

Expanding Organic Highbush Blueberry Production

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Four significant developments have occurred that amplify opportunity for certified organic growers to successfully grow organic highbush blueberry and to increase or transition acreage. First, there is the recent USDA national organic standardization that defines organic production practices and crop labels that creates clarity and evens competition. Second, we have the continued increase of smallfruit and vegetable sales related to nutritional and human health reasons that strongly contribute in creating today's \$40,000,000 highbush blueberry market in NJ. Future agribusiness gains are promising through the "organic certification" market segment. This organic designation appeals to today's consumer as an even higher market value and creates a separate market segment above the fresh market mainstream. Third, new tools are becoming available to organic growers that reduce the risk from pest problems such as the recent organic registration of Spinosad – now known as Entrust in the organic market. Finally, the Rutgers Blueberry Research Working group has made considerable progress in refining standard IPM practices and in helping develop new tools and holistic approaches for organic production systems. Our "Work in Progress" is establishing alternative approaches to some current agricultural practices in soil building, fertility, cultural approaches and pest management.

When blueberries were first selected and cultivated in the early 1900's, the traditional culture of this native small fruit was essentially organic in nature. Currently, perhaps 2/3's of what "conventional" growers do horticulturally is directly applicable to organic production. Some examples include selection for resistant varieties, pruning for canopy ventilation to reduce disease incidence, adding organic amendments in building soil such as peat and humus, mulching for weed control and water conservation, raised mounds, roguing of infected plants and the use of natural plant protection products like Bt, Pyrethrum and Spinosad which are safe to natural enemies.

In contrast to other fruits that have been introduced from other countries, the blueberry is one of the few native American fruits that has relatively good natural resistance to diseases and insects as well as an inherent vigor because it has been domesticated for less than 100 years. Thus, there is this strong historic baseline for succeeding in the return to organic production although some key risk factors remain to be solved. To achieve this comprehensive vision of an integrated organic production system, specific obstacles are being addressed by a team of collaborating specialists supported by RCE administrators Dr. Nick Vorsa of the Phil Marucci Blueberry and Cranberry Research Center and Jack Rabin of the NJ Agricultural Experiment Station as follows:

Varietal Selection – Dr. Mark Ehlenfeldt comparative work for the USDA breeding program suggests using early maturing varieties to escape later season blueberry maggot attack like Weymouth, Bluetta and Earlyblue. Mark continues research with new and better varieties resistant to pathogens that are essential in initiating any organic enterprise.

Fertility – Dr. Gary Pavlis has demonstrated the importance of pH in maximizing plant health through the enhanced availability and uptake of nutrients as the ammonium nitrogen form. Gary has also demonstrated the water conservation benefits of trickle irrigation. Dr. Joe Heckman points to a listing of organic based fertilizers to include nitrogen, phosphorus and potassium sources such as rock phosphate, greensand, bone meal, fish meal and composted manures to restore depleted soils. Check out recent and previous editions of the Rutgers Extension newsletter - Blueberry Bulletin.

Mulching – Dr. Barbara Rogers is researching the impacts of organically approved mulches for soil benefits and weed control. Barbara's investigations with Dr. Uta Krogmann include the recycling of composted cranberry fruit and leaves, municipal leaf blends with available manures, wood chips and plastic mulch.

IPM Scouting – Our state fruit IPM specialist Dean Polk has provided timely pest population data that is GIS positioned within a blueberry field to allow spot spraying as needed based upon economic thresholds. Dean's extensive scouting program utilizes direct pest assessment, pheromone trapping systems and colored sticky boards for decision-making.

Entomological Research – Dr. Sridhar Polavarapu has emphasized pruning of old cane to reduce scale infestation, clean cultivation to suppress cranberry weevil and plum curculio and using OMRI approved insecticides as *Bacillus thuringiensis* (Bt), azadirachtin (neem plant extract), rotenone, pyrethrum and spinosad. Spinosad should handle the difficult to control aphid complex and other economically important insect pests. Sridhar's research on baited toxicant sphere attractant traps for blueberry maggot and pheromone trapping approaches for oriental beetle are quite promising for commercialization.

Phytopathology Research – Dr. Peter Oudemans has stressed the importance of sanitation in the field to minimize pathogen entry and spread, use of certified free nursery stock, rogueing of virally diseased plants, pruning of bacterial or fungal infected stems and the promotion of rapid drying of leaf and fruit surfaces. OMRI certified fungicides as oxidate are part of his efficacy evaluation program as have been the natural minerals sulfur, lime and copper and bordeaux mixture, kaolin clay and urea. Mechanical cultivation and new biological controls appear promising for Mummyberry suppression in the soil.

Weed Control – Dr. Brad Majek provides weed species identification and essential information as to the life cycle of these annual, biennial or perennial grass and broadleaf weeds. Brad's advice helps plan for a weed control program which includes trying various mulching practices and treatments.

Commercial Organic Grower – John Marchese, Emery's Berry Farm. John's progressive approaches to planting, weed control and fertility from an organic underpinning have been extremely helpful in establishing commercial utility. His comparative use of the Weed Badger rotary hoe, flaming, cover cropping, mulching and alleyway establishment and other methods are pointing out some ways for economically solving problems specific to large-scale organic production.

Commercial Conventional Grower – Bobby Galletta, Atlantic Blueberry. Bobby and his family continue to share their legendary experiences and extensive knowledge in blueberry production in efforts to expand the industry and maintain profitability.

Certification & OMRI Information – Karen Anderson - Erich Bremer – NOFA-NJ. The Northeast Organic Farming Association of NJ has been actively involved in certifying acreage for organic production and in explaining to growers the approved practices and materials that are essential to maintaining compliance. Through NOFA, growers can connect with other growers as to successful farming practices and can gather current information on plant protection materials and fertilizers through OMRI: Organic Materials Resource Inventory. Call 609-737-6848.

Final Comments –Currently, about 7,500 acres of blueberries are grown in NJ with less than 2% (approximately 110 acres) produced organically. The authors believe that the agribusiness situation is that of an advanced market ahead of agricultural research; demand ahead of supply. The price of a flat of organic blueberries has ranged from \$18 to \$28 over the last three years while conventional production prices have generally ranged between \$8 to \$14 per flat. Any growers interested in transitioning to organic blueberries may feel free to contact the author for advice and connection to the team of leading experts referred to in this article. 732-431-7260 or e-mail sciarappa@aesop.rutgers.edu