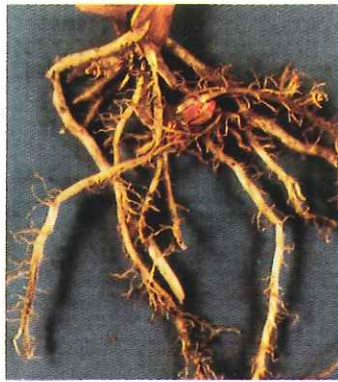


HERBICIDE INJURY — MERISTEMATIC INHIBITORS II



1. Corn Stunting and Interveinal Chlorosis of Leaves



2. Bottle-Brush Corn Roots



3. Golden Beans



4. Leaves of Golden Beans



5. Red Veins



6. Slow Plant Death



7. Chlorosis/Necrosis of Corn Leaves



8. Gradual Chlorosis/Necrosis of Soybean Leaves



9. Leaf Chlorosis, Necrosis, and Grass Plant Death



10. Dead Grass Meristem

HERBICIDE INJURY — MERISTEMATIC INHIBITORS II

SHOOT AND ROOT INHIBITORS

IMIDAZOLINONES and SULFONYLUREAS. Both these herbicide families inhibit plant growth by preventing the synthesis of certain amino acids. These herbicides are systemic, having both foliar and soil activity, and are capable of stopping root and shoot growth, depending on the site of herbicide uptake. The imidazolinone herbicides include imazaquin (Scepter), imazethapyr (Pursuit), and several premixes containing imazaquin or imazethapyr. The sulfonylurea herbicides include chlorimuron (Classic and a component of Preview, Canopy, Gemini, and Lorox Plus), and DPX-M6316 (Harmony and Pinnacle).

1. **Corn Stunting and Interveinal Chlorosis of Leaves.** Imazaquin, imazethapyr, or chlorimuron can injure corn through misapplication or through carryover of herbicide residues. Corn may appear stunted with interveinal chlorosis and/or purpling of the new leaves first. Risk of carryover injury from chlorimuron is much greater on soils with a pH above 6.8.

2. **Bottle-Brush Corn Roots.** Imidazolinones and sulfonylureas may inhibit root development of corn. With more severe injury, lateral roots are pruned. Short, proliferated roots may cause a "bottle brush" like appearance.

3. **Golden Beans.** Although soybean injury from imazaquin and chlorimuron applications is not common, it occurs more frequently on coarser-textured, lower organic matter soils. Soybean leaves may appear chlorotic and/or crinkled. The herbicide injury symptoms may appear similar to or be associated with those caused by potassium deficiency and/or soybean cyst nematodes.

4. **Leaves of Golden Beans.** An imidazolinone or sulfonylurea may cause soybean leaf margins to appear chlorotic to necrotic. Leaf yellowing may appear anywhere on the soybean plant (both the upper and lower portions of the plant).

5. **Red Veins.** The sulfonylurea herbicides can cause leaf veins to appear red or purplish. This is more frequently seen with susceptible weeds or less tolerant crops.

6. **Slow Plant Death.** Postemergence applications of the imidazolinones and sulfonylureas kill weeds slowly. Al-

though plant growth may slow or stop shortly after application, injury symptoms are often unnoticed for two to three weeks after application.

AMINO ACID. The amino acid type herbicides include glyphosate (Roundup, Rodeo, and Bronco), glufosinate (Ignite), and sulfosate (Touchdown). These translocated herbicides are nonselective, controlling both broadleaves and grasses. The amino acid herbicides are foliar applied materials, therefore injury symptoms first appear on the shoots of susceptible species. However, depending on the growth stage of the target species at application time (especially perennials), root inhibition may also occur.

7. **Chlorosis/Necrosis of Corn Leaves.** Glyphosate is the most common amino acid type herbicide. It is used for spot treatment of problem weeds in field crops and noncrop land. Glyphosate is very active on corn and is often applied with a ropewick. Crop injury occurs as a slow yellowing (chlorosis), followed by necrosis and plant death.

8. **Gradual Chlorosis/Necrosis of Soybean Leaves.** Glyphosate is often used for spot treatment of problem weeds in soybeans. However, if glyphosate comes in contact with soybean leaves, plant injury may occur. Newest soybean leaves will first appear chlorotic then may turn necrotic.

POSTEMERGENCE GRASS HERBICIDES. The postemergence grass herbicides include fenoxaprop (Option), fluazifop (Fusilade), haloxyfop (Verdict), sethoxydim (Poast), and quizalofop (Assure). These herbicides are systemic, controlling annual and some perennial grasses. They have little or no activity on broadleaf species. As with the amino acid herbicides, the postemergence grass herbicide injury symptoms first appear on the shoots of susceptible grass species. Root inhibition may also occur depending on plant growth stage and application timing.

9. **Leaf Chlorosis, Necrosis, and Grass Plant Death.** The newest leaf tissue of treated grasses slowly turns chlorotic and then necrotic. This is eventually followed by plant death.

10. **Dead Grass Meristem.** Young whorl leaves may be separated easily from the plant, indicating that the herbicide is acting on the plant meristem.