THE EFFECT OF MATURITY AT TIME OF HARVEST ON CERTAIN RESPONSES OF SEED OF CRESTED WHEAT-GRASS, AGROPYRON CRISTATUM (L.) GAERTN.¹

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The increased use of *Agropyron cristatum* (L.) Gaertn. as a forage crop and for soil erosion control has created a demand for information pertinent to management methods. As many days may elapse between the first and final dates of ripening among plant populations, the grower is confronted with the problem of harvesting at a time when the maximum production of mature seed will be obtained. Premature harvests may result in seed which germinates poorly or contains little reserve food, which delayed harvests may permit shattering of ripened seed and a consequent reduction in yields.

It has been shown by Kiesselbach (5) that seed size is not associated with plant yield in corn, but Kiesselbach and Helm (6) have reported that seed size materially influences plant yield in wheat. Salisbury (12) has discussed the relation between size, strength, and maturity of propagules and ability of the plant to establish itself under conditions of competition. Plants from small, weak, immature propagules are placed at a distinct disadvantage when competing for establishment with plants grown from larger propagules. It seems possible that immature, small seed of *Agropyron cristatum* may have a lessened chance of establishment in competition with the same or other species.

Studies by Hay (2, 3, 4) of the germination of crested wheatgrass have indicated that mature, freshly-harvested seed germinates more readily when held at a temperature below 20°C for part of the germination period, but that dry storage of the seed decreases the need for low-temperature treatment during the germination period.

Seedling emergence of crested wheatgrass when seeded at various depths has been reported by Kirk, Stevenson, and Clarke (7), Love and Hanson (10), and Murphy and Arny (11) whose conclusions were similar. Germination was good in surface plantings if satisfactory moisture conditions were maintained. Percentages of emergence decreased with an increase in depth of planting with the optimum depth being less than 1 inch and preferably ½ inch. Emergence (10) and non-emergence (7) of seedlings from planting depths of greater than 2 inches were both reported, but this variation in results might have been due to differences in soil types (11). The investigations reviewed were apparently made with well-ripened seed.

¹Contribution from the Seed Laboratory, Department of Agronomy, State College of Washington and the Washington Agricultural Experiment Station, Pullman, Wash. Published with the approval of the Director as Scientific Paper No. 416, College of Agriculture and Experiment Station, State College of Washington, Received for publication August 14, 1939.

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³Figures in parenthesis refer to “Literature Cited”, p. 884.