have a germination of more than 95%. He stated further that flax seed was more subject to weather damage than wheat or oats, and in some years the weather conditions at the time of ripening may be such that seed of low germination is produced. Dillman and Stoa (5) advised keeping the seed bolls off damp ground after harvest and cautioned that flax intended for seeding purposes should be recleaned before storing, thus removing shriveled and broken seeds, weed seed, and broken stems.

Dillman and Toole (6) reported that flax seed of good quality stored under favorable conditions maintained a high degree of viability for 10 years or more, but weather-damaged or low-quality seed lost its viability rapidly, beginning with the first year, and in extreme cases was worthless for planting. Seed stored with more than 11% moisture gave low germination only 6 months after harvest. The variety Linota gave somewhat higher germination than Bison in the tests.

Decker and Reitz (3) showed that viability of stored flax declined rapidly if moisture and temperature levels were high. Stored with 13% moisture, Linota flax lost its viability completely after 60 days at 86°F but showed only slight decline when stored at 40° or 70°. Lower moisture levels prolonged viability at all temperatures.

Dillman (4) found that seeds collected and cured from bolls 9 to 12 days after flowering did not germinate, between blotters in a moist chamber. Those collected at later periods showed germinations of 38% after 15 days, 80% after 18 days, 90% after 24 days, and an average of 95% for samples harvested 27 to 36 days after flowering. Robinson (17) obtained similar results on bulk seed samples from whole plants instead of selected bolls of known age. Samples taken at weekly intervals, beginning with the full bloom stage, gave germinations of 4.7, 61.3, 82.6, and 89.6%, respectively, indicating the low viability of immature seeds. These samples were cured slowly in the shade while comparable samples cured in the sunlight in a greenhouse germinated 0, 7.3, 15.3, and 93.6%, respectively. Fanning the seed sometimes increased the germination 10% or more as a result of removing light weight, underdeveloped seeds.

Landon (11) explained that low yields of Bison in some of his tests were due to low germination of the seed and subsequent poor stands. Davidson and Laude (2) reported that more Bison seeds were cracked during threshing than was the case with small-seed varieties such as Linota. Bison seed frequently was lower in test weight per bushel than Linota, indicating somewhat poorer development of the seed.

Stevens (19) tested 11 samples of Bison flax seed showing four types of mechanical injury. His results from soil tests in the laboratory chamber showed that uninjured seed germinated 80%, cracked seed 73%, slightly broken 57%, more than one-half seed with plumule 38%, and less than one-half seed with plumule 13%. In field tests these grades of seed germinated 63, 30, 20, 8, and 3%, respectively.

Machacek and Brown (13) reported that flax seed was often fractured when

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1 Contribution No. 387, Department of Agronomy, and Contribution No. 487, Serial No. 396, Department of Botany, Kansas Agricultural Experiment Station, Manhattan, Kansas. Received for publication July 3, 1947.
2 Agronomist, Associate Plant Pathologist, and Assistant Agronomist, Kansas Agricultural Experiment Station, and Germination Analyst, Seed Laboratory, Kansas State Board of Agriculture, respectively.
3 Figures in parenthesis refer to "Literature Cited", P. 969.