RUTGERS COOPERATIVE EXTENSION
NEW JERSEY AGRICULTURAL EXPERIMENT STATION

The BLUEBERRY BULLETIN

A Weekly Update to Growers
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September 29, 2000 **Vol. XVI, No. 22**

AT A GLANCE…

Upcoming meetings -

NEED CREDITS - 2 core will be given.
Veg Integrated Crop Management
Twilight Meeting
Monday, Oct 16, 2000
Starting at 5:30 PM
At Cresci Farms
4681 East Landis Avenue
Vineland, NJ
Need directions call Gary Pavlis' office and ask for Marilynn 609/625-0056.

NJ Vegetable Growers Conference
Jan 16 - Jan 18, 2001
Atlantic City, NJ

Mid-Atlantic Fruit & Veg Conference
Jan 29 - Feb 1, 2001
Hershey, PA

NJ State Agricultural Convention
Feb 6 - 7, 2001
Atlantic City, NJ

INTERNET ADDRESS
Click on to the RCE Web site and see our 'Web Page'

www.rce.rutgers.edu/pubs/blueberrybulletin

BLUEBERRIES

Disease and Culture:
By Gary C. Pavlis, Ph.D.
Atlantic County Agricultural Agent

2000 Blueberry Season Wrap-up
Now that the season has ended I would like to make a few comments about the 2000 season and answer a few questions I have received from growers.
1. **2000 crop size.** Most states in the east experienced a decrease in crop size as compared with 1999. Observant growers predicted this decreased crop due to weather conditions during bloom. Blueberry growers tend to take for granted the important role that honeybees, bumblebees and other insects have in fruit set. This newsletter provides a list of blueberry varieties and the recommended number of hives per acre each spring. These hives should provide the number of bees to attain good pollination and a full crop, under ideal conditions. This season, bloom conditions were very cold with temperatures in the 40's, windy and often raining. Honeybees do not work well in these conditions. In addition, the weekend following this rainy week the temperatures rose into the high 80's and low 90's. As a result, the bloom period ended quite abruptly. Bottom line decreased crop. One other note. I have heard growers state that their bees aren't working their blueberry flowers. Other than the weather conditions I have stated above, there are two main reason I have attributed to bees not working the blueberry blooms. The first is the presence of weeds. Too many competing flowers will decrease the number of visits a bee makes to the blueberry bush. The second problem is week hives. Hive strength is very important and should be checked by the grower or, as in the case of New Jersey, can be checked by the NJ Dept. of Agriculture. Week hives will not do the job you are paying for. (Cont on page 2.)

2. **Phytotoxicity.** Growers again experienced problems with chemical phytotoxicity on fruit and leaves in numerous parts of the country. I have written many articles for this newsletter on this subject but I would once again worn growers to test ANY chemical combination you are intending to spray on your bushes a few days beforehand. Phytotoxic effects usually can be seen within 24 – 48 hours. It is much more preferable to burn fruit on 10 bushes than 10 acres of bushes.

3. **Grubs.** I have visited many fields this summer where plants were not thriving but there were no apparent symptoms, i.e. leaf or cane discoloring, malformation or death. In these cases I look for a root problem. The first to rule out is pH. I have stated that growers should test their pH every Fall and Spring and make appropriate modifications at that time. Blueberry plants do not grow well if the pH is not between 4.5 and 4.8. After pH, the most likely problem has been grubs. Grubs can greatly decrease crop size on mature plants and kill plants 1-4 years old. When grubs are present and feeding, a plant can be easily pulled out of the ground because of decreased root mass. In years past we had no control for this pest. In NJ we now have a section 18 for Admire, which we feel is very effective. The timing of the application is critical and research at Rutgers is being conducted to pinpoint applications for the maximum efficacy of this chemical. It is our hope that Admire will be given a full national label soon. It is my understanding that Novartis will also be releasing a chemical grub control soon.

4. **Powdery Mildew.** Many growers called me this year suspecting that they had a very large outbreak of red ringspot virus. The symptoms of red ringspot virus are reddish-brown spots with green centers on the TOP of the leaves and on the stems and canes. These spots in some cases can cover the entire top surface of the leaf. Bushes, which exhibit this symptom, should be rogued out and destroyed. It should be realized however, that powdery mildew fungus can cause similar symptoms, but on BOTH sides of the leaf. In a rainy season such as 2000, powdery mildew often occurs. This disease rarely requires any control measures thus plants with this fungus should not be rogued out. It is important to know the difference.

Pruning Blueberries:

New Jersey has approximately eight thousand acres of blueberries under cultivation and this is the primary crop for which I have extension responsibilities. Pruning continues to be little understood and poorly executed throughout the industry. In fact, it is rare to find two growers who prune the same. I would like to clear up a few misconceptions and try to outline a simple method of pruning blueberries.

The first place to start would be to discuss the importance of pruning. Growers often feel that pruning is of little value because the effects of the practice are not immediately apparent or dramatic. It should be noted that a well known blueberry researcher, Phil Marucci stated many years ago that there were a few factors which have greatly influenced the lack of increase in blueberry yield on a per acre basis over the last 30 years and pruning was the most significant factor.

More recent research has revealed that young canes are more efficient fruit producers than old canes. In fact, canes which are 3 to 10 years old allocate greater than 50% of applied water and fertilizer to fruit production. By the time a cane reaches 20 years of age, only 25% is allocated to fruit. (Water and fertilizer costs the grower money and there is no profit in the production of blueberry leaves.) Additional research compared three pruning types on yield and fruit size. Plants were 1) regularly pruned in a moderate manner such that one out of every six canes per cut out, 2) heavily pruned by removing 40% of all canes out every five years and 3) not pruned at all. The result was that the regular moderate pruning had the highest yield on the least number of canes. Research has also shown that as pruning increases, new cane production increases. These studies show us that young canes out produce old canes, the removal of one out of six canes produces the right number of new canes and the highest yield and fruit weight is produced with regular moderate pruning.

It is also important to understand how a blueberry plant grows. Each year, canes are initiated from the base of the plant. Each succeeding year, the cane produces laterals, laterals produce laterals and so on. Each year the lateral production on any individual cane decreases in diameter, or put in other words, the wood becomes progressively twiggy. It should be realized that as wood becomes smaller, fruit size decreases. This is why we detail prune to increase fruit size.

With this information under our belts we can address <u>how</u> to prune. There are really 5 basic steps to keep in mind when approaching a bush which is to be pruned. 1.) Assess the plants overall vigor, is cane production adequate? 2.) Prune out all dead wood. 3.) Locate the oldest canes and prune out one of every six canes thus if the plant has twelve canes, remove two of the oldest. 4.) Prune out all low branches which will never be picked and are a source for disease. 5.) Detail prune, i.e. remove as much twiggy wood as time allows.

Armed with these basics, we can now deal with the different plant situations that arise. First, pruning young plantings has primarily the objective of establishing the plant to obtain full production as soon as

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possible. Thus, the first two years the procedure is to remove flower buds. Some growers cut off as much as the top half of the plant. This is really quite drastic. Rubbing off lower buds would be sufficient however in a big operation it is usually less labor intensive to cut the top 3-5 inches off each cane which will remove most flower buds. Any weak twiggy growth should also be removed.

In year three, a small crop is possible but not the expense of stunting the plant. Usually 1-2 pints/bush is the optimum and fruit should only be on strong wood.

The fourth and fifth year twiggy growth must again be removed as well as any lateral canes which have developed. Fruit production can be increased but the amount is dependent on the number of new canes which were produced the preceding years, 3-5 canes/yr is optimum.

The blueberry planting should be in full production by the sixth year though there are numerous variables which will influence this timing. The most important of these being proper pH and nutrition, water management and the crop to cane production balance.

I have found it is also helpful to growers to discuss blueberry pruning strategies based on plant status. I do not believe there is a strategy for each variety though any one variety may fall into one of the following categories most of the time. For example, the variety Blueray often has a spreading or open habit in which canes tend to bend down to the ground. Plants of this type must be thinned to the 1 of 6 rule however canes that are bent over also tend to produce an upright shoot. These canes should be pruned just above this upright shoot to produce a more erect plant. Other varieties which often fit into this category are Berkeley, Bluetta, Coville, Weymouth and Patriot.

Varieties such as Bluecrop, Collins, Darrow, Earliblue, Herbert, Jersey, Lateblue and Elliot often fall into the erect plant category. These plants become overly dense in the center which deceases fruit bud initiation. The pruning strategy for this category is to remove older central canes before all others.

When plants are overly vigorous, the primary strategy is to remove entire canes rather than spend time on detail pruning. This is done at least until the proper fruit to cane production balance can be established through nutrition and fruit production management. Varieties which are prone to this situation are Earliblue, Collins, Blueray, Herbert and Collins though any variety can potentially be overly vigorous.

Weak plants are treated in the opposite manner. The primary procedure is to detail prune rather than whole cane elimination. Varieties which are classically put into this category are Weymouth and Bluetta.

I should take a moment to address the method of pruning on a field which has been neglected for a long time and needs to be rejuvenated. This question often comes up when a grower has purchased one of these fields.

The most important step is to inspect the plants in their field for virus symptoms. Any plant showing these symptoms should be pulled out. The plant inspections must be done during the growing season because symptoms are most easily seen on the leaves. The next step is to completely prune everything down to the ground, a chain saw is the quickest and easiest method. This pruning is best done in late winter. An application of a 10-10-10 fertilizer should be made in early April, usually at a rate of 400 lbs per acre. No crop will be harvested that year however the following winter the canes should be thinned to approximately 12-16 canes per plant. A full crop can be harvested that year.

In summary, pruning correctly can 1) increase yield, by producing more young canes, 2) increase fruit size by producing more strong wood, 3) decrease disease by removing dead wood and, 4) increase cane initiation because as pruning increases, cane number increases. Pruning costs money, but it will cost a grower more if it isn't done and it isn't done correctly.

Lime Sulfur: I have recommended the use of lime sulfur for Phomopsis control. The fall application should go on when 2/3 of the leaves drop. Some growers have balked at using this material because of its corrosive nature. A grower from Massachusetts wrote to me and says he has a solution to this problem. He says that, "before applying the lime sulfur, I first spray the tractor and sprayer with a light oil and then the lime sulfur comes off when I wash the equipment after application. What works best, believe it or not, is "PAM", which is a combination of vegetable oil and lecithin which are biodegradable and therefore not the environmental hazard that motor oil would be. Generic brands of this cooking oil are cheaper and are equally effective. I can cover my equipment with 3-4 cans for a total of about 6-7 dollars." Sounds like a good idea to me. I wouldn't want to do this for a weekly spray but lime sulfur is applied just once in the fall and once in the spring.

Roguing: Roguing of diseased bushes should be progressing. This is important in all varieties but should be done with extra care where blocks of Bluetta or Weymouth are located close to Blueray or Bluecrop. In the Pemberton area where there is still an appreciable acreage of Rancocas, varieties adjoining this old variety

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should be carefully inspected. In such situations there seems to be a more rapid spread of stunt disease. The Rancocas is very resistant to this virus disease but it is susceptible and may be a source of the disease without showing symptoms vividly. After many years of harboring the disease some Rancocas bushes are now clearly exhibiting stunt symptoms. All old plantings of Rancocas should be carefully rogued. Remember to spray diseased bushes before removing them. It is necessary to kill the leafhoppers and it is more efficient, more economical, and wise from the standpoint of conservation of beneficial insects to spray individual bushes rather than entire fields.

Disease Identification: A few growers have asked me to provide them with information so that they are more able to identify the typical blueberry diseases such as Alternaria, anthracnose, Phomopsis, botrytis and mummy berry. I should just explain that the ability to positively identify a disease comes largely from experience. I once spent a few days looking at thousands of plants and tagging those with stunt while I was working on my masters degree in Arkansas. This experience was very early in my career and I accompanied Dr. Jim Moore from Arkansas and Dr. Al Stretch, USDA Pathologist. As a result of this experience, I have never forgotten what stunt looks like. This experience was invaluable and a grower who is not sure about disease ID should invite someone to his field who can spend some time and help him with identifications. This ability is critical in the choice of cultural and pesticide decisions.

Another aid to Disease ID are extension publications. The Highbush Blueberry Production Guide has photos and descriptions that will be of great value in disease ID Also, Michigan State produces one called 'Blueberry Diseases in Michigan', Extension Bulletin E-1731. Write Michigan Cooperative Extension, Michigan State University, East Lansing, MI 48824. There is also the new Compendium of Blueberry and Cranberry Diseases. This is an excellent resource for growers and researchers alike. This manual is produced by the American Phytopathological Society, 3340 Pilot Knob Road, St. Paul, MN 55121-2097. It should be realized that there are many times where disease ID is impossible without the help of their cooperative extension office in these cases.

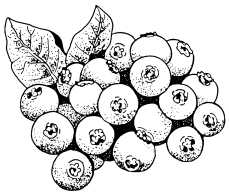
Dr. Marvin Pritts, Cornell University has developed a Web-based diagnostic tool to help the grower/educator determine what might be wrong with their berry plants - from pest injury to herbicide injury to nutritional deficiencies. By answering a series of questions about symptomology, one is led to a possible cause. The site uses lots of photographs and can be very useful. To access the site, go to http://www.hort.cornell.edu or http://www.fvs.cornell.edu and select "Resources." Then select "Berry Diagnostic Tool.".

Nut Sedge: I visited a farm infested with nut sedge with our Weed Specialist last week and picked up a few things that maybe useful to growers fighting this weed. You may recall that I have recommended Sinbar for the control of this weed. Actually, I stated that Sinbar will do a good job if applied at the maximum rate but only on high organic matter soils. Applications are made as late as possible because nut sedge germinates about May 1. A combination of Solicam and Sinbar will result in early suppression by Sinbar until July 4th, and then Solicam will kick in. The grower I visited last week did all this and still has a major problem. Dr. Brad Majek, our weed specialist, pointed out that Sinbar is very soluble and will not work when a trickle irrigation system is present, i.e. trickle + nut sedge = Roundup in early August. In addition, growers who have trickle systems would get better weed control from their herbicides if they would limit water applications in early spring when herbicides are first applied and are present. It actually might be a good idea to place the trickle tube at a 6 inch depth since herbicides work primarily in the top 6 inches of soil. Doing this may greatly decrease weed problems with trickle irrigation.

Lastly, in the fall it is wise to 1) assess how well your herbicide program performed and plan adjustments, 2) take soil samples to determine if pH should be adjusted (fall is best), 3) use Ridomil where Phytophthora is present, 4) apply lime sulfur when 2/3 of the leaves drop to control Phomopsis, cane canker etc.

Sincerely,

DR. GARY C. PAVLIS
Atlantic County Agricultural Agent
Editor - Blueberry Bulletin ma



Fruit IPM 09/25/00
Insect Trap Counts - Blueberry

	Atlantic County						Burlington County					
Week Ending	RBLR	OBLR	CBFW	SNLH	BBM	OB	RBLR	OBLR	CBFW	SNLH	BBM	OB
7/7	36.46	0.38	0.00	0.74	0.18	266.92	8.88	0.11	0.00	1.85	0.21	109.20
7/14	9.53	0.62	0.0	.053	0.18	176.00	2.13	0.11	0.10	1.13	0.39	28.9
7/21	9.75	0.17	0.00	0.35	0.27	46.08	0.25	0.00	0.00	0.28	0.26	12.7
7/28	14.77	0.58	0.00	0.13	0.37	26.38	1.29	0.33	0.00	0.49	0.51	8.14
8/4	---	---	---	0.26	0.26	---	---	---	---	1.66	0.23	---
8/11	---	---	---	0.83	---	---	---	---	---	9.8	---	---
8/18	---	---	---	2.61	---	---	---	---	---	6.54	---	---
8/25	---	---	---	1.02	---	---	---	---	---	4.59	---	---
9/3	---	---	---	0.61	---	---	---	---	---	1.53	---	---
9/10	---	---	---	1.40	---	---	---	---	---	2.49	---	---
9/22	---	---	---	1.87	---	---	---	---	---	5.6	---	---

Insect Trap Count Key: RBLR=redbanded leafroller, OBLR=obliquebanded leafroller, CBFW=cranberry fruitworm, SNLH=sharpnosed leafhopper, BBM=blueberry maggot, OB=oriental beetle.

RUTGERS BLUEBERRY ICED TEA

By Mike Green, Director, Resource Center
Rutgers Cooperative Extension

Over the past two years, Cook College researchers have been working with members of the blueberry industry toward the development, production, and marketing of value-added blueberry products. Our efforts have been specifically focused on developing marketable blueberry products that have health promoting characteristics. The project relied on the expertise of a large number of researchers, including food scientists, agricultural economists, product development specialists, marketing specialists, natural products chemists, and sensory evaluation experts.

I am pleased to say that the project has been very successful. To date, several blueberry products have been developed. Of these, the blueberry iced tea has generated the strongest appeal among consumers. Consumer market testing conducted at Cook College's Ag Field Day (April 29, 2000) and the Whitesbog Blueberry Festival (June 24, 2000) demonstrated outstanding consumer acceptance of the product.

Given strong consumer interest in the iced tea, we are presently exploring ways of making the product commercially available to the public. Blueberry Health, Inc. was recently incorporated for the specific purpose of producing and marketing the line of blueberry products developed from this project under the name of "Jersey Blues".

This product is going to be made available to Cooperative Extension to be sold at any programs and/or any other appropriate events The Blueberry Iced Tea can be purchased from the Resource Center for $.80c per bottle or $19.00 per case (24). It can then be sold for $1:00 per bottle or $24:00 a case realizing a $5:00 per case profit.

This is an excellent opportunity to help promote a revolutionary product that was developed and produced her at Rutgers, while making some money to help supplement programs at the same time.

If you would like more information on Jersey Blues blueberry iced tea, please contact Mike Green (732) 932-3908 or any of the Resource Center Staff for further details.

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INSECTS:

By Philip Marucci
(Reprinted article)

While pruning bushes this winter the observant grower might also be able to detect some marginal problems of blueberries. Two pests which should be looked for are bud mite and bud gall. See Gloria Jensen's drawings (on page 8) for help in identifying damage caused by these critters.

Bud mite: Bud mite is very tiny and inconspicuous, being only about 1/128 inch long. However, the plant reacts to the feeding of hundreds of the mites in such a way that heavy infestations may be suspected by the naked eye and confirmed with the aid of a hand lens. Even to the naked eye the heavily infested bud has a roughened appearance. Sunlight reflects

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from the many lens like protuberances, giving a distinct reddish glow. (In the winter with millions of little lenses on thousands of fruit buds, sunlight at the right angle can produce some strangely beautiful reflections. Enjoy the sight but be suspicious and check your fruit buds.) If you suspect bud mite or bud gall, take or send samples to the Rutgers Cranberry and Blueberry Lab, Chatsworth.

Bud gall: Bud gall is an interesting insect which has hitherto been found in heavy infestations only in wild blueberries and abandoned semi-wild fields. It is a tiny midge fly which lays its eggs in fruit buds in early August through September. In the act of laying eggs or in the feeding of larvae (or both) chemicals (enzymes) are released which cause abnormal (cancer-like) growth on which the larvae feed. In wild blueberries more than half of the fruit buds may be destroyed by bud galls. In abandoned fields more than 90% of the Weymouth fruit buds and more than 50% of the Rubels have been attacked in a single year. It is potentially a serious pest of cultivated blueberries in New Jersey but only a very few have been observed in regularly sprayed fields, usually along the edges where wild blueberries abound.

Be on the lookout for bud galls this autumn and winter. Not every fruit bud with some growth should be suspected. Many buds of early varieties make some normal growth in late summer and early fall at the same time that bud galls are causing abnormal growth. See Gloria's drawings for the distinction. The normally growing bud enlarges in length as well as girth and the bud scales are still tightly wrapped around the bud. In the abnormal growth the bud increases in girth more than in length; the shape is more globular compared to the more elongated normally growing bud. In the bud gall infested buds the bud scales are less tightly wrapped around the bud and their pointed tips extend above the bud like thorns. Tiny white larvae inside the bud are barely visible to the naked eye until mid November when they drop to the ground to make their cocoons under trash, where they hibernate. Bud galls in the winter will have empty cavities or visible white larvae which are the parasites of the bud gall larvae and remain in the bud all winter.

Blueberry stem gall: Another gall, caused by a small wasp the blueberry stem gall, can be completely controlled by pruning. The peculiar kidney shaped enlargement of the one year old stem makes this gall easy to recognize. It is an inch to 1-1/2 inches long and contains several white larvae about 1/8 inch long. Jerseys are especially vulnerable to this insect and in unpruned fields as many as half of the stems may have galls. Pruned out stems will dry out and the larvae within galls will not survive for more than a few days.

Gypsy moth eggs: Gypsy moth eggs are very easy to detect in blueberries and their destruction should be part of the blueberry pruning process. Surprisingly large number of gypsy moth eggs are sometimes found in blueberry fields after pruning. The eggs are usually fastened to canes low in the bush. The egg mass contain as many as 800 individual eggs is tan in color, about 1/2 to 1 inch long and covered with a wooly like coating.

Stunt & Red ring spot disease: Advanced cases of stunt disease and red ring spot disease can be detected during pruning. The stunted bushes have very weak thin growth with very short distances between the leaf buds.

Wood of stunted bushes is less mature, greener and softer than healthy wood. In advanced cases of red ring spot disease the distinct red rings can easily be seen on the bark of the new shoots and sometimes even on the one year laterals. The suspected bushes should be marked for observation and confirmation of the disease next year.

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ANTIOXIDANTS AND BLUEBERRIES CONTINUE TO BE A HOT TOPIC

As results of recent research concerning the antioxidant capacity of blueberries near publication, consumer and media interest in the healthful properties of blueberries continue to grow.

When tested for total antioxidant activity, in studies conducted at the USDA Human Nutrition Research Center on Aging at Tufts University, blueberries recorded the highest overall antioxidant score of some 40 fresh fruits and vegetables. Anthocyanin, the pigment that makes blueberries blue, are thought to be the major contributor to the high antioxidant activity levels observed.

To illustrate the health potential of blueberries, Dr. Ronald Prior, director of the research, explains that just ½ cup of blueberries can provide as much antioxidant power as 5 servings of other nutritious fruits and vegetables such as peas, carrots, apples, squash and broccoli. “Of course”, he adds, “ these foods supply other essential nutrients, so variety is still the key to a healthful diet”. To express it another way, the same ½-cup of blueberries packs the antioxidant punch of about 1000-mg vitamin C, a vitamin well known for its antioxidant properities.

Says Dr. Prior, “this research is still in its infancy; the ultimate goal is to see if people are protected from chronic diseases by eating blueberries. The animal studies that are underway show very promising results. In the meantime”, says Prior, “I’m eating blueberries everyday”.

Research findings to date from the USDA Human Nutrition Research Center are expected to be published in the Journal of Agricultural and Food Chemistry later this summer.
Reprinted: The Calyx, August 1998, Vol. 5.3.

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YOUR QUESTIONS ABOUT PESTICIDES ANSWERED

Reprinted: American Institute for Cancer Research Newsletter, Fall 1998, Issue 61.

There's no question that diets high in vegetables and fruits protect against cancer, as well as heart disease and many other chronic illnesses. But many people have questions about pesticides and other chemical residues in the food supply. Here are answers to ease many common concerns.

Q: Do pesticides and other chemicals in food increase cancer risk?
A: The scientist who reviewed over 4,500 research studies from around the world to develop AICR's report, Food, Nutrition and the Prevention of Cancer: a Global Perspective, found no convincing evidence that eating foods containing trace amounts of chemicals such as fertilizers, pesticides, herbicides and drugs used on farm animals changes our risk for cancer. Exposure to all manufactured chemicals in air, water, soil and food is believed to cause less than 1% of all cancers.

Q: How are limits on pesticides set?
A: The U.S. Environmental Protection Agency looks to animal studies to project the maximum amount of a pesticide residue that a person could consume daily during a 70-year life span without suffering harm. Once determined, the EPA sets the legal limit at a small fraction of that amount - generally 100 times lower.

In 1996, Congress passed the Food Quality Protection Act which is requiring the EPA to reassess all existing tolerances over a period of 10 years, starting with those believed to be most dangerous.

Q: Does buying organic eliminate pesticides?
A: Organic farming restricts or eliminates the use of chemical pesticides, fertilizers, herbicides and fungicides, resulting in lower pesticide residue levels in products. However, even crops grown by organic farming methods may contain some chemical residues. Foods may be exposed to contaminated rain water, irrigation water, soil or to chemicals carried from farm to farm by wind. In a recent test of over 1,000 pounds of produce, 25% of organic fruits and vegetables contained residues, compared with 77% of conventionally-grown.

Q: Are pesticides in food more toxic to children than to adults?
A: The Food Quality Protection Act (FQPA) requires that a pesticide must be shown to be safe for infants and children before used on crops. When effects on children are not known, only one-tenth of the amount that is considered safe for adults is used, as added protection.

Q: Are imported fruits and vegetables safe:
A: In 1996, 38% of fruits and 12% of vegetables consumed in the U.S. were imported. Imports must meet the same standards as produce grown in this country, but inspection is often less than stringent. Take the same precautions with imported fruits and vegetables - tips are below - that you would with those grown domestically.

Q: What can I do to reduce chemical residues in the foods I eat?
A: Several simple measures can make produce even safer:
• Wash and scrub all fresh fruits and vegetables thoroughly under running water, removing the outer leaves of leafy vegetables.
• Choose produce that is free of hole or punctures where residue could have entered.
• Consider buying fresh and processed organic foods. Look for those marked "certified organic" - foods certified by a public or private certification agency to be grown with few or no man-made chemicals.
• Eat a variety of foods. The more kinds of food you eat, the less your exposure to any one pesticide.

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BAGWORMS

By Deborah Smith-Fiola,
Agricultural Agent, RCE - Ocean County, NJ

Bagworm caterpillars have tied their bags closed and have pupated. By this time, several hundred eggs have been laid within the female bag, where they overwinter before hatching late next spring. Removing and destroying the bags anytime during the next 7 to 8 months is a valuable cultural method that eliminates the overwintering eggs.

The female bags containing eggs can usually be felt when slightly squeezed between two fingers (the vacated male bags will feel hollow or empty when squeezed). Females often carry their bags higher to the tops of the trees before pupating in order to allow for wind dispersal of a percentage of the newly hatched larvae to other nearby plant hosts. Therefore concentrate your removal efforts at these higher locations.

Unless the infested bushes are small, do not expect to be able to physically remove all of the female bags. Make note of the location of this problem and be sure to monitor the area for bagworms next spring. If you catch them when they are small in June, you can achieve good control with Bacillus thuringiensis.
Reprinted: IPM Newsletter, October 1999

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The Blueberry Bulletin
is a Weekly Newsletter
Published By
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		Cream Ridge Twilight Fruit Meeting: Rutgers Fruit Research & Extension Center
8	5/25	New Biorational Pesticide - Surround WP: V. Grubinger, U Vermont Extension
		Getting The Most From Round-up: G. Thornton, MSU
		Admire, Label
9	6/1	Life-history and Management of Oriental Beetle in Blueberries: S. Polavarapu, RU
		Timing for Admire 2F (Label): Variety, Recommended Timing, Product, REI and PHI: S. Polavarapu
10	6/8	Ohio State: Sprayer Cuts Pesticide Use In Half! Reprinted: The New Jersey Farmer, 6/1/00.
11	6/15	Blueberry Farms Try to Shake Blues, It soon will be iced tea of a different color
12	6/22	Eye Safety Around The Farm Pays Off
		Recipes For Using Blueberries
13	6/29	Blueberry Recipes
14	7/6	Using a pH Meter Can Increase Performance and Yield
		Recipes For Using Blueberries
15	7/11	Point Of Sale Nutritional Info
		Baseball Cap, Scant Solar Protector
16	7/20	Recipe, Sour Cream - Blueberry Coffee Cake
17	6/27	UDSA - Working With Communities to Protect Farms & Forest Land, Source - USDA
		Cultivated Blueberry Producers & Importers Approve National Promotion Program, Fruit Growers
		Beekeepers Stung By Imports
18	8/3	USDA & Department of Health & Human Services Dietary Guidelines for Americans
		AllAg Launches Ag Supply Web Site
		USDA On-Line Directory
		Grant Opportunity Now Available for Northeast Producers
		A Bushel of Web Sites, Go Online for Fruit Management Information
19	8/10	Recipe, Blueberry Cheese Tart
20	8/17	Blueberry Recipes
21	8/30	Pine Voles (Orchard Mice) In Blueberry Fields
22	9/29	Insects, Philip Marucci
		Antioxidants & Blueberries Continue to be a Hot Topic
		Your Questions about Pesticides Answered
		Bagworms