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.

Index

1.0 Organic Farming updates from Europe
2.0 Organics- global acreage
3.0 Harris Seed offers Organic Seed
4.0 Feeding the crop vs. feeding the soil
5.0 Soils and Microbes
6.0 Strawberry Marketing in Virginia
7.0 Thrips management tips (Florida)
8.0 Fungicide Updates (Mass)
9.0 Downy Mildew on cucurbits
10.0 Use of different Glyphosate products
11.0 Warrior Label Expanded
12.0 Sinbar herbicide in Strawberries (Illinois)
13.0 Aim Herbicide for Sweet Corn (Illinois)
14.0 Screening new Herbicides (Arizona)
15.0 Dual Magnum herb on Tomatoes
16.0 Oxidate vs. hydrogen peroxide use
17.0 Harris Moran melon, corn field day, Arizona
18.0 Computer Workshop Arizona June 03
19.0 Direct Mkt Conference Delaware Dec. 2003
1.0 Organic Farming updates from Europe

SWITZERLAND: ORGANIC SALES EXCEED ONE MILLIARD FRANC BARRIER

Sales of organic products grew by 13 % in 2002 to reach 1,056 million francs (718 million EUR). The Swiss spent an average of 144 francs (98 EUR) per head on organic products in 2002. Three quarters of these sales are over the counters of the Coop and Migros supermarket chains. Only 16 % of organic sales are made via organic food stores and health food stores.

The big sellers in the organic market are mainly fresh products, which have a market share of 7 %. Milk shows a share of 12 % or carrots, for example, 20 %. Organic vegetables, organic fruit, organic eggs and organic meat all have two-digit growth, although organic meat with a market share of 4 % is still a niche market. The 61 % growth in beef sales brings a distinct dynamic into the market. Total growth of 20 % is forecast for the organic meat market in 2003.

Organic farming in Switzerland grew by 6 % in 2002. Around 6,500 organic farmers work 11 % of the total agricultural area. The Swiss association Bio Suisse prevents the risk of overproduction by adopting a consistent quality strategy. The organic leader is the canton Graubünden with a 50 % share of organic farms. Whereas fresh products are experiencing strong growth, Switzerland currently has a self-sufficiency of only 25 % for organic corn.


FRANCE: FNAB CALLS FOR 15 % ORGANIC FARMING BY 2010

At a meeting of the French organic association FNAB at the end of March, the organic farmers called for efforts to achieve a target of 15 % for the organic farming area in France. Another seven years was allowed for this. The present organic share of the agricultural area is only 1.7 %. The FNAB members considered a list of requirements on how this ambitious objective could be achieved. For example, European grants should be harmonized and a bonus funded as recognition of the environment-friendly and socially compatible methods of organic farming.

ORGANIC AREA IN SPAIN GROWS BY 37 % IN 2002!

Andalusia is turning into the region with the largest registered area of organic farming, followed by Extremadura. In terms of processors, however, Catalonia is the leader with 262 of the altogether 1,204 companies, followed by Andalusia with 214 processing companies. A total of 665,055 ha were farmed organically in Spain in 2002, compared with 485,079 ha the year before. The turnover achieved by the total of 16,521 producers and 1,204 processing companies was estimated at 172.9 million euro. However, not only the area under cultivation has grown. The underlying data show that industrial activities
are also growing strongly in organic farming - in terms of plant and livestock production. The number of processors increased by 31% in the last trading year.


2.0 Organics- global acreage

WORLDWIDE MORE THAN 22 MILLION ORGANIC HECTARES

The International Federation of Organic Agriculture Movements (IFOAM), the Institution of Ecology & Agriculture (SÖL) and the Research Institute of Organic Agriculture (FiBL) presented the revised and updated edition of the study entitled "The World of Organic Agriculture - Statistics and Future Prospects" by Minou Yussefi (SÖL) and Helga Willer (FiBL) at BioFach 2003. Of the more than 22 million ha farmed organically throughout the world, Australia accounts for approx. 10.5 million ha, followed by Argentina (3.2 million ha) and Italy with more than 1.2 million hectares. Germany holds seventh position in the world with 632,165 hectares. The leaders in terms of the organic share of the total agricultural area are the European Alpine countries and Scandinavia. Germany with 3.7% occupies eleventh place by international comparison.

According to information from Rudy Kortbech-Olesen of the International Trade Centre (ITC), an agency of the United Nations Conference on Trade and Development and the WTO, the worldwide turnover of organic products for 2003 is estimated at approx. 23-25 milliard US dollars (24.6-26.7 milliard EUR). The organic share of the total food market is expected to rise from the present 1-3% to 5-10% in the larger markets of Europe and the USA in the coming years. The forecast annual growth rates have, however, been reduced a little compared with last year and are currently estimated at 5-15% in most countries.


3.0 Harris Seed offers Organic Seed

Harris Seed in Rochester, NY, was recently certified by the USDA as an organic seed sales and distribution company. It offers organically-grown OP vegetable, flower, and herb seeds to organic and commercial growers. www.harrisseeds.com


4.0 Feeding the crop vs. feeding the soil
"FEED THE CROP AND NOT THE SOIL" OR "FEED THE SOIL TO FEED THE PLANT".

"Feeding the crop" with a fertilizer program is an economical practice. Fertilizer products improve the supply of available nutrients in the soil for uptake by the plants. Fertilizers such as ammonium nitrate or urea applied on a current crop result in rapid responses by the treated crop. "Feeding the soil" is to increase organic matter, biological activity, nutrient availability, improve structure and tilth by adding amendments and/or fertilizers. Amendments are products that improve plant growth indirectly by improving soil conditions (e.g. tilth, water-holding capacity, or drainage) that are favorable for plants to grow. Many organically-approved soil amendments or fertilizers don't readily supply a current crop with adequate levels of necessary nutrients. Organic soil fertility programs include a series of practices to build and then maintain the nutrient pool for healthy, fertile, and biologically active soils.


5.0 Soils and Microbes

SOIL IS A MELTING POT OF MICROBES
(adapted from the one and only Tomato Magazine)

Healthy agricultural soils typically contain between 10 million and 1 billion organisms per gram of soil. That means there's a lot of metabolic activity going on in the soil. In other words, your soil is alive. There are six "functional groups" of organisms in the soil: heterotrophic (aerobic) bacteria, anaerobic bacteria, yeasts and molds, actinomycetes, pseudomonads, and nitrogen-fixing bacteria. The heterotrophic bacteria is a large group in most soils; these microbes utilize at least one carbon source and also use oxygen. The anaerobic bacteria do not require oxygen, and although they have a bad reputation because they can generate bad odors they play an important role in certain micro-environments. The yeasts and molds, or fungi, are important to the development of soil structure. While bacteria can be thought of as the glue that sticks soil particles together, fungi act as the 'rebar' to reinforce soil aggregates. Actinomycetes are a type of bacteria that are responsible for the 'earthy' smell of soil. They make many positive contributions to soil fertility by helping to form crumb structure and by producing antibiotics to help protect territory from 'bad' microbes. The pseudomonads are 'nutritional acrobats' producing an array of enzymes that help break down complex compounds into nutrients that are available to plants. Nitrogen-fixers can take N from the air in the soil and change it into a form that crops can use. They are much like the microbes inside legume root nodules, except they're 'naked'. While we have been very good at providing N,P,K for crop growth, too often we forget the important roles that microbes play in soil fertility!

(VERMONT VEGETABLE AND BERRY NEWS April 15, 2003)
6.0 Strawberry Marketing in Virginia

VA Beach Berry Promotions (from Cal Schiemann, VA-Tech CES):

Just a note to bring you up to date on our promotion efforts:
We have a bumper crop in VA Beach and they exploded overnight into ripeness earlier this week!

To promote the berries I took 5 flats to our local NBC station (WAVY Ch 10) for the morning news program. Had a 90 second interview promoting strawberries with a huge silver tray of ripe berries in front. Approximately 100,000 viewers saw that segment. The office phones have been busy with people calling for our 'VA Beach Strawberry Guide'.

Going back to the station for the noon news with a 4 minute interview. Not sure of size of the viewing audience at that time. I am curious to find out the station's fees for 5.5 minutes of advertising time.

We will have a two page news article in the local VA Beach newspaper this weekend.
Also, beginning next week, the State Dept. of Agriculture will run the first of 2 large color ads listing all strawberry growers in SE VA. The 2nd ad will run a week later. The ads will cost approximately $4,300 and will run in the Virginia-Pilot, the newspaper that covers the entire area.

"Cal Schiemann" <CSCHIEMA@vbgov.com>

7.0 Thrips management tips (Florida)

Reports from Homestead indicate that thrips are out with a vengeance. Thrips are widespread in beans, pepper, eggplant, potato, cucurbit, and tomato. Respondents note that *Thrips palmi* are widely present.

Growers and scouts in Palm Beach are increased thrips activity. Reports indicate these are mostly Florida flower thrips although a few scattered pockets of *Thrips palmi* have been noted in pepper and eggplant.

Respondents around Southwest Florida also note increased thrips pressure. These are primarily Florida flower thrips *Frankliniella bispinosa*, although some scattered damage consistent with melon thrips has been reported. Scouts report finding 5-10 thrips
per bloom in several crops over the past week with even higher numbers being seen in some hot spots. They also note that they are starting to find some minute pirate bugs, beneficial insects that eat thrips. Melon thrips (T. palmi) remain low in a few isolated locations.

**Thrips activity has been noted in peppers in the Manatee area.** These are primarily flower thrips.

**Citrus is at or past full bloom in most of the area and may be a likely source (or destination) for thrips which are more than likely Florida Flower thrips (Frankliniella bispinosa).** In most situations, Florida flower thrips are usually just a nuisance problem but at high numbers heavy feeding inside the bloom may cause flower abortion or fruit damage. Chemical control is difficult and often increases populations by killing off natural enemies.

**Melon thrips have a broad host range and are a primary foliage pest on watermelon, eggplant, pepper, and cucumber.** Heavy infestations cause silvered or bronzed leaves, stunted leaves and terminals, and scarred and deformed fruit. On peppers, fruit scaring emanates from the stem end following crevices between locule lobes. Foliar damage may also be severe. Melon thrips also damages eggplant.

**Many conventional insecticides seem to stimulate melon thrips populations, possibly by eliminating predators that otherwise control them.** Therefore, broad-spectrum insecticides should be avoided as much as possible in preference to selective materials when available. Growers have reported good results with soft materials such as Spintor. Reflective mulches have as demonstrated positive results in reducing western flowers thrips pressure in trials in Florida and may offer some benefits with *Thrips palmi*.

(Gene McAvoy, ed., SOUTH FLORIDA VEGETABLE PEST AND DISEASE, HOTLINE, March 19, 2003).

### 8.0 Fungicide Updates (Mass)

**FUNGICIDE UPDATE FOR VEGETABLES 2003**  
Robert L. Wick, Department of Microbiology, UMass, Amherst

**STROBILURINS:** These are a new class of fungicides that have a relatively broad spectrum of activity. Strobilurins would be a good choice for Early Blight. Late Blight and Powdery Mildew are on several of the labels. Some are excellent for Powdery Mildew. Resistance development is a problem. If you use strobilurins, make sure you rotate with chemicals outside of this class.

**NOVEL CHEMISTRY/BIOLOGICALS:**
Actigard, common name: acibenzolar-s-methyl, is a synthetic analogue of salicylic acid (active ingredient of aspirin). It is not toxic to microorganisms but it causes an induction of resistance in the plant. Currently the label is very short but it does include Bacterial Spot and Speck of tomato, and Downy Mildew and White Rust of spinach. Possibly result in reduced yield in tomato and yellowing in spinach.

Contans WG, a fungal biological control agent, Coniothyrium minitans. For control of Sclerotinia sclerotiorum (Sclerotinia Blight).

Messenger, common name: harpin. Like Actigard, Messenger stimulates defense mechanisms in plants. Messenger is a protein produced by a bacterium. There are a number of vegetable crops on the label. In addition to disease control the product is supposed to increase yield.

Serenade is the trade name for a formulation of the bacterium Bacillus subtilis. Serenade has several vegetables on the label but has a short list of diseases (Powdery Mildew, Downy Mildew, Bacterial Spot of tomato).

Sonata, Bacillus pumilus, is produced by the same company that makes Serenade. Similar spectrum of activity.

T-22 is a formulated product of the fungus Trichoderma harzianum. Trichoderma is a common soil-inhabiting fungus that is relatively antagonistic toward plant pathogens. In addition to vegetables, it has herbs on the label. It is compatible with a number of common fungicides. T-22 is for the control of root diseases.

Fungicide Resistance Management in Vegetable Crops: (for both old and new materials) Fungicide selection is important. Above all, you must know what pathogen you are trying to control. Next, you must select a material that will adequately control the pathogen. If you anticipate making several applications of a fungicide that may result in pathogen resistance, you should have one or two appropriate fungicides to rotate with. The following table of fungicides tends to result in resistance. Avoid applying them twice in a row. You can rotate from class to class but do not rotate within the same class.

FUNGICIDES WITH HIGH RESISTANCE POTENTIAL

<table>
<thead>
<tr>
<th>CLASS</th>
<th>TRADE NAME</th>
<th>COMMON NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sterol Inhibitors</td>
<td>Folicur</td>
<td>tebuconazole</td>
</tr>
<tr>
<td></td>
<td>Nova</td>
<td>myclobutanil</td>
</tr>
<tr>
<td></td>
<td>Strike</td>
<td>triadimefon</td>
</tr>
<tr>
<td></td>
<td>Tilt</td>
<td>propiconazole</td>
</tr>
<tr>
<td>Benzimidazoles</td>
<td>Benlate</td>
<td>benomyl</td>
</tr>
<tr>
<td></td>
<td>Tospin-M</td>
<td>thiophanate methyl</td>
</tr>
<tr>
<td>Dicarboximides</td>
<td>Ronilan</td>
<td>vinclozolin</td>
</tr>
<tr>
<td></td>
<td>Rovral</td>
<td>iprodione</td>
</tr>
<tr>
<td>Strobilurins</td>
<td>Flint</td>
<td>trifloxystrobin</td>
</tr>
</tbody>
</table>
Quadris azoxystrobin
Sovran kresoxim-methyl
Cabrio pyraclostrobin
Headline pyraclostrobin
Phenylamides Ridomil Gold mefenoxam*

*earlier formulations of Ridomil (metalaxyl) are chemically related to mefenoxam and should not be rotated with each other. However, combination products such as Ridomil/Bravo do not tend to result in resistance.

The following fungicides do not tend to result in resistance. They make good rotational partners for the above fungicides.

FUNGICIDES WITHOUT RESISTANCE POTENTIAL
CLASS TRADE NAME COMMON NAME
Dithiocarbamates Maneb maneb
Mancozeb mancozeb
Penncozeb mancozeb
Inorganics Champ copper hydroxide
Basicop basic copper sulfate
Kocide cupric hydroxide
Substituted benzenes Bravo chlorothalonil
Daconil chlorothalonil

(Richard Bonanno, ed., UMASS EXTENSION, VEGETABLE NOTES, For Vegetable Farmers in Massachusetts, VOLUME 13, NUMBER 25, MARCH 2003)

9.0 Downy Mildew on cucurbits

Downy Mildew

Downy mildew is widely present on cantaloupe, squash and watermelons in numerous locations around Southwest Florida. Favorable conditions (fog and rain) towards the end of March resulted dramatic increase in the incidence, occurrence and severity of this disease in many places.

Downy mildew is present on cucumbers and squash around Palm Beach.

Reports indicate that downy mildew is present in squash in the Manatee/Ruskin area with very heavy pressure in at least one field where fungicide applications have slowed but not stopped disease progression.

Scouts in Homestead note that downy mildew is widely present in squash.
Downy mildew caused by the fungus *Pseudoperonospora cubensis*, is found annually on squash, cucumbers, pumpkins, muskmelons, and other cucurbits in all areas of Florida. Although downy mildew of all cucurbits is caused by the same species, strains within the species seem to exist. It is not uncommon to see squash, cantaloupe, and cucumber severely diseased by downy mildew whereas nearby watermelons show no signs of the disease.

Leaf symptoms can be used to diagnose downy mildew in the field in some cases. On cucurbits other than watermelon, small yellowish areas occur on the upper leaf surface. Later, a more brilliant yellow coloration occurs with the internal part of the lesion turning brown. Downy mildew lesions typically start away from the leaf margins as opposed to gummy stem blight lesions, which normally begin at the leaf margin. When the leaves are moist, a downy grayish fungal growth can sometimes be seen on the underside of individual lesions. On watermelons, lesions may or may not be angular and later turn brown to black in color. On watermelons an exaggerated upward leaf curling often occurs that growers sometimes liken to a dead man’s hand.

Spores are produced on the underside of the leaf within the downy fungal growth associated with diseased tissue. Spores are easily dispersed by wind from one leaf spot to another leaf in a field or to another nearby planting. Spore movement occurs primarily during late morning to midday. Under ideal conditions spores may be transported for many miles from one field to another. When a spore contacts a leaf and the leaf is wet, the spore germinates and penetrates the leaf tissue. Within four to seven days, new lesions capable of producing spores are produced. As this cycle continues, an epidemic situation occurs and control becomes increasingly difficult.

Since nighttime temperatures between 55 and 75_F and relative humidity above 90%, provide ideal conditions for infection, cucurbits planted in South Florida are always at risk from downy mildew and may be infected as early as the appearance of the first true leaves.

Spray programs for downy mildew are most effective when initiated prior to the first sign of disease since once a planting becomes infected; it becomes more and more difficult for fungicides to control downy mildew. A range of fungicides is available for the control of downy mildew depending on the crop. Rotations of maneb, Dithane, Bravo, Ridomil MZ, Ridomil Gold/Bravo, Ridomil Gold/Copper, and strobularin fungicides such as Quadris and Cabrio have all shown efficacy against the disease. Coverage is important and failure to gain adequate control may be related to using too low a spray volume particularly when the vines are full grown. Use of Bravo should be avoided on watermelon after fruit set as it may increase the risk of sunburn.

Strobularin fungicides must be rotated with other materials to prevent the buildup of resistance.

*(Gene McAvoy, ed., SOUTH FLORIDA, VEGETABLE PEST AND DISEASE, HOTLINE, April 11, 2003)*
10.0 Use of different Glyphosate products

Having Many Glyphosate-Containing Products Results in Price Breaks But Confusion

Glyphosate (i.e. Roundup) is widely used in fruit and vegetable crops for as a nonselective herbicide for control of emerged weeds either in rows of trees or vines or for stale seedbed treatments before planting vegetables. In September 2000, Monsanto’s U.S. patent on glyphosate expired resulting in an increase in the number of glyphosate containing products available. These new products include Acquire, Buccaneer, ClearOut 41, Credit Duo, Gly-Flo, Glyphomax, Glyphosate, Mirage, Rattler, Roundup UltraMax, and Touchdown IQ. This wide array of glyphosate contain products has provided some important price benefits but also has caused confusion.

James Martin and J. D. Green of the University of Kentucky have written an excellent article comparing these products (http://www.uky.edu/Ag/Agronomy/Weeds/). In this article and accompanying tables they sort out how these glyphosate containing products differ. The first way the products differ is in the concentration of the active ingredient (generally expressed as acid equivalents). Most products contain 3 lbs of acid equivalent/gallon but there are exceptions. For example, Gly Star 5 contains 4 lbs of acid equivalent/gallon, Roundup UltraMAX contains 3.73 lbs acid equivalent/gallon, and Roundup Weather MAX contains 4.5 lbs acid equivalent/gallon. When determining price make sure to compare like amounts of the acid form of glyphosate.

Secondly, the type of salt used in the glyphosate formulation can vary. The most common salt is the isopropylamine but Touchdown Iq uses the diammonium and Roundup Weather MAX uses the potassium salt. The salt used in the formulation can effect performance such as rainfastness and absorption into the plant. It will also impact on the amount of active ingredient in a formulation. This is why it is important to compare acid equivalents of glyphosate when selecting a product.

The use of adjuvants also varies depending on the glyphosate containing product. Most glyphosate containing products indicate that ammonium sulfate (AMS) can be added as an adjuvant. AMS can improve the activity of glyphosate when it is tank mixed with some soil-residual herbicides, where weeds are not actively growing, where water hardness exceeds 500 ppm calcium or magnesium, or where problem weeds such as velvetleaf are present. Recommendation on using a surfactant vary depending on the glyphosate containing product. Some labels allow additional surfactant to be added, other glyphosate containing products require adjuvant, while products with unique surfactant systems (i.e. Roundup Ultra) do not allow additional surfactant.

Several Universities have compared different glyphosate containing products. All glyphosate products should provide adequate weed control if applied at the recommended rate to actively growing weeds at the proper size. Any differences in efficacy have generally been small and variable.
11.0 Warrior Label Expanded

Warrior Label Expanded

The label for the insecticide Warrior (lambda-cyhalothrin), manufactured by Syngenta, has been expanded to allow application to beans, peas, peppers, and eggplant. The new label also allows application to pome fruits (apples and pears), stone fruits (peaches, plums, nectarines, apricots, and cherries).

Rick Weinzierl (217-333-6651; weinzier@uiuc.edu)

12.0 Sinbar herbicide in Strawberries (Illinois)

DuPont Expands the Sinbar Label for Strawberries: Sinbar is a herbicide that has been registered for use on established strawberries either at renovation or just prior to mulching in the fall. Recently, DuPont, the manufacture of Sinbar has expanded its label to allow the use of Sinbar during the planting year. Sinbar can be applied at 2 to 3 ounces/acre after transplanting but before new runner plants start to root. A second Sinbar application at 2 to 6 ounces/acre can be made in late summer or early fall to control winter annual weeds. A third application at 2 to 4 ounces/acre can be made just prior to mulching in the fall. This third application will extend weed control through harvest in the following year. Use rates for Sinbar vary depending on soil type and amount of organic matter.

Sinbar can be absorbed through the foliage and cause injury, if the plants are actively growing and forming new leaves. To prevent injury, Sinbar applications to actively growing strawberry plants must be followed immediately by 0.5 to 1 inch of irrigation or rainfall to wash the Sinbar off the strawberry foliage. Strawberry varieties can vary in their tolerance to Sinbar and less vigorous plants tend to be injured. Before using Sinbar for the first time on a new planting conduct a trial on a small section of the planting to determine the potential for injury under your field conditions.


13.0 Aim Herbicide for Sweet Corn (Illinois)
Aim Herbicide on Sweet Corn: (John Masiunas, Univ. of IL)

Aim (active ingredient carfentrazone-ethyl) herbicide manufactured by FMC can be used for postemergence weed control in either fresh market or processing sweet corn. Aim should be applied to actively growing weeds up to 4 inches high and rosettes less than 3 inches across. Aim at 0.5 fluid ounces (0.008 lb active ingredient)/ acre will control common lambsquarters, ivyleaf and pitted morningglory, eastern black nightshade, redroot pigweed, velvetleaf, common waterhemp, and tall waterhemp. Thorough coverage of the weeds is essential for control. Thus, a nonionic surfactant at 0.25% v/v with at least 80% active ingredient should be included in the spray solution.

>>> Please NOTE for Ohio: The user assumes all responsibility for crop injury. Not all varieties of sweet corn have been tested for tolerance--check with your seed company or Extension specialist before use. Do not tank-mix with EC formulations of other herbicides.

(Robert Precheur, Ohio State University Extension, Vegetable Crops VegNet Vol. 10, No. 4. April 23, 2003)

14.0 Screening new Herbicides (Arizona)

SCREENING NEW HERBICIDES.

During the fall of 2002, several compounds that have registered uses in major crops were evaluated for potential use in vegetable crops. Fifteen preemergence and 16 postemergence herbicides were applied on head lettuce, romaine, broccoli, and spinach. In the small plot experiments, a backpack sprayer applied variable rates by constantly diluting products over the crops and weeds. The rates were determined for crop safety as well as effective rates that controlled weeds. The majority of the compounds in the experiments were sulfonylurea chemistries that are being used in corn, small grains, or other major crops. Products such as Upbeet* used in sugarbeets or Muster* used in canola were included to evaluate potential use on related spinach and broccoli, respectively. Other products included Callisto*, a corn herbicide, Valor*, Paramount*, and experimental materials not yet registered. Preliminary observations indicated that most of the postemergence applications caused stunting, chlorosis, or leaf-spotting on most of the crops with a very small margin of safety over rates to control weeds. Extremely low rates were calculated to be safe such as Muster at 0.011 lb a.i./A on broccoli and weed control observed at less than 0.003 lb a.i./A. Some compounds at as low as 0.002 lb a.i./A caused severe injury on all crops. Accent*, a corn herbicide, was safe on head lettuce in the preemergence and postemergence tests. A few leads generated from these experiments are being evaluated now in Salinas to verify the initial findings. If results are confirmed, further testing will be warranted to define rates, timing, and weed spectrum. (Kai Umeda, Arizona Coop. Ext. Maricopa County, VEGETABLES NEWSLETTER vol X, issue no. 3, May 9, 2003)
15.0 Dual Magnum herb on Tomatoes

Dual Magnum labeled for tomatoes: The long-awaited national label for Dual Magnum (metalochlor) on tomatoes has been issued. In the past few years Dual Magnum has had a Section 18 label in Indiana and Ohio for control of eastern black nightshade in processing tomatoes. Dual Magnum may be used on transplanted or direct seeded, processing or fresh market tomatoes.

In transplanted tomatoes, Dual Magnum may be preplant incorporated or surface-applied before transplanting the tomatoes. Dual Magnum may also be applied to transplanted tomatoes post-directed after the first settling rain or irrigation. Dual Magnum will not control emerged weeds. When using transplants with raised beds and plastic mulch, Dual Magnum may be used under the plastic. Apply Dual Magnum preplant, non-incorporated to the top of the prepared bed as the last step prior to laying the plastic mulch.

In seeded tomatoes, Dual Magnum should be applied as a post-directed treatment. The tomato plants must be at least 4 inches tall at the time of application and you must minimize contact with the tomato plants.

The application rate for Dual Magnum varies depending on soil type and the expected intensity of weed infestation. It ranges between 1 and 2 pints/acre. Check the label for a specific application rate on your soil.

Dual Magnum can injure tomatoes, and the label contains specific precautions to avoid any injury. Conduct a small trial before using Dual Magnum to determine if the herbicide will injury the tomato cultivars you are using. Use only healthy, vigorously growing transplants and do not apply when wet and cold growing conditions are likely to occur. If incorporating Dual Magnum on transplanted tomatoes, plant the tomatoes below the depth of incorporation and use the lower end of the rate range. Dual Magnum has a 90-day preharvest interval which will limit its use on some fresh-market tomatoes. Even with these limitations, Dual Magnum will be a welcome addition, especially for growers who have been battling eastern black nightshade in their tomatoes.

John Masiunas (masiunas@uiuc.edu)
(Rick Weinzierl, ed., Illinois Fruit and Vegetable News, University of Illinois Extension, Vol. 9, No. 5, May 9, 2003)

16.0 Oxidate vs. hydrogen peroxide use

OxiDate vs. Hydrogen Peroxide – apparently a few growers have been trying hydrogen peroxide for disease control thinking that it is comparable to OxiDate. Here are some
facts to consider.

The basic premise behind OxiDate (hydrogen dioxide) and peroxides when used, as anti-microbials is that bacteria and fungi are comprised of proteins and proteins are highly subject to oxidation. Disruption of the protein by oxidation results in loss of protein function and ultimately cell death. When using this category of oxidizers for disease control, there are a couple of important facts to consider.

First, OxiDate and the other peroxides have little or no residual activity due to the fact that they are rapidly degraded in the environment and are broken down to their constituent component—water (H₂O) and oxygen (O₂). Since they have no residual activity, coverage is essential because if the chemical doesn't contact the organism at the time of spraying and in the right concentration there is no effect. Secondly, in order to be effective, non-residual chemistry should be able to kill not only actively growing disease organisms but also spores. Lastly the oxidizing chemical must be stable enough to exist for some time in the environment and at the same time not harm the plant material.

The first major problem with hydrogen peroxide is stability. Hydrogen peroxide is highly unstable and breaks down very quickly when exposed to organic matter, UV light pressure changes, or in fact anytime energy is added to the system. The unstable nature of hydrogen peroxide can result in one of two possible outcomes when applied to crops. One possibility is that the peroxide will degrade through UV exposure, agitation in the tank and/or the rapid pressure changes associated with passage through the spray nozzles, into it's constituent parts - oxygen and water - before ever reaching the plant pathogen or soil. The second possibility is that it is sprayed at sufficient strength to actually reach the foliage and then reacts very quickly on the surface of the plant foliage liberating heat and oxygen and causing burning, phytotoxicity and crop damage. Either result is undesirable.

The second major shortcoming of hydrogen peroxide is that it has no sporicidal activity. This is why it is not used in applications where sporicidal activity is required.

The last major problem with hydrogen peroxide is that it is not registered with the US EPA as a fungicide/bactericide and therefore is illegal to use on crops for such purposes.

OxiDate is an EPA registered, stabilized and activated peroxygen/peroxyacetic acid compound. As per EPA requirements and to avoid confusion, the label refers to the active ingredient as hydrogen dioxide. Whichever way it is referred to, OxiDate is a stabilized, engineered hydrogen peroxide formulation in combination with peroxycetic acid. This combination gives OxiDate sporicidal properties while the stabilizers allow OxiDate to be applied as a spray or drench without the rapid loss of the active ingredient or phytotoxicity. OxiDate is labeled for use on the following crops: beans, broccoli, cauliflower, cabbage, cucurbits, onions, peppers, potatoes, and tomatoes. For more information on OxiDate, go to the BioSafeSystems website at http://www.biosafesystems.com.
17.0 Harris Moran melon, corn field day, Arizona

HARRIS MORAN SEED

Cantaloupe & Honeydew
Sweet Corn
Variety
Field Day Trials Yuma AZ

June 11, 2003
Time 8:00 am To Noon

Location: West of Yuma, In the Yuma Valley

County 10th St. & Ave. G

Neil Poston
(928) 246-4134
Pat Sakamoto
(760) 401-0047
Meir Peretz
(760) 831-2629

18.0 Computer Workshop Arizona June 03

Hands-on Computer Applications Workshop for Crops

Thursday, June 12, 2003
1:00 to 4:00 p.m.

Wingate Inn and Suites
1188 N. Dysart Road (corner of I-10 & Dysart)
Goodyear AZ

AGENDA
(no prior computer experience needed)

1:00 p.m. ACIS Information and Tools - Jenny Jones
 * Pesticide applicators information sites
 * IPM tools and resources
1:45 p.m. Crop Budgeting - Trent Teegerstrom

2:30 p.m. Using Excel to Evaluate Financial Risks - Russell Tronstad & Trent Teegerstrom
  * Utilizing Solver to select an optimal crop mix
  * Evaluating risk and return trade-offs
  * Evaluating alternative crop insurance products, levels, and decisions

3:30 p.m. Evaluating Herbicide Injury Symptoms - Pat Clay
  * on-line decision assistance

4:00 p.m. Adjourn

RSVP by June 10, 2003 - Space is Limited
Pat Clay, 602-470-8086x313 or Judy Robinson x322

1 hour CEU applied for (AZ)

Persons with a disability may request a reasonable accommodation, such a sign language interpreter, by contacting Pat Clay, 602-470-8086x313). Requests should be made as early as possible to allow time to arrange the accommodation.

**19.0 Direct Mkt Conference Delaware Dec. 2003**

**CALL FOR PRESENTATIONS**

Direct Marketing Training for Farm Profitability
Sponsored by Northeast Region SARE
Sustainable Agriculture Research & Extension Program

Held in conjunction with
The 5th Annual Future of Our Food and Farms Summit

December 4, 2003
Wilmington, Delaware

For further information, please contact:

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