The Benefits of Soybean Seed Treatments

Soybean Seed and Seedling Diseases

Recommendations for the planting date of soybeans continues to be moved to earlier dates as compared to just a few years ago.[1] Because of earlier planting, the risk of environmental stresses increases, particularly when planting in heavier soils. In conjunction with earlier planting, reduced seeding rates (140,000 seeds/acre) are also now the norm.[2] With earlier planting dates and lower seeding rates, protecting soybean seeds and seedlings from loss is even more important for maximizing yield potential.

While germination and emergence are rapid at temperatures above 77° F, seeds can also germinate at lower temperatures. Cool (less than 60° F) and moist soil conditions can slow germination and establishment of soybean seeds, making them more susceptible to soil-borne seed and seedling pathogens such as Pythium, early-season Phytophthora, and Fusarium.[6] Warm, moist soil environments favor the pathogen Rhizoctonia. These pathogens can invade plant roots causing tissue decay, pre-emergence damping-off, and early post-emergence seedling death.

Figure 1. Pythium damping-off.

Figure 2. Phytophthora-infected plants.

Figure 3. Rhizoctonia infection on roots.

Pythium species can infect seeds before germination or shortly thereafter. Infected seeds and seedlings may become soft and rotten and may die. Phytophthora species also cause a wet, soft rot of the seed or seedling tissue. While Fusarium species can cause disease, they are often found in association with other soil-borne pathogens. Symptoms of Rhizoctonia solani infection appear on seedlings as dry, dark reddish-brown lesions just above the soil surface.

In the central Corn Belt, bean leaf beetle feeding on soybean seedlings can also reduce plant stands and plant vigor.[3] Additionally, overwintering adults can harbor and vector Bean pod mottle virus, a concern for food-grade soybeans.[4]

- *Slow germination and establishment of soybean seeds in cool, wet soils can make them more susceptible to soil-borne seed and seedling pathogens.*
- *Early-season insect pests may also damage soybean seeds and seedlings.*
- *Soybean seed treatment products can help to reduce disease infections and protect seeds from insects, which can result in more uniform plant stands, less incidence of replant situations, better yield potential, and ultimately increased return on investment.*

Acceleron® Seed Applied Solutions Offerings for Soybean

Seed treatments can help to minimize the effects of unfavorable early-season planting conditions. Acceleron Seed Applied Solutions offerings for soybean contain multiple modes of action to provide broad-spectrum control of diseases and insects and promote improved plant health through more rapid and increased emergence of seedlings under suboptimal soil conditions. Acceleron Seed Applied Solutions offerings for soybean can protect soybean seeds and seedlings from certain diseases and insects. Protecting soybean against attack by soybean aphids and bean leaf beetles is a good tactic to prevent the viral diseases soybean mosaic virus and bean pod mottle virus that can be transmitted by these pests. Seed treatments provide the greatest benefit in early planting situations, reduced tillage, poorly drained or high clay content soils in fields with tight crop rotations, or in fields with a history of disease. Four tiers of seed treatment offerings are available:

Acceleron® Seed Applied Solutions BASIC for soybean contains an exclusive fungicide combination featuring prothioconazole, fluoxastrobin, and metalaxyl, which provides excellent control of Rhizoctonia, Pythium, Fusarium, and early-season Phytophthora.

Acceleron® Seed Applied Solutions STANDARD for soybeans contains the same fungicide combination in BASIC for protection from early-season diseases plus the industry's highest rate of insecticide, imidacloprid, for enhanced protection from early-season soybean aphids and bean leaf beetle.

Figure 4. Bean leaf beetle adult.

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NemaStrike™ Technology by Acceleron® Seed Applied Solutions for soybeans provides broad-spectrum control of plant-parasitic nematodes. NemaStrike™ Technology provides control of soybean cyst nematodes (SCN) and other plant-parasitic nematodes for up to 75 days after planting. Nematodes are an underestimated threat that cannot be seen by the naked eye, which can reduce soybean yields by 10%.[5] Nematodes pierce and infect roots, robbing them of nutrients and moisture, and making plants more susceptible to secondary issues like bacterial and fungal infections.[5] They utilize a wide range of host crops, including weeds, so an effective weed management program should also be established to assist in managing nematodes.

NemaStrike Technology strikes where nematodes attack, in the root zone, delivering broad-spectrum control for up to 75 days after planting.

Figure 5. Second stage juvenile soybean cyst nematode inside of the root.

Acceleron® Seed Applied Solutions offerings for soybean have been selected to help maximize the performance of Roundup Ready 2 Yield® soybean and Roundup Ready 2 Xtend® soybean but can be used with other soybean products to help protect soybean seeds and seedlings from disease and insect damage

// Management Options for Sudden Death Syndrome

Sudden death syndrome (SDS) can significantly reduce soybean yield and cannot be controlled with foliar applications of fungicide.[6] Acceleron® Seed Applied Solutions offerings for soybeans can be paired with ILeVO® Seed Treatment to help provide additional protection from SDS (Figure 6).

Figure 6. Sudden Death Syndrome (SDS).

Sources

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