THE VITALITY OF SOYBEAN SEED AS AFFECTED BY STORAGE CONDITIONS AND MECHANICAL INJURY1

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The seed of the soybean (Soja max) has been regarded by some as being unusually sensitive to adverse storage conditions. In view of the rapidly increasing economic importance of this crop, it is highly desirable that some definite knowledge of this matter be obtained based upon exact observations, and it was to this end that the investigation, of which the following experiments are a part, was undertaken.

The experiments presented in this paper fall under two headings, viz., storage conditions affecting the longevity of soybean seed and the effect of threshing injury upon the longevity and vigor of soybean seed.

STORAGE CONDITIONS AFFECTING LONGEVITY OF SOYBEAN SEED

Various theories have been advanced to explain differences in longevity in seeds. Crocker (8) states that there is no general rule for the curing and storage of seeds. Duvel (11) found that garden seeds lost their vitality very rapidly in warm, humid climates, but maintained it for long periods in cold climates. Welton (20), Sifton (19), Carruthers (7), Acton (1), Dorph-Peterson (9), Asprit and Gain (3), Harrington (13), Bacquerel (4), Blackman (5), Lespeschkin (16), and others have worked with seeds of different ages. As a general summary of the work of these investigators, it may be stated that loss of vitality has been attributed to desiccation, high temperature, loss of oxygen, weather conditions at harvest time, inheritance, loss of diastatic and proteolitic activities, permeability of seedcoats, denaturing of protein, etc. In most cases, however, the age of the seed was the only factor considered, different conditions of storage not being taken into account.

In the present investigation, the plan was to subject soybeans of a few common varieties to several different conditions of storage. The work was continued for three seasons during which weather conditions differed widely at harvest time. New lots of beans and new storage conditions were introduced each fall. For the present purpose, the data for the first two seasons only are included since they represent diverse conditions.

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3Reference by number is to “Literature Cited,” p. 854.