

Soil Microbes Make Difference In Health Of Plant, Vegetable Grower Notes

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NEW HOLLAND (Lancaster Co.) — Vegetable producers should understand that the soil used for their crops is a living organism, according to an organic vegetable grower from Lancaster County.

And those soil microbes we take for granted "can make a very big difference in the health of your plants," said Harry Wimer, farm foreman for Paradise Organics in Paradise.

"When we keep our plants growing healthy, they have less pressure from insects and disease," said Wimer to more than 100 vegetable producers and agri-industry representatives last week during a session of the New Holland Vegetable Day at Yoder's Restaurant in New Holland.

At the Vegetable Day, moved from its previous location at Summit Valley Elementary School to the conference facilities at the restaurant, more than 240 growers and industry representatives attended. Some learned about how to become certified as organic vegetable growers, an industry that is growing exponentially and which provides premium income for quality produce.

Paradise Organics grows field and greenhouse vegetables and other crops on 4.5 acres. They market their organic products directly to natural health food stores and others.

Wimer explained that the organic vegetable farm maintains a variety of practices specific to generating a quality product.

For crop fertilizer, Paradise uses compost provided by a local farmer, spread on at the rate of 3.5 tons per acre. They also use a granular mix composed of bone meal, blood meal, and kelp (with a 5-2-0 label). In addition, a foliar feed made up of seaweed and liquid fish with a 4-1-1 label is used to maintain the health of the plants.

The foliar feed is one of the most effective feeds accepted by the Organic Crop Improvement Association (OCIA).

The compost is a mixture of cow manure, chicken manure, old hay, and end material. The microbial compost takes the raw natural material to a finished humus stage, Wimer noted.

The benefits of having a compost allow the plant to actively extract nutrients when they need it. The nitrogen is not in a water-soluble form.

It's important to maintain the proper nutrient mix so the plants have what they need when they need it.

Keeping the plants fed and watered properly goes a long way to allowing a consistent supply of healthy plants, Wimer noted.

"Water with an appropriate amount of water at all times," he said.

Fortunately the past growing season included a "relative lack of moisture," he said. Using irrigation during droughty conditions kept the disease pressure down.

Paradise Organics uses a drip irrigation system with timers. They use a flat system that pumps water to a garden hose and from there to a drip hose. The timer is on the header.

Tomatoes, when in full production, are watered two hours every day. The farm uses the Caruso tomato variety in the greenhouse and Paragon and Mountain Pride

outside, according to Chris Petersheim, owner of the farm who also spoke at the conference.

With the system, number one tomatoes were "way up," said Wimer. "We're very pleased with that." Equipment is kept to a minimum. The fertilizer is spread with a drop spreader and a rototiller is used. The fields are moldboard plowed "when we can get in," said Wimer.

Insect challenges varied, but included the leaf miner and spinach leaf miner. Organic spray materials were used. For control of caterpillars, Bt material was used. "We spray only when absolutely necessary and in areas necessary," said Wimer.

The farm regularly scouts to examine insect populations.

For weed control, the farm never uses herbicides of any kind. They use plastic mulch for tomatoes and melons. In between rows, Paradise Organics sows white clover, which is effective in keeping weeds down.

Wimer noted that direct sunlight burns up the soil, "and the more we keep the soil covered, the better off we'll be," Wimer said. "The sun will burn the organic material out of the soil, even in winter."

Weeds are removed by hand or hoe. The important thing to remember, according to Wimer, is not to let the weeds go to seed.

It's important to start weeding when weeds are just sprouts, he said.

He is reminded of a saying, "one year of seed is seven years of weed," he said.

Cultivation is done between plastic to prevent erosion.

The farm uses two greenhouses measuring 30-feet by 144-feet. They also maintain a small greenhouse for starter plants.

They plant 6-7 varieties of lettuce with each group and plant a lot of baby greens, including lettuce, kale, and collard.

"Be a good manager," said Wimer. "We have learned how to budget our time, take notes when we go around, and how to plant for next year." Paradise Organics also experiments with new varieties and new planting methods.

Chris Petersheim, owner of Paradise Organics, spoke to the vegetable growers. Petersheim, who worked for 19 years (some of them as seedling supervisor) at Witmer's Greenhouses in Lancaster, began Paradise Organics in 1980. The farm began as a small operation which gradually expanded to the 4.5-acre facility today.

A small, treated wood-framed, lean-to type of greenhouse was constructed in 1981. The farm began using the greenhouse, which faces due south, to grow transplants. In 1988 the two large greenhouses were constructed.

The business uses refrigerated vehicles for transporting products.

Petersheim reviewed the use of their seedling production, including the company's vacuum seeder. The medium is a mix of their own soil, including 1.5 parts peat, 1/2 part compost, and 1/2 part Pearlite, in addition to rock dust and organic fertilizer. They use a cement mixer.

Paradise uses a 30-gallon gas water heater which provides heat to the soil zone in the greenhouse. The soil is heated at the base. Some areas use an incubator system. The large greenhouses are heated by propane gas. Ventilation is by electric fan. "It's important to have



Soil microbes we take for granted "can make a very big difference in the health of your plants," said Harry Wimer, farm foreman for Paradise Organics in Paradise, left. And growers should beware of how insects migrate and reproduce and incorporate a scouting program into their management, according to Dr. Shelby Fleischer, Penn State, center. At right is Dr. Tim Elkner, Lancaster County horticulture agent, who spoke about powdery mildew-resistant pumpkin trials at the meeting.

good air circulation," he said.

For each transplant, it is important to raise a nice, sturdy product, one that will sell.

Beds are planted in order to harvest regularly. Every week a new planting group is harvested.

"Plan and plant to have a consistent amount coming at all times," said Petersheim.

A key to planning is keeping a log of the items to sell, the dates, and the amount that will be available. Paradise Organics uses such a detailed scheduled sheet for that purpose.

For pollination, the farm uses bees. They found hand-pollination to be too time-consuming. Bees are highly recommended, especially for tomatoes. Also, for control of insects, particularly aphids, they use a parasite bug control method.

The most profitable crops for Paradise are the "warm weather crops in the spring," he said.

Overall, working to keep the plants healthy goes a long way in keeping a consistent customer supply.

At the Vegetable Day, growers should beware of how insects migrate and reproduce and incorporate a scouting program into their management. According to Dr. Shelby Fleischer, Penn State, the female corn earworm can lay up to 1,000 eggs.

When spraying for control, it is important to understand the insect's propagation cycle. While controls work best on the adults, if applied too early or too late, the material can often do little to get rid of subsequent generations of pests.

Dr. Bill Lamont, Penn State, spoke about the ongoing efforts to create the Penn State Center for Plasticiculture. The center plans to be an information clearinghouse for all sorts of ag plastics, including greenhouses, films, high tunnels, unheated greenhouses, field mulches, drip irrigation tape, containerized transplant trays, plastic pots, silage bags, hay wraps, ag product packaging, and other materials.

The center can act as a "lightning rod," said Lamont, to develop new products, test film, come up with new formulations of colored mulches, new covers, and production systems for the vegetable grower.

Penn State wants to be on the "cutting edge" of the plasticulture movement, he said. As a result, the new Rockspring research center has recently installed 12 high tunnel frames and will install another 12 in the spring. They will look at tomatoes in the tunnels and examine a tomato nutrient program.

Also, the center wants to look at a variety of plastic color systems. They will also be looking at a moveable, rail-type tunnel system for cool to warm season crops.

The plasticulture center will look at "really intensive type of agriculture," he said. "It is all about intensive agriculture — how to farm less but produce more on the land." The systems are similar to how land in Japan and Israel is used to the maximum to produce crops.

Also, Lamont noted that in September 2000, the 15th International Plasticulture meeting is scheduled for the Hershey Convention Center in Hershey.

For growers, Lamont provided some research results about the use of plastics and bedding for maximum produce production.

"I personally like to use a crown bed," he said, "tapered from center to the edges by 1/4 inches. This allows the crop to sit up high and dry and keeps the weather away from the crop. Water moves away from the plant."

Here are some of Penn State's findings on the use of colored plastic mulch:

- The new IRT green plastics eliminate the weed problems that clear plastic provides. They allow heating but not weed-generating wavelengths of sunlight to pass through. The IRT green was good

- for cantaloupes (muskmelons). "Don't use white (plastic) for muskmelons," he said, because the color actually keeps the soil too cool.

- Polyon-brown material is almost as warm as the IRT green.

- Red mulch. Used by more growers on tomatoes. Some growers have seen a 15 percent increase in yield on average. Also reduced the incidence of early blight on tomatoes. Red mulch is also effective on egg plants — 13 tons to the acre average yield in some cases.

- Black mulch. This color can produce a tremendous amount of yield for onions. However, using black on melons produced the smallest fruit size.

- Silver mulch. Highest yield for peppers on silver mulch. However, peppers didn't do so well on blue or white mulch.

- Yellow mulch. Attracts insects. Yellow mulch decreased yield on eggplants. Eggplants had the largest yield on red mulch but the fruit size was the lowest on silver mulch.

Mulches will effect yields of potatoes (it becomes too hot under the plastic).

In all, it is important to match the type and color of mulch plastic to the crop being grown.

According to Leland Miller, Advanced Agronomics, Quarryville, the quality of the product starts before the harvest.

An agronomic consultant, Miller worked with the Nelson and Rose Rohrer farm and learned about a variety of fresh and cut flower growing strategies which he shared with those who attended the Vegetable Day.

Pa. Jersey Annual Meeting

TUNKHANNOCK (Wyoming Co.) — Pennsylvania Jersey Cattle Association annual meeting is scheduled April 9-10 here at the Shadowbrook Resort.

A directors meeting is scheduled April 9 in the afternoon. In the evening, an awards banquet and the Pennsylvania Jersey Queen Contest are scheduled. The queen contest is open to any girls between 15-19 years old. Those interested can contact Pat Rassau at (724) 353-9681 for more

information.

The Pennsylvania State Jersey Sale is scheduled April 10, with a site to be announced. The sale includes more than 50 head of high quality registered Jerseys and a small number of Pot O'Gold calves. The association is looking for high quality consignments. Contact Craig Sprout at (570) 965-2412 or Paul Moyer at (570) 324-2482, or any state director. The association is accepting consignments from other states.