Calendar of Events

Mark Your Calendars --- Plan To Participate

♦ July 15th - VA/ WV/ MD Fruit Tour/Twilight, WMREC
♦ August 12th - Fruit & Veg Twilight, Upper Marlboro

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- 2003 Pesticide Container Recycling Program
- Nutrient Management Program Update
- NREAS New Pumpkin Production Guide
- Blue Mold Alert
- Soil Lab Closes
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- Small Farm Institute Corner
- Wildlife Damage Management
- Maryland Sheep & Goat Newsletter
- Plant Nematode Troubles
- 2002 Graziers Notebook
- Orchard, Vineyard and Bramble Herbicides
- Reflection & Pledge
**Western Regional Fruit Meetings**  
By Joe Fiola  
Extension Fruit Specialist

Please mark your calendar for the following fruit programs in the western region:
- **MD Horticultural Society Annual Summer Tour & VA/WV/MD Extension Twilight Fruit Meeting**  
  Tuesday, July 15, 2003, at 6:00 p.m.
  Mid-Day Tour - Commercial Washington County Orchards - Smithsburg/Cavetown area Dinner and Twilight tour at the USDA Appalachian Fruit Research Station, Kearneysville, WV Catered dinner (Bell’s Catering) at 6:00 p.m. with Specialist updates at 7:00 p.m.
  Presentations and/or tour by USDA scientists.
  For details and registration contact Susan Provost at the Western Maryland Research and education Center at: 301 432-2767, Ext. 315 or by email at: sp178@umail.umd.edu

**Orchard, Vineyard & Specialty Vegetable Twilight Tour, Lafayette, Indiana.**

Mark Your Calendars! You are invited to attend a twilight tour of the University of Maryland Upper Marlboro Research Farm, on August 12, 2003 from 5:00 p.m. to 8:30 p.m.

Maryland Cooperative Extension will host this Orchard, Vineyard & Specialty Vegetable Twilight Tour, and light refreshments will be served. Please call me if you have any questions.

The following research projects will be highlighted as part of the wagon tour:
1. **Ethnic Vegetable Research**
   Presenters: Tubene, and Bouwkamp
2. **Tree Fruit Research**
   Apples and Peaches
   Presenters: Myers, Walsh, and Newell
   Beach Plums
   Presenters: Beale and Fiola
3. **Vineyard Research**
   Presenters: Reed, Fiola, Beale, and Welsh
4. **Strip-Till & No-Till Vegetable Demonstration**
   Presenters: Myers, Beale and Reed

**ArkPlus Tall Fescue**
By Les Vough  
Extension Forage Crops Specialist

ArkPlus™is the newest variety of tall fescue containing a non-toxic endophyte. The endophyte in ArkPlus™was selected by Dr. Chuck West from the University of Arkansas and inserted into a tall fescue germplasm developed by the Missouri Agricultural Experiment Station. This new variety has been licensed to FFR Cooperative of Lafayette, Indiana. FFR markets seed through member cooperatives across the country. Southern States is the member cooperative in Maryland and Delaware. Since the variety is new, we do not have any agronomic or animal performance data. Plantings are being planned for this year.

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**Forage and Hay--Potassium Paves the Way**
By Les Vough  
Extension Forage Crops Specialist

Except for nitrogen, have you ever wondered which plant nutrient is required in the greatest amount by your pasture or which nutrient is removed in the greatest quantities in hay harvests? The answer is potassium.

**Potassium...**
- encourages more efficient nitrogen use by plants,
- increases the photosynthetic production of carbohydrates which are necessary for energy production,
- stimulates storage of starch reserves in the roots of summer perennial grasses to provide greater protection against winterkill,
- enables plants to use soil moisture more efficiently,
- regulates the opening and closing of leaf pores (stomates) to allow proper air exchange for photosynthesis and for plant cooling,
- improves root growth and enhances drought tolerance,
- decreases susceptibility to several plant diseases,
- stimulates increased nitrogen fixation by forage legumes and also increases plant protein content,
- is involved in many beneficial enzymatic reactions,
- and it increases forage yields, grazing capacity, and potential farm profits.

**Potassium’s Nutritional Role**
Potassium is also essential in animal nutrition. It helps regulate the heartbeat, affects neuromuscular activity, maintains proper osmotic balance and acid-base balance in the blood system, and maintains water balance.

Muscle contains most of the potassium in the bodies of animals, but it is found in every cell of the body. If cattle and lambs are fed forage and hay with optimum potassium, it can help reduce their stress when they are shipped to feedlots, or moved about for shows.

Forage will take up potassium in the following amounts (pounds of K2O per ton of forage dry matter): alfalfa=60; fescue, smooth bromegrass, and orchardgrass=50; bermudagrass=45; and clover/grass mixtures=60. Grazing animals will return a large portion of the ingested potassium to the soil in feces and urine.

If your summer forage production seemed to drop off too rapidly as temperatures increased, or if cool-season forages do not respond to nitrogen rates as expected, check your soil test potassium levels. Remember, hay and silage harvests remove more potassium from the soil than any field crops. To sustain and improve production, the harvested potassium must be replaced.

Growers should consider grazing and hay demands, soil testing to evaluate their soil’s potassium-supplying power, and applying potassium fertilizer with other recommended nutrients as a part of this year’s management program. Paying attention to potassium can improve forage and livestock production and increase farm profits.

Adapted from Agri-Briefs, Fall 2002, No. 5  
Potash & Phosphate Institute
Determining Forage Moisture Content Using a Microwave Oven
By Les Vough
Extension Forage Crops Specialist

A microwave oven can be used to obtain accurate forage moisture measurements in a relatively short time. A scale that weighs in grams is needed because of the small quantities of forage being weighed. To determine hay moisture with the microwave oven and gram scale method, follow these steps:

1. Collect small grab samples (about ½ lb) from 3 or 4 locations in the field.
2. Use sharp scissors or hedge shears to chop the samples into 1 to 2-inch lengths. Take care not to lose any leaves.
3. Thoroughly mix the chopped forage and accurately weigh out a subsample of about 100 grams.
4. Spread forage thinly on a microwave-safe dish or on a moisture-free, paper plate. Place in microwave oven for two minutes at half power.
5. After two minutes, remove the sample, weigh and record weight, and then return it to the oven for another 30 seconds of drying. Microwaves vary considerably in drying capacity. It is better to dry for short intervals and reweigh frequently than to over dry and run the risk of burning the samples or damaging the oven.
6. Continue this cycle of weighing and drying until back-to-back weights are the same or forage begins to char. If any charring has occurred, use the previous weight for calculating the moisture content.
7. Calculate the percentage of moisture as follows:

**Step One** Fill in the blanks. Example:

Weight of sample before drying 100 \( (a) \)
Weight of sample after drying 82 \( (b) \)

Note: These weights should not include the weight of the plate. Therefore, subtract the weight of the plate before going any further.

**Step Two** Complete this equation. Example:

\[
\frac{(b)}{(a)} \times 100 = \text{percentage of dry matter (% DM)} \]

\[
100 \times 82 = 82\% \text{ DM}
\]

**Step Three** Complete this equation. Example:

\[
100 - \% \text{ DM} = \text{% moisture in the hay}
\]

\[
100 - 82 = 18\% \text{ moisture}
\]

It is a good idea to follow this procedure twice. First, follow the procedure with samples taken from average spots in the windrow. Then run through it again, this time with samples taken from the wettest spots. That way, you not only know the average moisture content but the moisture content of problem spots as well.

Haymaking: Practices to Reduce Field Drying Time
By Les Vough
Extension Forage Crops Specialist

Haymaking has been a real challenge thus far this year. Even harvesting as silage has been difficult. During years such as this, hay growers become especially interested in techniques and practices that can reduce the length of time between cutting and baling.

Solar energy (sunshine) is the single most important factor affecting drying rate. You can’t make hay when the sun doesn’t shine, and clear, sunny days have been few and far between in May this year. Simple things such as proper equipment adjustment and timing of operations can help.

If you are using a mower-conditioner with intermeshing rollers, make sure the rollers are set to obtain the proper amount of crushing and breaking of the stems. The adjustment on many machines has never been changed since they were delivered and originally set up on the farm. If the rollers are too far apart, stems may not be crushed and broken. Having the rollers set too close results in a lot of leaf loss and extra wear on the rollers. Check the operator’s manual for proper adjustment of your particular machine.

**Mow early in the day** to maximize the hours of sunshine available for drying. Begin as the dew is starting to dry off of the plant material. Mowing while heavy dew is still on the plants can trap considerable moisture underneath the swath.

**Make wide swaths** to maximize the surface area exposed to sunshine. It is estimated that less than half of the solar radiation penetrates beyond a 1 inch depth in the swath. However, if the soil surface is wet at mowing, set the mower-conditioner to make a narrow swath or windrow to let the bare ground dry somewhat. After several hours of drying, spread the windrows with a tedder to maximize the surface area exposed to sunshine. When hay is laid down on wet ground, moisture evaporating from the soil must move through the layer of hay.

The use of effective hay preservatives enables baling at moisture levels up to 35 percent, thereby reducing the time required for curing. The preservatives that have consistently been proven to be most effective are organic acids, primarily propionate (propionic acid) and acetate (acetic acid). Some commercial products contain a mixture of propionic and acetic acids. Acetic acid is only about half as effective as a preservative as propionic acid. Some commercial products may also contain citric acid to retain green color.

Organic acid hay preservatives are designed to reduce microbial activity and spoilage in high moisture hays. When hay is baled and put into storage at moisture levels of 18 to 35 percent, a favorable environment exists for growth of undesirable fungi, bacteria and yeast. Although bacteria can be associated with spoilage of wet hay, it is generally fungi that cause most spoilage problems. Organic acids basically function as fungicides, preventing growth of the microorganisms. Propionic acid is most effective in inhibiting growth of fungi (molds), followed by yeast, and then bacteria.
Not all commercial products are equal. Product effectiveness, concentration of active ingredient (propionic acid), and cost per pound of propionic acid varies among the different products on the market. When purchasing a propionic acid-based product, read the product label for the actual percentage of propionic acid. Some products have contained as little as 15 to 20 percent actual propionic acid. The use of very dilute products is not recommended because you are adding a large volume of water back to the hay. Typically the most cost-effective products are those with the highest concentration of propionate. Base purchase decisions on cost per pound of active ingredient - not cost per pound of product.

For many years the major disadvantages to using propionic acid were its corrosiveness to machinery, pungent smell, and volatility. Today the primary form of propionic acid preservatives on the market are “buffered” products that are less volatile, less harmful to paint, and less caustic to skin and nasal passages. Buffered products are made by adding compounds such as ammonium hydroxide to the acid to form ammonium propionate. Several research studies have shown that the buffered product is equal in hay preservation qualities to that of the unbuffered propionic acid.

To be effective the preservative must be uniformly distributed on the hay as it enters the baling chamber. This means multiple application nozzles are needed. If distribution is not uniform, pockets of muskiness or mold can occur (parts of the bale being musty or moldy). Through use of a moisture sensor in the bale chamber and multiple application nozzles, variable application rates can be obtained for varying moisture levels of the hay being baled.

Recommended application rates are based on the moisture content of the hay (Table 1). Note that the rates are for pounds of acid, not product. Therefore a product with 50 percent acid would need to be applied at twice the rates in Table 1. Although hays containing moisture levels higher than 35 percent moisture can be effectively preserved, the practice is not recommended because of costs, difficulty of handling wet bales, and bale shrinkage in storage resulting in loose strings.

### Recommended application rates for propionic and propionic-acetic acid preservatives.

<table>
<thead>
<tr>
<th>Hay Moisture % Content</th>
<th>Application Rate % of Dry Wt.</th>
<th>Lb. Acid/Ton Dry Wt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-25</td>
<td>0.5</td>
<td>10</td>
</tr>
<tr>
<td>25-30</td>
<td>1.0</td>
<td>20</td>
</tr>
<tr>
<td>30-35</td>
<td>1.5</td>
<td>30</td>
</tr>
</tbody>
</table>

Anhydrous ammonia is an effective preservative (fungicide) for grasses. It can be injected into bales or released into a stack of bales covered and tightly sealed with plastic. Use of 1 percent anhydrous ammonia (20 lb anhydrous ammonia per ton of dry hay) has been shown to reduce storage dry matter losses and prevent heating and mold development in hays containing up to 32 percent moisture. Crude protein levels in the hay increase due to the nitrogen content of the ammonia and treated hay has a higher digestibility than untreated hay.

This method of preservation has not received wide acceptance because of problems in supplying the ammonia to large amounts of hay and concerns for human and animal safety. For humans, strong concentrations can cause severe burns, blindness and death. Vapors from treated bales can be irritating, especially in poorly ventilated areas. Also, the ammonia may not become distributed uniformly throughout the hay, therefore portions of the stack may spoil.

Applying more than 1 percent ammonia to high quality forages such as alfalfa, immature grasses and cereal grain hay can result in formation of a toxic compound. Animals consuming ammoniated high quality forage have had toxic reactions. Symptoms of the toxicity include hyper-excitability, circling, convulsions and death. The toxin is transferred into milk, so nursing calves and lambs are also susceptible to the toxicity. If signs of toxicity occur, feeding of treated hay should be discontinued. So it is important that anhydrous ammonia be used with care and applied at the recommended rate.

Application of urea is much simpler than using anhydrous ammonia gas, but it is not as effective. Urea can be converted to ammonia by bacteria normally found on the hay. Researchers have found that relatively large amounts of pelleted urea (40 to 120 lb per ton of hay dry matter) applied to hay containing up to 30 percent moisture improved visual appearance over that of non-treated moist hay. However, sufficient research has not been done with urea to develop recommended application rates. The range of 40 to 120 lb per ton is very wide and the risk of animal toxicity with excess ammoniation is too great for this practice to be recommended.

The newest type of preservative is the inoculants. Inoculants consist of bacteria and enzymes to enhance bacterial growth. The possible mode of action of these inoculants in aiding hay preservation under aerobic conditions has not been clearly elucidated. The principle is that bacteria might inhibit fungal growth by reducing the pH or by utilizing limited substrate supplies. There are some indications of positive effects of inoculation on hay preservation but taken as a whole, they do not exhibit the pattern of changes in hay temperature, composition, and dustiness typical of effective preservatives.

No one of these practices or techniques used alone will solve our problems of haymaking during inclement weather, but proper mower-conditioner adjustment along with adoption of one or more of the other practices presented above can cut from several hours to a day or more off of the field drying time.

### Baleage: The Round Bale Silo

Haylage (ensiled hay) is the surest way to make quality forage in the spring and late fall. It allows for quick and timely harvests between rainfall events during cool short day periods. Haymaking in Maryland from late April to the end of
May is extremely difficult. It generally requires 3 to 5 days depending upon the mass of the windrow, current soil moisture, and prevailing weather conditions to cure hay to 15% moisture. Assuming that a rain-free day is selected for mowing, the probability of having a 2-day rain-free period is 73%. However, the probability of having a 5-day period without rain to complete hay curing is only 28%. I believe that this is too high of a risk for typically what is the highest yield and best quality hay for the year. An option would be to make haylage. Baleage may possibly be the simplest and most economical way to produce haylage. However, it may also be the silage system most likely to fail.

All good silage is the result of cutting and densely packing the crop at the correct moisture content to exclude oxygen, creating an anaerobic state. Fermentation, the ensiling process, will occur rapidly due to the naturally occurring bacteria, *Lactobacillus*. This bacteria thrives and converts sugars into lactic acid, thereby, reducing the forage pH to 3.8. At this point the silage process is complete, and the forage will remain preserved until oxygen infiltrates. The surface area of an ensiled round bale is the greatest of any silage system, thus making it more prone to spoilage losses if oxygen is not completely excluded until fed. Haylage properly ensiled and free of molds may be fed to all livestock, including horses.

**The Baleage Technique**
- Bale at moisture of 45 to 60%
- Form a tight and dense a bale as possible
- Avoid wrapping delay wrap on the day of baling
- Wrap with 4-layers of white plastic, overlapped 50%
- Inoculants and preservatives may increase ensilage success and quality
- Store bales in a protected site on end to lesson deformity
- Avoid stacking of wrapped bales
- If bale wrap tears tape closed or feed as soon as possible

**IPM Pest Report**
May 27, 2003

By
Galen P. Dively

Looking for IPM news? Check out the university of Maryland Integrated Pest Management web site at: [www.mdipm.umd.edu](http://www.mdipm.umd.edu)

**SLUGS** have not been as bad as expected in corn and other crops thus far this spring, despite the seemingly ideal weather conditions. Winds and cold temperatures during the night have suppressed slug activity. However, they are beginning to cause significant feeding damage on leaves and some severing of seedlings in hot spots of fields. If current weather conditions continue, slugs will plague growers, especially in fields where no-till corn hasn't emerged or been planted yet. Wet fields with high amounts of residue are most susceptible and should be scouted for slugs. Feeding injury can reduce plant stands when wet soil conditions during planting prevent the seed slot from closing completely. When this happens, slugs can feed below ground level and can kill the growing tip of young seedlings.

I conducted a field study several years ago to measure the corn plant’s ability to withstand slug damage. The work was done in a no-till field with closed seed slots and an average of ten slugs per plant at emergence. At the 2-3 leaf stage, individual plants were rated for damage and then flagged for later assessments of seedling mortality and plant growth at 1, 2, and 4 weeks after the initial rating. No controls were applied, so the slug population present at plant emergence was allowed to develop and feed on seedlings after the damage ratings were made. The rating categories included: 1= seedling completely severed at ground level; 2= all leaves consumed except one remaining intact (greater than 75% defoliated); 3= all leaves showing moderate damage but entire plant intact (25 to 50% defoliated); 4= only one leaf showing damage (less than 25% defoliated); 5= no damage.

The study showed that a considerable amount of slug injury could be tolerated before plant density and growth are severely affected. Although regrowth delayed the production of leaves, 32% of the severed plants and 83% of the plants that were more than 75% defoliated recovered after 2 weeks from the initial onset of injury. All plants in categories 3 (25 to 50% defoliated) and 4 recovered completely and were not significantly different from undamaged plants with respect to the number of leaves and plant height later in the season.

Although individual plant yields were not determined, there were no observable differences in plant or ear size at harvest between damaged and undamaged plants; thus, any yield loss from slug damage is probably directly related to stand reduction.

Based on this study, populations of five or more slugs around each plant prior to the 3-leaf stage may be economic, especially if injury is heavy, plant growth is slow, and cool, wet conditions prevail. If the weather turns hot and dry, 10 or more slugs per plant may be tolerated if the seedlings reach the 3-leaf stage. Generally, if a heavily infested field reaches the 3-leaf stage without severe seedling mortality, the crop has survived the critical period and should outgrow further slug injury, regardless of the population pressure.

For information on control, you can view or download the pdf file on the Biology and Management of Slugs in Reduced-Tillage Corn, located as a special topic link on the MD IPM homepage ([www.mdipm.umd.edu](http://www.mdipm.umd.edu)).

**BLACK CUTWORMS**: A few reports of cutworm infestations have been coming in; however, it is still early in many areas for the cutting stage larvae to be present since the majority of moth activity took place in early May and temperatures certainly have not been ideal for rapid egg hatch and larval development. Late-planted fields, especially reduced tillage fields or fields planted in low-lying, weedy areas, that are just emerging should be monitored for possible damage.

**EUROPEAN CORN BORER** moth activity has been at least one-half the expected average levels in most regions of the state. I don't expect to see any first generation damage to whorl-stage corn because plant growth is simply not advanced enough to attract egg-laying moths. One question about corn not planted yet is whether there is any benefit to Bt hybrids at this point since the first generation is no longer a threat. Keep in mind that late-planted corn is subject to whorl and stalk damage from second generation and potential yield losses can still be great enough to justify the technology fee, especially on the Eastern Shore. However, my guess is that
overall corn borer pressure on all plantings of corn should be lower than normal this season. Usually when corn growth is delayed, other host plants, such as potatoes, become more attractive to moths. Thus, higher infestations in potatoes were expected but so far this has not been the case. Apparently, cool, wet conditions are slowing corn borer development and rains wash away a significant portion of the newly hatched larvae. The first brood flight of moths is still not over, so there is time remaining for corn borer problems to occur. When monitoring for this pest in potatoes, note the present of moths that are flushed out of the canopy as you walk through fields - this is an indication that egg laying is occurring. Check carefully for small entrance holes caused by young larvae boring into the leaf axils and petioles of 5 main shoots at each of 10 sites. Signs of wilted terminal leaves are often evidence of infested stems. Examine each shoot and tally number with at least one entrance hole; thus, it is not necessary to count all entrance holes. The treatment strategy is to delay insecticide controls until a significant portion of the egg laying occurs and young larvae have actually entered stems. This increases the chances that one or two insecticide applications will keep borer damage below tolerable levels. Keep in mind that young larvae feed in their first galleries for several days, after which they move 4 or 5 times from old to new feeding sites farther down on the stem to complete their larval development. Thus, there is ample opportunity for wandering larvae to become exposed to insecticide residues and natural enemies. Ambush®, Baythroid®, Furadan®, Monitor®, Penncap®, Pounce® or Spintor® will provide control. The first application should be delayed until 25% or more of the shoots are showing at least one entrance hole caused by young larvae. Furadan® or Monitor® will provide the best control if you wait until you see infested shoots. A second treatment applied 7-10 after the first may be necessary if there is a significant increase in fresh terminal injury and light trap captures in the area exceed 10 moths per night.

**GRUBS ON CORN:** Young plants are stressed in a number of cornfields where grubs are apparently feeding on the root systems. I expect that Japanese beetles and other annual white grubs are the predominate species. These annual grubs do most of their feeding in late summer and early fall of the previous season when field crops have massive root systems and thus are less susceptible to economic root damage. Normally, when the grubs become active again in the spring, they have a relatively short period of time to feed before pupation in late May or early June. This season, however, grub development has been prolonged by the cooler soil temperatures, giving the grubs a longer opportunity to feed on the roots of corn plantings, which are already stressed by the weather. At this time, the only way to control grubs once the crop is planted is to replant and treat with a soil insecticide. Obviously, replanting should be done only if a critical number of plants have been stunted or destroyed by grubs. In most cases, no action is recommended; however, it is important to accurately identify the grub species involved because there may be potential problems to field crops next season if the predominate species are true white grubs. Of this group, May/June beetle grubs have a 3-year life cycle and can cause stand loss during 2 years of their 3-year cycle. They can be separated from annual white grubs by examining the pattern of hairs on the raster (the underside of the last tail segment). The raster of the true white grub has a narrow, smooth space with two rows of parallel bristles (patterned like a zipper). Also, there are many scattered bristles on either side of the zipper. Annual white grubs, such as Japanese beetles and several chafer, have scattered bristles on the raster, but no distinct pattern like the zipper.

For more information on the biology and identification of grubs, check out the following websites:
http://www.ces.uga.edu/pubcd/1428-w.html

**SEEDCORN MAGGOTS THREATEN SLOW GERMINATING CROPS:** The current weather pattern is ideal for seedcorn maggot injury in corn, soybean, and many vegetable crops. Fields most frequently chosen for egg-laying are those with less than adequate drainage, following set-aside acreage or sod, or high concentrations of organic matter. Fields that are heavily manured or treated with sludge have the greatest risk. Planter-box seed treatments provide a reliable and economical approach to managing this pest. Corn seed is generally treated with a fungicide but not always with an insecticide or at a rate of insecticide highest enough to kill maggots. Soybean seed is rarely treated with a protectant and generally does not need one; however, this year may be the exception if cool soil conditions continue. The following materials are available as planter-box treatments for corn, soybean, sweet corn, peas and beans: diazinon (Agrox® D-L Plus, Agrox® B-3, Diazinon® 50W, Kernel Guard®, KickStart® or Germate Plus), and permethrin (Kernel Guard Supreme, KickStart® VP). Products containing chlorpyrifos (Lorsban®), imidacloprid (Gaucho® 480, 600 and Prescribe®), thiamethoxam (Cruiser®) and permethrin (Barracuda®) are only available as commercially treated corn, wheat, soybean, sweet corn, and snap bean seed.

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**Easy To Grow Raspberries**
By Francis R. Gouin, Professor Emeritus
University of Maryland

The demand for fresh raspberries in the Washington and Baltimore area is high and likely to remain that way because fresh ripe raspberries do not ship well. Raspberries are sold mostly by the half pint and pint. During the summer of 2002 half pints of raspberries were selling in major grocery stores for $2.50 to $3.00 and the supply was limited. Commercial raspberry production on well-drained enriched soils with supplemental irrigation should be considered as an alternative crop in Southern Maryland.

Raspberry cultivars developed by Dr. Harry Schwartz of the University of Maryland, have not only reduced production time but have significantly reduced labor requirements. Pruning hooks and pruners are no longer needed. Most of the major pruning can be done with the bush-hog or a walk behind brush cutter. The reason is the new raspberry cultivars are all primary cane producers. Primary cane means that the fruit
are produced on canes that sprouted from the ground that same year.

Nearly all of the old cultivars of raspberries produced the cane one year and the fruit the second year. This meant having to hand prune out the old canes that had produced the fruit during the winter and early spring months in order to make room for new canes to sprout from the roots. This was not only labor intensive but one had to construct a wire frame to support the canes so as to provide access for harvesting.

With primary cane cultivars, the canes sprout from the ground in the spring and produce strong canes with fruit the very same growing season depending if they are early, mid or late season cultivars. As soon as the early and mid season cultivars have been harvested, the canes are mowed to the ground. Only the late season cultivars are mowed to the ground the following spring before growth starts. There is no need to either thin or support the canes with wire frames when growing primary cane cultivars.

However, the best yields are obtained on rich organic soils having a pH near 6.5 using a landscape fabric to control weeds. Now that we have an abundant supply of compost available throughout Maryland, there is no excuse for not infusing an abundance supply of organic matter into the soil in preparation of planting. It is important to have the soil tested and to add sufficient compost to increase the organic matter concentration of the soil to near 5%. If your soil has an organic matter concentration of near 3% this means amending the soil with approximately 4 to 5 cubic yards of compost per 1,000 sq. ft. It is only necessary to amend the soil in the growing area and not in the walkways.

For maximum yields, grow raspberries on well-drained soil with full sun in rows 7' to 8' apart and consider using trickle irrigation installed beneath the landscape fabric. One should not use preemergence herbicides near raspberries. It is best to install landscape fabric over the prepared soil and plant through the landscape fabric.

The propagation of primary cane raspberries is by tissue culture. At the present time the most accessible propagator of primary cane raspberries is Davron Farms in Hurlock, MD.

Raspberries do have a few insect pests, but they are not more difficult to control than on any other crops. Through genetic engineering, Dr. Schwartz has eliminated the problems with crown gall, which was one of several cane problems with older cultivars.

Harvesting does require a considerable amount of labor because there are no mechanical harvesters for fresh market sales. However, all of the primary cane cultivars currently available produce large plum fruit that are easily harvested. This is one crop that should be given serious consideration in crop diversification.

Fruit and Vegetable Tip-O-Phone
The Fruit and Vegetable crop and pest status reports, and the Cheltenham Farmers Market auction price quotes are updated weekly. For the recorded update call 410 761-8911, and please share a hot tip by leaving a message after the beep.

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Wet Weather Tips

Weather Facts
Well, if we are going to have rain lets go for the record! According to NOAA we have only had two weekends where both Saturday and Sunday were sunny and clear since January 1st 2003. Last year at this time we had 14.85 inches of rainfall. This year we are at 25.43 inches of rain. This is before the rain on this Friday, Saturday and Sunday. NOAA is also predicting that we can expect 5 – 6 hurricanes this summer. This is an unusually high number. Looks like rain will be will us most of the summer. This information was excerpted from the weekly Greenhouse IPM Report, which is provided by Stanton Gill, Extension Horticultural Specialist.

Prevalent Wet Weather Diseases

Damping off caused by the soil fungi phytophthora, rhizoctonia, and pythium is an anticipated outcome of cool saturated soil conditions. Be sure to treat all seeds with additional fungicide protection. When wet soil conditions persist, fungicide seed treatment should also be applied to seed used for the establishment of forages and cover crops.

Phytophora blight on the cucurbits and peppers requires a diligent strategy starting with soil fungicide applications at the plants root environment, and later applications to protect the area of crown fruit set. Treat the plant zone with Ridomil® Gold at planting time, followed by Ridomil® Gold Copper or Ridomil® Gold MZ. As fruit sets, alternate fungicides for full spectrum disease control utilizing fixed coppers, Bravo®, Mancozeb®, Quadris®, etc. Be sure to consult EB 236 for labeled usage of fungicide products on each specific crop.

2003 Pesticide Container Recycling Collection
There are two relatively close sites for Anne Arundel and Prince George's County farmers to dispose of their empty and rinsed pesticide jugs. Central and Southern Maryland farmers may drop-off their rinsed pesticide containers for recycling at the Beltsville, USDA Research Center, Building 302, Visitor Center on Powder Mill Road, on June 26, 2003; July 24, 2003; August 28, 2003; and September 25, 2003.

There will also be a collection site at the Perdue Farms located at 6272 Southern Maryland Boulevard on June 19, 2003; July 15, 2003; August 19, 2003; and September 23, 2003. The containers will be received from 9:00 a.m. to 3:00 p.m. for all dates listed.

Additional information on the required rinsing of the pesticide containers, and the recycling program can be obtained by calling the MDA Pesticide Regulation Section Office at 410 841-5710.
University of Maryland and the Maryland Department of Agriculture

Nutrient Management

Training Courses/Programs 2003

The following is a list of training workshops for certified consultants. Also listed are the dates for the two-day Pre Exam training and the certification exam dates. Some of the later workshops are still tentative and will be confirmed at a later time. Certified consultants are sent registration forms for all workshops. Registration forms will be available on the MDA website: http://www.mda.state.md.us/nutrient/nutmgmt.html approximately 1 month prior to each workshop. Each one-day workshop counts for 6 hours of continuing education credits. The Pre Exam training cannot be counted toward continuing education credit.

**July 30**
**Nutrient Management for Grounds**

Management Personnel

This training course is aimed at individuals responsible for managing nutrient application on public grounds, parks, apartment complexes, common grounds and other urban landscapes. Efficient nutrient use, soil testing, record keeping, and regulatory requirements will be discussed.

**Aug. 1**
**Certification Exam**

Anyone wishing to take the certification examination must apply at least 2 weeks prior to the exam date and meet certain educational and experience requirements. Applying 2 months prior to the exam is recommended. Call or write the Nutrient Management Program for an application (phone 410-841-5959). The application form will be available on the MDA website. Once the application is approved, study materials will be sent to applicants.

State-of-the-Science Nutrient Management Research Briefing Scheduled

ANNAPOLIS, MD (June 12, 2003) - Maryland Secretary of Agriculture Lewis R. Riley today announced that the Maryland Department of Agriculture will host a one-day briefing for farmers, nutrient management consultants, legislators, agricultural organizations, environmental interests and other key stakeholders on the most recent research findings related to nutrient management. The briefing will be held Thursday, July 17, 2003 from 10 a.m. - 3:45 p.m. at the Patuxent Research Refuge National Wildlife Visitor Center in Laurel, Maryland.

"We have to use the best science available to develop policy. This research briefing will provide valuable background information for those individuals who plan to participate in the Nutrient Management Summit scheduled for August 5th at Chesapeake College," explained Secretary Riley. "It is important for stakeholders to understand the scientific underpinnings and emerging technologies that support nutrient management before we attempt to craft changes to the program or establish new directions."

Substantial research related to the implementation of the Water Quality Improvement Act of 1998 has been conducted since the law was enacted. The purpose of the research briefing is to evaluate progress and discuss new tools and management techniques--some currently in use, others under development--that may be used to help farmers implement nitrogen (N) and phosphorus (P) based nutrient management plans.

Due to space limitations, registration is required and limited to the first 200 applicants. The registration deadline is July 7 and a $15 registration fee includes lunch. Interested persons should call the Maryland Department of Agriculture's Nutrient Management Program at 410-841-5959 or visit their website to obtain a registration form at: http://www.mda.state.md.us/

**New Pumpkin Production Guide Has It All**

The Pumpkin Production Guide, available June 30, is a must-have for both new and experienced pumpkin growers, serious gardeners, and agricultural advisors. The 152-page guide covers the basics of pumpkin production and cutting-edge research.

Twelve chapters offer practical information for preparing the field, evaluating varieties, and choosing the best cultural practices; groundbreaking insight into fruit set and pollination to help growers maximize yields; descriptions for identifying and controlling weeds, insects, diseases, and wildlife pests; ways to maintain postharvest quality; and sample budgets and marketing ideas. Over 115 color photos supplement the text.

The Pumpkin Production Guide, NRAES-123, is available from NRAES for $39.00 plus $6.00 S&H (within the continental U.S.) Make checks payable to NRAES; all major credit cards accepted. New York residents, add 8.25% sales tax (on both the cost of the book and S&H). Contact NRAES for other S&H rates and possible discounts at: NRAES (Natural Resource, Agriculture, and Engineering Service)(formerly Northeast Regional Agricultural Engineering Service) Hours: 8:30AM-4:30 PM, Monday-Thursday; 8:30 AM-2:30 PM, Friday.

Address for US Mail: Cooperative Extension, PO Box 4557, Ithaca, NY 14852-4557
Address for UPS, FedEx, or to stop by: B-16 Morrison Hall, Ithaca, NY 14853
Phone: (607) 255-7654
Fax: (607) 254-8770
E-mail: nraes@cornell.edu
Web site: http://www.nraes.org

**Blue Mold Alert**

By Dave Conrad

Extension Tobacco Program Specialist

The North American Plant Disease Forecast Center at NCSU has been forecasting some blue mold spore trajectories, which passed over Maryland around the third week in June. These spore trajectories are likely to continue throughout the summer. Be on the lookout for reported blue mold outbreaks. The weather is perfect, and, the spores are probably in the vicinity. Dithane DF and Acrobat are our only preventative spray programs. See Tobacco Views and News No. 3, 2002, Table 6 for rates. Recommendations are also in EB237.
Soil Lab Closes: The Dean’s Message
By Tom Fretz
Dean, College of Agriculture & Natural Resource Science

Due to the drastic cuts in state funding to our budget, it has become necessary to close the Soil Testing Laboratory, effective June 30. Soil and manure samples received by the lab, with payment, before June 30 will be completed, as usual.

This was a tough decision. The Soil Testing Lab has served Maryland’s agricultural, landscape horticulture, and home horticulture communities for almost 50 years. The Soil Testing Lab was never a financially self-sufficient program and depended on support from the College and MCE to supplement funds received from MDA and user fees. In our current budget situation, it is no longer possible to subsidize the lab.

This closure has absolutely nothing to do with the quality of the service provided by the lab, which was always exceptional. I would like to thank the Soil Testing Lab staff for the great work they’ve done for the College.

MCE educators and staff will be given information to provide to the agricultural community and homeowners about alternative soil testing facilities. The cost and accuracy of the tests conducted by private and neighboring public labs are comparable to that of the Soil Testing Lab. Although, we will no longer conduct the chemical analysis of the soil, MCE educators will continue to interpret lab results and provide recommendations.

In closing, I want to point out that in the past Cooperative Extension was the only resource available to farmers and homeowners for obtaining a soil analysis. Soil testing is offered widely now, and we can be proud of Extension’s role in developing and nurturing this technology. In a way, the lab’s closing is the result of Cooperative Extension creating a successful enterprise for private industry to model. We are, in a sense, passing the torch. Now, we have the opportunity to shift our resources to focus on innovative solutions to future challenges.

Alternative Soil Testing Labs
By Krista Wilson

Once the University of MD’s Soil Testing Lab has closed, producers will need to seek out other labs for soil analyses. Not all labs can be readily converted into University of Maryland values. A list of alternative labs has been provided below, as well as instructions on how to convert values. Producers will need to make arrangements with these soil-testing labs (i.e. obtain soil bags, forms, and make arrangements to mail the samples to the lab). The University of Maryland’s “Soil Sampling Procedures for Nutrient Management” should still be followed (i.e. 8-inch sampling depth), even if the lab you are using follows different laboratory procedures.

Participating Soil Test Laboratories:

- **A & L Eastern Agricultural Laboratories**
  7621 Whitepine Rd.
  Richmond, VA 23237-2296
  (804) 743-9401 / Fax: (804) 271-6446
  http://www.al-labs-eastern.com
  email: paulchu@al-labs-eastern.com

- **Agri Analysis, Inc.**
  280 Newport Rd.
  P.O. Box 483
  Leola, PA 17540
  (717) 656-9326 / Fax: (717) 656-0910
  http://www.agrianalysis.com
  email: info@arianalysis.com

- **Pennsylvania State University**
  Agricultural Analytical Services Laboratory
  Tower Road
  University Park, PA 16802
  (814) 863-0841 / Fax: (814) 863-4540
  http://www.aasl.psu.edu
  email: aaslab@psu.edu

- **Brookside Laboratories, Inc.**
  308 South Main St.
  New Knoxville, OH 45871
  (419) 753-2448 / Fax: (419) 753-2949
  http://www.blinc.com

- **Spectrum Analytic, Inc.**
  1087 Jamison Rd.
  P.O. Box 639
  Washington Court House, OH 43160
  (800) 321-1562
  http://www.spectruumanalytic.com

- **University of Delaware**
  Soil Testing Program
  152 Townsend Hall
  531 S. College Ave.
  University of Delaware
  Newark, DE 19717-1303
  (302) 831-1392
  www.udel.edu/DSTP

- **Waters Agricultural Laboratories, Inc.**
  P.O. Box 382
  257 Newton Hwy.
  Camilla, Georgia 31730
  (229) 336-7967 / Fax: (229) 336-7967
  www.watersag.com
  email: info@watersag.com

Converting Among Soil Test Analyses Frequently Used by Maryland Farmers

The following information was excerpted from Extension Publication SFM-4, authored by Frank Coale, Extension Specialist, Soil Fertility and Nutrient Management. University of Maryland, College Park, May 2001.

This publication is available on the AGNR website: http://agnr.umd.edu/
Factors for converting from regional soil-testing laboratory report data to Maryland Cooperative Extension Soil Testing Laboratory's fertility index value (FIV) scale. To determine an equivalent Maryland FIV value for each soil-test nutrient, multiply the regional laboratory reported value, expressed in the units shown, by the value in column A and then add the value in column B.

<table>
<thead>
<tr>
<th>Regional Soil- Testing Lab</th>
<th>Soil-test Nutrient</th>
<th>Phosphorus (P)</th>
<th>Potassium (K)</th>
<th>Calcium (Ca)</th>
<th>Magnesium (Mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A &amp; L ppm</td>
<td></td>
<td>0.63 (-18)</td>
<td>0.13 (-21)</td>
<td>0.67 21</td>
<td></td>
</tr>
<tr>
<td>Agri-Analysis lbs/a</td>
<td></td>
<td>0.22 (-3)</td>
<td>0.06 (-23)</td>
<td>0.06 (-21)</td>
<td>0.23 0</td>
</tr>
<tr>
<td>Brookside ppm</td>
<td></td>
<td>0.26 (-3)</td>
<td>0.07 (-23)</td>
<td>0.39 12</td>
<td></td>
</tr>
<tr>
<td>Brookside lb/a</td>
<td></td>
<td>0.22 (-2)</td>
<td>0.06 (-21)</td>
<td>0.23 0</td>
<td></td>
</tr>
<tr>
<td>Penn State ppm</td>
<td></td>
<td>0.60 0</td>
<td>0.12 (-21)</td>
<td>0.76 0</td>
<td></td>
</tr>
<tr>
<td>Spectrum lbs/a</td>
<td></td>
<td>0.33 (-1)</td>
<td>0.08 (-16)</td>
<td>0.43 8</td>
<td></td>
</tr>
<tr>
<td>U. of DE ind-ex</td>
<td></td>
<td>1.10 1</td>
<td>1.05 (-9)</td>
<td>0.97 10</td>
<td></td>
</tr>
<tr>
<td>Waters lbs/a</td>
<td></td>
<td>0.38 (-1)</td>
<td>0.06 (-12)</td>
<td>0.43 4</td>
<td></td>
</tr>
</tbody>
</table>

For A & L Laboratories, use Bray P1 (weak Bray) P values. For AgriAnalysis, use Phosphate (P_2O_5), Potash (K_2O), and Magnesium (MgO) values.

For Brookside Laboratories, use Easily Extractable P, lb/a as P_2O_5. For Brookside Laboratories, use Easily Extractable P, p.p.m. of P.

University of MD Soil Tests Units are FIV’s (Fertility Index Values):

<table>
<thead>
<tr>
<th>FIV</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-25</td>
<td>Low (Yield response is likely if fertilizer is applied)</td>
</tr>
<tr>
<td>25-50</td>
<td>Medium (Yield response possible if crop is fertilized)</td>
</tr>
<tr>
<td>51-100</td>
<td>Optimum (Yield response unlikely if additional fertilizer is applied to crop)</td>
</tr>
<tr>
<td>&gt;100</td>
<td>Excessive (Yield response very unlikely)</td>
</tr>
</tbody>
</table>

The Small Farm Institute Corner
By Stephan Tubene
Coordinator, Small Farm Institute

Maryland's Best
Under the leadership of Maryland Department of Agriculture, ethnic/specialty vegetable growers are encouraged to subscribe to the “Maryland's Best” program in order to take advantage of this new initiative. “Maryland’s Best” membership is free. For more information, contact Ms. Jane Storrs at storrjsm@mda.state.md.us and/or at 410-841-5770.

In January 2003 newsletter, you received some preliminary information on “Ethnic Buyers and Sellers’ Responses to Ethnic and Specialty Produce in the Baltimore-Washington Area—Project Funded by Maryland Department of Agriculture: Specialty Crops Grant.” The project is still underway and we want your feedback. In a separate envelope you will receive a one-page questionnaire asking information on ethnic/specialty vegetables being grown on your farm. As soon as you get the questionnaire, please fill it out and send it back to us in a provided return envelope. We would like to compile a directory of Maryland ethnic/specialty vegetable growers. The directory will be an excellent marketing tool and will serve to promote your produce and provide a regional, national, as well as international exposure of your farm and produce. Please stay tuned!

Maryland Ethnic Vegetables Web Site
If you have been looking for an ethnic vegetables web site, don't look any further; just visit: www.marylandethnicvegetable.com

You will find all kinds of information on ethnic and specialty produce ranging from production, marketing, and cooking. For instance, a trip to Tacoma Park’s international markets revealed that ethnic vegetables have a price markup of 55%. This figure might not be higher than that of traditional markets. However, specialty vegetables, being high-value crops, are already more expensive than traditional vegetables offering therefore, a fairly good return to farmers (Table 1).

<table>
<thead>
<tr>
<th>Vegetable</th>
<th>Farm Gate</th>
<th>Grocery Store</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amaranth, Green/Red Leaf</td>
<td>$1.60/lb</td>
<td>$2.90/lb</td>
</tr>
<tr>
<td>Spinach, Green (Green Malabar)</td>
<td>$1.30/lb</td>
<td>$2.39/lb</td>
</tr>
<tr>
<td>Sweet Potato Leaf, Green</td>
<td>$1.20/lb</td>
<td>$2.19/lb</td>
</tr>
<tr>
<td>Eggplant, Long Purple (Machiaw)</td>
<td>$1.00/lb</td>
<td>$1.80/lb</td>
</tr>
<tr>
<td>Hot Pepper (Habanero)</td>
<td>$2.25/lb</td>
<td>$4.00/lb</td>
</tr>
</tbody>
</table>

Table 1. Price of Selected Ethnic and Specialty Vegetables (Tacoma Park Market)
Wildlife Damage Management Update

Wildlife damage and the weather combined is more than you deserve to endure. Therefore, Jonathan Kays, Extension Specialist, Natural Resources wishes to announce a new wildlife management and natural resource web page. This link between you and Maryland’s forestry and wildlife educational resources can be found at:

www.naturalresources.umd.edu

New items at this site include a revised Bulletin 354 “Managing Deer Damage in Maryland,” and also a new publication by Doug Tregoning, Montgomery County Extension Educator, entitled: “Using Deer Repellents to Reduce Browsing to Ornamental Plants.” There is also downloadable information compiled as part of the Deer CD Project. This project information contains comprehensive information about deer damage strategies such as: fencing, repellents, vegetation management, and hunting. The site is also well linked to other useful natural resource agencies.

Recently passed regulations now allow forest landowners with a forest stewardship plan to obtain crop damage permits just as commercial farmers. To obtain crop damage or forest permits contact your regional DNR Wildlife office. USDA APHIS also has an animal control hotline for immediate wildlife concerns at 877 463-6497.

Maryland Sheep & Goat Newsletter Via the World Wide Web

The Maryland Sheep & Goat Producer newsletter is available on the Internet as an HTML file (a web page) or as a downloadable PDF file. Adobe Acrobat Reader is required to view and print PDF files. Producers with access to the Internet may request to be placed on the e-mail newsletter list in lieu of receiving a hard copy of the newsletter in the mail. An e-mail message is sent to e-mail subscribers when a new issue of the newsletter has been posted to the web.

With the increasing costs of paper, copying, and postage, along with budget cuts to Cooperative Extension, persons with Internet access are encouraged to print their own copies of the newsletter off the Internet. If you print a PDF copy of the newsletter, it will be identical to the copy of the newsletter that is mailed out. If this is an option for you, please contact Susan Provost at sp178@umail.umd.edu or Susan Schoenian at sschoen@umd.edu to have your name switched to the e-mail subscriber list.

Plant Nematode Troubles

Nematodes are ever present in our soils, with over 100 species capable of causing economic plant damage. Let’s step through a process, which may lead to their successful control.

1. Nematodes are generally crop specific; therefore, crop rotations of crop plant families are critical to maintaining reduced nematode populations.

2. Cover crops, green manures turned-under, and fallow periods will reduce nematode populations.

3. Fertigation may overcome nematode feeding damage by allowing the crop to outgrow damage.

4. Sampling of nematodes is best done in the fall before cold weather.

5. Fumigant and non-fumigant nematicides may be required for troublesome and reoccurring nematode populations. There are currently four chemical non-fumigant nematicides labeled for selected vegetable crops:

- Counter® 15G Contact only
- Mocap® 10G or 6E Contact only
- Nemacur® 15G or 3SC Contact and plant systemic
- Vydate® L Contact and plant systemic

2002 Graziers Notebook

Beef, Sheep, Goats & Horses

I have acquired copies of the pocket sized 78-page 2002 Graziers Notebook for Beef, Sheep, Goats & Horses, published by the U.S. NRCS and ARS Departments. This is an excellent reference which contains the following livestock management processes:

- Pasture Allocation
- Livestock Body Condition Scoring
- Pasture Soil Fertility
- Biosecurity
- Animal Record Keeping
- Parasite Control

For a free copy call give me a call at 410 222-6759.

Orchard, Vineyard & Bramble Herbicide Mode of Action And Classification

Letting Herbicides do the Work!

- Meristematic Root Inhibitors: Inhibition of Cell Division and Elongation of Roots
  - Dinitroanilines
    - Pendimethalin: Prowl® Orchards only 1st Leaf
    - Oryzalin: Surflan® A.S. 1st Leaf
  - Pre-emergence with 1-3 months of soil activity
  - Does not leach – forms a herbicide barrier in clay soils
  - Apply before rainfall or shallowly incorporate
  - Controls grasses & small seeded broadleaves
  - Not translocated in plants

- Meristematic Shoot Inhibitors: Strong Inhibiter of Mitosis - Cell Division
  - Chloracetamides or Amides
    - Napropamide: Devrinol® 1st Leaf
    - Pronamide: Kerb® 2nd Leaf
  - Pre & Post-emergence with 1-3 months of soil activity
  - Very little leaching – forms a herbicide barrier in clay soils
  - Apply before rainfall or shallowly incorporate
- Controls primarily grasses
- Absorbed primarily by the roots and readily translocated via the xylem
- No foliar absorption

- Mobile Photosynthetic Inhibitors
  - **Ureas**
    - Diuron: Karmax® Peaches 4th Leaf, Apples 2nd Leaf
  - **Uracils**
    - Terbacil: Sinbar® 3rd Leaf – Not for Grapes
      - Pre and Post-emergence with 4-12 months of soil activity
      - Controls broadleaves & grasses
      - Absorbed primarily through the roots translocated readily via the xylem
      - Some foliar uptake
      - 1-3 year established orchards - consult label

- Mobile Photosynthetic Inhibitors
  - **Triazines**
    - Simazine: Princep® Orchards & Brambles 2nd Leaf, Grapes 3rd Leaf
      - Pre and Post-emergence with 2-6 months of soil activity
      - Controls broadleaves & grasses
      - Absorbed primarily through the roots translocated readily via the xylem
      - Some foliar uptake
      - Avoid application on high pH soils above 6.8

- Carotenoid Synthesis Inhibitors
  - **Pyridazinone**
    - Norflurazon: Solicam® Orchards & Brambles 2nd Leaf, Grapes 3rd Leaf
      - Pre-emergence with 1-2 months of soil activity
      - Controls grasses, sedges and many broadleaves
      - Absorbed primarily through the roots translocated readily via the xylem

- Cellulose Biosynthesis Inhibitor: Acts Primarily at Actively Dividing Meristems – Roots Tips & Growing Points
  - **Benzonitrile**
    - Dichlobenil: Casoron®4G Orchards & Grapes 1st Leaf, Brambles 2nd Leaf
      - Pre-emergence with 2-6 months of soil activity
      - Controls broadleaves & grasses equally
      - Absorbed primarily through the roots translocated readily via the xylem

- Lipid Synthesis Inhibitor
  - **Aryoxyphenoxy-Propianates**
    - Fluazifop-P-Butyl: Fusilade® Orchards 1st Leaf, Non-bearing Grapes & Brambles
  - **Cyclohexandiones**
    - Sethoxydim: Poast® 1st Leaf
      - Post-emergence with no soil activity or uptake
      - Controls grasses only

- Enzyme Protoporphyrinogen Oxidase (PPO) Inhibitor: Specifically Inhibits Acetyl-CoA Carboxylase A Key Enzyme for Fatty Acid and Flavonoid Biosynthesis
  - **Aryl Triazolinones**
    - Clethodim: Select® Non-bearing orchards only – 1 year PHI
      - Post-emergence with no soil activity or uptake
      - Controls grasses only
      - Primarily leaf uptake – rapidly translocates to growing points
      - Use with crop oil concentrate (COC)

- Growth Regulators: Abnormal Growth Response
  - **Phenoxy Acetic Acids**
    - 2,4-D: 2,4-D Amine® Not for Grapes & Brambles, Orchards 1st Leaf
      - Post-emergence with 1-4 weeks of soil activity
      - Controls broadleaves
      - Foliar & root uptake translocates in the xylem & phloem
      - High vapor potential – prone to cause drift damage to sensitive crops and fruit
      - Avoid trunk & branch contact

- Cell Membrane Disrupters
  - **Diphenylethers**
    - Oxyfluorfen: Goal® Dormant Orchards Only
      - Pre & Post-emergence with 1 month of soil activity or uptake
      - Controls broadleaves
      - Contact herbicide: Foliar with shoot & some root uptake from the soil – non mobile in plant
      - Use with a non-ionic surfactant (NIS)

- Cell Membrane Disrupters
  - **Bipyridiliums**
    - Paraquat: Gramoxone Max® or Boa® 1st Leaf
      - Post-emergence with no soil activity or uptake
      - Non-selective
      - Contact herbicide: rapid foliar absorption with some translocation
      - Use with a non-ionic surfactant (NIS)

- Aromatic Amino-Acid 5 Enolpyruvyl-Shikimate-3-Phosphate Synthase (EPSP) Inhibitors
  - **No Accepted Classification**
    - Glyphosate: Roundup Ultra Max® 1st Leaf
      - Glufosinate: Rely® 1st Leaf
      - Post-emergence with no soil activity or uptake
      - Non-selective
      - Contact systemic herbicide: foliar absorption with translocation
      - Do not use with a surfactant
      - Avoid branch and trunk contact
Reflection and A Pledge for You
By R. David Myers

As an Extension Educator for the University of Maryland Cooperative Extension, I am charged with the task to teach in the farm community of Anne Arundel and Prince George’s counties, covering all aspects of agricultural production. With attentiveness to the changes occurring in the Southern Maryland region, I recognize the educational needs of my clientele, and develop responsive programs in agricultural production and marketing, to sustain their economic viability. I endeavor to build teams to form meaningful educational outreach links from the University to the community. I incorporate research projects into my teaching programs to strengthen not only my knowledge and confidence, but more importantly to develop a shared learning experience with my students. My responsibility is to mentor change in agriculture for the Southern Maryland region that sustains agriculture as a viable, and valued entity for as long as society deems it important.

Therefore, I will continue to conduct research in alternative and sustainable crops in order to find the most viable agricultural options for Southern Maryland farmers. I look forward to developing marketing strategies for the high value specialty crops that are emerging in Southern Maryland. For farmers who are transitioning from tobacco or a non-profitable crop, I will help them choose successful alternatives. With integrated pest management (IPM) concepts, I will teach prescriptive pesticide usage and train growers to apply needed pesticides safely. I will advance agricultural ideas and concepts that are novel and exiting, that protect the environment, conserve natural resources, and improve our quality of life. I will train new farmers, young and old alike, to love this land and to hand it to the next generation improved.

I highly value the land grant mission that I am entrusted, this educational outreach arm of the University, which the Maryland Cooperative Extension champions for the College of Agriculture and Natural Resource Science. The farm community, which I serve, is comprised mostly of small and part-time farmers. Yet, it is with this majority of non-career farmers that I connect. Together we contribute richly to the quality of life for all citizenry. Great rewards are a result of this job, and its ability to provide unbiased science-based information. As in the past, a novice farmer is vulnerable. They seek as their grandparents did the sound advice offered by the Maryland Cooperative Extension. I am proud to be a part of this Extension team, and to serve as an Extension Educator amongst the public for the University of Maryland.

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.

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://www.agnr.umd.edu/AnneArundel/newsletter.htm
An agricultural bulletin page is also available for viewing or copy under our hot topics section at:
http://www.agnr.umd.edu/AnneArundel/agbulletin.htm

Southern Maryland Agriculture: The Best Story!

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

NACAA
National Association of County Agricultural Agents

NACAA Communication Award
Individual Newsletter
2002 National Winner

Prince George’s Cooperative Extension
6707 Groveton Drive
Clinton, MD 20735
301 868-8783

Anne Arundel Cooperative Extension
7320 Ritchie Highway, Suite 210
Glen Burnie, MD 21061
410 222-6759 or 301 970-8250

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Educating People to Help Themselves

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