Note: Some of the information provided on products/pesticide use below, is from other states and thus the products may have no current Hawaii registration. Always read the label before making any product/pesticide applications. Due to environmental effects the effectiveness of particular products may also vary across locations. Also note that recommendations developed for northern climates may not be directly applicable to Hawaii.
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1.0 Entrust labeled for organic production

Entrust Labeled for use in Organic Production

Dow Agro-Sciences recently announced that Entrust, an insecticide product containing the active ingredient spinosad (same as in SpinTor) recently passed all the regulatory "hoops" to be certified for organic production systems. Limited quantities of this product will be made available in 2003. A rate of 1.25 oz Entrust is the equivalent active spinosad in 2 fl oz of Tracer 2SC or 4 fl oz of SpinTor 2SC. Entrust will be sold in a one pound re-sealable foil pack. There will be 12 packs per case, and 1oz and .25 oz scoops will be placed in each case. Entrust is OMRI-certified and has met the NOP (National Organic Program) requirements.

Spinosad will be a huge addition to the organic insecticides market, because it is far more effective than many of the other compounds allowed in organic production. Among the uses that likely will be especially popular are corn earworm control in sweet corn, apple maggot and codling moth control in apples, and Oriental fruit moth control in peaches. In SpinTor, the active ingredient spinosad has not been as effective as the best of the synthetic insecticides (such as Warrior and Capture in sweet corn) against these pests, but in comparison with choices such as pyrethrin, Surround, or horticultural oil, spinosad is clearly more effective.

Organic growers should check out the Entrust label, see where it might help them against troublesome insect pests, and be prepared to pencil out the economics ... Entrust is not inexpensive.

Rick Weinzierl (217-333-6651; weinzier@uiuc.edu)
(Rick Weinzierl, ed., Illinois Fruit and Vegetable News, Vol. 8, No. 20, February 27, 2003)
Supermarket chains in the northeastern United States are using their market power to reap record profits on milk at the expense of both dairy farmers and consumers, according to a new study from the University of Connecticut.

The study examined milk prices at 191 stores in four states and found that, while farm prices have dropped to 25-year lows, retail prices remain at record highs. Milk prices in New England have dropped well below what it costs farmers to produce milk, since 2001 when Congress abolished a price support structure known as the Northeast Interstate Dairy Compact. Meanwhile, consumer prices have stayed about the same. The problem, according to the study, is that a handful of retail chains and milk processors now dominate the market, leaving farmers with few options for selling their milk and consumers with exorbitant prices. The study found that, despite efficiencies of size, prices were highest at large supermarket chains and lower at smaller retailers.

Since 1991, milk prices in New York have been much lower due to a law that bars retailers from charging more than twice what farmers receive for their milk. Massachusetts, Connecticut, and New Hampshire are now considering similar legislation. The study is fueling legislative efforts in several New England states. A number of approaches to control the power of grocery chains and to protect consumers and farmers are being considered.

To read the full study, please visit http://www.iatp.org/enviroObs/library/uploadedfiles/Milk_Prices_in_New_England_and_Neighboring_Are.pdf (MARKET POWER: Buying for the Future - Vol. 6, Number 3 March 6, 2003).
TALLAHASSEE -- With threats of bio-terrorism around the globe, a recent national survey confirms that consumers want to see the country of origin listed on fresh fruits and vegetables, and that they are willing to pay more for produce grown in the United States. Armed with this new information on consumer attitudes toward labeling, Florida Agriculture Commissioner Charles H. Bronson will attend the National Association of State Departments of Agriculture's Mid-year Legislative Conference in Washington, D.C., on January 31.

“There has been some reluctance on the part of retailers to go to the trouble of providing country-of-origin information, but this survey should help provide assurance that consumers want to know where their food comes from,” Bronson said. “I urge my fellow Commissioners of Agriculture to encourage their state’s retailers to start identifying the country of origin now, rather than waiting until it becomes mandatory.”

Under the 2002 Farm Act, the U.S. Secretary of Agriculture must create guidelines for mandatory point-of-origin labeling no later than September 30, 2004. Until then, compliance is voluntary and based on guidelines issued by the Secretary in 2002.

The new survey was designed by the Florida Department of Agriculture and Consumer Services and conducted by Mid-Florida Marketing and Research, Inc. Telephone interviews were conducted days, evenings and weekends, and gauged the shopping habits of 2,500 consumers in eight major cities: New York, Chicago, Boston, Philadelphia, Tampa, Birmingham, Charlotte, and Cincinnati.

Consumers indicated that country-of-origin information is an important factor in their buying decisions, and that they have more confidence in the quality of domestic produce. They also believe
that food produced in the United States is safer than food imported from other countries.

According to the survey:

• If the country of origin was clearly identified on fruits and vegetables, 37 percent of consumers said they would be willing to pay between 10 and 20 percent more for the same produce.

• More than two-thirds of consumers at least sometimes notice the country where fresh produce is grown. One-third notices the produce’s country of origin “always” or “often.”

• 56 percent of consumers think that produce grown in the United States is safer than imported produce.

• 41 percent rate U.S.-grown produce as being of higher quality than imported produce.

• If price and appearance were equal, 61 percent of consumers would select U.S.-grown produce.

• 62 percent would purchase U.S. produce if it had a logo or label identifying its country of origin.

• When evaluating factors that influenced their purchase of U.S.-grown produce, consumers ranked safety higher than price or health.

• 30 percent of consumers would prefer to see the country of origin indicated on a sticker on the item; 27 percent preferred a display sign; 41 percent preferred both.

Highlights and graphs of the survey data can be viewed at www.florida-agriculture.com.

4.0 Country of Origin Labelling, Farm Bill update

COUNTRY OF ORIGIN LABELING UNDER ATTACK

With the last Farm Bill passage family farm producers were able to force a provision requiring mandatory country of origin labeling for agricultural products. Now, this provision is under attack by different commodities groups who see the measure cutting into their ability to "source" commodities from the cheapest global producers. Most recent in the barrage against mandatory country of origin labeling (MCOOL) is an attack by the National Cattleman's Beef Association - a group supposedly representing the interests of beef producers but more closely aligned politically with meat packers than meat producers. According to a report at www.meatnews.com, the NCBA has now "directed its Washington staff to work towards a repeal of the COOL provision of the 2002 Farm Bill, and to work with the US Department of Agriculture to develop a more workable voluntary program."

See the story at www.meatnews.com (Rural Updates! Newsletter, March 14, 2003)

5.0 Glomalin- the real soil builder

Glomalin: The Real Soil Builder

An Agricultural Research Service scientist now has more proof that she has found a key ingredient responsible for the well-known benefits of soil organic matter.

Sara F. Wright, a soil scientist with the ARS Sustainable Agricultural Systems Laboratory in Beltsville, Md., discovered glomalin in 1996 and named the substance after Glomales, the taxonomic order of the
fungi that produce the sticky protein. Recently, she used a nuclear magnetic resonance imager to show that glomalin is structurally different from any other organic matter component, proving it is a distinct entity.

The fungi live on most plant roots and use the plants' carbon to produce glomalin. Glomalin is thought to seal and solidify the outside of the fungi's pipelike filaments that transport water and nutrients to plants.

As the roots grow, glomalin sloughs off into the soil where it acts as a "super glue," helping sand, silt and clay particles stick to each other and to the organic matter that brings soil to life. It is glomalin that helps give good soil its feel, as smooth clumps of the glued-together particles and organic matter flow through an experienced gardener's or farmer's hands.

Glomalin was long lost in humus, the organic matter that is often called "black gold." When it did turn up in humus measurements, it was thought to be a contaminant.

Glomalin is not just the glue that holds humus to soil particles, it actually does much of what humus has been credited with. Because there is so much more glomalin in the soil than humic acid, an extractable fraction of humus, glomalin stores 27 percent of total soil carbon, compared to humic acid's eight percent. It also provides nitrogen to soil and gives it the structure needed to hold water and for proper aeration, movement of plant roots and stability to resist erosion.

ARS is the U.S. Department of Agriculture's chief scientific research agency.
(ARS News Service, Agricultural Research Service, USDA, Don Comis, (301) 504-1625, comis@ars.usda.gov, February 5, 2003)

6.0 Fair-Trade Label for organic products in UK

FAIRTRADE LABEL EXTENDED TO UK ORGANIC PRODUCTS
The United Kingdom Soil Association, responsible for organic certification in the UK, has in collaboration with the Fairtrade foundation launched a one-year pilot project to increase Fairtrade certification of organic products. Fairtrade standards can be applied to a continually growing list of organic products as an increasing number fall within Fairtrade requirements. The pilot project is intended to expedite the development of new products that meet both standards.

"Many farmers around the world are suffering from prices for their products which do not cover the cost of production, and this is certainly true in the UK," said Patrick Holden, director of the Soil Association. Existing trading practices contribute to this problem and this new scheme will help promote the changes needed to ensure a fair return to farmers., said Harriet Lamb, executive director of the Fairtrade Foundation.

Source: http://www.just-food.com
January 3, 2003

(MARKET POWER: Buying for the Future - Vol. 6, Number 2
February 5, 2003)

7.0 Mites in Strawberry (N. Carolina)

Do I have mites and how can I be sure?

Assume you have mites! But check plants for mite stages using a 10X hand lens. You can also use a dissecting microscope. Several county extension offices have these scopes and can assist you. We looked at leaves from 5 sites in Rockingham County this week and only found one mite and several aphids (living and dead). I looked at several leaves last week at a field in Wake County and only found aphids living.

How do take a sample for mites?
Remove the older leaves laying flat on the plastic. Do not examine new, unfolding leaves. You can mix the sample with old lower leaves and old leaves in the middle of the plant. Mites at this time have been confined to the older leaves contacting the black plastic around the base of the plant where temperatures are the highest.

**How many mites or plants containing mites means I need to do something?**

As a rule 5 % of the plants with mites means be prepared to spray. It is not necessary to count all the mites on a leaf, but rather just presence or absence of mites is sufficient. Be sure to record the number sampled with the date.

**Should I take samples every week?**

Only if you want to stay completely on top of mite development. Sample and when 5% level is reached monitor the weather and get the sprayer ready and the miticides out.

**Why monitor the weather?**

Mites can pass through a complete cycle (adult to adult) in about 7 days at temperatures of 80 and 50 day / night. Warm weather, bright sun, low wind and no rain are favorable for mite development. The degree of favorable conditions and the duration will determine how fast mites will build up.

**Why worry about mite build-up?**

Once mites are completing cycles within the population you have all stages overlapping and the effectiveness of miticides and the frequency of applications and the spray intervals will change and the level of control will vary and never be complete. Once you have mites and webbing and damage to the foliage you are behind the 8 ball, the fire is raging and the horses are out of the barn! To prevent this from happening with mites keep weekly records, monitor the weather and spray and pray!
Which miticide is the best?

The one that works. All miticides have their place and you must select the one that fits your situation at the time. Acramite is the new one with unique chemistry and has not been used so resistance should not exist. It also is effective against all mite stages and has good residual activity. Try it and order early so your dealer has it on hand. Savey is another new miticide that has ovicide activity. It can only be used once a year. Then there is AgriMek, Kelthane, Vendex and etc. AgriMek label indicates two applications. Kelthane is an old miticide that still works when not over used. Vendex is a selective miticide but it is slow.

Where do I find out how to use a miticide?

The label is the best source of information. For service consult with County agents, University Specialists, ask your dealer and ask your neighbor. Your experience counts too. Read spray guides and refer to handouts from meetings and various newsletters.

Help. I have difficulty in selecting a miticide.

Several factors can influence your decision. Experience, availability, cost, formulation, safe to the applicator, safety to good mites and insects, safety to the environment, size of container, shelf life, time limitations to harvest, re-entry interval, compatibility with other sprays, pH of my water, class of miticide, mode of action, when used last in my field, resistance level of mites in my field etc. It is not easy and simple to select one. But you gather information, integrate that information and make the best choice at the time.

Best advice for now:

For now the best advice is to check those fields, select the leaves, and examine for mites. Take leaves from 100 plants in your field. Only sample until you find 5% of those leaves infested. Once you find 5 leaves with mites, you know you have mites. Additional counts can indicate what areas of the field have mites. If you map this out, you could spot treat in those areas only that have mites. Mites and mite populations do start in hot spots in the field and you
usually know where they are. Also monitor around edges of fields and even check a few of those broadleaf winter annual weeds. Keep records. Spray if needed and follow-up with more samples after 5 days to see how good you did and whether you need another spray.


8.0 Admire application through drip

Memo from Bayer's Ed Ishida:

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Memorandum
Date: March 3, 2003
To: Pepper and Tomato PCA’s and Growers
From: Ed Ishida – Bayer CropScience
Subject: Admire Applications on Peppers and Tomatoes

Please copy and forward to field personnel and growers:
Admire application guide on peppers and tomatoes through drip irrigation:
The objective is to place Admire into the active root zone with the injection solution. The duration of activity increases with the rate of Admire, allowing PCA’s and growers to customize the rate and application to suit the type and length of control required by the crop.

Make Admire drip irrigation treatments before infestation occurs, preferably at planting time or early season after planting.

Admire Drip Application Method:
**Pre-irrigation:** Run irrigation systems before the actual application to check irrigation system, to settle soil under the drip line, and to provide lower bed moisture. Settling the soil will reduce vertical water channeling and the additional moisture will allow the wetting front to move across the plant line.

**Admire Drip Application Sequence:** Best results are obtained when the Admire injection occurs within a couple days of the pre-irrigation.

* Clear Water Front: Run the drip irrigation system for 1-2 hours with clear water to develop a wetting front and to recheck the irrigation system.
* Admire Injection: Uniformly inject Admire into the irrigation system for ~2+ hours. Be sure to inject behind the filters and to have in-line mixing before emitters or sub-line splits. Know the travel time from the injection point to the last emitter – then double the time for the injection period.
* Clear Water Flush: Continue irrigation with clear water for ~2+ hours to flush system AND move Admire into the root zone. The wetting front should move across the plant row from the drip line. Flush period should be double the travel time plus movement into the root zone.

Adjust the Pre-irrigation and Application Sequence to fit the soil and moisture conditions, and the drip line placement. For example, a single drip line – “double plant row” system should require more clear water flush than would a “single in-row” drip system. To move Admire into the root zone for both rows on a single drip line – double plant row system, increase the Admire injection and clear-water flush periods to move the wetting front across the plant row.

Maintain a normal drip irrigation schedule to keep plant growth and plant roots active, yet not over-irrigate. Use agitation in the mix tank to maintain a uniform solution. Optional addition of a wetting/compatibility agent improves mixing of the solution and leaves fewer residues in the tank.

Use of a non-foaming agent may help tank mixing and rinsing.

**Peppers:** Labeling allows 16 to 32-fl. oz. of Admire per acre per year as a soil application. Depending on pest spectrum, a single 32 fl. oz. or a 16 plus 16 may be used. Be sure to apply early season. PHI is 21 days. See *Note

**Tomatoes:** Labeling allows 16 to 24-fl. oz. of Admire per acre per year as a single soil application. Alternatively, applications may include a 16-fl. oz. application and then followed with a 16-fl. oz. application. The 16 plus 16 total is 32-fl. oz., equaling 0.5 lb. ai. per acre. PHI is 21 days. Be sure to have Admire in the plant system before infestations occur. See *Note
Admire is a Category III material, carries a CAUTION label, and is a non-restricted use pesticide. Applicators and other handlers must wear long-sleeved shirt and long pants, waterproof gloves, and shoes plus socks.

*Note: Regardless of the type of application (soil or foliar) or type of formulation, do not apply more than 0.5 lb. imidacloprid in Admire or Provado.

Injection Equipment: Accurate and Ease
To help visualize the application, install a flow meter (ball float type) in the injection line. Use an orifice plate to meter the flow and a flow meter to see the flow. A glance at the flow meter, the operator can see if the system is operating properly and at the correct rate. Needle valves at the smaller flow rates can be sensitive and susceptible to small debris. Use higher flow rates for the injection to increase application ease and accuracy. In addition, viewing the flow meter is eased with a more dilute solution. With a 100-gallon tank and a flow rate of 25 to 50 gph, applications are easy to calibrate and monitor. Having a set operating pressure over the irrigation system with a set flow (gph) rate, applications become standardized whether the application block is 1 acre or 50 acres. (Ed Ishida, Adobe Acrobat memo, March 3, 2003).

[Editor's note, please contact me at hector@hawaii.edu, if you would like for me to send you a copy of the Acrobat pdf file which includes a TeeJet nozzles calibration chart, file: Admire Pepper Tomato 03.pdf].

9.0 Rotation of neonicotinoid products for whitefly management in Arizona

The neonicotinoid class of insecticide chemistry offers vegetable, melon, and cotton growers and crop consultants critical tools for implementing IPM strategies for sustainable and economical whitefly management while protecting the chemistry from resistance. Actara*, Adage*, Admire*, Centric*, Cruiser*, Gaucho*, Intruder*, Platinum*, and Provado* are neonicotinoid products available for various crops in Arizona. Suggested guidelines for use of these products have been developed for crop communities defined by whitefly sensitive host crops. Crop communities are: "multi-crop" where cotton, melons, cole crops, and lettuce are grown in close proximity to each other and growing seasons overlap; "cotton/melon" such as in certain areas of central Arizona; and "cotton intensive" which typically occurs in central Arizona. The guidelines suggest limits on neonicotinoid use in each crop community and consideration should be given to alternating use of
appropriately labeled insect growth regulators (IGR's, Courier* and Knack*), pyrethroids (e.g. Capture*, Danitol*), endosulfan, dimethoate, Orthene*, Fulfill*, Metasystox-R*, or other products. With consideration given to planting dates, time of whitefly infestations, and proximity to sensitive adjacent crops, generally, only one (1) application of a neonicotinoid insecticide is suggested on a melon crop or vegetable crop. In cotton intensive communities, up to two (2) timely neonicotinoid applications are allowed.


10.0 Soil-borne diseases overview

SOIL-BORNE DISEASES OF VEGETABLE CROPS
Robert L. Wick

Soil-borne diseases are caused by plant pathogens (mostly fungi and nematodes) that can survive in the soil indefinitely. Indeed, soil is their natural habitat. Typically, soil-borne pathogens cause root and crown rot but several cause fruit rot and foliage blight. Most plant pathogens that cause disease of the foliage, such as Alternaria, and Septoria, cannot survive in soil. Despite a few exceptions to these generalizations, it is useful to categorize pathogens as either soil-borne, or not soil-borne, because it helps us understand how to manage them more effectively.

Soil-borne pathogens are difficult to control because they have the ability to survive for many years in the soil. Plowing crops into the ground after the growing season does not help reduce soil-borne pathogens; it’s like throwing br’er rabbit into the briar patch. The most important practice is to avoid planting susceptible crops into contaminated soil.

Crop rotation, along with other cultural practices, and fungicide applications, are important tools for managing plant diseases. An integration of management practices is the most effective approach. This article addresses practices that can be targeted to specific soil-borne diseases. Knowing exactly what diseases you are dealing with
is the most important first step in developing an integrated pest management program. Make sure your diseases are accurately diagnosed.

**OOMYCETES**

Pythium, Phytophthora, and the downy mildews are often referred to as “water-molds” or “primitive fungi”. They are not “true fungi” but we refer to them as fungi because they look like and behave like fungi. They are more properly known as oomycetes. Oomycetes survive for many years in the soil by producing specialized resistant spores called oospores (Fig 1, next page). These thick-walled structures germinate only when root secretions from a susceptible host are present, and soil moisture is abundant.

Pythium is a common inhabitant of all field soils and has a very wide host range. Though it is a weak pathogen in the field, and rarely a cause for concern, it often causes damping-off in the greenhouse (Fig 2). This is because Pythium does not compete well with other soil-inhabiting fungi and bacteria, which are generally absent in soilless growing media used in greenhouses. When starting transplants in the greenhouse choose a soilless growing medium that drains well. Avoid contaminating the medium with soiled hands, hose-ends and tools. Avoid overwatering and overfertilizing. Pythium occasionally causes disease to seedlings in the field when soil is excessively wet and cool. Also, transplants are more susceptible during the first week or two after setting out.

Phytophthora is closely related to Pythium but is different in several ways. Phytophthora is much more pathogenic but unlike Pythium it is not widely distributed. Also, Phytophthora species that attack vegetable crops generally have relatively narrow host ranges. Phytophthora infestans attacks only tomato and potato. It behaves like a downy mildew in that it causes blights of the foliage (Fig 3), and spores are easily blown throughout the field. It generally does not take up residence in the soil because it needs two different mating types (similar to male and female) to produce the oospores that allow long-term survival. For this reason, we don’t see this disease repeating itself in the same field year after year. Typically, it is brought in on seed potatoes, and its spores can be blown for a
mile or so in a good storm. Phytophthora infestans can survive in potato cull piles. Diseased plants should be plowed into the ground to prevent further spread. It is especially important to bury cull piles of potatoes and tomatoes. There are several fungicides registered for use on potatoes and tomatoes but they may not perform well when disease pressure is significant.

Phytophthora capsici causes blight of cucurbits, tomatoes, peppers and eggplant. Crown rot and fruit rot are the most common symptoms (Fig 4, next page). Often, a powdery or mealy bloom of whitish growth appears on the surface of infected fruit. This Phytophthora species can survive for very long periods of time in the soil. Plowing infected plant debris into the ground will not help, and may increase the level of soil contamination. However, chisel plowing may improve drainage, and that can help reduce Phytophthora blight. There may be some benefit gained from removing the diseased fruit from the field. However, do not dispose it on agricultural land. Diseased fruit should be landfilled or placed where cucurbits, peppers and tomatoes will never be grown. Phytophthora capsici can contaminate farm ponds if fields with diseased plants drain into the pond. Avoid planting susceptible crops on land known to be contaminated with Phytophthora capsici. Avoid bringing contaminated soil to clean fields with plows, etc. Plow and disc contaminated lands last and spray the soil off equipment before moving to new fields.

Downy mildews are caused by a number of different species. Most have a narrow host range, attacking a single genus or family of plants. They cause blights of the foliage rather than root and crown rot. Peronospora tabacina is one of the most destructive species and causes blue mold of tobacco. This pathogen does not survive in the northern states and must travel up the eastern seaboard, hopscotching from field to field. It can also overwinter on ornamental tobacco and volunteer tobacco in greenhouses. Downy mildews of crucifers are caused by Peronospora parasitica. Most crucifers, including weeds are susceptible. Disease occurs when temperatures are between 50 and 60 F and plants are wet for 12 to 24 hours. The pathogen can survive in the soil by forming oospores. Rotate away from crucifers for at least two years. Some broccoli cultivars are resistant, see your seed catalogues. Registered fungicides include: Bravo Ultrex, Aliette, Maneb and Ridomil Gold EC/Bravo.
TRUE FUNGI

Rhizoctonia causes damping-off (Fig 2, previous page), crown rot and root rot of a variety of vegetable crops. As is the case with Pythium, Rhizoctonia is mostly a problem in the greenhouse. Several fungicides are available to protect seedlings. Occasionally, head rot of cabbage, “soil rot” of squash, or stem rot of crucifers will occur in the field. Rhizoctonia is generally not a problem in field soil and fungicide applications are usually not warranted.

Sclerotinia blight affects a wide range of vegetable crops but not corn or grasses. Sclerotinia sclerotiorum survives in the soil by producing sclerotia, hard black structures that are 1/8 to 1/2 inch in length (Fig 5,). They are usually embedded in the fruit and stems of the plants. Sclerotia that are within 1 to 2 inches of the soil surface germinate when the soil has been saturated for about a week and temperatures are between 50 and 70 F. They may directly infect stems, or produce tiny mushrooms, which disperse millions of spores. The spores do not have enough energy to germinate and infect healthy tissue. However, spores that land on dying flowers germinate and develop enough growth to cause infection once the flower drops to a stem or fruit. If conditions for disease are present, fungicides should be used when the plants come into flower. Once the disease has become established there is no point in using fungicides because there are no secondary disease cycles. Sclerotia that develop after infection cannot germinate until the following year.

If practical, remove diseased plants and fruit from the field. A single head of cabbage can have thousands of sclerotia. If removal is not practical, it is better to plow the infected plants into the soil than diskling them in. Plowing under the diseased plants will bury the sclerotia to a depth that will inhibit germination, while diskling will tend to place the sclerotia in a more favorable place to germinate. Like many seeds, sclerotia will only germinate when they are within an inch or two of the soil surface. Improving drainage by chisel plowing would also be of value. When a soil is infested with Sclerotinia, it is recommended to rotate away from susceptible crops for 7 years.

Fusarium crown rot of squash and pumpkin Fusarium solani causes a crown rot of squash, gourds and pumpkins. The disease appears to be more prevalent now than in previous years. Plants
develop a soft, water-soaked rot at the crown of the plant. Wilting and collapse soon follow (Fig 6). Fungicides are of no value, rotate away from cucurbits for at least 4 years.

Fusarium wilt is caused by Fusarium oxysporum. Unlike Fusarium solani, F. oxysporum, does not cause rotting. This fungus enters through the roots and grows up through the water-conducting cells of the plant into the stem. Symptoms of Fusarium wilt include yellowing and wilting, often on one side of the plant. A cut through the stem often shows discoloration of the vascular system. This fungus is highly host specific. For example, Fusarium wilt of basil occurs by a specific strain that can only cause wilt in basil. Fusarium wilt of tomato only affects tomato. Fungicides are of no value, rotate with another crop for at least 4 years. Some cultivars have been bred to be resistant to Fusarium oxysporum.

Verticillium wilt is caused by Verticillium dahliae. Verticillium infects plants in the same way that F. oxysporum does. Yellowing, scorching and wilting follow infection. Discoloration of the vascular system may be evident. This fungus has a very wide host range but some specificity exists. For example, strains that infect maple trees may be weak pathogens of vegetable crops. A variety of vegetable crops can be infected by the same strain. Eggplant is particularly susceptible. A combination of lesion nematodes and Verticillium causes “early dying” in potato. Fungicides are of no value. Avoid planting susceptible crops in contaminated fields. Some resistant cultivars are available.

NEMATODES

There are many species of plant parasitic nematodes, and most of them have wide host ranges. Every handful of soil has a few plant parasitic nematodes but they are not a problem unless they build up to high numbers. Root-knot, lesion and stubby root nematodes occasionally build up enough to cause problems. Dagger and stubby-root nematodes can transmit viruses such as tobacco ringspot virus and tomato ringspot virus. The Plant Disease Diagnostic Lab can assay soil for nematodes.

Root-knot nematode (Meloidogyne hapla) is the most serious nematode pest in the New England region. It is not widely distributed, but there are fields where it is a perennial problem. Root-knot nematodes can result in significant losses to tomato, lettuce, carrots, parsnips and a few other crops. Above ground
symptoms, wilting and stunting, are not unique to nematodes. Below ground symptoms are fairly unique, small galls occur on the roots (Fig 7).

Galls are similar in size to the nitrogen fixing nodules on legumes. Some clubroot galls can be of similar size but crucifers are not good hosts of root-knot nematodes. Root-knot is very difficult to control short of fumigation or nematicides, both rather risky ventures. Resistant cultivars are available for some crops, and non-susceptible crops can be grown. Corn and grains are not hosts of root-knot. Sudangrass and rapeseed may reduce populations of some nematodes and reduce their damage. Soil incorporation of two month-old Sudangrass was found to be more effective against root-knot than three month old plants.

Lesion nematodes (Pratylenchus) are widespread in soils and are not a problem unless they build up to large populations. This can happen when a susceptible crop is grown year after year. With potatoes, lesion nematodes plus Verticillium results in a disease caused “early dying”. Corn and potato plantings occasionally develop high populations. A soil and root assay is necessary to determine if populations are damaging. Resistant cultivars are not available but lesion nematodes are not frequently a problem.

Stubby-root nematodes (Trichodorus), along with the dagger nematode, can transmit viruses. When populations are high, they can also cause injury by themselves. The presence of tobacco ringspot and tomato ringspot virus indicates that one or both of the nematodes are present. Resistant cultivars are not available but stubby-root nematodes are not frequently a problem.

January - March 2003
(Rob Wick, Editor, Vegetable Notes, University Of Massachusetts Extension Vegetable Program, January, 2003, VOLUME 13, NUMBER 23).

11.0 Spray schedule for anthracnose/botrytis in strawberries

[Below are recommendations for spray schedules for anthracnose and botrytis management on strawberries in North Carolina. These
recommendations are based on the growth cycle pattern of plant growth for strawberries in that part of the country.]

Wet weather & Botrytis Crown Rot: Dr. Frank Louws, Extension Plant Pathologist, sent me an email this morning in which he noted that he has observed a high level of Botrytis crown rot in some plantings. He went on to say that it can be confused with anthracnose or Phytophthora since plants seem to go down. Where this is occurring, growers may want to consider initiating their Botrytis fungicide program, even if 10% bloom has not occurred. Frank has an excellent article and pictures at: http://ipmwww.ncsu.edu/current_ipm/99PestNews/99News1/fruitveg.html

Dr. Louws further notes that if bloom has not started, Rovral would be the product of choice. If bloom has started - follow the schedule as Frank has published earlier. Here is that schedule: SUMMARY OF FUNGICIDE USE IN STRAWBERRIES FOR BOTRYTIS AND ANTHRACNOSE CONTROL IN THE SPRING

**SCHEDULE 1:** For cases when there is no risk of anthracnose and growers need to focus on gray mold control.

For growers who adopt a conservative (low risk) fungicide program, apply weekly sprays according to the following suggested schedule:

Application #1: at 10% bloom apply captan + Topsin-M OR Switch
Application #2: Elevate
Application #3: same as #1 if there is a “full bloom” situation
Application #4 and weekly: Rotate captan and Elevate OR Switch

Options: Elevate may be used in 2 consecutive sprays; captan offers a broader spectrum of disease control. There is no advantage to tank mix captan, Elevate, and/or Switch. In all cases follow label directions.

For a reduced fungicide program initiate applications at 10% bloom as above but apply subsequent sprays before predicted wet weather that favors Botrytis and end applications about 26-30 days before expected final harvests.
SCHEDULE 2: For cases where some insurance is desired against anthracnose but the focus remains on gray mold control.
Application #1: at 10 % bloom apply captan + Topsin-M OR Switch + Quadris
Application #2: Elevate + Quadris
Application #3: same as #1 if there is a “full bloom” situation
Application #4 and weekly: Rotate captan and Elevate + Quadris OR Switch + Quadris

SCHEDULE 3: Aggressive program to manage anthracnose if disease is known to be present.
Application #1: at 10 % bloom apply captan + Quadris
Application #2: captan + Quadris
Application #3: captan + Topsin-M
Application #4 and weekly: Rotate captan + Quadris and Captan

Elevate and Switch could be incorporated into schedule 3 to get better management of gray mold but there should be continuous coverage with Captan, Quadris, or the combination.

GENERAL NOTES: Thiram can be substituted for Captan. It also is a broad spectrum fungicide. Cabrio is equally effective as Quadris, and should be considered essentially the same chemistry and this chemistry should never be used back-to-back more than two times and no more than the number of times per season as indicated on the label.


12.0 Subscription and organic farming profile, NY

Community Supported Agriculture- a member’s view

By Susan Womersley
New York Correspondent

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It's a far cry from the food co-ops of the sixties and seventies. Gone are the ragged-leaved, drooping vegetables that were the only organic produce you could buy. Today's organic farms are large, developed businesses that produce a huge variety of organic vegetables from the common to the exotic.

In New York's fertile Hudson Valley, there are many such farms. One of the leaders in a relatively new trend of community cooperative organic farms is Roxbury Farm, located in Kinderhook N.Y. Farmer Jean-Paul Courtens and his partner Jody Bolluyt, has become the lightening rod in biodynamic farming success. Roxbury Farm is a CSA (community supported agriculture), a concept that has been growing in popularity.

Although CSAs have their roots in Japan, the term "Community Supported Agriculture" is from the United States, coined by a Massachusetts farm, one of the earliest CSAs in North America.

Roxbury is one of the oldest and largest CSAs in the area, farming 70 acres, with 685 member shares. Jean-Paul came to Columbia County from Amsterdam, The Netherlands, with an education in biodynamic farming, the leased Roxbury Farm in 1990 and farmed five acres of vegetables. In 1991, after being approached by a group of consumers in Manhattan who wanted to have more control over the quality and healthfulness of their food, Jean-Paul began his involvement with CSA.

Today, members come from as far south as Manhattan, to as far north as Schenectady. Along with vegetable shares, members also have the opportunity to work on the farm and are expected to put in a share of involvement in any number of ways, either by participating in monthly work days, volunteering for clean-up at the pick-up sites, dropping the remaining produce at food bank locations, or working at fundraising events.

I recently took part in a work day, on a sunny Saturday in July. Members gathered at the barn and were divided into work groups. I was surprised at the number and diversity of the group. There were retired couples, young families, toddlers, and single people. At least a third of the group had come from Manhattan to spend part of the
day outside working on the farm. As we were given work assignments ranging from hoeing the winter squash and sweet potato crops, to harvesting the garlic, to digging up and moving irrigation pipe, the farmer, Jean-Paul, discussed projects and methods with us, including which had been successful and which had not. While my group hoed the winter squash, Jody seeded it with red clover which, we were told, would grow up as the squash was dying out, and provide a thick, natural mulch.

We took a break for a potluck lunch and sat around picnic tables discussing what the farm and belonging to a CSA meant to us. One young mother of a precocious toddler said that, before belonging to the farm, her son would not eat strawberries. That spring, while members picked their weekly quart of strawberries in the fields, her son had discovered the source of strawberries. Now, when they appear on their table, he happily says "farm" and eats them all.

That was a perfect example of what CSAs are doing. They are providing a direct connection between farm and table. Children and adults alike can see where their food is grown, they can hoe the fields, and they can pick the vegetables. They can experience and share the joys of a good crop, or the sorrows and frustrations of losing an entire crop to frost, drought or flood. They can participate in healthy commerce.

Another more far-reaching benefit of CSAs is the interest they have fostered in a new generation of farmers. Jean-Paul finds that he is attracting enthusiastic and well-educated apprentices every year and that the majority of them are staying in farming by either moving into larger farms or starting their own farms, many of those CSAs.

Roxbury Farm is a model of the successful CSA. In 2000, funded primarily by membership donation, over $200,000 was raised to purchase the farm and place it in a land trust - never to be developed and always to be farmed. This is in concert with Jean-Paul's biodynamic farming style and a hopeful sign to a community that has seen farmed-out lands sold to developers, as they become barren and a financial burden to farmers.
Roxbury, as well as its members, feel very strongly that it is essential to New York, and to the country as well, that small and medium sized farms flourish and continue to provide healthy, organic produce that is available to all.
(The Mid-West Vegetable Growers News / Sept. 2002, pg. 19)

13.0 Ornamentals corner: Poinsettia info on WEB

Once again, GPN brings you the industry's most complete coverage of last year's poinsettia trials - from culture points to classifications and everything in between. The Poinsettia Zone has it all. To get there click the following link and select the Poinsettia Zone icon.

The best cultivar for an individual grower varies with location, production practices and markets. There are many poinsettia cultivars that can be grown successfully when the grower is very familiar with the cultivar and can provide the required culture for that cultivar.

To help growers make these decisions we present the Poinsettia Zone, a new section of the GPN web site, bringing together all of the Poinsettia information contained in the site. We have done the searching for you! Also offered is a list of FAQs, web exclusive information not previously presented in the magazine, and our "Ask the Experts" area.

Enjoy the Poinsettia Zone, your comments and suggestions are encouraged!

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14.0 Molokai Organics on the WEB

http://www.molokaiorganics.com/

15.0 Herbicides for pastures in Hawaii

HERBICIDES FOR HAWAIIAN WEEDS

To address the serious challenge of conducting effective weed management under tropical conditions, weed scientists on Hawaii have prepared an extensive web publication, HERBICIDAL WEED CONTROL METHODS FOR PASTURES AND NATURAL AREAS OF HAWAII, as a review of various methods, but primarily focusing on application of herbicides. Editors P. Motooka, _et al_, offer a wide range of topics, and delve into the "how to" details with examples of fundamental calculations for correct application. The November 2002 publication can be freely downloaded and printed in PDF format from: http://www2.ctahr.hawaii.edu/oc/freepubs/pdf/WC-8.pdf.

J.B. Friday, <JBFriday@hawaii.edu>.

(IPMnet NEWS, February 2003, Issue 110)

16.0 International Postharvest symposium, Italy 6-04

5th International Postharvest Symposium
Verona, Italy 6-11 June 2004

Dear Colleagues, the first announcement of the ISHS Postharvest 2004 Symposium is ready and can be downloaded in the official web site of the Symposium (www.soihs.it/postharvest2004) were preliminary information is available as well as the pre-registration service on-line.

Hope to see all of you in Verona
"When it comes to entrepreneurship and job creation, ours is an increasingly woman's world" -- President George W. Bush.

The Labor Department and the Small Business Administration have launched a Web site dedicated to women small-business owners. The site, women-21.gov, aims to help women deal with the ever-changing business climate and gain access to government resources for women.

"No business group in America is moving faster and more efficiently than women-owned businesses," SBA Administrator Hector Barreto said in a statement. "Now, when women entrepreneurs want to stop and ask for directions, that will help them get through the maze of government, they can make one stop and ask at www.women-21.gov."

The site is a product of Women Entrepreneurship in the 21st Century, a series of summits to discuss the increasing role of women in the economy and the obstacles they face. The site features information on issues such as:

* Access to capital.
* Health care for small businesses.
* Government procurement.
* Retirement security.
* Technology.

Women-owned businesses are growing at twice the rate of all U.S. businesses, SBA officials said. The 9.1 million women-owned businesses account for 38 percent of all businesses. (Doug Vincent, CTAHR, e-mail, March 7, 2003).
18.0 USDA's FSIS Analytical Chemistry Laboratory Guidebook

FSIS has posted its "Analytical Chemistry Laboratory Guidebook", which contains test methods used by its laboratories for the analysis of food composition, food additives, nutrients, veterinary drug and pesticide residues, on its Web site. Methods are designed to provide analysts with written documentation to facilitate training, performance, quality assessment, and interpretation of data. The contents of this "Guidebook" are continuously revised and future updates will include other methods previously published in the hard copy version of the "Guidebook", which is no longer available for distribution. Access the "Guidebook" at: http://www.fsis.usda.gov/ophs/clg/

19.0 World Congress on Food Irradiation, 5-03

**First World Congress on Food Irradiation:** Meeting the Challenges of Food Safety and Trade

The First World Congress on Food Irradiation will take place May 5-7, 2003, at McCormick Place, Chicago, Illinois. Dr. Elsa Murano, USDA Under Secretary for Food Safety, will be the keynote speaker. http://www.fsis.usda.gov/OA/topics/irrmenu.htm

The National Food Safety & Toxicology Center, Michigan State University, has provided a Web site about the Congress at: http://www.foodsafe.msu.edu/Congress/congress.html