

PROCESSING OF MONOGERM BEET SEED

By: G. E. Nichol 1/

Commercial monogerm sugar beet seed used in the Eastern sugar beet growing area is grown mostly in the Willamette Valley of Oregon. This seed is processed in a plant at Saginaw, operated by the Farmers & Manufacturers Beet Sugar Association. The development of a system of processing seed has been a joint effort by the Association and its member companies.

Monogerm seed as received consists of a mixture of monogerm seed from the male-sterile female line plus a small percentage of Multigerm seed from the multigerm pollinator. This seed has been draped before shipment to remove stems and other foreign material and has been sized to remove seed less than $6/64$ " in diameter.

A characteristic of monogerm seed is that it is flat or disc shaped in one dimension. The other dimension is round with 5 stars (flower parts) attached to each seed. These stars are hard and flinty on large seed but soft and easy to remove on the smaller seed. Furthermore, the smaller sizes of seed cannot withstand rough handling while such treatment is necessary to smooth and remove the stars from the larger seed. Rough treatment within reasonable limits apparently does not injure the larger seeds.

The objectives of seed processing are:

1. To produce seed of uniform size which may be planted in a precise manner.
2. To remove seed of low quality, thus giving a commercial seed of the highest possible germination.
3. To produce commercial seed at an economical cost.

Experience in seed processing during the past five years has led to the development of a processing system described as follows:

1. Unprocessed seed is divided into two sizes - large (over $9/64$ ") and small.
2. Large seed is put through a rice huller which polishes rather severely. Small seed goes through another rice huller set for a light polishing.
3. All seed passes over a large clipper mill for sizing into five separate sizes of seed. Variation within each size is $1/64$ ". For example $8\frac{1}{2}/64$ to $9\frac{1}{2}/64$ inch.
4. Largest and smallest sizes are bagged off and held since only three sizes may be run simultaneously.

5. Seed passes through Carter Indent cylinders to remove odd shaped seed and foreign material, such as grain.
6. Seed goes through a small 2-screen clipper mill equipped with slotted screens. Thick seed (mostly multigerm) and thin seed is discarded.
7. Running one size at a time, seed is passed over an Oliver gravity table to remove the light weight seed which is generally low in germination.
8. Seed goes to holding bin, then through slurry type seed treater and is bagged and sewn.
9. Samples are tested for germination at seed processing plant. Duplicate samples are sent to the Michigan State Seed Laboratory at Lansing for germination tests.
10. Spot checks to determine cell fill in planter plates are made periodically.

The system now in use has been developed by a trial and error method and improvements in the system have been made each year. The eventual goal is to have seed of such high quality that every seed will produce a good healthy plant under reasonable field conditions.