THE RELATION OF MOISTURE CONTENT AND TIME OF HARVEST TO GERMINATION OF IMMATURE CORN

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THE satisfactory and efficient use of the greenhouse in corn breeding and genetic investigation requires that the planting of the winter crop be delayed as long as possible and still permit the maturing of seed before the time of spring planting. Thus, for greenhouse-grown corn, planting usually follows very closely after harvest. Under such conditions corn sometimes exhibits slow and irregular germination. In rare cases a complete failure to germinate is noted. The possibility of poor or irregular germination appeared to be one factor limiting the usefulness of the greenhouse in advancing breeding and genetic investigations.

Under certain conditions small grains have a marked period of dormancy. It was thought that the occasional poor germination of greenhouse-grown corn might be a manifestation of the same phenomenon. These studies were undertaken to determine the importance of after-ripening in corn and, if possible, to find some method of hastening the process.

The germination and subsequent growth of prematurely harvested but thoroughly after-ripened corn has been studied by Robinson. The literature on dormancy and after-ripening has been reviewed by Harrington and no further review will be presented here. For the small grains in general he concludes that the embryo is not dormant, dormancy being imposed by an impermeable seed coat.

MATERIALS AND METHODS

In preliminary comparisons of greenhouse- and field-grown corn there was no evidence of any difference in germination response when corn of equivalent stages of development and maturity was compared. For this reason, all subsequent studies were carried out with field-grown corn since it was more readily available and could be obtained in any desired quantities.

Double and single crosses of field corn have been used to insure greater uniformity and thereby reduce the size of sample necessary for adequate representation. Pollinations for periodic sampling were made on a single day to insure material of known age. Three to five ears were harvested at 5-day intervals beginning 10 days after pollination and continuing until immediate normal germination was obtained. The kernels were removed from the ears immediately after harvest, bulked, and spread in a single layer to dry. Samples for moisture, germination, and chemical treatment were taken from the bulked sample.

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