THE EFFECT OF MATURITY ON THE VIABILITY AND 
LONGEVITY OF THE SEEDS OF WESTERN 
RANGE AND PASTURE GRASSES

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IN recent years there has been a considerable demand for grass 
seeds of both native and introduced species for reseeding in the 
West. The variation in types of seeds, in seeding habits of the species 
needed, and the lack of experience in handling the seeds of many of 
the species has resulted in various problems, not only to those inter-
ested in commercial seed production, but also to those engaged in 
grass research. One of these problems is the amount of shattering 
before or during the harvesting process which depends on the species, 
weather conditions, and harvesting methods. The possibility sug-
gested itself that perhaps losses due to shattering might be avoided 
by harvesting before the seeds were fully ripe.

This study was made to determine the earliest stage in develop-
ment at which seeds of Agropyron cristatum (L.) Gaertn., crested 
wheatgrass; A. smithii Rydb., western wheatgrass; A. trachycaulum 
(Link) Malte, slender wheatgrass; Bromus inermis Leyss, smooth 
brome; B. marginatus Nees., mountain brome; B. polyanthus Scribn.; 
Elymus glaucus Buckl., blue wildrye; and Stipa viridula Trin., green 
needlegrass, could be harvested without loss in viability, longevity, 
and vigor of the seedlings following germination. Shattering had 
previously been observed in all of these species with the exception of 
B. inermis.

Most of the investigations dealing with seed maturity in the grass 
group have been carried out on the small grains and corn. Lehmann 
and Aichele (6)3 have reviewed most of these studies, as well as those 
dealing with forage grasses. In general, it has been found that the 
seeds of members of the Gramineae will germinate and produce seed-
lings when harvested as early as the milk stage of development. 
Harlan and Pope (2) found that five out of seven barley varieties pro-
duced viable seeds as early as 6 days following pollination. In a study 
on the time of cutting as related to the production of viable seeds, 
Gill (1) found that Hordeum nodosum and Bromus mollis produced 
viable seeds when cut in the milk-ripe condition. Hermann and Her-
mann (3) conclude from germination and emergence tests of seeds of 
Agropyron cristatum collected at 10 stages of maturity, from pre-milk 
to fully mature, that “vigorous plants probably cannot be expected 
from seed harvested earlier than in the hard dough stage.” They 
found, however, that good germination could be obtained from seeds 
harvested in the early dough stage.

1Contribution from the Division of Forage Crops and Diseases, U. S. Dept. of 
Agriculture, in cooperation with the Utah Agricultural Experiment Station, 
Logan, Utah. Received for publication January 20, 1943.
2Assistant Physiologist.
3Figures in parenthesis refer to “Literature Cited”, p. 452.