

T H E F U R R O W

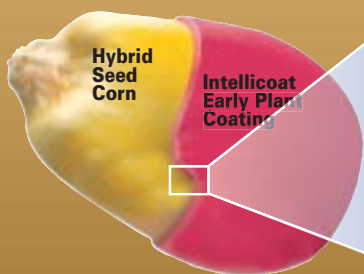
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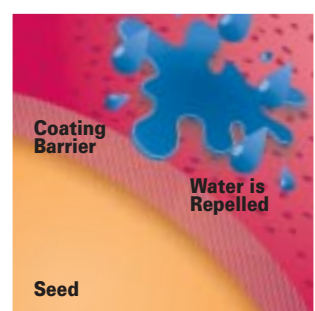
By Dean Houghton

Smart seed coatings

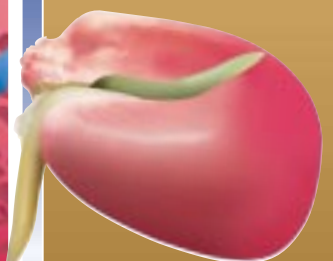
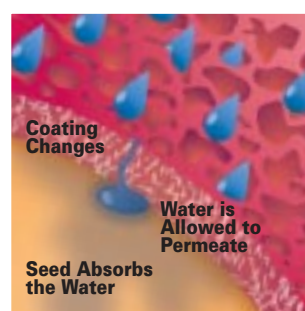
New seed treatments and coatings boost production with a blanket of protection



Below 55° F



Above 55° F



Graphic courtesy of LANDEC AG

Everyone agrees that the real value of a seed is the genetic material that it hides inside. But there's a reason these days to look at what's on the outside of a seed as well.

Scientists have developed a number of new coating compounds that protect seeds from a variety of hazards, from pests to cold soil temperatures. A new generation of seed-coating machines allows these compounds to be layered on a seed gently and accurately. As a result, more and more growers are opening seed bags containing a rainbow of colored coatings that fit smartly into today's crop production systems.

Early bird. Marty Hutcheson won't be waiting for oak leaves to reach the size of a squirrel's ear before he plants corn in 2004. In fact, those squirrels will still be awaiting the official arrival of spring. "We're planning on getting the first corn in the ground around March 1," says this East Prairie, Mo., corn grower.

His farm fields are near the Mississippi River in the state's Boot-

heel region, where the first corn seed wouldn't typically be planted until March 25. Hutcheson can get away with extra early planting because he uses a specially coated seed on those acres. He has been testing a product called Intellicoat, an intelligent-polymer coating, applied to hybrids from Fielder's Choice Direct. Intellicoat was launched on a commercial scale to U.S. farmers for the 2003 growing season.

Quick change. The coating is derived from natural fatty acids from corn and soybean oils, and is environmentally friendly. The coating stays hard and crystalline, like a shell, when seeds are placed in cold soil. No water is allowed to penetrate this hard shell, so the seed cannot germinate.

When the soil reaches a temperature of about 55 degrees, however, a temperature "switch" is flipped on and the coating suddenly changes to an amorphous state, which allows water to penetrate so the seed can begin to germinate. The process is reversible and repeatable as soils fluctuate above and below the point at which the temperature switch is set. The coating can regulate the seed's water uptake until the seed has absorbed enough water to germinate.

The result: corn that is planted early waits until conditions are right before it emerges, allowing a full and uniform stand. "We planted a population of 33,000 in 2003, and got a 32,000 stand at harvest," Hutcheson says. "The coated seed expands the planting window because we can get some of our acres in early. It also comes out of the field with less moisture at harvest."

A similar intelligent polymer called Pollinator Plus is used to coat male inbred seeds used in the production of hybrid seed corn. Delayed germination of these seeds widens the pollination window. The coating was used on 80,000 acres of seedcorn production in the U.S. during the 2003 growing season.

Multi-protection. New for canola growers is a seed coating called Prosper. This seed coating provides multiple layers of protection including a new generation insecticide (clothianidin) along with three fungicides: Vitavax, Thiram, and metalaxyl. The

coating allows protection against both disease and insects. Prosper 200 provides control of flea beetles from crop emergence through the second-leaf stage. Prosper 400, with a higher level of the systemic insecticide, provides protection from flea beetles through the fourthleaf stage.

Diseases controlled by these products include seed-borne blackleg, seed-borne *Alternaria*, seed rots, and seedling blight. The fungicides also provide protection against early season root rot caused by pathogens such as *Rhizoctonia* and *Pythium*.

Tech team. Improved insecticidal seed coatings have helped free farmers from the labor (and exposure) associated with applying a separate insecticide at planting time. Now, seed coatings may play an important role teamed up with technology traits to provide a full pest-protection package for corn.

Brad Biddick, president and general manager of Trelay Seed Co. in Livingston, Wis., says his company purchased a computerized, continuous-batch seed coating machine a couple of years ago specifically with this marriage in mind.

"We saw that the biotech rootworm hybrids were going to require an insecticide application to control secondary pests," Biddick explains. "Seed treatment seems to be an ideal fit." The biotech hybrids also require an adjacent refuge of susceptible corn, so those acres need additional protection.

For example, Biddick points out that a new seed-applied insecticide called Poncho 250 could be used with biotech rootworm hybrids to protect against secondary pests such as wireworms and white grub. On refuge acres, Poncho 1250 provides a higher rate of insecticide that protects against those pests as well as rootworm control comparable to conventional soil-applied insecticides.

Using today's technology to layer seed coatings into cost effective combinations is exciting, Biddick says. "The long term possibilities are endless."



Above: Two rates of insecticide protect corn.

Front top: Insecticide coatings team with fungicide to protect canola.

Front bottom: Polymer coat repels moisture when soil is cold, but allows kernel to germinate when soil is warm.