

# SEMIS SHORT COURSE

## SEED QUALITY ASSURANCE

### Fast Green Test

The fast green test is a quick test used to detect pericarp (seed coat) damage in seed corn and sorghum seeds. Fast green used in low concentrations is non toxic to embryos and small seedlings. Briefly exposing seeds to fast green solution and then rinsing off excess solution results in the damage to the surface of seeds becoming apparent. Damage is classified as light (damage to base of seed or small areas away from the embryo), medium (damage extending along either side of the embryo) or severe (damage to seed over the embryo). Stained seeds can be germinated and the normal and abnormal seedlings examined to observe the nature of the damage. Mechanical damage occurs during harvesting, shelling, conditioning and handling of the seed. Weather also can cause seed coat damage such as early frost. The test is especially useful in setting equipment in seed conditioning facilities so as to maximize output while minimizing damage from machinery.

#### Requirements

1. 1% Fast green solution
2. Maize seeds
3. Tap water
4. Absorbent paper towels
5. Magnifying glass
6. 250 Erlenmeyer flasks

#### Testing Procedures

- Prepare a 0.1% fast green solution by adding 1.0 gram of fast green to 1000 ml of water (one quart) or mix 0.1 gram of fast green in 100 ml of water (about ¼ pint).
- Place two replicates of 100 randomly selected seeds into 250 ml beakers or similar-sized containers.
- Add enough fast green solution to submerge seeds and swirl occasionally for 15 to 30 second period. Use the 15 second staining period when severe damage is known.
- Pour off fast green solution and rinse seeds under tap water (the solution can be reused).
- Spread each 100 seeds out on absorbent towels and allow air dry for ½ hour to one hour.

**Note: fast greens will stain most items it comes in contact with such as clothes, hands and counter tops.**

#### Observations

Observe the green-stained seeds for the following damage categories

##### ➤ Light

- Damage is not apparent and confined to small areas near the point of attachment to the cob, near or at the crown (top) of seed, and away from the embryonic axis.

- Seeds with “bees wings” tip or base of seed will show heavy dye staining. These seeds usually produce normal seedlings.

➤ **Medium**

- Damage is more severe and occurs anywhere on the seed except in the embryonic axis area.
- Seeds with insect damage, **not** associated with the embryonic axis are also included in this classification.
- Seeds in this category usually leach out when planted and more susceptible to attack by soil microorganisms if planted under stressful soil conditions.

➤ **Severe**

- Damage is directly on or associated with the embryonic axis.
- Seeds with severe pericarp damage near the funiculus are also included. Large areas of missing or extensively damaged pericarp are considered severe damage.
- Seeds with damage to the embryonic axis commonly show abnormal growth of the warm test.
- Seeds with severe pericarp damage usually perform poorly under stressful planting conditions.
- Damage not associated with the embryonic axis. Large areas of missing or extensively damaged pericarp are considered severe damage.

### **Recording**

Record the number of seeds with light, medium and severe damage