

Bts Celebrate 100 Years

Bacillus thuringiensis (Bt) bioinsecticides are celebrating a birthday of sorts. Roughly a century ago, in 1901 Japan, a bacteriologist discovered the Bt bacterium. Field tests for the first commercial Bt product began in the late 1920s and ever since Bts have played a role in agricultural pest management.

“It is surprising,” H. Charles Mellinger, Ph.D. says. “Bts have lasted a unique length of time.”

Some classes of synthetic chemical pesticides have come and gone, largely due to overuse and resistance, safety concerns or adverse environmental impact. But a full century after it was first discovered and 75 years after it was first used in the field, Bt still predominates the global biopesticide market, accounting for more than 90 percent of the \$60 million in biopesticide sales in the U.S. alone.

Advances in Bt genetics, strain selection, fermentation media and formulation over the past 20 years have

resulted in more potent, stable Bt spray products with more consistent performance against a broader array of insect pests. Because it has little or no impact on nontarget organisms and offers an alternative mode of action for delaying insecticide resistance in pests, Bt remains a key tool for Integrated Pest Management (IPM), especially in forestry, row crops, tree fruits, vines, nuts and vegetables.

In the U.S., Florida tomato growers are the largest users of Bt bioinsecticides. Up to 90 percent of the 40,000-acre tomato crop receive five to six Bt sprays per season to control Southern armyworm, beet armyworm, loopers, tomato fruitworm and cutworm.

“Bts are nuggets...and they still are so effective.”

—Dr. Charles Mellinger

“Bts are still the backbone of the worm control complex,” says Dr. Mellinger who is director of technical services for Glades Crop Care, Inc. of Jupiter, FL, the largest independent

crop consulting and research firm in the state. (www.gladescropcare.com)

“Bts are still efficacious, they are still economical, and they are still soft on beneficials,” he says. And, although new chemistries with some characteristics that cannot be matched by Bts have been available for the last several years, Bts are still the workhorses of Florida tomato production.

At Glades Crop Care, Dr. Mellinger says the company’s consultants start the fall tomato production season with Bt products, because they are “generally the most economical.” Then, as the season moves into Florida’s rainy period, Glades Crop Care recommends the rotation of Bts with one of the highly rainfast worm control materials tebufenozide or indoxacarb. “We usually hold spinosad for later in the season when we need leafminer control,” Dr. Mellinger says. In the spring, the consultants recommend a return to the economical Bt-reliant program until circumstances again dictate the rotation of another material.

Also, Dr. Mellinger says, “By maintaining a soft larvicide program, which you can do with the Bts, we can preserve populations of the wasp that parasitizes leafminer larvae.” Glades Crop Care advocates the use of softer products like the Bts to retain and build up the wasp population through the fall. “That way the wasps will control the early developing populations of leafminer and save the grower one or two applications of abamectin or cyromazine, and that’s good,” he says.

“Bts are nuggets that have been with us for so long, and they still are so effective,” Dr. Mellinger says. “That’s the gem of the deal, right there.”

