



Tom Lewman attributes his success to beneficial bacteria.

BUX MONT HYDROPONICS

Putting biological control into practice

Not all bacteria are bad guys. KEVIN HATTORI reports that one commercially developed beneficial bacteria available in North America eliminates *Fusarium* and *Botrytis* in tomato and basil crops.

Since he's a mechanical engineer by training and practice, it begs the question: "How did Tom Lewman become a successful hydroponics grower?" Increasingly discontent with the high levels of chemical pesticides contained in the foods he consumed during business travel, Tom, together with his wife Nancy, planned a healthy solution. Their original intent was to have a small greenhouse in which to grow food for the family, though it soon became evident they were on to something much bigger:

From the outside, Bux Mont Hydroponics in Perkasio, Pennsylvania (located near the historic Valley Forge), doesn't look like a large operation, but looks can be deceiving. Consisting of a 6,000 square foot greenhouse, Bux Mont Hydroponics supplies tomatoes, basil, and arugula to seven stores out of a 20-store supermarket chain, with plans to supply all the stores in the chain with Bux Mont produce. Tom is currently considering other crops that include bell peppers, cilantro, dill and lettuce. Demand for Bux Mont fresh produce is so high that Tom is in the middle of building additional bays on his 11-acre property

"I have enough supermarkets around me in a 15-mile radius to keep me busy," said Tom. "Everything is local, delivered as fresh as it can be, and only handled by me."

Although much of the space in Tom's hoop houses is occupied by rows of tomato vines, visitors will notice sections devoted to other plants, including basil.

"There are so many hydroponic tomatoes coming in from places like Canada that prices here are being driven down," said Tom. "I knew I had to do something different in order to succeed, and that is why I decided to grow basil as a cash crop."

From cash drain to cash crop

When Tom first began growing basil, he had a serious problem with *Fusarium* wilt, which was spoiling about 40% of his entire basil crop per growing cycle. Practically speaking, he began with 2,000 plants and was losing approximately 800 plants per cycle to *Fusarium*. Tom recalls that he was ready to give up on the idea of growing basil as a crop.

"If this is how it is going to be, it just isn't worth it," he remembers telling Nancy. Then, as he was "surfing" the Internet one night, he happened across the website of Growth Products, who manufacture Companion®, a liquid microbial inoculant.

New levels of production and profitability

Tom had previously tried a water-soluble biological disease control with some success, but was less than enamored with the product once he discovered it "really fouled up his injectors" because of the high clay content. He was always checking his injectors, replacing injector heads, and performing what the manufacturer referred to as "decanting". This time-consuming, costly, and tiresome process was one that Tom said he could not afford to continue.

"Ease of use is extremely important to me. Obviously, it is critical to keep time and labour costs down," he said. "When I found a product that was already in a liquid form, I figured it was at least worth a shot."

Since Tom began using Companion, which contains the beneficial bacteria *Bacillus subtilis* GB03, he has had virtually no

disease problems. He uses it at a 4 oz. per gallon rate to let his seeds/plugs soak before he puts them into the growing trays. Once they are in trays, Tom uses about 5 oz. per week in the 150-gallon nutrient tank; he uses no other fungicides. In an amazing success story, Tom has tripled his basil production. In a crop of 6,000 plants, he will lose around four per cycle! To verify these results were attributed to Companion, Tom abruptly stopped applying the product for about five days, and the *Fusarium* returned.

Better Rooting and Growth

According to Tom, Companion's benefits go beyond disease suppression. He says it has also improved the development and overall health of his plants. To demonstrate this claim, Tom is quick to lift the top off one of his hydroponic trays to show visitors just how extensive the root development is. The sight is striking; there is a solid mass of intertwined, white roots all the way through the trays, something that Tom says did not happen prior to using Companion. Tom has discovered that healthier plants and the superior rooting provided by Companion translates into increased production and profitability. From seed, it now takes about four-and-a-half weeks before the plants are ready for market, instead of the six-and-a-half weeks it usually takes for basil plants to reach full cycle.

Tom says he loves the low-maintenance aspect of Companion.

"It's already a liquid, so there's no mixing necessary, no worry about settling out, and no more clogged injectors. I also love the fact that it doesn't have any special handling requirements. I don't have to refrigerate it or use it all immediately. Best of all, it really works."

Better tomato yields

The main tomato variety grown at Bux Mont Hydroponics is "Match". The greenhouse yields 2,000 lbs/week with an average fruit size of 8-9oz. According to Tom, the tomato crop has also benefited from *Bacillus subtilis* GB03. Tom uses four ounces of Companion per two gallons of water about once per month to control *Botrytis*, the prevalent disease he has seen in his tomato crop. He does this during the last two feedings of the day. Using perlite growing media, Tom believes the microbial inoculant colonizes the roots of the plants. He is fairly certain he has seen less on his tomato plants. The last time he pulled the plants, when



they were nine months old, he was astounded he found no dead, brown roots. In fact, he discovered all the plants had masses of solid, white roots.

Always one to get the most from his plants, Tom has also begun spraying the top one to two feet of his tomato plants with a 100% natural biostimulant and rooting hormone (Essential). This has given greatly improved flowering and clustering, and as a result, better fruit set and more tomatoes per bunch. Tom also uses the product as a root dip before the tomato plugs go in, and they respond by establishing themselves rapidly.

When asked about his outlook for the future, Tom surmises that his operation will triple in size within the next five years.

"I think the main reason for the increasing popularity of hydroponic herbs, is that people today are more health conscious than ever before," he says.

With that trend clearly gaining momentum, the future looks bright for Bux Mont Hydroponics. 🍅

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