Development of best nutrient and pest management practices for organic blueberry production in Michigan

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Potential for growth

• 53 acres blueberries certified-organic in Michigan, less than 0.3% total Michigan blueberry acreage

• 20% annual growth in demand for organic products

• 20-100% price premiums for wholesale organic blueberries in 2007

Sources:
2. Organic certifying agencies registered with Michigan Department of Agriculture(GOA, ICS, MOSA, OEFFA, OCIA, Oregon Tilth, ICO), personal communication, November, of 2007
Challenges in organic production

- Majority of acreage “blow sands”, with lesser but significant acreage on high O.M. peat bogs
- Acidic soils, ideal pH 4.5
- Insect pests, such as Japanese beetle, blueberry maggot (zero-tolerance)
- Diseases, such as mummy berry (zero-tolerance) and anthracnose fruit rot
- Shallow roots, mechanical for weed control difficult
Overall goal: Develop recommendations for production of organic blueberries in Michigan

1) Evaluate organic management of blueberry pests (weeds, insects, and diseases)

2) Determine effect of mulches, cover crops and organic fertilizers on plant and soil health

3) Establish cost of organic production practices
Establishment of organic blueberry research sites

- 1-acre site at HTRC, East Lansing
  - Elliott, Bluecrop; mixed rows of Duke, Draper, and Nelson
  - Sulfur and cover crops 2007, blueberries in 2008

- Trials on farms and experiment stations

- Nutrient sources
  - Commercial organic fertilizer, feather or soybean meal, compost, fish emulsion through drip irrigation

- Mulch
  - Bark chips, straw, white landscape fabric, hand-weeded

- Cover crop treatments
  - Annual crimson clover, perennial alsike clover, cereal
What will we measure?

- Ericoid mycorrhizae
- Beneficial microbes
  - *Bacillus*, *Streptomyces*, *Trichoderma* spp., fluorescent Pseudomonads, total bacteria and fungi
- Soil biological and chemical properties
  - Macro- and micronutrients, light fraction O.M., potential N mineralization, microbial biomass, enzyme activity
- Plant health
  - Tissue analysis, growth, yield, disease and insect pressure
Pest management strategies

- Almost 200 OMRI-listed weed, insect, and disease control products

- Which are most effective?
  - Spinosad (Entrust™) baits for blueberry maggot
  - *Bacillus subtilis* (Serenade™) for fungal disease
  - Acetic acid (AllDown™) and fatty acid (Scythe™)-based herbicides
  - Copper and sulfur products
  - Compost tea and other foliar sprays
  - Cultural methods
Research Progress

Fluorescent Pseudomonads

Total Fungi

Trichoderma spp.
Conclusion

• Establishment of research sites in 2008
• First year of longer-term project
• Continue to work with growers and consultants to identify priorities

• Questions / Discussion