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The Berry Good News

Volume 1, Issue 3

April, 2009

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On the Horizon:

- **Goal or Aim for burn-down on raspberries**
- **Indar for mummy-berry in blues**
- **Resist drench or drip for root rot**
- **Possible Diazinon for spanworm in blues**
- **Fertilizing**
- **Pre-bloom spray in blues: Monarch, Calcium, Boron, Resist, possibly Bravo**
- **5% bloom spray in blues with Pristine and nutrients**
- **Pre-bloom spray in rasp's: Monarch, Calcium, Boron, Resist, Manganese, possibly Diazinon.**

(Please see your crop advisor for specific recommendations for your situation. No guarantee is written or implied in this newsletter. Always follow manufacturer's label.)

When Do I Apply Fertilizer?

That is the question we have been receiving here lately. There are a couple of schools of thought on this.

The traditional school of thought is to make two applications of a dry fertilizer blend—for raspberries, the first being before new canes emerge, and the second being 1 month before harvest (Hart, Strik, and Rempel, OSU 2005). For blueberries, there is no real standard yet except to treat them like raspberries, it seems.

Our programs are based on the latest technologies and research in plant and soil nutrition. We are making less dry fertilizer applications (usually just one around pre-bloom), and are feeding with

liquid nutrients at critical timings (the first one would be after buds open but before bloom begins). These nutrients are chemically reacted with organic acids to enhance availability, reduce nutrient tie-ups, and prevent leaching normally associated with liquid fertilizers.

According to the OSU handbook on Caneberries, raspberries need 50-80 pounds of Nitrogen (N) for optimum yields and plant health. Tissue levels should be between 2.3-3.0% N in early August. We are concerned that many growers are over-applying fertilizer. We are seeing yields go down over time, soil levels testing 200-plus pounds of N at

harvest, and tissue levels above 4% N. The canes may be big and lush (because of excess N and K), but this will cause lateral bud spacing to increase (which means yield decreases) and will cause worsening fruit quality. Similar problems can be seen in blueberries as well. Blueberries don't respond as well to high-salt dry fertilizers as they do to organically-chelated ammonium orthophosphate, such as Actagro's Structure™.

We believe it is wasteful to over-apply fertilizer, especially before roots are even active. The timing for our customers is very soon. Call us and we will help you make

What Are "Organic Acids"?

That is another question often asked. "Organic acids", are materials found nature and are in products manufactured by Actagro LLC, based in Biola, CA. Actagro has been in the organic acid business for over 25 years. They hold several United States patents on their products. Actagro markets these compounds under the registered name, "Actagro Organic Acids®". Recently, Elenbaas asked Professor Mir Seyedbagheri from the University of

Idaho to discuss the science behind organic acids and their importance to agriculture. Mir is the co-chairman of the International Humic Substances Society, and is one of the world's leading experts in humic substances. Mir related how Actagro Organic Acids® are truly unique compared to "humic acids" which are sold all over the marketplace. Actagro is the only company manufacturing products containing all three components of humic substances or,

"organic acids", found in nature: Humic Acid, Fulvic Acids, and Humic aggregates. This means they are more active in the plant and soil than typical "humic acids".

When using Actagro Organic Acids®, less inorganic fertilizers are needed, because there are enhancements in:

- ~ **Nutrient availability**
- ~ **Nutrient exchange**
- ~ **Less leaching of nutrients**
- ~ **Microorganism activity**

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Focus on Fertility: Boron (B)

Dr. Patrick Brown, UC Davis, is the world's leading expert on Boron, and he spoke last year at an Actagro Agronomy Conference about it. Boron is a critical component of the cell wall, terminal buds, and pollen tubers. It is involved in seed, flower, and fruit formation and improves quality and disease resistance. Periods of drought or wet weather will cause Boron deficiency in the plant, and will reduce Boron transport to the flower. Also, Calcium and Boron must be in balance for proper plant growth. The plant cannot metabolize Boron when calcium is low, and vice versa. Low Boron in the plant affects phosphorous incorporation in the plant cells and reduces phosphate absorption at the roots by one-half. Soil fertilizers are always compromised by either lack of moisture or lack of uptake during times of plant activity. Therefore, pre-bloom and bloom sprays of Calcium, Boron, and Resist™ phosphite are proving to be highly effective, along with dripping boron with our phosphate product, Structure™. Boron is needed throughout the growing season, so maintain a constant supply through foliar and drip fertigation for optimum plant health and crop yields.

The Scoop on Pseudomonas in Blueberries

Did you know that ski slopes use *pseudomonas syringae* for stimulating clouds to make snow, and that oil companies use it to build ice islands in the Arctic for their drilling platforms? Yes, it's true. What is a foe for blueberry growers is a friend for other industries.

Pseudomonas syringae, also called bacterial blight, triggers ice formation on the bark of blueberry plants when temperatures go below 32°F. These crystals puncture the green bark of new wood. Once punctured, the bacteria produce a toxin that enters the vascular system and causes cells to leak and die. Those cells become food for continued bacterial feeding. Besides being a threat to the surface of the wood, bacteria can enter wounds and pruning cuts.

Usually you will first see *pseudomonas* in December or January as red- or black-colored water-soaked lesions on the canes.

New baby plants planted in the fall are more susceptible than older, taller plants because typically they haven't hardened off before the first freeze, and because cold air settles to the ground. It is always on first year wood. Pushing baby plants with water and good nutrition to increase the caliper of the canes can help protect the plant from infection and from cracking under high-wind stress, as long as you don't push too much nitrogen in the late summer-fall.

Pseudomonas is difficult to control because it is everywhere—it is thought to be significant in causing rainfall!—and usually it is in a form that is very benign, feeding on decaying bio-matter.



So, how do we protect blueberries from something so ubiquitous?

Probably the best thing you can do is treat before any potential frost, and before any wet periods in the spring when daytime temps are in the 50's and overnight lows are below freezing. The most common treatment is with Copper. Popular products are Bordeaux mixtures (8-8-100 or Cuprofix), Copper Oxide (Nordox), and Copper Hydroxide (Kocide, Champ, or Nu-Cop). Some are using Oxidate (hydrogen peroxide-based) to kill the bacteria then applying copper as a protectant afterwards. Serenade is another recent product, but reports I am getting from Oregon suggest regular copper sprays beginning in fall and continuing through spring are more effective. Using a surfactant like Nu-Film 17 will hold the material on the plant better during wet weather because it is so sticky. Finally, always be sure to spray copper after pruning.