The Good, Bad and Unrecognized of a Biological/Biocompatible World

See an insect munching on your plant, squish it; see a furry fungus eating your plant, rub it off; see a stinky bacterium spotting your plant, wash it off. Or, spray it with sulfur or copper, but be careful not to burn the plant. This made sense before the advent of chemical pesticides.

Prior to 1943, commercial growers had few chemical tools to control pests and diseases other than sulfur, lime-sulfur and copper. However, in 1943 the chemical family of bisdithiocarbamate was introduced with nabam, zineb and maneb leading the way. These fungicides were broad-spectrum in control of fungal pathogens; production yields in agriculture increased 65% from 1901 to 1945 (a period of 44 years), but by 90% from 1945 to 1954 (a period of 9 years) when chemical fungicides were employed. The bisdithiocarbamates are still used today – nearly 60 years after their introduction.

In 1961 a landmark book was published entitled Silent Spring by Rachel Carson. This book had a major impact on the indiscriminate and successful use of pesticides. The main focus was on DDT and toxic environmental influences of its use. However, public concerns raised by this book caught the attention of the U.S. Government, which took action to establish the U.S. Environmental Protection Agency (EPA) in 1970. The EPA's responsibility was to register and regulate the use of pesticides. These restrictions required exceptional planning in crop production. During the 1980s there was increased interest in reduced use of toxic pesticides. These concerns generated more interest in the use of integrated pest management (IPM). An objective of IPM was to reduce the use of toxic chemicals, which contaminate the environment, yet still control diseases and pests. IPM strategies became even more important when the U.S. Congress passed the Food Quality Protection Act (FQPA) in 1996. This act required the EPA to reassess tolerances of all 9,600 pesticides used commercially in the United States by 2006. Many insecticides have already been removed from commercial use by the EPA following the mandates of FQPA.

IPM strategies include:

• Use of good cultural practices; sanitation, minimizing re-use of old materials, scouting

• By scouting and keeping good records, only apply pesticides when necessary to maintain a certain threshold of health acceptance

• Make use of application methods that apply less pesticide or use a more efficient spray system

• Use biological control when available and appropriate

• Use biocompatibles when available and appropriate (if available)

The crew at Blue Stone Perennials (with Alvin, the mascot): "Because of the safety of RootShield Granules, we can conduct meetings among our healthy plants without fear."

A grower's use of IPM strategies can reduce pesticide use by 50 percent or more. How does one create and maximize an ideal integrated program? In the last 20 years there have been intense research efforts in the development of biological control and biorational chemicals. We call these types of products biocompatibles or "soft chemicals" or "green chemicals". The FQPA also provides for accelerated registration of safer pesticides, such as biological control organisms or active ingredients with the potential for minimal environmental impact. The EPA now has a listing of minimum risk active ingredients, as well as additives which will not adversely affect public health or the environment (List 4). For example, a food grade version of potassium bicarbonate is the active ingredient in MilStop. MilStop also contains the surfactants,

sodium lauryl sulfate and sodium dioctyl sulfosuccinate, both of which are on the EPA list 4. Moreover, research indicates that MilStop and the biocontrol products, RootShield Granules and PlantShield HC, provide good disease control and can be used in an effective integrated program.

There are growers on both coasts and across the country that have converted to using biologicals and biocompatibles.

Comments from these growers include (pictures appear on the cover or in the article):

Joe Slivinski, Director of Production at Glenn Walters Nursery (Ore.), says, "One application of RootShield Granules more than paid for itself over not using it vs. a well known chemical drench fungicide. I used it on 2 million seedlings as a preplant inoculant with no other fumigants or fungicides and have had no problems".

Growers who have enjoyed success with RootShield® Granules, PlantShield® HC and Milstop include (clockwise from top left) Jean-Marc Versolato from Bailey's Nurseries, Joe Slivinski from Glenn Walters Nursery, Fred Curley from White Sands Nursery, Chris McGuire from PVG and Mark Donahue from Donahue's Clematis Specialists (middle).

Chris McGuire, Stock/Finish Grower at Pleasant View Greenhouses (N.H.), says, "Over a year ago we (PVG) were looking into an alternative means for our monthly fungicide applications in our stock program. We decided to incorporate PlantShield HC into that system. Our goal was to produce the same quality stock without all of the labor of monthly drenching and without using so much of the standard fungicides.

After a successful year of producing the stock plants and subsequent quality liners, we found it no coincidence that we had less disease problems, healthier roots, vigorous plants and also had saved money compared to our previous chemical fungicide regime.

We were so impressed with those results we have now incorporated PlantShield HC into our spring and summer finished programs".

Mark Donahue, Owner/GM of Donahue's Clematis Specialists (Minn.) says, "I can sleep at night now that I have RootShield Granules incorporated into my growing media"!

Fred Curley, Vice President of White Sands Nursery (Fla.) says, "We have used RootShield for years and are pleased with results as well as the cost savings".

At an impromptu meeting at Bluestone Perennials (Ohio) with the President (William Boonstra), Supervisor (Jack Johnson), General Manager (Al Pavlinak) and of course Alvin (the company mascot) it was said, "because of the safety of RootShield Granules, we can conduct meetings among our healthy plants without fear".

In addition to what commercial growers are saying, researchers and consultants are supporting the use of biocontrol and biocompatible products. Publications in trade magazines, bulletins and commercial newsletters describing the benefits of these "green" products are increasing as these authors become familiar with the technology. A recent publication in the Chase News, a monthly publication by Dr. Ann Chase (Zemke) of Chase Research Garden (Mt. Aukum, Calif.) listed the broad-spectrum foliar fungicide, MilStop, as excellent against powdery mildew. A bonus, the product is one of the most economical ones on the market.

Ecologists regularly express grave concerns for the protection of the environment and news media publishes concerns for environmental safety. However, public and grower interest in using biocompatible fungicides is still in its infancy, but grows every year with the successful use of currently established products like RootShield Granules, PlantShield HC and MilStop. The slow acceptance of this technology may be due to the unfamiliarity with these products. In order to change a grower's cultural practices that may have been in use for decades, a comfort level must be reached. A grower has to sleep at night, not an easy thing to do when incorporating new growing practices.

The myth that plant disease control relates to environmental damage and toxicity to humans and animals needs to be changed. Products like RootShield Granules, PlantShield HC, MilStop and others offer alternatives to growers that are Responsible, Economical and Proven. How you grow matters; it matters that you, the grower, produces a profitable crop without the occurrence of an ulcer or losing more hair than you already have. Education on biologicals; when, where and how to apply, compatibility, longevity, benefits and limitations, is key to their proper use and performance.

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