

"Damping off" in soybeans

Seedling diseases reduce soybean stands early in the season, especially under wet conditions. Commonly referred to as "damping-off," these diseases often place soybean growers in the agonizing position of making costly replant decisions.

Pythium and Phytophthora are probably the most devastating and widespread disease organisms that cause damping-off in soybeans. Rhizoctonia and Fusarium root rots also cause problems.

All of these diseases are caused by soil-borne fungi that persist in the soil indefinitely. Although more commonly associated with heavy soils and poor drainage, these diseases can occur wherever soils remain water-saturated for several days.

Pythium is favored by cool conditions and can kill soybean plants any time from planting to mid-season. Symptoms vary depending on the specific species of the fungus causing the infection. Seeds which become infected often rot and fail to germinate. The disease causes seedling cotyledon lesions, roots to rot and blocks main stem development. There are no resistant varieties to this disease.

Unlike Pythium, Phytophthora is favored by warm temperatures and can kill soybean plants at any state of development. Symptoms of both diseases are similar. Phytophthora spreads through free soil water and is most severe in saturated soils.

Several different races of Phytophthora have been identified. Fortunately, varieties are available that have race-specific resistance and field tolerance.

Rhizoctonia produces reddish-brown lesions on the roots and lower stem below the soil line. The lesions may develop into a sunken, reddish-brown canker. Infected roots and stems usually remain firm and dry.

Fusarium causes dark brown to black lesions on the roots and lower stem. These symptoms are often confused with those of Rhizoctonia. When the infection is severe, seedling emergence is poor. Seedlings that do emerge are often stunted and weak. The root system may be completely destroyed.

When weather conditions favor the development of these diseases, a grower can do little other than wait to see if replanting will be required. However, growers can reduce the risk of replanting.

Planting high quality seed into warm, well-drained soil is the first step in avoiding costly replant situations. Using bin-run seed that has not been adequately tested is risky.

Fungicide seed treatments offer temporary protection from diseases during the critical seedling state. These seed treatments are most effective in years when weather conditions favor disease development, when used in combination with resistant varieties, or when planting early in cold soil. However, fungicides do not make susceptible varieties resistant to disease.

Variety selection is also important. Resistant or tolerant varieties may yield slightly less than susceptible ones in the absence of disease but are probably a better choice for fields where the risk of disease is high.

USDA researcher

develops test to detect pesticide residues

WASHINGTON — Minute pesticide residues can be rapidly detected in the soil by a simple assay patterned after a human or animal's immune system, a U.S. Department of Agriculture researcher said.

The test can detect residues even though the pesticides have undergone chemical changes that obscure their identity.

"We are using a new, simplified test to identify pesticides that are altered by bacteria, light and other agents in the soil," said USDA's Bhon D. Dunbar, who developed the assay. "We expect the test will increase the speed and accuracy of discovering soil residues that could be an environmental concern."

Dunbar, a research agronomist for USDA's Agricultural Research Service, said the technique for pesticide assays could be likened to medical tests that rely on antibodies to signal the presence of a foreign object in humans and animals. A defense is built up as the body reacts to the foreign object and produces antibodies to attack it.

In the assay a pesticide is the foreign object, causing antibodies to form in rabbit serum, said Dunbar at the agency's Central Great Plains Research Station, Akron, Colo.

Warren C. Shaw, the USDA agency's research leader for agricultural chemicals technology, said the assay "could have potentially far-reaching implications for government and private organizations that monitor pesticides. Agencies and laboratories will be able to distinguish and measure closely-

related pesticides. That means monitoring can be rapid and extremely precise."

Dunbar said the assay was first developed to detect residues at parts per trillion of atrazine, a herbicide applied to the soil to kill weeds. He said he expects private industry will develop simple test kits based on the assay.

"We were able to run 100 atrazine assays in eight hours, which is much faster than using current analytical methods," he said. If the new technique were automated, he said, at least two thousand assays a day could be done.

"We are adapting the assay to detect a dozen other widely used herbicides and insecticides at parts per trillion," he said. Current testing is done mainly at parts per billion or million.

Dunbar obtained the antibodies by first attaching atrazine molecules to protein molecules. He used the protein molecules because they are large enough for a rabbit's immune system to recognize as a foreign object, while atrazine molecules alone are too small. He then injected the paired molecules into rabbits. The rabbits are not harmed by the process.

"We closely monitored the rabbits," he said. "Their immune systems recognized the molecules as a foreign substance and started producing antibodies in the blood."

He said tests showed the blood carried antibodies specifically targeted against atrazine. "We have used the antibodies successfully for precise identification of how much atrazine is present in a pesticide sample," he said.



MILK MASTER

Still The One!!



29H3815 Giltex-B MILKMASTER - Twin VG-87

USDA 1-85 RPT 98%
PD +114\$ +846M +.03% +36F +102 CV \$ +19 PRO.1B
HFA 1-85 RPT 96%
-.08 PDT +472 TPI

A MILKMASTER DAUGHTER



CAR JAY VER ELVIRA

MILKMASTER has stood the test of time. At 98% repeatability this Glendell X King Pin bull has proved he can sire lots of milk from very shapely udders. MILKMASTER is very reasonably priced at \$15 per unit.



A BETTER BEGINNING
AMERICAN BREEDERS SERVICE
Division of WR Grace & Co.

CONTACT YOUR LOCAL
ABS REPRESENTATIVE
FOR MORE INFORMATION

IN PENNSYLVANIA

Allenwood, PA, George Showers
Bangor, PA, Eric Heinsohn
Carlisle, PA, Wayne Piper
Clifford, PA, William Horton
Coburn, PA, Wendel Musser
Columbia, PA, James Charles
Dornsife, PA, Steve Kieffer
East Earl, PA, Darwin Yoder
Holtwood, PA, Paul Herr
Lebanon, PA, Paul Martin
Leola, PA, Lynn Gardner
Linden, PA, Larry Bower
Mansfield, PA, Harold Robson, Jr
Mifflinburg, PA, John M. Beachy
Mifflintown, PA, Mervin Zandt
Millville, PA, Wilmer Hendricks
Prospectville, PA, William Tyner
Reading, PA, Andrew Cooper
Reedsville, PA, Chester G. Selfridge
Rothsville, PA, Keith Campbell
Stewartstown, PA, Tom Engle
Thomasville, PA, Ira Boyer
Ulysses, PA, Bonnie Barker
West Grove, PA, Brian Geesaman

717-538-1812
215-588-4704
717-532-4401
717-222-3224
814-349-5310
717-898-8694
717-758-1714
717-733-0966
717-284-4592
717-949-2381
717-656-6700
717-323-9710
717-662-7731
717-966-1344
717-436-6386
717-458-5949
215-542-8479
215-378-1212
717-667-3181
717-733-1226
717-993-6836
717-225-3758
814-848-7674
215-869-9187

IN NEW YORK

Johnson, NY, Peter Vander Schaaf
Pen Yan, NY, Calvin Crosby

914-355-1692
315-526-6144

IN DELAWARE

Kirkwood, PA, Dan Rush

717-529-6548

IN NEW JERSEY

Baptistown, NJ, Cindy Gordeuk
Elmer, NJ, Cyndy Hetzell
Lambertville, NJ, Robert Fulper
Port Murray, NJ, Robert Kayhart

201-996-2088
609-455-8187
717-658-7316
201-689-2605

IN MARYLAND

Detour, MD, Jim Carmack
Mt. Airy, MD, Allan Pickett

301-775-7221
301-663-4191