Use of Forsberg Destoner for Mass Selection against FHB Colonized Seeds in Early Generations of Cultivar Development

Equipment: Forsberg Destoner, Model G-2, Manufactured by Forsberg, Inc., Thief River Falls, MN 56701. This equipment is used by Small Grains Breeding & Genetics Program at Virginia Tech.

1. Grain samples for mass selection are derived from early generation breeding populations grown in environments where FHB epidemics occur naturally or are induced via application of inoculum (e.g. *Fusarium* colonized grain) and mist irrigation. Care should be taken to begin with a large enough grain sample to ensure that a sufficient amount of "selected grain" is obtained for re-planting the population. For example, if wheat spikes are visually selected on the basis of phenotype and bulked from each population, be sure to select enough heads to ensure availability of the desired amount of final selected grain. The amount of grain needed and the effectiveness of mass selection also will depend on incidence and severity of FHB in the nursery where the grain originated.

2. Pour seeds into De-stoner and set air volume by turning the crank handle that controls a sliding door in the air system. The crank and door can be seen in picture below. The crank handle is down low on the right side of the machine.

3. Collect scabby seed (lighter) in the pan on the right and good seed (heavier) in the pan on the left.

4. Weigh good seeds and scabby seeds to get percentage colonized seeds by weight.

Good seed sample on left; scabby seed sample on right.

5. Plant good seeds to advance early generation populations.

Scabby seed removed from sample.

Selected good seed sample.

NOTE: The test weight of the composite seed sample used in this example was 55.9 lb/bu. The selected good seed sample had a test weight of 59.3 lb/bu on the SRW scale. Test weight of the scabby seed sample could not be determined on the SRW wheat scale. On the oat scale, it gave a test weight of 43.5 lb/bu. On the barley scale, it had a test weight of 43.8 lb/bu.

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