Dave’s Ramble

“My little children cover up be sure to sleep tight and don’t let the bed bugs bite.” You better believe I heeded that advice, and slept tightly wrapped from my soles to the top of my head. Admittedly, I never truly had to sleep in such fear of this blood feeding scourge of mankind known of quite well by my grandparents. Why? Because I’ve lived in a blessed era: An era of organochlorines, carbamates and organophosphates. True organic chemicals! In time, I grew and realized my liberation unimaginable to our fathers before from the pestilence; Born unto this world in the winter prior to the Silent Spring.

All natural is so vogue. So amazing the claims for natural products! Dogmatic testimonials without cessation for the clean-all, heal-all properties of baking soda, vinegar, and orange pulp and such. Oh Truth! In reality chemistry is the root of all good and evil substance. The chemical world involves no feelings of remorse, guilt or concern. The science of chemistry involves two distinct disciplines-- organic and inorganic. This separation involves the presence or absence of carbon, essentially the element of life. The unfamiliarity of chemistry in our living world has yielded to societal misconceptions; a renaissance of an alchemist age. Yet, enlightened chemists who have learned from nature’s laboratory having synthesized both inorganic and organic chemicals to civilize this world; they still may prevail. For under the sun on this good earth can a non-organic food of sustenance be found? Not likely!

Hence as some of the first order truly organic chemicals are fading away – Let me offer this historical reminder: DDT an organochlorine was synthesized by a German graduate student chemist in 1873 and rediscovered to have insecticidal properties in 1939 by a Swiss Entomologist named Paul Mueller. Never forget Dr. Mueller received the Nobel Prize in medicine in 1949 for this life saving discovery that is still saving lives in the malaria ridden world even today. The annual worldwide death rate from malaria was reduced by DDT from 6 million in 1939 to 2.5 million in 1965 and to about 1 million by 1991. Thank you Dr. Mueller!

More recently other organic chemicals (in the classical sense), organophosphates such as Diazinon®, Malathion® and Lorsban® have recently lost homeowner labels replaced by “softer” pesticides. Hear the conclusion my little children of no fear, “Let your toes hang out tonight for the bed bugs are about to bite!”

Spring 2006

Calendar of Events

Mark Your Calendars --- Plan To Participate

• May 6-7 -- MD Sheep & Wool Festival – Howard Co.
• May TBA -- Strawberry Spring Crops Twilight - Wye REC
• June 17 -- MD Grape Growers Field Day – CMREC
• August 24 - Crops Twilight & Barbecue - CMREC

Inside This Issue

- Spring/ Summer Meetings
- Maryland Weed Reporter
- Asian Soybean Rust
- Agronomic Crop Insect Update
- Vegetable IPM Update
- Vegetables The Organic Way
- Stewart’s Bacterial Wilt A Problem Year?
- Fungicide Resistance Management
- Greenhouse IPM Update
- Maryland Vegetable Growers
- Specialty Crops Voted Most Likely to Succeed
- Alternative Fruit Crop Report
- SMRFM Spring Plant Auction
- Hulless Barley Evaluation
- Farm Price & Marketing Reports
- Governor’s Ag Forum Priorities
- Maryland’s Farm Wildlife Crop Loss Report
- Maryland Animal Identification Plan
- Sheep & Goat Blog & Production Update
- Farm Safety Article
Wye Strawberry & Spring Crops Twilight Tours
Date TBA
Make plans to attend the annual Wye Strawberry & Spring Crops Twilight Tours in May 2006 (Date TBA) at the Wye Research and Education Center. For more information contact Debby Dant at 410 827-8056 x115.

Maryland Grape Growers Association Summer Field Day
Research Vineyard at CMREC Upper Marlboro
June 17, 2006
Plan to attend the Maryland Grape Growers Association Summer Field Day at the CMREC Upper Marlboro research vineyard. This all day event is hosted by the Southern Maryland Vineyard Team and the Maryland Grape Growers Association. Private Pesticide Recertification credit will awarded for full participation.
For more details visit the Maryland Grape Growers Association website at: http://www.marylandwine.com/mgga/

Field Crops Research Twilight Barbecue & Ice Cream Social
CMREC, Upper Marlboro Farm
August 24, 2006
You are invited to attend a twilight wagon tour of the University of Maryland Upper Marlboro Research Farm, on Thursday, August 24, 2006 from 4:30 p.m. to 8:30 p.m. Maryland Cooperative Extension will host this Field Crops Research Twilight Barbecue & Ice Cream Social.
Served after the barbecue, “old-fashioned” homemade ice cream! It’s “old fashioned” ice cream because we will be using a 1929 Fair-Banks Morse antique gas engine to do the cranking.
This event will highlight all field crops, agronomic and horticultural research projects currently conducted at the CMREC Upper Marlboro Farm, possibly including but not limited to the following:
- Bt Sweet Corn
- Entrust Study on Potatoes
- Vineyard Projects - Table and Wine Grapes
- Corn Stalk Nitrate Test Study
- P Phyto-Remediation Grain vs. Forage Systems
- Peach & Beach Plum Research
- Ethnic and Specialty Vegetables
- Strip-Till/No-Till Vegetable Production Techniques
- Blueberry Project

The Maryland Weed Reporter
The Maryland Weed Reporter is issued on an irregular basis 1-2 times per year, with information about new products, label changes, and other weed science news. Compiled by Dr. Ronald L. Ritter, Extension weed control specialist.
Past Editions of the Maryland Weed Reporter
2006 Chemical Weed Control (Herbicide) Information for Maryland
- Chemical Weed Control in Field Crops
- Weed Control in Corn
- Weed Control in Alfalfa
- Weed Control in Pastures
- Weed Control in Grain Sorghum
- Weed Control in Small Grains (Barley, Oats, Rye and Wheat)
- Weed Control in Soybeans
- Weed Control in Sunflowers
- Weed Control in Tobacco
- Weed Control in Vegetables
The full text of these articles, with additional information on disease, nematode and insect pest management, is available in:
- Extension Bulletin 237, Pest Management Recommendations for Field Crops
- Printed copies of EB-237 can be ordered from your local MCE office for $19.00.

Asian Soybean Rust Forecast
Websites for tracking soybean rust occurrence and movement are found at:
USDA/APHIS tracking site: http://www.sbrusa.net/
North Carolina State Univ. forecasting site: http://www.ces.ncsu.edu/depts/pp/soybeanrust/

Agronomic Crop Insects
Joanne Whalen
Extension IPM Specialist; jwhalen@udel.edu

Soybeans - EPA has approved the use of Orthene 97 on soybeans. The supplemental federal label can be obtaining at the following site: http://www.cdms.net/idat/id2AQ011.pdf

Field Corn Soil Insect Management - The decision to use preventive treatments should be based on field history, sampling for the insects, and crop rotation. The following is a brief review of conditions favoring soil insects in field corn as well as observations from the 2005 season:

1. Corn Rootworm (Larval Control): Since rootworms are generally a problem in continuous corn, rotating out of corn should be considered for corn rootworm larve management. However, if you plan to plant continuous corn, control options include either a soil insecticide, a commercially applied seed treatment of either Cruiser (high rate) or Poncho 1250, or a transgenic corn hybrid with resistance to rootworm larvae.
As far as seed treatments, reports from the Mid-West and areas in PA with heavy rootworm pressure state that “when rootworm densities and root injury have been moderate, seed treatments have provided acceptable protection of the roots. However, when rootworm densities have been high and root injury has been moderately high to severe, insecticidal seed treatments have not provided consistently acceptable control of corn rootworm larvae.”
Vegetable Crop Insects

Joanne Whalen

Extension IPM Specialist; jwhalen@udel.edu

Admire Pro (Bayer) - This new formulation of imidacloprid will be in the marketplace in 2006. It contains 4.6 lbs of active ingredient per gallon. Please be sure to check the label for use rates and restrictions (http://www.cdms.net/ldat/ld745007.pdf)

Venom 70SG (Valent) - This new neonicotinoid, containing the active ingredient dinofuran, is now labeled for use on cucurbits, fruiting vegetables, head and stem brassica, leafy vegetables and potatoes. Please see the label for use rates and restrictions.

Tomatoes - Please note that Actara is not labeled on tomatoes. It is incorrectly listed under tomatoes in the Commercial Vegetable Production Recommendations, Extension Bulletin 236.

IPM Techniques for Vegetable Producers

Michael D. Orzolek

Department of Horticulture, Pennsylvania State University

Pest management in vegetable crops and horticultural crops in general present many challenges, the least of which is vegetables and other horticultural crops are classified as minor crops and have limited labeled fungicides, insecticides and herbicides compared to agronomic crops. Also, there are no weed or insect resistant vegetable varieties like there are commercial disease resistant/tolerant cultivars.

Vegetable growers out of necessity have had to practice Integrated Pest Management, but many have adopted only a partial list of IPM practices with the assumption that pest resistance to current vegetable pesticides will not occur in their (growers in the 50 + age group) fields or lifetime.

All vegetable pest management programs in Pennsylvania have emphasized an IPM approach. The programs generally are three areas; cultural, mechanical and chemical controls. Cultural controls would include; liming and soil pH management, banding fertilizer, crop rotation, crop density or population, identifying and treating hot spots of weeds, insects or disease in the field with pesticides, eliminating or reducing weed seed and inoculum levels, and use of plastic mulch, raised beds and drip irrigation. Mechanical controls would consist of tillage methods, cultivation and burning or flaming with propane burners. Chemical control methods would include; proper identification of the problem pest, treating active pest(s) populations in the field, correct choice of pesticide and rate, rotation of chemical families, correct application technique and uniform application in the field.

Resistance Management has become an integral part of an Integrated Pest Management program for the last 10 years in Pennsylvania because of the large application of certain pesticides in the field without rotation to different chemical families during the growing season. A good example is weed resistance to atrazine; both common lambsquarters and redroot pigweed have developed resistance to atrazine. Since atrazine is such an inexpensive herbicide to apply, controls a large number of grass and broadleaf weeds, and can be applied either pre or post-emergence, almost all corn (field, sweet, pop and ornamental) growers in Pennsylvania make one application/acre/year. Thus, the challenge for Extension is to provide viable, efficient method(s) of controlling weeds in vegetables by either chemical and/or cultural means and encourage the reduction/elimination of atrazine use in the state while utilizing IPM methods for weed control in vegetables.

Cultural controls can help reduce problem and resistant pest populations in many fields by at least 50% a year. Monitoring (scouting) fields and identifying the different type of pests and population changes that take place each year will help growers to decide what crop(s) to plant in each of...
his/her fields depending on pest demographics. In addition, some vegetable crops when grown in a no-till system are more competitive than the weeds and compete rather effectively from establishment through harvest. Crop rotation – Use of legume cover crops (hairy vetch, clovers, etc.) or small grain in a crop rotation program will provide effective pest control of most annual broadleaf weeds such as ragweed, jimsonweed and galinsoga, reduce some soil insect populations and encourage a better soil environment for beneficial fungi and bacteria. Since most minor crops have fewer labeled pesticides, rotating minor crops (horticultural crops) with corn, soybeans and small grains will increase the number of labeled pesticides available that will control annual and perennial weeds, insects and disease organisms. This will also enable the grower to choose from more pesticide families and reduce the potential for resistance in field pest populations.

Tillage – The use of a moldboard plow in alternate years or at least every third year will provide generally better perennial weed control (for weeds like Canada thistle and horsenettle) than chisel plowing. Moldboard plowing will also bring to the soil surface and expose the large storage organ (root) of many weeds, soil insects, larvae and eggs as well as many microorganisms that cause diseases so that over time the storage roots, insect larvae/eggs and microorganisms desiccate and/or rot during the winter months.

Cultivation – Timely cultivation can effectively control many annual weeds, especially weed populations that have acquired resistance to herbicide(s) or have a very narrow genetic base or variation. Generally, cultivating several times during the growing season in specific crops grown in fields with low weed seed populations will provide effective weed management during the entire growing season. Cultivating or destroying weeds between rows of vegetables in the field also reduces the potential for insects and diseases to use the weeds as hosts or reservoirs. However, the one drawback of relying solely on cultivation for pest control during the growing season is rainfall and wet soils. Extended wet periods can eliminate the use of a cultivator in the production field for several weeks while young weeds are still actively growing.

Banding or injecting fertilizer – Application of fertilizer as a band next to the crop provides nutrients to the crop but not the weeds, especially between crop rows. Likewise, injecting fertilizer in drip irrigation tape will provide nutrients for the crop but not weeds. Banding also helps to reduce the total cost of nutrient application for a vegetable crop.

Plant populations – The higher the plant population per acre, the greater the canopy of the vegetable crop and reduction in the number of weeds that are competitive with the crop due to the lack or reduction in photosynthetic active radiation (PAR). Plant populations can be increased within limits to enhance canopy development of the crop without compromising crop yield or quality. The disadvantage of high plant populations is the potential for greater insect problems unless a thorough scouting problem is employed and large, dense canopies that will increase the relative humidity in the plant canopy which in turn will increase the potential for foliar diseases such as powdery mildew.

Eliminating weed seed production – This is the most significant cultural practice that will reap rewards for years to come. The elimination of viable weed seed and/or reproductive structures by either mechanical or chemical means will over time result in much smaller weed seed populations in the soil bank that can actively compete with vegetable crops in the future and act as hosts for insects and disease organisms. Simply mowing weeds and eliminating immature flowers on the weeds is very effective. Some weeds when mature can supply thousands of weed seeds per plant back into the soil bank and be problems for many years in the future.

Treating hot spots – Many weed problems originate in fence-rows near the field with only a few plants or maybe even one. Treating and eliminating weeds, even if only one or two which seem insignificant at the time, in fence rows will help to eliminate future pest problems in your field. Also, eliminating hot spots in your production field as they become apparent will prevent large scale populations of pest problems in the future.

Use of plasticulture systems for vegetable production – Many vegetables benefit from being grown on raised beds (28” to 30” wide and 6” to 8” tall) covered with plastic mulch and drip irrigation tape buried beneath it in the bed. The plastic film, generally black but can be other colors, not only eliminates weed growth but also increases soil temperature, maintains higher soil moisture levels, reduces leaching of nutrients and other pesticides applied to the bed and retains soil structure throughout the growing season. Mulch color has been shown to reduce some insect problems as well as some disease problems.

If populations of volunteer weeds, insects or disease causing organisms are still present after using several of the cultural controls available for pest management in vegetables, then the use of appropriate pesticides should be considered. However, before applying the pesticide on the problem pest(s), several decisions need to be made by the grower. One, is the pesticide labeled for the intended crop use? Two, will the pesticide provide effective control of the problem pest(s) found in the crop? Three, what rate should be applied and what method of application should be used? Four, are there any sensitive crops being grown near the field where the pesticide will be applied? Five, what is the half life of the pesticide and how long will it last in the field after application? If a grower has answered all these questions to his/her satisfaction, then applying a specific pesticide to a specific vegetable crop to control a specific pest should be made. Of course, it is assumed that: 1) there is negligible wind during application, 2) the sprayer has been correctly calibrated, 3) all nozzles tips and screens have been checked for wear and blockage and 4) both the crop and pest populations are actively growing and not under stress.

As growers become busier tilling fields, planting crops and monitoring pests in the field, they invariably will take short cuts to become more efficient with time and maintain some resemblance of a production plan for the year. However,
short cuts lead to mistakes and mistakes can result in the reduction of both yield and quality of most vegetable crops.

The Organic Way – Resource Guide for Organic Insect and Disease Management

A new publication is available for organic growers and growers in transition to organic production, extension personnel, and farm advisors. Resource Guide for Organic Insect and Disease Management contains information on cultural strategies and materials in compliance with the National Organic Standards based on published research for insect and disease management of vegetable crops. Crops included in the guide are brassicas, cucurbits, lettuce, solanaceous crops and sweet corn. The guide also contains color photographs of many insects and symptoms of diseases for these crops. Material fact sheets containing references and appendices are also included. The guide is available in its entirety online at: http://www.nysaes.cornell.edu/pp/resourceguide/index.php.

Additionally, a limited number of copies are also available for purchase $5 plus $4 shipping and handling by contacting Gemma Osborne, NYSAES by mail at 630 W North Street, Geneva, NY 14456 or by email gro2@cornell.edu or by telephone at (315)787-2248.

Vegetable Crop Fungicide Update

Bob Mulrooney

Extension Plant Pathologist; bobmul@udel.edu

There have been several new additions to the fungicide arsenal this past year including Reason from Bayer Crop Science and Ranman from FMC. Reason (fenamidone) is a new Group 11 fungicide labeled for use on tomatoes and potatoes for early blight and late blight with good activity against early blight. It is also labeled for cucurbits and would be an alternative for Alternaria leafblight on cantaloupes and watermelon. I would not expect activity against downy mildew on pickles although it is labeled for downy mildew as well. Ranman (cyazofamid) is new chemistry and is in fungicide group 21 all by itself. It is an excellent fungicide for the control of the oomycete fungi such as late blight and downy mildew. It is currently labeled for late blight on potato and tomato, and downy mildew on cucurbits.

Forum replaces Acrobat as the new formulation of the fungicide dimethomorph from BASF. Forum is a 4.18 lbs/gal SC formulation replacing the Acrobat wettable powder formulation. The labeled crops are the same.

Will Stewart’s Bacterial Wilt be a Problem This Year?

Tim Elkner

Extension Educator, Lancaster County

Stewart’s bacterial wilt of sweet corn could be a potential problem for growers this season. The bacteria that cause this disease (Pantoea stewartii, formerly Erwinia stewartii) survive the winter in the digestive system of corn flea beetles. When the weather warms the beetles emerge from their overwintering sites and spread the disease to corn seedlings. There are two phases of Stewart’s wilt on corn. The first phase, or seedling wilt phase, happens when susceptible sweet corn is infected as young plants. The second phase, or leaf blight phase, occurs when corn plants are infected after tassels emerge. The first phase is the most destructive and yield losses of 40 to 100% can occur when susceptible varieties are infected before the five-leaf stage under epidemic conditions.

Stewart’s Wilt of corn is a disease confined to North America, although there have been infrequent reports of the disease occurring outside of this area. The disease is confined to areas where the corn flea beetle occurs – the primary carrier of the disease. In the US this is the Mid-Atlantic and Ohio River Valley regions and the southern portion of the Corn Belt. Once a beetle becomes infected with the bacteria, it will remain a carrier for the rest of its life. Although the disease can be seedborne, this method of spreading the disease is rare.

Why could the 2006 growing season see a large amount of this disease? Blame our warmer than normal winter. A forecast system to predict the occurrence of Stewart’s wilt based on winter temperatures was developed by N. E. Stevens in the early 1930’s. This was one of the first disease prediction forecast systems developed for plant diseases. G. H. Boewe modified Steven’s forecast 15 years later to more accurately predict the leaf blight phase of Stewart’s Wilt. Basically the system totals the average winter temperatures for December, January and February and assigns a severity index for the potential occurrence of the disease in both the seedling and leaf-blight phases (Table 1). This information is based on survival of the overwintering beetles. My calculations for Lancaster, PA this winter give an index of 102 (through February 27). This puts us in the potentially destructive and severe phases for seedling wilt and leaf-blight, respectively.

Growers need to be aware of the potential for this disease this season and take appropriate steps. Steps to reduce potential losses include the following:

1) Select disease resistant varieties if possible. There are a greater number of later sweet corn varieties with resistance than early selections so growers who use early varieties need to use other methods to reduce potential disease occurrence. For resistance information check the variety listings in your Commercial Vegetable Production Guide, consult your seed supplier or view the results of resistance testing conducted at the University of Illinois at: http://www.sweetcorn.uiuc.edu/ (select ‘Disease Nursery Reports’).

2) Use commercially treated seed to control early beetle populations, particularly on wilt-susceptible varieties.
Treatments (all commercially applied) include Cruiser, Gaucho and Poncho. There are some plant back restrictions when using treated seed so be sure to check the seed label or consult your seed supplier.

3) Use planter box or soil applied treatments to protect seedlings. However – there is a great deal of variability in the length of time these treatments will protect plants. Be sure to consult the label or your supplier for this information. Also note that soil-applied insecticides may not be effective if soil temperatures are cool.

4) Control the beetles with foliar insecticide applications. Start scouting your fields at spike emergence and if more than 5% of plants are infested with beetles then start applications. If your beetle populations are high frequent applications may be necessary to keep newly-developing foliage covered with a protectant insecticide. Again – consult your Commercial Vegetable Production Guide EB236 for labeled materials and rates.

Not all overwintering beetles are carrying the wilt bacteria in their system (estimates are up to 20% may be carriers) and the actual number of beetles with the bacteria will be dependent upon the amount of disease present in your area last year. Note that seed treatments are effective through the 5-leaf stage while researchers recommend control through the 7-leaf stage so additional insecticides may be necessary in your fields if beetle pressure remains high. Also – there is no advantage (for beetle control) in using both treated seed and a planter box or soil applied insecticide. Select your insecticides based on the pest(s) to be controlled.

High populations of corn flea beetles can cause severe feeding damage to newly emerged sweet corn plants so even if you do not have a history of Stewart’s Wilt on your farm be aware of the potential for high beetle populations this spring. And if we do have a higher than normal occurrence or Stewart’s Wilt be sure to destroy your sweet corn fields as soon as possible after harvest. This will help to reduce the chances of recently emerged beetles feeding on an infected stalk and becoming disease carriers for next season.

**Table 1.** Sevens-Boewe forecast for Stewart’s wilt.

<table>
<thead>
<tr>
<th>Winter temp index</th>
<th>Seedling wilt phase</th>
<th>Leaf blight phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 or more</td>
<td>destructive</td>
<td>severe</td>
</tr>
<tr>
<td>90 to 100</td>
<td>light to severe</td>
<td>severe</td>
</tr>
<tr>
<td>85 to 90</td>
<td>nearly absent</td>
<td>moderate</td>
</tr>
<tr>
<td>80 to 85</td>
<td>nearly absent</td>
<td>light</td>
</tr>
<tr>
<td>below 80</td>
<td>nearly absent</td>
<td>trace</td>
</tr>
</tbody>
</table>

Developed in the 1930s and revised in the 1940s by N. E. Stevens and G. H. Boewe at the Illinois Natural History Survey, University of Illinois. Winter temperature index = sum of average temperature (°F) for December, January, and February. Table from “Stewart’s Wilt of Corn” by Jerald K. Pataky, APSNet feature story July-August 2003: [http://www.apsnet.org/online/feature/stewarts/](http://www.apsnet.org/online/feature/stewarts/)

---

**General Insect Control Updates**

Joanne Whalen  
Extension IPM Specialist; jwhalen@udel.edu

As we start the 2006 season, remember that pesticide labels are always changing so it is important to read all labels before applying any pesticide. In some cases, the labels you find on line or even in label books may not be the most recent label or may have changed after printing. Therefore, you always need to use the label that is on the pesticide container. Since the label is the law, it is important to always read the label and follow those directions and restrictions before making any applications. If you are applying a pesticide under a special label (including Section 18’s, Special Local Need 24C’s or 2ee) then you must also have those labels with you at the time of application.

Hopper Box Seed Treatments for Vegetable and Field Crops: Seed treatments containing diazinon can be still be used under the old labels in 2006. The new labels, which should start to appear in 2006, will no longer have diazinon on the label as a seed treatment. According to EPA, if you have it in your possession, you should be able to use your existing stocks under the old labels, including diazinon 50W and diazinon-lindane formulations. However, there are few if any existing stocks of the diazinon/lindane products (i.e. Kickstart, Kernel Guard) available in the marketplace. Although the use has not been cancelled, the same is true for stocks of the permethrin based seed treatments (i.e. Kernel Guard Supreme or Kickstart VP). Therefore, the only available hopper box treatments for field corn and sweet corn will be Latitude and Concur (both contain imidacloprid).

Kelthane – The following information was provided by Dow AgroSciences on the voluntary phase out of Kelthane: “Dow AgroSciences has decided to initiate a voluntary phase out and global exit of the Kelthane® miticide business. Kelthane (dicofol) is a non-systemic, organochlorine miticide (acaricide) that has been used for almost 50 years to control mite pests in U.S. field and specialty crops such as: apple, citrus, cotton, grapes, pecans, and various vegetable crops. Kelthane is an efficacious, broad spectrum, and economical miticide that has minimal effects on beneficial insects or bees (when used according to label directions) and has fit into resistance management programs as an alternative mode of action for product rotation. However, the U.S. and global market for Kelthane has been experiencing a steady decline for several years as many new miticide products and other technologies have been introduced. In addition, Kelthane (dicofol) regulatory uncertainties and costs continue to escalate in key global geographies. Given these conditions, Dow AgroSciences can no longer justify a commercial rationale to remain in this business. Therefore, we will be ending Kelthane manufacturing in June of 2006 and will plan to sell out our entire inventory into channels of distribution during 2006.”

A few other important messages from Dow regarding this planned exit of Kelthane brands:

1) U.S. end-users have many miticide product alternatives available today. We desire that they continue to use...
Chateau has a New 2006 Onion Label

Ed Beste
Weed Science University of Maryland

The Valent Corp. has labeled Chateau herbicide as a postemergence application to dry onions (this includes fresh bulb onions, such as "Vidalia" onions, but not green onions or shallots). A third party waiver is required between the grower and The Valent Corporation. Chateau is labeled for seeded or transplanted onions. See the label on-line at: www.cdms.net or at Valent Corp. web site: http://www.valent.com/

Flumioxazin (Chateau) will control most broadleaf weeds, postemergence, and provides a greatly needed improvement for weed control programs in onions. Goal (oxyfluorfen) postemergence herbicide may be applied to smaller onions than Chateau. Goal has a useful niche in onion production, but it is weak on some problem weeds such as mustards.

Knowing Your FRAC Groupings for Fungicide Resistance Management

Bob Mulrooney
Extension Plant Pathologist; bobmul@udel.edu

FRAC, or the Fungicide Resistance Action Committee, was developed to help provide fungicide resistance management guidelines for ‘at or high risk’ fungicides. At or high risk fungicides have a high probability for fungi to develop resistance because of their mode-of-action (MOA). Fungicides with chemistries that have a specific target site of activity against fungal pathogens, unfortunately, have a high risk for losing efficacy.

Also, fungicides with similar chemistries and similar MOAs may also allow fungi to develop cross-resistance. This is where a fungus that develops resistance to one fungicide in the FRAC group may also develop resistance to other fungicides in the group, even if those other fungicides haven’t been used. With the recent flux of new fungicide chemistries on the market great lengths have been taken to reduce the risk of fungicide resistance development. There are currently 42 numbered FRAC groupings and 4 lettered groups. As new fungicides with new MOAs are released on the market new numbered groups will be added to the list. Fortunately, for most vegetable crops many of the most commonly used fungicides fall into a few of these groupings. Most notably, the multi-sites (M) or low risk fungicide groupings include M1 and M2 (inorganics such as sulfur and copper); M3( Maneb, Mancozeb); and M5 (chlorothalonil such as Bravo, Guide, Equus). Higher risk groups include Group 3 (triazoles, such as Nova), Group 4 (mefenoxams, such as Ridomil), and Group 11 (strobilurins, such as Amistar, Flint, Cabrio) to name a few.

Knowing which fungicides are in which grouping will have an impact on spray schedules, disease control, and resistance management. Protectant fungicides, such as those in the M FRAC groupings, have a low risk for fungicide resistance development and have less stringent restrictions. However, for those chemicals with a higher risk of fungicide resistance development the product labels are more stringent and labels should be followed precisely. Labels often require that high-risk fungicides be tank mixed with protectant fungicides to reduce the chances for fungicide resistance development. In general, tank mixing high-risk fungicides with protectant fungicides is always a good resistance management strategy. For example, the strobilurin fungicides in FRAC group 11 should not be sprayed consecutively. Such that, if Amistar (azoxystrobin, 11) is sprayed one week, it should not be followed the next week with another Group 11 compound such as Flint (trifloxystrobin, 11) or Cabrio (pyraclostrobin, 11) or a compound containing a Group 11 fungicide (Pristine, pyraclostrobin + boscalid, 11 + 7).

If this sounds confusing, it is, but a simple way to remember what to use next in fungicide rotation is to use a labeled fungicide with a different number or letter. FRAC groupings have been added to the fungicide table at the beginning of each crop section in the 2006 Recommendations Guide to help growers learn what fungicides belong to what FRAC groups and to help them chose fungicides for use in rotations. A complete list of fungicides and FRAC group can be found in Table E-8 on pages E28 and E29 in the Recommendations Guide. Efforts in learning and using new chemistries with new modes of action along with knowing their FRAC grouping will ultimately pay off in the long run by reducing the chances for fungicide resistance development.

Iron Deficiency
Symptoms of interveinal chlorosis on the new growth of petunias is often caused by an iron deficiency. Iron deficiency can be the result of having insufficient iron in the soil, but oftentimes the problem is that the petunias are being grown at a high pH. The proper pH range for petunias is 5.5-6.3. When the pH is too high, the iron in the soil is less soluble and thus unavailable to the plants. Growers can try lowering their soil pH by using an ammonical or urea based N fertilizer. If the pH of iron deficient plants is in the proper range, supplemental iron (Sprint 330 or Sprint 138) can be injected into the soil.

Algae in the Greenhouse Guarantees Shore Flies
Shore flies (Scatella stagnalis) thrive in wet areas with algae where they can feed and lay their eggs. Shore flies are often confused with another greenhouse pest found in wet areas, the fungus gnat (Bradysia spp.). Unlike fungus gnats, shore flies have robust bodies, short antennae, spots on their wings, and larvae without head capsules. Shore flies are also stronger fliers than fungus gnats which live mainly on the surface of the soil. Because shore flies do not feed on plant tissues like the fungus gnat, they are considered more of a nuisance pest. However, shore flies are capable of spreading diseases like Pythium. Eliminating breeding areas and preventing the development of algae in the greenhouse is crucial for managing shore fly populations. Do not allow standing water- especially water containing fertilizer. Practice good sanitation by keeping the greenhouse free of debris.

Monitoring for larvae is difficult, but by examining algae covered areas with a good hand lens, you can find the white, wedge-shaped larvae. Monitor adult populations using sticky cards. Control the algae first. If controlling algae alone is not effective in suppressing shorefly populations, then treatments should be directed at the larval stage. Soil drench treatments include: Distance (pyriproxyfen) and Adept (diflubenzuron). Make sure the chemical is applied to a depth of one inch or more. Note: Biological controls such as predatory mites, parasitic nematodes, and Gnatrol (Bacillus thuringiensis) drenches used for fungus gnat larvae are not effective on shore flies.

Several products that can be used to control algae include:

- ZeroTol Broad Spectrum Algaecide/ Fungicide (hydrogen dioxide product labeled for use both on greenhouse surfaces and on plants)
- Physan 20 Algaecide, Fungicide, Bactericide Virucide, (quaternary ammonium compound for use on greenhouse surfaces and on orchids, roses, and African violets)
- Green-Shield Algaecide, Fungicide, Bactericide Virucide (quaternary ammonium compound for use on greenhouse surfaces)
- GreenClean Granular Algaecide (Sodium Carbonate Peroxyhydrate or use on greenhouse surfaces)
- Terracyte Broad Spectrum Algaecide, Fungicide (sodium carbonate peroxyhydrate for use on greenhouse surfaces and on plants)
- Triathlon Algaecide, Fungicide, Bactericide (quaternary ammonium compound for use on greenhouse surfaces).

So Your pH is Down!
We occasionally get calls when the pH of the substrate in a greenhouse has dropped to pH 4.0. Somehow, someone was not monitoring regularly and suddenly they are in the “got- to- act- fast” mode.

How do you deal with trying to raise this soil pH? The answer is liquid limestone. This is generally purchased in 2.5 gallon containers. Mix the contents of this container into a 5 gallon bucket of water, slowly adding the liquid limestone to the water and stirring to get the lumps of limestone into suspension. Take this 2.5 gallons of liquid limestone and 2.5 gallons of water mixture and add it to 95 gallons of water. Keep agitating the tank to prevent the limestone from settling out. This 100 gallon solution is applied as a drench to 1,000 ft2 of growing area. Be sure to wash off any liquid limestone from the foliage to avoid leaving a residue. If the pH is 4.0 then the pH should move up to 5.0 within 10 -14 days. If the pH is still too low the process can be repeated.

Maryland Vegetable Growers Association

MVGA Secretary’s Report of the Annual Board Meeting on January 13, 2006
♦ 2004 Membership: 56 members -- 30 members paid dues in 2004
♦ 2005 Membership: 74 members -- 43 members paid dues in 2005

MVGA Awards Program for 2006
♦ $500 – Laura Hunsberger MCE The Use of Perimeter Trap Cropping Control Pepper Maggot in Organic Pepper Production.
♦ $250 – University of Maryland Soil Judging Team

2006 MVGA Label Indemnification Program
The MVGA Board will continue to promote the IR4 Minor Crop Pesticide Use Label Program for Maryland. You must be a MVGA member in good standing to qualify. Please fill out the MVGA 2006 Grower Intent of Use, Indemnification,
Ethnic & Specialty Crops Voted Most Likely to Succeed by Mid Atlantic Vegetable Researchers

Kim Pappas
Vegetable Marketing Specialist

A team of Mid Atlantic Vegetable researchers and marketing specialist arrived at four lists of ethnic crops that were considered both “popular” and “potentially feasible” to grow (& distribute, market, and sell for profit) within the Eastern US.

Bear in mind that the overarching goal was to capture anticipated market growth in certain ethnic markets; and collectively his team was able to take a list of over 100 ethnic crops identified as commonly sold/market in ethnic markets and reduce that by more than 50%, due to known barriers to entry, cost-constraints, climate/growth constraints, regulatory (e.g. seed supply) constraints, lack of profit potential, etc. Thus they arrived at a reasonable list (in terms of size and feasibility; for both demand and production research), for inclusion in our ethnic consumer survey, to further ascertain/quantify/project demand in a more scientific fashion.

At this point, we would like to share with you the results of our combined efforts, via the final list(s), as follows (no particular order, listed by common English and/or Ethnic name:

### East Coast Ethnic Produce Project

### Survey Crop Selection

#### Puerto Rican (10)
- Aji Dulce
- Bean: Fava
- Boniato/Batata/Camote
- Calabaza
- Calabacita
- Chili Caribe
- Cilantro
- Eggplant/Berenjena
- Pepino
- Verdolaga

#### Mexican (10)
- Anaheim Pepper
- Calabaza
- Calabacita
- Tutuma (Squash)
- Chili Jalapeno
- Chili Poblano
- Chili Serrano
- Chili Habanero
- Cilantro
- Tomatillo

#### Chinese (12)
- Edamame (Edible Soybean, Mao Dou)
- Pak Choy (Large Loose-leaf/White-Petiole Type)
- Oriental Spinach (Bo cai)
- Snow peas (Chinese Peas, Wan dou)
- Oriental eggplant (Asian Eggplant, Oie zi)
- Edible Luffa (Dish Cloth Luffa, Sponge Gourd, Ci gua)
- Baby pak choy (Small Loose-Leaf/Green-Petiole Type)
- Napa cabbage (Heading Type, Bok Choy,Siew Choy)
- Perilla (Japanese and Korean Shi-So)
- Oriental mustard (Chinese Mustard, Gai Choy)
- Basil (Holy)
- Malabar Spinach

#### Asian Indian (10)
- Eggplant (Pushpa variety)
- Amaranth (Chauli, Chavleri)
- Bottle Gourd (Ghiya, Loki)
- Cluster Beans (Gawar Phaili, Guar)
- Fenugreek Leaves (Methi)
- Mint Leaves (Pudina)
- Mustard Leaves (Sarson)
- Ridge Gourd (Torai, Turaii)
- White Pumpkin (Khadu)
- Bitter Gourd (Karela)
Developing Alternative Fruit Crops for Maryland Regional and Niche Markets
Center of Agro Ecology Grant Progress
Report for 2005
Joseph A. Fiola, Ph.D.,
Specialist in Viticulture and Small Fruit
University of Maryland

Project Duration and Timetable

This project involves the trial of “alternative” crops, including blueberries; beach plums; Muscadine, seedless table and wine grapes for many of the diverse growing environments in Maryland, concentrating on the Southern Shore. Since the crops being tested are perennials, the project thus far included site preparation, planting, and establishment. Some of the crops also exhibited some early fruiting. The progress will be reported by crop and location.

Southern Highbush Blueberries: The Southern Highbush Blueberry (SHB - V. corymbosum x V. darwini) is a cross between the Northern Highbush Blueberry and the native Southern Darwin species. The Southern Highbush is considered to have greater tolerance to high summer temperatures, greater drought tolerance, early fruit production, and superior fruit quality in warmer climates, therefore it is a prime candidate for Southern Maryland. SHB have strict soil amendment and pH requirement, so special attention was paid to ground preparation before planting of the blueberries.

A replicated variety trail was established at the CMREC in Upper Marlboro which included 10 commercial cultivars. The RCB design consisted of plots of 4 bushes of 10 varieties replicated 4 times, all planted with standard soil amendments. A second split plot experiment (4 reps; 3 bushes per rep) was established adjacent to the above to compare performance of 2 commercial varieties on unamended upland soil vs. “standard” blueberry soil amendments to increased organic matter.

Variety Selection:

<table>
<thead>
<tr>
<th>Variety</th>
<th>Plant/ survive</th>
<th>Growth rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legacy Jubilee</td>
<td>51/60</td>
<td>Good</td>
</tr>
<tr>
<td>Bluecrop</td>
<td>10/12</td>
<td>Very good</td>
</tr>
<tr>
<td>Liberty</td>
<td>9/12</td>
<td>Fair</td>
</tr>
<tr>
<td>Aurora Premierie</td>
<td>9/12</td>
<td>Poor</td>
</tr>
<tr>
<td>Duke Blue Ray</td>
<td>11/12</td>
<td>Good</td>
</tr>
<tr>
<td>Ozark Blue</td>
<td>11/12</td>
<td>Fair</td>
</tr>
<tr>
<td>O’Neal</td>
<td>51/60</td>
<td>Fair</td>
</tr>
</tbody>
</table>

The variety selections were based upon adaptability to site and current success.

A blueberry planting established at D & S Farms. Soil was not amended rigorously at this site so establishment has been slow.

A blueberry planting established at Allenberg Orchards, Smithsburg, MD on an upland soil type in the Western Mountains. Varieties, establishment, and performance as follows:

<table>
<thead>
<tr>
<th>Variety</th>
<th>Plant/survive</th>
<th>Growth rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Crop</td>
<td>51/60</td>
<td>Good</td>
</tr>
<tr>
<td>Blue Gold</td>
<td>10/12</td>
<td>Very good</td>
</tr>
<tr>
<td>Carra’s Choice</td>
<td>9/12</td>
<td>Fair</td>
</tr>
<tr>
<td>Elizabeth</td>
<td>9/12</td>
<td>Poor</td>
</tr>
<tr>
<td>Hanna’s Choice</td>
<td>11/12</td>
<td>Good</td>
</tr>
<tr>
<td>Ozark Blue</td>
<td>11/12</td>
<td>Fair</td>
</tr>
<tr>
<td>O’Neal</td>
<td>51/60</td>
<td>Fair</td>
</tr>
</tbody>
</table>

Beach Plums: The Beach plum (Prunus maritima Marsh.) is a wild, native plum of the Northeastern United States. It grows among the sand dunes on the coastal planes from Virginia to Nova Scotia. The fruit can be consumed fresh but is commonly used for the making of jam and jelly. Interest in bringing beach plum into commercial production has necessitated small-scale production trials to optimize horticultural practices to increase yield. From bloom through fruit display, the plants also have high ornamental value.

The planting at CMREC in Upper Marlboro came into precocious fruiting 2005; please see attached report in appendix. Forty-nine of fifty-one seedlings established and fruited. The small trees were rated for vigor, plant habit, leaf disease, crop amount, fruit size, fruit disease, fruit firmness, and fruit quality attributes including type of flavor, sugar/acid balance, astringency, skin attributes. There was a great amount of variation for all of the attributes which will allow for directed selection according to function. The fruit from one tree was harvested and processed into jam which was highly received.

The planting at WMREC in Keedysville did not fruit in 2005 but made tremendous growth. These plants were suited with a 3’ grow tubes that forced the growth up into more of a tree –like shape instead of allowing the plants to low branch and sucker. These plants had experienced severe deer grazing in the past year but a newly installed exclusion fence alleviated the problem and allowed the rapid growth. Trees are expected to fruit in 2006.

The planting at LESREC in Salisbury did not fruit in 2005 but made good growth. These plants were slow to establish on the sandy soil without adequate irrigation. All Beach plum trees are expected to fruit in 2006.

Wine Grapes: Planting of vineyards is one of the most rapidly expanding commercial agricultural ventures in the Eastern United States. However there are few areas of the world where grapes are grown with conditions like Southern Maryland, so specific variety trails and cultural practice studies are needed. The vines tested in this trial will be from regions with very warm climates similar to Southern Maryland, specifically Southern Italy, Spain, and Portugal.

Ten new varieties were planted in the spring of 2005 at CMREC in Upper Marlboro. The following is the list varieties to be tested: Norton (Native US – VA), Negro Amaro (Southern Italy), Carmenere (Southwest France), Touriga (Spain), Sauvignon Blanc (Southwest France), Chardonel (New Hybrid), Vignoles (Old Hybrid), Petit Sirah (Southwest France), and Petit Manseng (Languedoc, So France). These vines were planted in a split-plot design with “traditional” 8’x6’ spacing and “high-density” 8’x4’ spacing with each variety/spacing treatment replicated 4 times.

Young vines at other commercial Southern Maryland Vineyards, Summerseat Vineyards (see table below) in Lusby, Maryland and Lawton Hall Vineyards in Bushwood, Maryland were just coming into fruiting in 2005. Because of the age of the vines and the dryness of the season, the
vines were only allowed to ripen a very small crop to see what the cluster would be like and not overly stress the vines. They should be in full fruit in 2006.

Table Grapes: Over the past 40 years many seedless table grape varieties have been developed that will withstand Eastern U.S. winters. The author has conducted extensive variety and cultural trial while at Rutgers University, however, again, there are few areas of the world where grapes are grown with conditions like Southern Maryland, so specific variety trials and cultural practice studies are needed.

Six seedless table grape varieties were planted in the spring of 2005 at CMREC in Upper Marlboro. The following is the list of varieties to be tested: Concord, Lakemont Seedless, Himrod Seedless, Candice Seedless, Reliance Seedless, and Vanessa Seedless. These vines were in a RCB design with 8’x6’ spacing with each variety replicated 4 times. The vines are being trained to a high cordon system, the traditional system for table grapes in the eastern U.S. Growth was exceptionally good in the establishment year, with the vines reaching the top cordon wire and partial cordon establishment during the growing season.

Also a demonstration planting was established at Catoctin Orchards in Thurmont, MD in the Western Mountains.

Muscadine Grapes: The Muscadine or “Southern Grape,” Vitis rotundifolia, is grown widely from North Carolina to Florida. The fruit can be processed into juice and wine; however there has been a surge of demand for fresh fruit, especially in the Washington, D.C. region (Barclay Poling, Personal Communication). Although they will only grow in the most protected sites in the region due to cold sensitivity, they may be able to fit into a very lucrative niche market. These trails would be limited to the most protected site in Southern Maryland. A small demonstration planting was established at Michaels Manor in Scotland, MD, down by Point Lookout. However, establishment and growth has been very poor.

Co Principal Investigators:
Joseph A. Fiola, Ph.D., Specialist in Viticulture and Small Fruit
WMREC 18330 Keedysville Rd., Keedysville, MD 21756
301-432-2767 x344; 301-432-2408 FAX
fiola@umd.edu

Benjamin Beale, Extension Educator, AGNR
MCE – St Mary’s County P.O. Box 663, Leonardtown, MD 20650
301-475-4484; 301-475-4883 FAX
bb165@umail.umd.edu

Cooperators:
R. David Myers, Extension Educator, AGNR
Maryland Cooperative Extension – Prince George’s County
Laura Romancos, Extension Educator, AGNR
Maryland Cooperative Extension - Worchester County
Herb Reed, Extension Educator, AGNR
Maryland Cooperative Extension - Calvert County
G.R. Welsh, Jr., Faculty Research Assistant – Viticulture
Western Maryland Research & Education Center

Commercial Cooperators:
Henry Allenberg, Allenberg Orchards, Smithsburg, MD
Robert Black, Catoctin Orchards, Thurmont, MD
Dan & Sue Gragan, D & S Farms, Charlotte Hall, MD
Friendship Farms, Mechanicsville MD
Pat Isles, Summerseat Farms, Bushy, MD
Steve Purvins, Lawton Hall Vineyards, Bushwood Maryland
Joe Dick, Michaels Manor Vineyard, Scotland, MD

SMRFM Spring
Plant & Flower Auction
By Tom Clements SMRFM Board President
◆ Wide Variety of Bedding Plants, Vegetable Plants, Hanging Baskets, Planters, and more
◆ Thousands of Plants/Various Lot Sizes at every auction
◆ Rain or Shine (Auctions Held Indoors)
◆ Super Low 2% Buyer’s Premium and 10% Sellers Commission
◆ Wednesday & Saturday Auctions on the following dates:

<table>
<thead>
<tr>
<th></th>
<th>Wednesday’s</th>
<th>Saturday’s</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2:00 P.M.</td>
<td>10:00 A.M.</td>
</tr>
</tbody>
</table>

◆ 2006 SMRFM Produce Auctions will begin on June 22nd and continue every Monday and Thursday evening starting at 7:00 p.m.
◆ Also New in 2006 SMRFM will reopen the Retail Market Pavilion. Contact Tom Clement, SMRFM Board President immediately if you are interested in retailing during the 2006 growing season.

Directions: Southern Maryland Regional Farmers Market is located on Route 301 South in Cheltenham, MD (Next to the Veteran’s Cemetery). Only 10 miles south of the Capital Beltway (I-495), only 7 miles north of Waldorf. For additional information call the market office at: (800) 533-FARM

Pennsylvania Hulless Barley Evaluation
Greg W. Roth
Professor of Agronomy
&
Shaun Heinbaugh
Penn State University

Winter barley breeding efforts at Virginia Tech have led to the first released public hulless barley variety “Doyce” for the Mid Atlantic. Since the release of Doyce, efforts have continued for breeding the hulless trait at Virginia Tech. Because of interest in ethanol production from alternative feedstocks, improving the export potential of Pennsylvania/Mid Atlantic barley, utilizing hulless barley as a livestock feed, and maintaining winter barley in Pennsylvania cropping rotations, we developed a project to evaluate the agronomic performance and grain quality under Pennsylvania conditions. This research was supported in part by agricultural research funds administered by The Pennsylvania Department of Agriculture.

This study was designed to address three objectives:
1) to compare the agronomic performance of experimental hulless barley lines and Doyce relative to leading hulled barley varieties
2) to evaluate the consistency of hulless barley for basic grain quality parameters which are important for both feed and ethanol production and
3) determine the price necessary for hulless barley to be equally as profitable as hulled barley production.

Four conventional hulled barley varieties were tested against eighteen advanced hulless barley breeding lines and one released hulless variety for a total of twenty-three entries at five different locations in 2004 and 2005. In 2004, two experiment sites were located in Lancaster County (Landisville and Rheems), and in 2005 sites were located in Centre County (Rock Springs), Perry County (Millerstown), and Lancaster County (Landisville).

Grain yields of the top three advanced hulless barley lines and the top three conventional hulled lines are shown in Table 1. The three top yielding hulless lines were VA00H-65, VA00H-70, and Doyce. Compared to the top three hulled lines, these varieties yielded about 83.5% of the hulless lines. The experimental line VA00H-65 yielded about 4.5% higher than Doyce. Agronomic characteristics of the VA00H-65 line also tended to be superior to Doyce. VA00H-65 had superior winterhardiness and spring vigor, was slightly taller and had higher test weights than Doyce (Table 2). It was more susceptible to disease, especially net blotch, however. One of the limitations of Doyce in our environments is its low spring vigor ratings compared to many of the conventional hulled lines. This difference is noticeable in the field and could likely limit the acceptance of the variety.

All of the lines were evaluated for starch, protein and oil content. Hulless lines averaged less than 3 percentage units higher than the hulled lines. Two of the newer hulled lines, MacGregor and Thoroughbred had starch levels comparable to some of the hulless lines. VA00H-65 tended to have high starch levels relative to the average hulless. There was a wide range of starch content among environments. The small difference in starch levels between the hulled and hulless lines was surprising.

Ethanol yields on a per acre and per ton basis were estimated based on equations provided by USDA scientists at ERRC in Wyndmoor, PA. This analysis revealed that hulled and hulless barley have the potential to produce and average of 189 and 168 gallons of ethanol per acre plus an average of 2214 and 1768 pounds of distillers grains per acre. In addition these crops would provide 1 to 1.5 tons of straw. The analysis showed that hulled barley ethanol yields per acre were higher than hulless barley ethanol yields, due to the high starch content of some of the lines and the high yields per acre. Hulled barely lines are not well adapted to processing in ethanol plants. Of the hulless lines, the VA00H-65 line also tended to have higher ethanol and distiller's grain yields than most of the other hulless lines.

A simple economic analysis was conducted to determine the price required for hulless barley to be economically justified relative to hulled barley. Assuming the price of hulless barley is $2.00 per bushel, or $0.0416/lb, then an equivalent price for hulless barley would need to be $0.0498/lb to provide the same revenue for producers. Using a test weight of 56 pounds per bushel, this would translate into $2.79/bushel for the hulless barley.

Conclusions

This study has shown that hulless barley can be produced in Pennsylvania, but higher prices will be necessary to justify its production. In these trials, hulless barley yields averaged about 83.5% of hulled yields. Winter hardiness, spring vigor, height and maturity are key agronomic traits that need to be considered in future hulless barley development. In these trials, the variety “Doyce” was one of the top yielding hulless lines but its winter hardiness and spring vigor levels were not quite as high as the hulled lines. Future experimental lines like VA00H-65 should have more potential in Pennsylvania than Doyce. We will continue to work with Virginia Tech to evaluate a limited number of promising hulless winter barley lines in our trials in Pennsylvania.

Johanns Announces Nitrogen Fertilizer Tool as Part of Energy Strategy

Agriculture Secretary Mike Johanns announced last week the release of USDA's Energy Estimator for Nitrogen, a Web-based awareness tool that farmers and ranchers can use to identify potential nitrogen cost savings associated with major crops and commercial nitrogen fertilizer applications. "The Energy Estimator for nitrogen provides our nation's producers with another new tool to reduce their energy costs and protect the environment," said Johanns.

"Encouraging proper fertilizer management is part of USDA's comprehensive energy strategy to help farmers and ranchers mitigate the impact of high energy costs."

Nitrogen fertilizer is one of the largest indirect uses of energy on an agricultural operation. Fertilizer accounts for 29 percent of agriculture's energy use, according to USDA research data. Proper management of nitrogen fertilizer, including the use of organic sources of nitrogen such as animal manure and cover crops, can save producers energy and money.

Using manure instead of petroleum-based fertilizers could reduce costs up to $55 per acre, based on February 2006 prices, while adopting management intensive grazing practices can save up to $6.50 per acre in energy costs and another $38.00 in reduced harvest costs. In addition, converting from conventional tillage to no-till can save up to 3.5 gallons of fuel per acre with a current value of $6.83 per acre. Nationwide, reducing application overlap on 250 million acres of cropland could save up to $750 million in fertilizer and pesticide costs each year and doubling the use of manure-based nitrogen fertilizer to replace fertilizer produced from natural gas could save an additional $750 million and 100 billion cubic feet of natural gas annually.

USDA intends for farmers and ranchers to use the Energy Estimator for Nitrogen for guidance rather than as a sole source for decision-making on nitrogen fertilizer application. USDA recommends that farmers and ranchers take their nitrogen fertilizer estimates to their local USDA Service Center, Cooperative State Research Education and Extension Service (CSREES) office, or their crop consultant. The Energy Estimator for Nitrogen identifies a producer's local USDA Service Center and provides links to CSREES websites.

Johanns Announces More Than $21 Million in Energy Projects

Agriculture Secretary Mike Johanns announced the award of 14 grants and one loan guarantee totaling over $21.6 million to increase energy production or improve electrical service and energy efficiency in communities in five states.

"Increasing domestic energy production, including the development of farm-based energy sources, helps to strengthen the economy of rural America and reduces our dependence on imported oil," said Johanns. "These funds will also help to promote energy efficiency by improving our existing electrical infrastructure."

In Clinton, Iowa, a USDA Rural Development Renewable Energy Systems loan guarantee of $3,220,000 will be used to partially fund construction and operation of a biodiesel production plant with a yearly capacity of 10 million gallons. The plant will use more than 7 million bushels of Midwestern grown soybeans a year. Additionally, the plant will use its own by-products to provide much of its energy supply. It is owned by Clinton County Bio Energy, LLC, which includes local farmers and business operators. When completed, the plant will provide at least nine new jobs. It is the first production facility to be located in a new 233 acre industrial park in Clinton.

A complete list of the grant recipients is available at: http://www.rurdev.usda.gov.

NASS Releases Monthly Ag Newsletter Info

The following estimates, forecasts, and projections are mainly taken from recent publications of the National Agricultural Statistics Service, Economic Research Service, and the World Agricultural Outlook Board of the USDA.

U.S. corn ending stocks for the 2005/06 marketing year are forecast by World Agricultural Outlook Board (WAOB) to total 2.40 billion bushels, down 25 million bushels from the previous forecast, but 287 million bushels above the 2004/05 marketing year. No changes were made to projected feed and residual use or exports, but projected use of corn to produce ethanol was up 25 million bushels from last month. The average price for the 2005 crop is expected to be between $1.75 and $2.05 per bushel, unchanged from last month.

Ending U.S. soybean stocks for the 2005/06 marketing year are forecast by WAOB to total 555 million bushels, up 50 million bushels from the previous forecast and 299 million bushels above the 2004/05 marketing year. If realized, this would be the highest ending stocks level on record. Projected U.S. exports were down 40 million from last month as record Brazilian exports reduced demand for U.S. soybeans. Crush prospects decreased by 10 million bushels, reflecting lower domestic soybean meal and oil consumption. The average price for the 2005 crop is expected to be between $5.20 and $5.80 per bushel.

U.S. wheat ending stocks for the 2005/06 marketing year are forecast by WAOB to total 542 million bushels, unchanged from the previous month. No changes were made to projected imports, domestic use, or exports. The average price for the 2005 crop is expected to be between $5.35 and $3.45 per bushel. For other updates, go to: http://www.nass.usda.gov/Publications/Ag_Newsletter/nf1030206.pdf

“Poultry Litter Use and Transport in Caroline, Queen Anne’s, Somerset and Wicomico Counties in Maryland: A Summary Report”

Doug Parker
Extension Specialist Water Resources
University of Maryland

I have recently finished a report on poultry litter transport and marketing in four Maryland Eastern Shore Counties. This report is based upon a survey from last year.

The report finds that we currently have a very active market for poultry litter in Maryland, with over 75% of poultry growers transferring at least some of their poultry litter off-farm. We also find that 60% of crop growers in Somerset and Wicomico counties who do not own poultry houses use poultry litter. In Caroline and Queen Anne’s counties this number is lower but still significant (34%). Despite this active market, we find that prices for poultry litter do not reflect its value. This seems to suggest that growers do not fully appreciate the benefits of poultry litter as a crop nutrient source. This lack of appreciation may stem from a lack of knowledge concerning poultry litter, information concerning sources of poultry litter (supply) or perhaps equipment to effective utilize poultry litter. We do find some significant differences in the use and value of poultry litter in the primary poultry producing counties when compared to the secondary poultry producing counties.

This work was partially funded by the Mid-Atlantic Regional Water Program. The report can be found on-line at the Regional Program’s website: www.mawaterquality.org or directly at: http://www.mawaterquality.org/Publications/pdfs/Poultry_Litter_Use_MD_M_AWP_0601.pdf. Please feel free to contact me should you have any questions or concerns.

Grain Marketing Highlights

Carl German
Extension Crops Marketing Specialist; clgerman@udel.edu

Weather Becomes Dominant Factor in Commodity Markets:

It seems to be rather unusual for this time of year; however, the weather has become one of the dominant factors that are currently impacting commodity prices. The wheat market, for example, typically undergoes a seasonal lull as we get near the harvest season. So far, this year that has not been the case. The wheat markets are currently being impacted by the dry weather concerns prevailing in the Southern Plains. It is important to note that small grains normally do well as a dry weather crop. However, what remains to be seen this year is how well can the hard red winter wheat crop pull through under ‘ parched’ conditions? The outcome is not expected to be good. The soft red winter wheat crop, grown locally, is viewed as being in very good to excellent condition nationally. Therein lies part of the reason for the 52 cent per bushel price differential between July ’06 Chicago Board of Trade soft red
winter wheat and the Kansas City Board of Trade hard red winter wheat futures, currently bidding at $3.70 and $4.22 per bushel, respectively.

Commodity traders have been taking both sides of the market this past week in the corn, soybean, and wheat pits. Traders will be assessing weekend weather as the markets open for trading. It is imperative for the Corn Belt to get sub soil moisture replenishing rains this spring. Short of that it will take ‘timely’ rains to produce a normal or better ‘06 U.S. crop. To some degree, recent rains throughout the Corn Belt have been very good. However, it won’t be long before more is needed. We will be getting our first real look at production forecasts for the ‘06 cropping season on March 31st when USDA releases the Prospective Plantings Report. Along with that report, USDA will also be releasing the March 31 Quarterly Grain Stocks Report. In the meantime, the weather will play a dominant factor in commodity bidding.

Governor's Agricultural Forum a Success
Farmers Identify Top Policy Priorities in Culmination of Year-Long Process

Nearly 250 members of the agricultural community were in attendance at the Governor's Agricultural Forum at the Prince George's Equestrian Center in Upper Marlboro on Monday to discuss policy recommendations for the future of the industry in Maryland. The event brought together a wide range of producers and policy shapers to share their top priorities for the future success of the agricultural industry in the State.

"I would like to express my gratitude to the Agricultural Commission and all the participants and supporters who contributed to the success of this event," said Governor Ehrlich. "Monday's forum was the culmination of a year-long effort to build on our previous successes and identify the most pressing issues facing one of our State's most important industries--agriculture. We know that farmers, farmland, and farming are good for Maryland and the information obtained through this process will prove invaluable as we work to preserve and grow the agricultural industry."

"Farmers know their industry best and have provided a comprehensive set of policy recommendations for the future of agriculture in Maryland" said Agriculture Secretary Lewis R. Riley. "We are thankful to Governor Ehrlich for initiating this process and taking the time to listen to these priorities. Now the hard work of making these priorities a reality begins."

Throughout the day, participants emphasized the need to enhance profitability through improved marketing and access to markets, business development assistance, a reduced cost of production, farmer-friendly health and zoning regulations, and a tax structure more supportive of agriculture. Another top priority was to ensure an adequate base of well-managed agricultural land through the stabilization of the land base, agricultural stewardship, stronger right-to-farm laws, and the advancement of forestry as an agricultural enterprise. Finally, participants stated the need for advanced research, education and advocacy of agriculture and support for the next generation of farmers in Maryland. The group reached a consensus about the importance of specific priorities including:

- attracting processing operations and export facilities and providing incentives to increase the production and use of bio-energy; all of which add value to Maryland's agricultural products;
- securing funding for agricultural economic development initiatives to provide farmers with business planning services, capital investments, and product development assistance;
- reducing health insurance costs for farmers and their families;
- providing technical assistance for local officials in order to create zoning regulations that support agriculture;
- offering tax credits for preserving agricultural land;
- ensuring full funding for Maryland's land protection programs;
- providing increased funding for the Maryland Land Conservation Districts and Maryland Cooperative Extension;
- strengthening right-to-farm laws;
- funding the LEAD Maryland program; and
- reducing capital gains tax rates for land sold to young or new farmers.

The forum was initiated by Governor Robert L. Ehrlich, Jr., in an effort to find solutions to a number of challenges facing Maryland's farmers. Governor Ehrlich directed the Maryland Department of Agriculture to convene the forum to help chart a course for the future of farming in Maryland. The Maryland Agriculture Commission, a 24-member group representing a cross section of commodities and appointed by the Governor as an advisory body to the Secretary of Agriculture, spearheaded the forum. The Commission partnered with farm, commodity and farmland preservation organizations to complete the process. A draft of the "Statewide Plan for Agricultural Policy and Resource Management," as well as a list of the top priorities identified at the forum are available on MDA's website: www.mda.state.md.us.

MD Farmers Estimate $10.5 Million in 2005
Wildlife Related Crop Losses
Report is first to accurately measure wildlife damage

The Maryland Field Office of USDA's National Agricultural Statistics Service report that Maryland farmers lost $10.5 million in potential crop production income due to wildlife damage in 2005. The survey results were collected and tabulated from the agency's fall acreage and production survey, with nearly 1,500 reports tabulated. Damage statewide was attributed to the following wildlife species with the corresponding estimated percent loss due to each species: deer, 83.8%; resident geese, 6.4%; migrant gese, ...
Maryland Premise ID Registration Underway

To date, 984 Maryland livestock and equine owners have registered their premises with the National Animal Identification System (NAIS). Premise registration is the first step in the three steps or phases of the program. Tagging individual animals will come next, but at this time, it is not necessary to purchase special NAIS tags. Producers should continue to use their current method of tagging. If you haven't yet registered your premise, you can do so online at: http://www.mda.state.md.us/animal_health/nais/registration.php.

By 2008, all of the following livestock species shall be identified: cattle/bison, swine, horses/equine, sheep, goats, llamas, alpacas, and deer/elk, and poultry (by 2006). Some animals will be identified individually, and others will be identified by a group or flock number.

If you have any questions regarding the NAIS program, contact Marilyn Bassford at: bassfoml@mda.state.md.us.

I have created a blog for the Maryland sheep and goat industry. It is called Shepherd’s Notebook and can be viewed at http://mdsheepgoat.blogspot.com.

New Shepherd’s Notebook Blog
Susan Schoenian
Area Agent, Sheep and Goats
University of Maryland, WMREC

Blog is short for weblog. A weblog is a journal (or newsletter) that is frequently updated and intended for general public consumption. Users can post comments to the blog. The purpose of the Shepherd’s Notebook blog will be to provide up-to-date information to sheep and goat producers in Maryland and other states.

To have information published on the blog, send it to me at: sschoen@umd.edu. If you're interested, I can add you as a contributor.

The Following is excerpted from Susan’s Spring Newsletter:

Cydectin® Oral Drench Approved for Sheep

On November 30, 2005, the Food and Drug Administration (FDA) approved the use of Cydectin® Oral Drench in sheep. Earlier in the year, Cydectin 1% Injectable was approved for use in cattle. Previously, the only way sheep producers could use Cydectin® was to use the cattle pour-on product (orally) or horse product (Quest® paste). Both uses constituted extra-label drug use and required veterinary approval.

The active ingredient in Cydectin® is moxidectin. Moxidectin is effective against the adult and L4 larval stages of Haemonchus contortis, Teladorsagia circumcinta, T. trifurcata, Tristrongylus axei, T. colubriformis, T. vitrinus, Cooperia curticei, C. Oncophora, Oesophagostomum columbianum, O. venulosum, Nematodirus battus, N. filicollis, and N. sphaigrier. Moxidectin is not effective against tapeworms.

The labeled dosage for the sheep drench is 1 ml per 11 lbs by mouth (or 1 ml per 5 kg). The withdrawal period is 7 days for slaughter animals. No withdrawal has been established for dairy sheep. Thus, the product should not be used on ewes (or does) that are producing milk for human consumption.

Recommendations for using Cydectin®:
1. Do not use Cydectin on a regular basis.
   Why? The more often you use an anthelmintic the more rapid the worms become resistant to it. Eventually, the drug will become ineffective at reducing parasite burdens and result in the death of some animals.
2. When deworming, do not treat all animals in the flock/ herd.
   Why? Treating all animals increases the rate by which the worms become resistant to the drug. Plus, it’s not likely that all animals in a flock/herd need treated. It is estimated that approximately only 20% of the flock/ herd is responsible for laying the majority of worm eggs in a pasture.
3. Save Cydectin® for clinically parasitized animals.
   Why? Cydectin®, along with Levamisol (trade names Levasol®, Tramisol®, and Prohibit®), is probably the most...
effective anthelmintics available to producers. According to various university studies, resistance levels tend to be much higher among the Benzimidazoles (SafeGuard® and Valbazan®) and ivermectin. Some resistance is found in Levamisol and has begun to develop in Cydectin®. We need to do all we can to prolong the effectiveness of both drugs.  

4. Use the FAMACHA® system to determine when to deworm individual animals. 

Why? The barber pole worm (Haemonchus contortis) is the primary parasite affecting sheep/goats in warm, moist climates like Maryland. It is a blood-sucking parasite that causes blood and protein loss in the host, as evidenced by pale mucous membranes. The FAMACHA® system utilizes a color eye chart that shows varying degrees of anemia (1-red, 2-pinkish-red, 3-pink, 4-pinkish-white, and 5-white) and gives treatment recommendations based on eye scores.  

5. Do not underdose your sheep. 

Why? A partial treatment may be insufficient to save a severely parasitized animal. In addition, it will accelerate the development of drug resistant worms. Dose animals individually according to their weight. Buy or borrow scales so you know what your animals weigh. Weigh tapes can be used for goats.  

What About Goats? 

No form of Moxidectin has been FDA-approved for use in goats. Thus, goat producers must continue to follow the guidelines of extra label drug use. Extra-label drug use requires veterinary approval. Goat producers should also consult their veterinarians to get proper dosage recommendations. Goats metabolize anthelmintics differently and usually require higher dosages than sheep, cattle, and horses.  

Mark Your Calendars:  

Maryland Sheep & Wool Festival  
May 6-7, 2006  
Howard County Fairgrounds  
West Friendship, Maryland  
Info: www.sheepandwool.org  

What is the Real Price Agriculture Pays  

“From Field to Fork?”  

In the first month of 2006, 16 West Virginia coal miners were killed on the job. On January 2, 2006, 13 West Virginia coal miners were trapped when a part of the Sago Mine collapsed. Eventually, only one miner made it out alive. It was headline news for days. Society was outraged. State and federal government stepped in and passed legislation ‘overnight’ to take measures for improving the safety and health conditions under which miners work. Additional funding and support were provided. While so much attention was focused on West Virginia mining, two more miners died in separate incidents. On February 1, the Mine Safety and Health Administration (MSHA) called for coal mine operations all over the country to take a pause for safety’s sake on February 6th. Miners were asked to set aside the first hour of their shift to “Stand Down for Safety” to emphasize safety in the mining workplace. [Press Release for Mine Stand Down]  

Certainly, our hearts go out to these miners, their families, and their communities. Yet, it should also remind us that in any given month, 65-70 workers are killed working in agriculture. [Based on National Safety Council estimates.]  

Perhaps we should take this time to remind ‘society’ that agriculture and mining share the dubious distinction of being the top two most hazardous occupations. Agriculture’s annual fatality rate stays around 24-28 per 100,000 workers. However, this is actually an underestimate -- exact numbers are not known due to lack of accurate data collection systems for ag related injuries and deaths. That number also does not include children. A sample data collection based on newspaper clippings included the deaths of several children: a 21-month-old, and 3-, 4-, 5-, and 6-year-olds. There would be total outrage if a 2-year-old were killed in any other industry in America. [For a few examples of deaths in agriculture, see Put a Face on the Statistics.]  

During the past year, USDA funding support for Extension farm safety programs was eliminated. A comparative study of federal dollars allocated for various occupations has not been done recently. However, a comparative study was done in 1985. At that time federal dollars spent per worker for safety was 30 cents for agricultural worker and $182 per miner. This amounted to $606 per ag worker death and $363,366 per miner death. Agriculture needs to be viewed for what it is -- an industry with persistent occupational safety and health issues.  

Yes, we do have several NIOSH-funded ag injury and health centers around the country, however, support for ag safety and health is still a very small portion of total federal funds allocated for occupational safety and health.  

Those in agriculture should declare a time to ‘Stand Down for Safety’ and think about the hazards and dangers that surround them. Farm safety topics have always been geared towards farmers, farm families and producers. Maybe it is time to increase the awareness of the general public about the “real price agriculture pays ‘from field to fork’!” In 1984, Des Moines Register reporter Tom Knudson wrote a Pulitzer prize winning series of articles, “A Harvest of Harm: The farm-health crisis.” Maybe it is time for someone to write a “Harvest of Harm - 22 Years Later.”  

Farm Safety & Handling Goats  

Many people now include goats (milk or meat) in their farm enterprise. Yet, goats may be harder to handle than cattle or sheep. The following two publications contain useful safety information for those who handle goats.  

Care and Use of Goats discusses various illnesses that people can contract from goats (such illnesses that people can contract from animals are called zoonoses). It notes the importance of good personal hygiene practices when around the animals.  

Efficient Handling of Meat Goats, from University of Maryland Extension, discusses principles and practices for the safe handling of the animals. Safer handling means less stress for the animal -- which in turn leads to increased productivity.
Farm Safety & Handling Bulls
Winter and spring are bull-buying season in Florida. Working with bulls can pose its own unique set of problems as they can be very unpredictable. Additionally, their weight, strength, and temperament should be taken into consideration. Even ‘playful’ activity can result in injury or death. Bulls require special facilities that allow them to feed, drink, exercise, and breed without direct contact with handlers. Male calves that have been bottle-raised should be castrated. Bottle-fed male calves will think of themselves ‘as people,’ and when they reach breeding age, they exert their dominance on people -- with disastrous results.

Animal Handling Safety provides tips for working with these animals.

Two Farmers / Brothers Killed By Young Angus Bull is a Fatality Assessment and Control Evaluation (FACE) report which provides a case study of two elderly farmers who were killed by a young angus bull on their farm.

Farm Safety Videos on Clearance
Farm Safety 4 Just Kids (FS4JK) is offering several videos at clearance prices of $3.50 - $7.00. Visit the Farm Safety 4 Just Kids Web site, and click on "Buy Your Items Here" and then "Videos."

These videos would be useful if you are doing any day camps or other types of safety training. Included are videos for kids, youth and adult audiences.

The Safety Net video ($3.50) has a clip in it that I use with adult audiences. There is a young man who explains the tractor overturn he was in and he says, "...it happens so fast there is no time to react." That is followed by the demo of the dummy being wrapped around the PTO, and then it shows the PTO 'wrap' in slow-motion.

APHIS is currently conducting an epidemiological investigation into the animal’s origin in order to attempt to trace the animal to its place of birth. It had been on the Alabama farm less than a year. One of the first steps in this investigation will be the recovery of the carcass for examination to allow APHIS investigators to directly examine the breed and age of the animal as well as check the animal for any form of identification such as ear-tags. The recovery will be completed within the next day.

The cow, initially reported to be a Santa Gertrudis, is now believed to be a red crossbred (possibly crossed with a Santa Gertrudis or similar breed). This animal was non-ambulatory on the farm and examined by a local, private veterinarian. The veterinarian returned to the farm the following day, euthanized the animal and collected a sample, which was submitted for testing. The animal was buried on the farm at that time.

This animal did not enter the animal or human food chain, in accordance with USDA protocols. Human and animal health in the United States is protected by a system of interlocking safeguards, which ensure the safety of U.S. beef. The most important of these safeguards is the ban on specified risk materials from the food supply and the Food and Drug Administration's ruminant-to-ruminant feed ban.

As part of USDA's BSE enhanced surveillance program, more than 650,000 samples have been tested since June 2004. Throughout this effort, APHIS has noted the likelihood of finding additional cases of BSE. To date, only two of these highest risk animals has tested positive for the disease as part of the surveillance program, for a total of three cases of BSE in the United States. The enhanced surveillance program was designed as a one-time, intensive effort to provide a snap shot of the U.S. cattle population, in order to determine the prevalence of BSE in this country. This second case does not change the fact that BSE prevalence in the United States remains extremely low.

APHIS will continue to work closely with the state of Alabama to learn more about this animal’s history, and the results of our epidemiological investigation will be shared with the public. All animals of interest will be tested for BSE.

For more information on the USDA-APHIS announcement, please go to:
http://www.aphis.usda.gov/newsroom/content/2006/03/bsestatement3-13-06_vs.shtml

Crop Insurance Evaluator Update

Wes Musser
Farm Management Extension Specialist
University of Maryland

The 2006 iFarm Crop Insurance Evaluators for Illinois, Indiana, Iowa, and Maryland have been updated to reflect final price and volatility data released by RMA on March 3rd, and to reflect the most recent futures price distribution information available. Please see:
http://www.farmdoc.uiuc.edu/cropins/index.asp for the most recent version of the iFarm Crop Insurance Evaluator.
Users select the county and crop that they wish to evaluate and the iFarm tools return estimates of premiums, frequency of payments, average payments, net costs, and risk reductions associated with alternative crop insurance products and election levels in an easily understood format.

The 2006 iFarm Crop Insurance Evaluators can be found at: http://www.farmdoc.uiuc.edu/cropins/index.asp

Spring Planting Puzzle

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ACROSS
1. Primary conservation tillage tool  
4. Opens soil for seed placement  
5. Places seed in soil  
7. Seed in the soil  
8. Cuts residue and opens soil  
9. Firms soil  
10. Planter type

DOWN
2. Row cleaner  
3. Regulates seed  
6. Five times the diameter of the seed

Thanks for Partnering
Thanks for partnering with the Maryland Cooperative Extension, and supporting our programs. I also hope you enjoy this newsletter. If you are no longer interested in receiving this newsletter, please call or write the office for the removal of your name from the mailer.

Sincerely,

R. David Myers
Extension Educator
Agriculture and Natural Resources
Anne Arundel & Prince George’s Counties
Fruits and Vegetables

Check Out Our Updated County Website
Visit us in Cyberspace!!!

Christie Kneipp is our website designer. Christie has recently updated our website, and we hope that you find the additions helpful. The current and past newsletter additions are available for viewing or copy at:

http://extension.umd.edu/local/AnneArundel/files/agnews.cfm

An agricultural bulletin page is also available for viewing or copy under our hot topics section at:

http://extension.umd.edu/local/AnneArundel/files/agbulletins.cfm

Note: Registered Trade Mark® Products, Manufacturers, or Companies mentioned within this newsletter are not to be considered as sole endorsements. The information has been provided for educational purposes only.
Orchard Multi-Fruit Cover Spray Program

Many local orchards are composed of multi-fruit combinations producing for fresh market apples, peaches, pears, plums, nectarines, and cherries. Aggressive fruit tree spray programs are required to achieve high quality fruit. These multi-fruit orchards create many spray management challenges for the achievement of good pest control in accordance to label guidelines. Therefore, the following multi-fruit orchard spray program for the control of major tree fruit pests and diseases may offer some assistance:

(Labeled as noted in 2006 for All Tree Fruit - Apples, Peaches, Pears, Plums, Nectarines, and Cherries.)

** FUNGICIDES: **

<table>
<thead>
<tr>
<th>Fungicide</th>
<th>Rate</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Captan® 50W</td>
<td>2.0 lbs</td>
<td><strong>New 4 day REI</strong></td>
</tr>
<tr>
<td>Dormant Oil</td>
<td>4.0 gal</td>
<td>Apply Temp 35-85° F</td>
</tr>
<tr>
<td>Kocide® DF</td>
<td>2.0 lbs</td>
<td>Dormant Spray Only</td>
</tr>
<tr>
<td>Nova® 40W</td>
<td>4.0 ozs</td>
<td>For Peach Rusty Spot</td>
</tr>
<tr>
<td>Ziram® 76DF</td>
<td>3.0 lbs</td>
<td>(Not for Pears, or Plums)</td>
</tr>
<tr>
<td>Agrimycin® 17 W</td>
<td>24.0 ozs</td>
<td>Fireblight Control</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Apples &amp; Pears Only)</td>
</tr>
</tbody>
</table>

** INSECTICIDES: **

<table>
<thead>
<tr>
<th>Insecticide</th>
<th>Rate</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guthion® 50W</td>
<td>16.0 ozs</td>
<td>Codling &amp; Fruit Moth</td>
</tr>
<tr>
<td>Imidan® 70W</td>
<td>2.0 lbs</td>
<td>Plum Curculio</td>
</tr>
<tr>
<td>Lannate® 90SP</td>
<td>12.0 ozs</td>
<td>Codling &amp; Fruit Moth</td>
</tr>
<tr>
<td>Lorsban® 4E</td>
<td>1.5 qts</td>
<td>Dormant Only</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Not for Cherries)</td>
</tr>
<tr>
<td>Endosulfan® 50WSB</td>
<td>3.0 lbs</td>
<td>Misses Plum Curculio</td>
</tr>
<tr>
<td>Vendex® 50W</td>
<td>1.0 lbs</td>
<td>Mites Only</td>
</tr>
<tr>
<td>Sevin® 50W</td>
<td>4.0 lbs</td>
<td>Japanese Beetles</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Apple Thinning Agent)</td>
</tr>
</tbody>
</table>

* Rate for 50-100gal Acre Concentrate Spray

** Be sure to follow all labels closely for PHI and REI!

### Multi-Fruit Spray Calendar*

**March 15 --** Dormant Spray

- Dormant Oil 4.0 gal (For Scales)
- Ziram 76DF 5.0 lbs
- Kocide® DF 2.0 lbs
- Lorsban® 4E 1.5 qts (For Mites)

**April 5 --** Peach Bloom

- Apple Tight Cluster
- Captan® 50W 2.0 lbs
- Tospin-M® 70W 12.0 ozs
- Agrimycin® 17 W 24.0 ozs (Fireblight Control Add for Apples & Pears Only)

**April 15 --** Peach Petal Fall

- Apple Bloom
- Captan® 50W 2.0 lbs
- Ziram® 76DF 5.0 lbs
- Kocide® DF 2.0 lbs
- Dormant Oil 4.0 gal (For Scales)
- Lorsban® 4E 1.5 qts (For Mites)

**April 25 --** Peach Shuck Split

- Apple Petal Fall
- Captan® 50W 2.0 lbs
- Tospin-M® 70W 12.0 ozs
- Guthion® 50W16.0 ozs (Plum Curculio)
- Agrimycin® 17 W 24.0 ozs (Fireblight Control Add for Apples & Pears Only)

**May 5 --** 1st Cover Spray

- Captan® 50W 2.0 lbs
- Nova® 40W 4.0 ozs (Not for Pears & Plums)
- Imidan® 70W 2.0 lbs (Plum Curculio)

**May 15 --** 2nd Cover Spray

- Captan® 50W 2.0 lbs
- Tospin-M® 70W 12.0 ozs
- Guthion® 50W 16.0 ozs (Plum Curculio)

**June 1 --** 3rd Cover Spray

- Captan® 50W 2.0 lbs
- Nova® 40W 4.0 ozs (Not for Pears & Plums - 7-Day Peach PHI)
- Endosulfan® 50WSB 3.0 lbs (Codling & Fruit Moths)
- Vendex® 50W 1.0 lbs (For Mites if Required - 14-day PHI All Fruit)

**June 15 --** 4th Cover Spray

- Captan® 50W 2.0 lbs
- Tospin-M® 70W 12.0 ozs (1-Day PHI All Fruit)
- Lannate® 90SP 12.0 ozs (Codling & Fruit Moths - 4-day Peach PHI)

**July 1 --** 5th Cover Spray

- Early Peach Harvest
- Sulfur 95W 3.0 lbs (0-day PHI)
- Tospin-M® 70W 12.0 ozs (1-Day PHI All Fruit)
- Lannate® 90SP 12.0 ozs (Codling & Fruit Moths - 4-Day Peach PHI)

**July 15 --** 6th Cover Spray

- Peach Harvest
- Captan® 50W 2.0 lbs (0-Day PHI but a 4-Day REI)
- Tospin-M® 70W 12.0 ozs (1-Day PHI All Fruit)
- Sevin® 50W 4.0 lbs (Japanese Beetle & Moths - 3-Day PHI for All fruit)

**August 1 --** 7th Cover Spray

- Peach Harvest
- Captan® 50W 2.0 lbs (0-Day PHI but a 4-Day REI)
- Tospin-M® 70W 12.0 ozs (1-Day PHI All Fruit)
- Sevin® 50W 4.0 lbs (Japanese Beetle & Moths - 3-Day PHI for All fruit)

**August 15 --** 8th Cover Spray

- Early Apple Harvests
- Sulfur 95W 3.0 lbs (0-DAY PHI)
- Tospin-M® 70W 12.0 ozs (1-Day PHI All Fruit)
- Sevin® 50W 4.0 lbs (Japanese Beetle & Moths - 3-Day PHI for All fruit)

**September 1 --** 9th Cover Spray

- Apples and Pears Only
- Captan® 50W 2.0 lbs (0-Day PHI but a 4-Day REI)
- Tospin-M® 70W 12.0 ozs (1-Day PHI All Fruit)
- Sulfur 95W 3.0 lbs (0-Day PHI)

**September 15 --** Trunk Bore Spray

- Lorsban® 4E 1.5 qts (For Bores)

* Important Note: The calendar spray dates given are an average estimate for Anne Arundel and Prince George’s County Orchards, and may vary by location in Southern Maryland. Be sure to adjust your spray schedule application dates accordingly. The above recommendations very closely reflect the current spray program utilized at the University of Maryland Research and Education Center, Upper Marlboro Facility for its research orchard.

R. David Myers
Extension Educator, Agriculture
2006