

WYOMING BIG SAGEBRUSH SEED QUALITY AS INFLUENCED BY PROCESSING WITH AN INDUSTRIAL DEBEARDER¹

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Abstract: A debearder is a machine developed to remove the grain from the seedhead of bearded (awned) plants like barley or wheat. It consists of rotating and fixed tines enclosed in a cylinder and set an angle so that material fed into one end of the cylinder is moved through the machine to the opposite end. Debearders are used for many types of seed cleaning, including processing sagebrush by the native-plant seed industry. Since poor seed quality may be a contributing factor to low stand establishment of Wyoming big sagebrush sown on mined lands, we investigated the effect of debearder processing on seed quality. Seeds of Wyoming big sagebrush were collected from (2) Wyoming locations in late October 1993, put in large woven polypropylene bags, then stored in an unheated warehouse for approximately 4.5 months before being processed with a 48" debearder. Seed materials were processed for 2, 4, 6, 8, or 10 minutes. Temperature and RH inside the debearder were recorded after each interval. Seed germination and seedling vigor were tested by imbibing treated seeds at 5°C for 4 days, incubating them at 20°C under light for another 14 days, and then measuring seedling axial length. Temperature and RH inside the debearder increased linearly from 14.0 to 22.4° and from 59.0 to 81.2% with processing time. The moisture content of seed materials did not change with the processing duration, indicating that the water status of seeds did not change. The number of undamaged seeds per gram of material did not change with processing duration and was similar between collections. This unexpected finding may result from the small seed size of this species. Total germination, germination rate and seedling vigor were similar among treatments in both collections, but different between collections. The effect of processing duration may influence seed viability over time, a hypothesis which will be tested in future experiments. This project will also investigate the effect of seed moisture and temperature on imbibition rate and how these factors influence germination rate and seedling vigor.

Additional Key Words: Reclamation, seed damage, seedling vigor.

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