EFFECT OF GERMINATION AND SEED SIZE ON SORGHUM STANDS

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ONE of the important steps in profitable sorghum production is that of securing stands. Stands may be altered by a number of factors a few of which are due to the peculiar characteristics of the seed. Other hazards to stands are a poor seedbed, low grade seed, planting too early, the use of improper planting plates, and torrential rains which may cover or wash away the young seedlings. Some of these hazards may be more easily controlled if the character of the seed is given consideration. The discrepancy between laboratory and field germination of seed of the better known sorghum varieties, as well as the influence of size of kernel on the number of plants per acre, are discussed in this paper.

LABORATORY AND FIELD GERMINATION COMPARED

Certain cultivated crops often show a much wider discrepancy between laboratory and field germination than is generally realized by many farmers. This discrepancy is probably greater for sorghum than for most crops. Experiments conducted at Amarillo, Tex., in 1914 and 1915 showed (5) that five varieties of sorghum planted on April 1 in wet, cold soil resulted in field germination ranging from 11.4 to 33.0%. When the same varieties were planted on June 1 in moist soil when higher temperatures prevailed, the field germination ranged from 51.3 to 61.9%. Seed of good viability was used in the test, the laboratory germination being from 90 to 98.5%. It was concluded from the Amarillo data that “it is best to expect in field seedings of kafir, milo, and sorgo not more than 50 per cent of the laboratory germination and of feterita not over 40 per cent.”

Engledow and Ramiah (1) in England found that under reasonably good planting conditions from 60 to 80% of the wheat sown may be expected to grow into plants to be harvested. Parasitic action, adverse weather, bad tilth, and bad seed (physiologically imperfect) were regarded as factors which may bring about very substantial reduction in the number of plants. These workers also found some varieties of wheat to be inherently poor and slow in germination as compared with other varieties.

Five varieties of wheat planted under optimum field conditions at Hays in 1935 germinated 83.0%. Under equally favorable planting conditions in June sorghums have averaged 60%.

1 Contribution from the Fort Hays Branch of the Kansas Agricultural Experiment Station, Hays, Kans., and the Division of Cereal Crops and Diseases, Bureau of Plant Industry, U. S. Dept. of Agriculture, cooperating. Contribution No. 21 from the Fort Hays Experiment Station. Received for publication September 4, 1936.

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3 Figures in parenthesis refer to “Literature Cited”, p. 1004.