

Mysterious Alfalfa Menace



PHOTO: GLENN SHEWMAKER

Clover root curculio sneak-attacks Western fields

by Neil Tietz

An insidious insect is stealing yield and stand life from irrigated alfalfa fields in Idaho and other Western states, and many growers are unaware.

That's according to Idaho Extension specialists Glenn Shewmaker and Mir Seyedbagheri, who've been dealing with clover root curculio for several years and are seeing more signs of the pest's presence. While the damage is more severe some years than others, and not every field gets hit, they've diagnosed it in multiple fields over a wide area.

"We're losing more stands than we did in the past, and clover root curculio is everywhere I look," says Shewmaker, University of Idaho Extension forage agronomist. "I'm convinced it's one of our biggest economic problems."

"It is a major problem," agrees Seyedbagheri, Elmore County Extension educator. "I find this thing in probably six out of 10 fields, maybe seven."

He's seen varying amounts of clover root curculio damage in irrigated fields throughout southern Idaho and in plant samples from Montana,

Nevada and Utah.

The insect is "mysterious" because it usually goes undetected, even when inflicting serious damage, says Seyedbagheri. The damage is usually blamed on nutrient deficiencies or on diseases that are actually secondary infections resulting from curculio root feeding.

Clover root curculio adults, which look a lot like alfalfa weevils, feed on alfalfa leaves, chewing half-circle holes along the leaf margins. But their larva do most of the damage. Shortly after hatching on the soil surface in early spring, the short, white grubs move down and begin feeding on alfalfa roots. They start on small roots and root nodules, moving to bigger roots and eventually the tap root as they grow.

The flow of water and nutrients to the topgrowth is hampered, and disease organisms enter the roots through the wounds.

The above-ground symptoms include slow spring green-up and weak, yellow patches and individual plants scattered randomly across a field. Older stands tend to show the most damage, probably because the curculio population builds over time,

says Shewmaker.

The problem is compounded when the insect's effects are combined with another stress factor, such as a drought that lingers into fall after the irrigation season ends, he says.

No insecticides are registered for clover root curculio control, so crop rotation is the best option when the pest is diagnosed. Shewmaker says to count stems in spring, then make a decision.

"With the price of hay now, as long as you have the stem density that you need, I would go ahead and take this year's crop and then rotate out. Depending on your market, you might want to interseed a grass or cereal to make up for lost production."

Diagnosing the insect's presence requires digging up alfalfa plants and examining roots. Look for pruned lateral roots and scars on taproots. Clover root curculio damage is "fairly unique," says Shewmaker. "It's different than what a cutworm or most other larva would do."

To make small scars on taproots more visible, wash roots before examining them, Seyedbagheri advises.

When he began getting calls about the problem several years ago,



PHOTO: GLENN SHEWMAKER

Clover root curculio symptoms include pruned lateral roots and a scarred taproot. Infested fields may be slow to break dormancy in spring, as shown at left. Inset photos show the pest in its adult and larval stages.

he searched the Internet to see if researchers in other states had done anything he could follow up on.

"I couldn't find anything, and that was shocking to me," Seyedbagheri reports.

In the absence of chemical controls or resistant varieties, he began to evaluate cultural practices that can help infected plants overcome root injury and stay productive. First, he says to avoid overwatering. Saturated soils become anaerobic, a condition that favors disease invasions.

"Nutrition, especially phosphorus and potassium, is very important," Seyedbagheri adds. "Potassium is important in assisting the uptake of other nutrients. Also watch the zinc and iron."

Newer alfalfa varieties have strong root systems, which can help overcome insect damage, too. But he hopes alfalfa breeders will eventually develop resistant varieties.

"If somebody would do a very comprehensive survey, they would see there is a need for some resistance," he says.

Also needed, says Shewmaker, is research that takes a "new look" at clover root curculio's prevalence and economic impact. In the past, it wasn't considered economical to spray the pest, which is why no insecticides are registered.

"But something has changed," he says. "We need to identify the amount of yield and stand loss and we need to see if the biology has changed. Maybe it's economic now to get a pesticide registered; I kind of think it is." ♦

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