RUTGERS COOPERATIVE EXTENSION AT THE NEW JERSEY AGRICULTURAL EXPERIMENT STATION

PLANT & PEST ADVISORY

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Termination of Cover Crop by Rolling Source: USDA Sustainable Agricultural Systems Laboratory

INSIDE

No-Till Killed Mulch Systems for Soil Building and Weed Control

Olga Wickerhauser, Sustainable Agriculture Coordinator

Cover crops are an integral part of organic agriculture. They protect the soil from erosion and compaction, preserve and increase soil organic matter, improve water infiltration, increase soil biological activity, and interrupt disease, pest and weed cycles when used in a crop rotation.

In New Jersey cover crops are normally planted in the fall and tilled under in early spring before the cash crop is planted. This practice has disadvantages. For one, tillage is damaging to the soil. (It depletes organic matter, decreases soil biological diversity, and exposes the soil to erosion and compaction). Also, a significant amount of organic matter is forfeited when a cover crop is turned under early in the season before it has a chance to produce most of its biomass.

Research in recent years has focused on no-till killed mulch systems, where a dense cover crop is grown, then killed and left on the surface, and the cash crop is seeded or transplanted directly into it. The soil is not disturbed or left bare, which eliminates the problems caused by tillage, and the cover crop is allowed to produce its maximum biomass, which is returned to the soil as organic matter.

The dense mulch provided by the killed cover crop also suppresses weeds, reduces soil temperature fluctuations, keeps soil warmer during cold snaps, and provides a continuous food source for soil microorganisms (5).

In conventional no-till systems, cover crops are killed with herbicides. Organic growers can use various mechanical kill methods, including mowing, chopping, crushing or flattening the cover crop. A number of studies have examined the effectiveness of these methods, as well as the success of cash crops grown in the killed cover crop and the ability of the mulch to control weeds.

The studies share similar findings:

- All mechanical kill methods work best when the cover crops are in the late stages of growth (early milk stage and later)
- The thicker the residue, the better the weed control (Minimum 2tons/acre)
- After 3-4 weeks, weeds begin to appear even through thick mulch. At that point, the dense residues can impede cultivation, which may be

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the only option for weed control in commercial-scale organic production. (In conventional systems, post-emergent herbicides are used to kill the weeds.)

Mowers, including rotary, sickle bar, disc and flail, are most commonly used to kill a cover crop mechanically. Each has its pros and cons. Sickle bar mowers cut the crop close to the soil, which increases the chances of a successful kill. They also distribute the mulch evenly, which is important for good weed control, and they don't chop up the cover crop, which leads to rapid decomposition and loss of weed control potential. However, viney crops, such as hairy vetch, often get tangled up in sickle bar mowers.

Disc mowers don't get hung up on viney crops and also cut close to the surface, but they leave an uneven mulch layer and bare strips where weeds can grow. Flail mowers cut low and distribute evenly, but chop up the mulch so it decomposes quickly. Rotary mowers are least effective. They don't cut as low as other types of mowers, so the cover crop can re-grow, and they chop up the biomass and distribute it unevenly.(6)

Mowers have their advantages. Growers generally already own one so they don't need to invest in new equipment, and mowing is not dependent on soil moisture conditions, as is undercutting.

Researchers at Ohio State have developed an undercutter tool to kill cover crops by severing the roots and flattening the stems on the ground.(2) The undercutter features a large blade or blades (adapted from a V-blade plow) that cuts the cover crop off just below the crown. It is most effective in killing crops that are in mid- to late bloom stage or beyond. Also, it works better with annuals, especially hairy vetch and rye, than with biennial and perennial species.

An advantage of the undercutter is that it does not chop up the cover crop and so leaves a dense mat on the soil surface that provides persistent weed control. In one study, the undercutter left a mulch layer 10 – 13 cm thick, compared to a layer 2.5-5.0 cm thick left by a flail mower.(2)

Farmers in South America have had success using knife rollers/crimpers that mechanically lodge the cover crops and crush them.(10). The rollers have been credited with revolutionizing farming in Paraguay and Brazil over the last 20 years. A combination of South American economics – high input costs and no government support – and climate – tropical rains and heat that lead to rapid oxidation of organic matter and loss of soil productivity - have pushed farmers there towards no-till killed mulch practices.

The knife rollers are hollow steel drums, generally two to three feet in diameter and about six feet wide, with blunt knives set horizontally every seven to eight inches. The knives do not cut or chop the stems but crimp or crush them. The drums weigh more than 800 lbs. empty and more than 1700 lbs. when filled with water. The water helps as the cover crop height and biomass increases. The rollers lay the cover crop residues flat on the soil surface in a unidirectional mat, which provides maximum soil coverage to prevent erosion, decrease soil water loss, provide weed control and facilitate planting.

Researchers at USDA/ARS in Alabama found that rollers were 95% effective in killing the cover crop – which was the same rate as with herbicides - when the crop was in the early milk stage of growth or older.(10)

Studies at Virginia Tech and USDA have shown that vegetables can be grown successfully in dense cover crop mulch. Scientists at Virginia Tech found that a roll-killed high-residue legume-grass cover crop suppressed weeds and provided a major source of nitrogen for organically grown broccoli without reducing yields. (7) In a related experiment, tomatoes were transplanted into undercut mulch, which remained on the soil surface throughout the season and controlled weeds as effectively as herbicides.(4)

The challenge of the no-till killed mulch system for organic growers is late season weed control. The dense mulch suppresses weeds for about four weeks, after which weeds start to grow though it. Cultivation is tricky because of the thick mulch mat. On a small scale – in the home garden or market garden, the weeds can be pulled by hand, but they present a problem in larger scale operations. More research is needed to address this problem.

1.Ashford, D.L. et al 2000 *Roller vs. Herbicides: An Alternative Kill Method for Cover Crops*. Proceedings of the Southern Conservation Tillage Conference for Sustainable Agriculture
Available at www.ag.auburn.edu/nsdl/sctcsa/

2. Creamer, N.G., et al 1995 *A Method for Mechanically Killing Cover Crops to Optimize Weed Suppression.* American Journal of Alternative Agriculture. Vol. 10, No. 4 p. 157-162

3. Creamer, N.G. and Seth M. Dabney 2002 *Killing Cover Crops Mechanically: Review of Recent Literature and Assessment of New Research Results*. American Journal of Alternative Agriculture. Vol. 17, Issue 1. p.32-40

4.Creamer, N.G. et al 1993 *Cover Crop Management for Vegetable Production Systems*. American Society Agronomy Abstracts p.132)

5. Dabney, Seth (USDA-ARS National Sedimentation Laboratory)
Managing Cover Crops and Green Manures
Available at www.sedlab.olemiss.edu/uep_unit/projects/cover_crops/index32.html

6. Kuepper, George (ATTRA) 2001 *Pursuing Conservation Tillage Systems for Organic Crop Production*.
Available at http://attra.ncat.org/attra-pub/organicmatters/conservationtillage.html

7. Morse, R.D. 2000 *No-Herbicide, No-Till Summer Broccoli – Quantity of Rye and Hairy Vetch Mulch on Weed Suppression and Crop Yield*. Proceedings of the Southern Conservation Tillage Conference for Sustainable Agriculture
Available at www.ag.auburn.edu/nsdl/sctcsa/

8. . Phatak, S.C. et al 2002 *Cover Crops and Conservation Tillage in Sustainable Vegetable Production* . Proceedings of the Southern Conservation Tillage Conference for Sustainable Agriculture. Available at www.ag.auburn.edu/nsdl/sctcsa/

9. USDA Farmers' Bulletin No. 2279 *Sustainable Production of Fresh-Market Tomatoes and Other Summer Vegetables with Organic Mulches.*
Available at www.ars.usda.gov/is/np/tomatoes.html

10. USDA NRCS 2002 *The Knife Roller (Crimper): An Alternative Kill Method for Cover Crops* Technical Note No. 13.

Critical Weed Control Periods and Populations

Bradley A. Majek, Ph.D., Specialist in Weed Science

Weeds are plants growing where they are not wanted. They compete with crops for light, water, nutrients, and space. The result can be reduced yield, quality and/or earliness of the crop. Weeds can also slow the speed of harvest, and in some cases, poisonous weeds can contaminate the yield.

Farmers often question:

How long can a weed be left growing with the crop?

How long must a crop be kept weeded?

How many weeds can be tolerated before yield, quality or earliness will be affected?

The research needed to answer these questions is difficult and costly. Intensive hand labor is required. The desired populations of the weed species under investigation must be maintained growing in the crop being researched. Additional hand labor is needed to maintain complete control of all other weed species in the crop for the entire growing season. The impact of planting date must be considered. A weed species may not be equally competitive in full season and double crop soybeans, or in successive plantings of a vegetable crop that begin in early May and continue until August. Despite the hurdles, a great deal of information is known about the three questions.

Critical Weedy Period – is the longest period of time weeds that emerge with the crop can be left in the field. Weeds that remain growing with the crop longer than the Critical Weedy Period will begin to reduce yield, quality, or earliness.

Critical Weed Free Period – is the length of time, beginning at planting that a crop must be kept weeded. Weeds that emerge *before* the Critical Weed Free Period will reduce yield, quality, or earliness. Weeds that emerge *after* the Critical Weed Free Period will not reduce yield, quality, or earliness.

Critical Weed Population – is the minimum number of weeds (per unit area or length of row) that emerge with the crop that will reduce yield, quality, or earliness. Fewer weeds (per unit area or length of row) than the Critical Weed Population, although unsightly and capable of copious seed production, will not reduce yield, quality or earliness.

The **Critical Weedy Period** for most summer annual weeds germinating with the crop is often similar, although extremes in weather conditions can have an impact. Weeds emerge about 1 week after tillage, when temperature and moisture conditions are favorable, and are less than or about one inch tall. Most broadleaf weeds emerge with cotyledons (halves of the seed) that function as the first leaves. Grasses sprout with a spike from which the true leaves emerge. Weeds may be difficult to see the first week, but the field may have a greenish or purplish haze in the early morning when wet with dew. Two weeks after tillage and planting, the first and second true leaves are evident, but the weeds remain about an inch tall. Three weeks after tillage and planting, the third and fourth true leaves are evident, and the weeds may be one to two inches tall. At four weeks, the third and fourth leaves have enlarged greatly, the fifth and sixth leaves can be seen, and the weeds grow rapidly to three to four inches tall. Rapid growth continues when conditions are favorable. Weeds may have up to eight to twelve leaves and be six to ten inches tall six weeks after germination. **The Critical Weedy Period for many summer annual weeds is FOUR WEEKS from when the field is tilled and planted, and weed seeds begin to germinate.** Weeds that germinate with the crop and are removed in less than four weeks will not reduce yield, quality or earliness. These weeds will be two inches tall or less and have no more than two full size true leaves. The third and fourth true leaf may be evident, but not full size. Grasses will have not yet begun to tiller. Weeds that emerge with the crop and grow for more than four weeks can be expected to reduce yield, quality or earliness, even if they are eventually controlled. These weeds will be four or more inches tall, and have four or more full sized leaves. Grasses will have begun to tiller.

The **Critical Weed Free Period** often coincides with when the crop canopy closes, depriving new germinating weeds exposure to sunlight. Therefore, the crop and certain agronomic/horticultural practices such as plant population and row width can affect the length of time weeds must be controlled**. For many crops, the Critical Weed Free Period is between four and eight weeks.** Soybeans and other beans grown on a narrow (less than 20 inches) row spacing close a canopy quickly and may require weeds to be controlled for only four weeks. Beans on wide row spacing, and many other crops require a Weed Free Period of six to eight weeks, or longer. Some crops, for example, onions, never effectively close a crop canopy and may need to be kept weeded up to within two to three weeks of harvest.

The **Critical Weed Population** is the number of weeds that emerge with the crop that can be allowed to remain in the crop for longer than four weeks, which is the Critical Weedy Period. Weed numbers are generally expressed as weeds per square yard or weeds per 10 feet of row. The weed count per square yard is most often used in solid seeded crops and crops planted in narrow rows. The weed count per 10 feet of row is most often used when the crop is planted in wide rows and cultivation is used to control weeds between the rows. **For most crops, the Critical Weed Population will be between 0.5 and 2 weeds per square yard or per 10 feet of row.**

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CRITICAL WEED POPULATION FROM PAGE 3

1. If the weed population that emerged with the crop is less than 0.5 weeds per square yard or per 10 feet of row, anticipate that yield, quality or earliness will not be reduced.
2. If the weed population that emerged with the crop is more than 2 weeds per square yard or per 10 feet of row, anticipate that yield, quality or earliness will be reduced. Weeds should be controlled within four weeks of planting.
3. If the weed population that emerged with the crop is between 0.5 and 2 weeds per square yard or per 10 feet of row, weather and other conditions that affect crop growth will affect whether the weeds reduce yield. The more conservative threshold of 0.5 weeds per square yard or per 10 feet of row should be used to assure maximum yield.

The weed population will seldom be found to be between 0.5 and 2 weeds per square yard or per 10 feet of row. Either weed control measures used will have reduced weeds to a level below the threshold, or the weed population will be *well* above the threshold.

Access your weed population two and a half to three weeks after planting when growing conditions are optimum. If any earlier, weeds will be very small and may still be emerging. An assessment later than three weeks after planting leaves little time to implement control measures within the four week Critical Weedy Period. Remember, periods may be extended when cold adverse weather slows crop and weed growth.

If the weed population that emerged with the crop is heavy, exceeds three to four inches tall and cannot be controlled due to wet field conditions or other factors, seriously consider abandoning the planting. Consider the field a stale seedbed, till to control the weeds, and reseed when conditions improve. ❑

Worker Protection Standard Inspections

Raymond J. Samulis, Burlington County Agricultural Agent

Some growers have expressed concern over the seemingly abundant messages to expect DEP inspectors this year for both the Worker Protection Standards as well as irrigation issues. The Worker Protection Standards have been in place for many years; however, a little bit of review never hurts anyone. Growers have asked me what an average inspection for Worker Protection Standard might entail. If you will remember back a few years, one of the first parts of the Worker Protection Standard program was to establish a central location for information to be posted and available for the workers' review. In fact, a few years ago, our office was one of the first to produce a complete Worker Protection Standard package that could be used on the farm. Since that time, commercial companies like Gemplers now have complete posting packages, and also separate individual parts for the bulletin board. Some items that must be included on the bulletin board are the Worker Protection Standard poster, application records, and location of emergency facilities. Another part of the program entails the actual training of the workers, which can occur as a group function, and must include giving each worker a training booklet.

Another important part of the Worker Protection Standard program is the availability of a decontamination site that should include water, soap, towels, etc. Also, inspectors will most likely check for a plan to deal with the transportation of and assistance to workers in case of an emergency. It is a common technique for the inspectors to verify the truth of what the farmer said by asking the workers various questions about items available to them around the farm. Be sure to verify that the workers know where the bulletin board is, and that they are aware of the training materials that they should have. A total lack of knowledge by the workers of any of these will assure even closer scrutiny on other items. While the abovementioned items are common to all types of farms, be aware that there are additional requirements for each specific type of operation. For example, nurseries and greenhouses have more specific requirements regarding reentry intervals and posting requirements where needed. Fortunately, our Rutgers web site has a new section on farm safety, which contains the complete checklist for Worker Protection Standard inspections. You can view it at http://www.rce.rutgers.edu/farmsafety/. This web site contains information on Worker Protection Standards as well as many other farm safety topics. Be sure to listen to the sound effects at the beginning!

Many of the county agricultural agents meet with various officials of the Bureau of Water Allocation of the DEP as well as with enforcement personnel. Due to continued water shortages and competition for water supplies, expect increased enforcement activities this summer. Enforcement inspections have already begun in Northern and Central New Jersey. Remember to keep your water use logbooks current. Our office still has a supply of these pocket books we designed for keeping records of your water use. We were told that in the not too distant future, the DEP would be looking for comments regarding updating their regulations for agricultural water use. As agents, we are on top of this issue; however, it will also be imperative for growers to give input on how some of these proposed changes may effect their operation. We are currently having philosophical arguments with them as to whether the water allocation permits should reflect actual water used or water needed under extreme

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Prevent Vegetable Diseases with Good Cultural Practices

Michelle Infante-Casella, Gloucester County Agricultural Agent

Often we rely on chemical methods to control vegetable diseases in the field. Many cultural steps can be practiced to reduce the incidence of diseases. These steps should be considered and utilized in combination with chemical controls. If you are diligent about practicing good cultural methods, reliance on chemicals may be reduced. Using the best cultural practices will promote healthy plant growth; thus, plants may overcome the threat of some diseases. The following methods are examples of general cultural practices that will aid in preventing vegetable diseases.

Prevention of Foliar Diseases

- Stake and prune plants to increase air movement and leaf drying
- Always work in fields when plants are dry to avoid spreading disease manually
- Make sure to clean and disinfect stakes and stringing sticks before reuse
- Wider row spacing can be used to increase leaf drying and air movement, and can be especially useful for late season crops when foliar diseases are more of a threat
- Use overhead irrigation in the morning hours so leaves dry quickly after irrigation
- Use drip irrigation to prevent leaf wetness and spread of disease from water splash
- Use plastic mulch or organic mulches like straw to prevent soil splash up into the plant
- Plant natural windbreaks or use synthetic windbreaks to reduce the spread of airborne spores in high winds
- Consider using a boom sprayer rather than an air-blast to reduce spreading airborne spores

Prevention of Root and Crown Rots

- Use raised beds to improve water drainage in root zone
- Chisel plow or subsoil to break up hard pans to increase percolation
- Use careful cultivation in planted crops to aerate the soil for healthy root growth
- Do not till fields when wet to prevent clodding and compaction
- Do not over irrigate fields, use soil moisture monitoring methods, like tensiometers, to apply correct amounts of water for crop needs
- Create cross ditches to allow for drainage of standing water in low areas of the field
- Cultivate rows to the end of the field and contour field ends for water runoff out of the field
- Increase organic matter levels in soil by intensive cover cropping, leaf application, or other methods

Prevention of Viral Diseases

- Use floating row covers as a barrier when feasible to reduce insect vectors
- Reflective mulches can be used to repel some insect pests in the field
- Practice good weed control since some weeds carry plant diseases that are diseases of vegetable crops
- Scout fields for insect vectors and use trapping methods like yellow sticky cards for aphids

Prevention of Post Harvest Diseases

- Handle harvested produce gently to avoid cuts and bruises that act as entry points for bacteria and fungi
- Use plastic containers rather than wood containers that may contain wires, staples, or splinters that will injure the harvested crop
- Clean harvest containers to keep free of plant debris and soil
- Use padded bulk bins and pad areas on packing/grading belts to soften the blow when dumping produce
- Cool harvested product rapidly to slow microbial activity that cause rot
- Use proper storage temperatures and humidity levels
- Frequently clean and disinfect trailers or containers that the produce is shipped in

Other General Disease Prevention Methods

- Soil test and apply proper lime and fertilizer rates to reduce plant stress and avoid excessive soft growth that is more susceptible to diseases
- Be dedicated to and practice proper crop rotations to reduce disease inoculum buildup in fields
- Incorporate previous crop residues to promote rapid breakdown of plant material
- Wash equipment and tractors frequently to reduce the spread of diseases from field to field
- Use proper planting dates that will promote healthy plant growth

*Some information in this article was derived from NRAES Publication 104, *Sustainable Vegetable Production from Start-Up to Market*, by Vernon P. Grubinger. ❑

Water Use from page 4

drought conditions where no rainfall occurs. All of the allocations were designed to reflect the latter in order to provide farmers with the necessary water. It will be in our best interest to continue protection of the water allocations as they are currently designed.

With increased competition for water in our state, this issue is not going away. Agriculture needs to be on the forefront of this issue and if farming is to be preserved in the "Garden State" farmers need adequate amounts of water to remain in business. Additionally, this state needs farmland and open space to benefit water resources and the environment. ❑

Organic Highbush Blueberry Production

Bill Sciarappa, Ph.D., Monmouth County Agricultural Agent; Gary Pavlis, Ph.D., Atlantic County Agricultural Agent; and Nicholi Vorsa, Ph.D., Research Professor in Blueberries/Cranberries

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 in small fruit and vegetable sales in relation to nutritional and human health concerns that strongly contribute in creating today's $40,000,000 highbush blueberry market in New Jersey. 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, rogueing 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 Marucci Blueberry and Cranberry Research Center and Jack Rabin of the New Jersey Agricultural Experiment Station as follows:

Varietal Selection – Dr. Mark Ehlenfeldt's 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 Cooperative Extension newsletter - Blueberry Bulletin (available at http://www.rce.rutgers.edu/pubs/blueberrybulletin or through RCE of Atlantic County).

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 such 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, and pruning of bacterial or fungal infected stems and the

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promotion of rapid drying of leaf and fruit surfaces. OMRI certified fungicides such 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 and 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 New Jersey 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 can contact Bill Sciarappa at 732-431-7260 or e-mail sciarappa@aesop.rutgers.edu for advice and connection to the team of leading experts referred to in this article. ❑

Blueberry and Bramble Fest

Rutgers Cooperative Extension, Northeast Organic Farming Association – NJ (NOFA-NJ) and Natural Resources Conservation Service (NRCS) cordially invite you to attend a "Twilight Farm Tour of Organic Methods for Blueberry and Bramble Production" on **Tuesday, July 8, 2003 from 4:30 PM to 9:30** at Emery's Berry Patch in New Egypt, NJ. Our farm hosts are John and Susan Marchese who own and operate Emery's. The informative evening starts with a free barbecue and ends with scrumptious desserts served at Emery's storefront. The field tour will include discussions and demonstrations of traditional and emerging organic practices presented by researchers and growers. The schedule for the Fest is as follows:

4:30 Welcome - Emery's Owners - John & Susan Marchese - BBQ Dinner
5:00 Program Introduction - Bill Sciarappa - RCE Agricultural Agent
5:15 Organic Philosophy - Karen Anderson, NOFA-NJ
5:40 Organic Certification & Organic Pesticide Process – Erich Bremer, NOFA-NJ

Field Tour

6:00 Soil Building, Fertility and Crop Establishment, Gary Pavlis – RCE Agricultural Agent
6:25 Blueberry IPM Insect & Disease Scouting, Dean Polk, RCE Fruit IPM Agent
6:50 Weed Control and Cover Crop Demonstration – SARE, John Marchese
7:15 Mulching Demonstration & Organic Pesticides – Bill Sciarappa
7:45 Blueberry Production Tips – Rutgers Research Team: Nick Vorsa, Shridar Polavarapu, Peter Oudemans, Marucci Center for Blueberry & Cranberry Research & Extension
8:30 Bramble Production Tips, Mark Ciotoli - The Berry Farm
8:55 Emery's Storefront - Desserts & Refreshments - Suzanne Marchese
9:00 Marketing Organic Small Fruit - Maureen Scaramella, Food Innovation Research & Extension Center
9:30 Good Night

DEP Certification Credits will be provided: 1A - 4 units, PP2 - 4 units.

To register, request a flyer with map, or for further questions, please call Terry at RCE of Monmouth County at 732-431-7260. We really need you to RSVP in order to have the proper amount of food and materials.

Emery's is located on 346 Long Swamp Road (off Route 539), New Egypt, NJ. Look for the Emery's sign on Long Swamp Rd. For door-to-door directions go to the Emery's web site at www.netpie.com. The flyer can be found on our county website www.visitmonmouth.com/07050coopext Click on presentations and flyers. ❑

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