

Crops Experts Advise On Plant Planning

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LANCASTER (Lancaster Co.) — The common element in talks given by crop experts Tuesday during the 33rd Lancaster County Crops and Soils Day was "management."

Sponsored by the Lancaster County Extension Service and supported by Lancaster Farm Credit Association, Hamilton Bank, and other agribusinesses, about 200 people attended the event held at the Lancaster Farm and Home Center, despite snowfall predictions of up to several inches.

Speakers included Penn State University crop experts Dr. Dennis Calvin, Dr. Greg Roth, and Dr. Douglas Beegle, and Lancaster County Extension Agent Robert Anderson.

Calvin discussed management for corn rootworms and considerations for early season pest management, focussing on the stage of development from seed through sprouting, to the fourth-leave stage of development.

According to Calvin, corn rootworms can be managed using testing and a system of checking for levels of the pest before applying a pesticide. Rotational strategies can also keep pest population levels below that which would impact financial returns.

In addition to rootworm, Calvin also talked about spring pests and said that it needs to be understood that insect pests are not present in a field without reason; that there are characteristics about fields which serve to attract pests.

He said that in order to understand management for pests, an understanding of the pest and its behavior and nature is essential.

With knowing what attracts pests, what they prefer to feed on, and the basics of the life cycles, a cropman can better "read" his fields for potential problems and better be aware of when he has a problem.

And, it should be understood that during the early phase in development — emergence to 4th leave stage — the plant is primarily depending on energy stored within the seed. Any damage to emerging roots or stalk can be fatal to the plant, because it can't make up the difference in energy.

Damage in the pre-4th leave stage can also show up in reduced yields, in the long run.

When seeds are planted they absorb water and begin respiration, producing carbon dioxide.

The carbon dioxide is also an attractant to insects such as wireworms, white grubs and seedcorn maggots, he said.

This is important to understand because a decision can be made with respect to pests and whether to use a soil insecticide, or a seed treatment, depending on which pest is in a field, and whether it may be there in a level high enough to damage yields.

Calvin presented several scenarios in which a producer could take justifiable preventative action.

For example, in the case of the seedcorn maggot, Calvin said the adults are first drawn to a field because of decomposing vegetative matter, which produces volatile organic chemicals that attract them.

Such obvious fields are those in which no-till planting and surface residue is significant, or in which a lot of manure has been applied.

The eggs are hatched and the larvae then migrate toward the carbon dioxide in the seedling.

The cure would be to use treated seed, Calvin said.

Another example of the benefit of knowing about insects pest behavior involves wireworm, which can decimate corn.

Calvin said that wireworm is more of a feeder of grass roots, particularly blue grass. In a field that has been converted from grass within the past five years, wireworms can be a problem, because unlike most of the corn crop pests, wireworms have a 2- to 3-year life cycle.

Thus they can remain a pest to crops planted in the soil for years after conversion from grass.

Calvin said that a seed treatment can help, as well as can a soil treatment, but that they can be difficult to control because they will move through the substrate with the varying levels of moisture and can actually escape coming into contact with a pesticide until after the chemical breaks down and is no longer effective.

The black cutworm is probably the second most common problem in Pennsylvania, according to Calvin. He said normally by the time that a problem is visually noticed, it is too late to prevent serious damage.

However, control of the black cutworm can be done through management of winter annual weeds, such as common chickweed.

What frequently happens is that the migratory moth of the black cutworm flies north and lays eggs on weeds such as common chickweed, he said.

In the spring, a chemical burn-down removes the cutworm infested chickweed, but doesn't injure the cutworm larvae. They migrate to the corn plant.

Other weeds which attract cutworm are Shepherd's Purse and varieties of the wild mustard.

A stand of alfalfa can host them also and damage can occur to corn planted against alfalfa, he said.

According to Calvin, if the farmer can get into the field to burn down the chickweed from 10 to 14 days ahead of planting, then the cutworm larvae die from lack of nourishment, before they can opportunize the corn.

Calvin also reviewed the sod webworm, slug, common stalk borer, billbug (Which depends on yellow nutsedge, a plant associated more with wetlands, for its lifecycle.), and the army worm, even though it is usually associated with crop damage during a later stage in development, such as mid-to late-June.

The army worm, for example, lays its eggs in rye, and then when the rye is removed, the larvae migrate to the corn.

In other business, Dr. Greg Roth discussed producing quality silage and managing corn for profit.

Roth said that 70 to 75 percent of the dairymen surveyed were found to be growing corn silage because of its consistency as a forage, the mechanical aspects of it, reduced labor, and its volume of harvest, which is important especially in areas where season length limits haymaking.

In attempting to produce quality corn silage, he said most producers take either a defensive or an offensive approach.

A defensive approach to making silage is to select a limited amount of acreage for corn, and depending on the result of the season, decide at harvest time how much is going to go toward silage.

Roth said that for some areas of

Pennsylvania, especially those in which soil and weather conditions present a more unpredictable crop, such a strategy is good, because of its flexibility.

A defensive strategy to silage production would incorporate a similar management as for grain, modest plant population levels, medium length maturity, soil fertility based on grains, in addition to silage fields being selected at harvest.

However, in other areas of the state, especially for large dairy operations, an offensive approach is preferable because it can reduce risk of coming up short with forage.

An offensive strategy would be characterized as management being based on the crop's end use, higher plant populations, a longer maturity, fertility based on the crop's use as silage (Potash is lost from soil more rapidly with silage than with grain corn because of the removal of the whole plant, rather than a portion of it.), and with silage fields being selected before planting.

The first step in planning the crop is to determine how much is needed. Roth said that for every pound of silage fed, an additional 18 percent is needed because of expected losses. Other crops can require planting as much as 50 percent more than anticipated need, he said.

The expectation is that a quality silage should result more frequently from a program directed at producing silage, than in a program that treats silage as an option.

According to Roth, offensive-style planting rates would be from 25,000 to 30,000 plants per acre (ppa), at least 2,000 to 4,000 more ppa than with grain plantings.

He said some people are now looking at planting even higher rates with 15-inch rows and harvesting it with modified equipment so that row direction in harvest is not a strong factor — the harvester can operate equally well in any direction.

And while he said research into that technique looks promising, substantiating research is still being performed and a lot of questions still need to be answered.

Soil tests on silage ground are

recommended, because of the use of potash, and also to ensure that the resulting crop has enough protein content from adequate nitrogen levels.

Hybrid selection is also a factor in managing for quality silage.

Roth said that selecting for maturity is very important, and that longer maturities help — there is a correlation between length of maturity and yield.

However, he said that potential harvesting problems (such as whether a producer can normally get into a field at certain time of the year), livestock feeding requirements, silo filling time, and the adaptability of the hybrid should all be considered.

He talked about his work growing tropical varieties of corn in Pennsylvania, as an example of adaptation. He said while the 12- to 13-foot high stalks initially appear as though they should produce more silage, the quality isn't as high because it doesn't resist pests as well and he wasn't able to get grain development to levels that justified using the plant.

He said he also did work with "open pollinated" seed and his results showed that this resulted in even poorer silage, because of variation within the field and in plants.

He said that yield data should be used whenever possible in selecting a hybrid. The differences in yield can be great, he said, and while other considerations are important, yield data is the best information.

Stress tolerance should be considered as well as the particular nature of the field and local environment in which a hybrid is being considered for planting.

He said yield is probably the most important factor, while stress tolerance is probably the second most important.

Energy content in silage has caused a lot of confusion in the past couple of years, according to Roth.

He said that field reports are showing some range in apparent effectiveness, though laboratory tests indicate nutrient values about equal.

Differences in lignin content, which is a nondigestible fiber in

the plant, is higher in some varieties and it also increases with age of plant. The lignin is used by the plant as a structural component and apparently is protecting some nutrients and energy in silage from the digestive action in the cow.

So while silage tests may be equal, the feed value may well be significantly different because of the lignin component.

Crimping is being tried, but no studies yet support the theory that crimping corn fodder before ensiling allows better digestibility of the end product.

Rolling silage prior to mixing in a totally mixed ration (TMR), in order to crack open reserves of nutrients is also apparently largely untried.

The differences in lignin content are considered to be significant enough that research is being directed at it, he said.

The most digestible corn silage comes from plants harvested early, while the milk line is still high in the seed. Roth said that though some people may have had trouble with seeping from too young silage, he said that a larger, courser cut should prevent some of that.

He said that seed companies are starting to do more work with hybrids selected for ensiling, but in the meantime, he said to select a hybrid for maturity, high yield, quality, digestibility and protein content.

Anti-quality factors include weed growth, late harvest and cloudy weather. Weed growth and late harvest are management issues.

Roth also talked briefly about "stay-green" corn varieties, but said that his research has shown negligible differences in moisture content at harvest between plants retaining its green and those showing the normal brown.

"But I still think something is there, from talking to farmers," he said.

Also important in making quality silage is to make sure to get a good pack and a good seal. He said to try to eliminate air, delays in filling and variability in the silo.

He said that after harvest, producers should be thinking about soil conditions and using cover crops.

Students Prepare Display For Builder's Show



A series of vocational school demonstrations will be part of the 1994 Builders Show February 26 to March 6 at the Farm Show Complex. FFA Chapters and 4-H Clubs will be participating, along with other vocational organizations. Two-hundred students will be helping with displays and demonstrations. The "Wonderful Wetlands" display shown above has been prepared for the show by the FFA Chapter at Dover High School. Presenting the display are from left, Brian Smyser, a senior, and Mike Boyer, Jon Bish, and Harry Border, all juniors.