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Spring/Summer 2012

WATAUGA COUNTY CENTER

“Partnering with communities to deliver education and technology.”

Inside This Edition

CAMP AND HOMESICKNESS

Spending a week at camp has many wonderful benefits, from making new friends, learning new skills, practicing being independent, and having a sense of accomplishment. Many adults report fond memories of going to camp.

Going away to camp is a big step for children and families and can create feelings of excitement and some anxiety. The American Camp Association has some great tips for preparing for this adventure:


**What is it?**

Homesickness is, above all, a normal feeling. It is the natural result of separating from home and loved ones. Almost all children (and grown-ups!) feel homesick when they’re away from home. People’s feelings simply vary in intensity.

**What causes it?**

There are several factors that put children at greater risk for becoming homesick. For example, children with little previous experience away from home, children who have low expectations of camp, children who feel forced to go to camp, children who are unsure whether adults will help them if they need help, children who have little practice coping with negative emotions, and children whose parents express a lot of anxiety are most likely to feel homesick.

The best at-home prevention strategies include:

- working together as a family to select a camp, plan, and pack
- spending practice time away from home, such as a long weekend at a friend’s house
- experimenting with the best coping strategies during this practice separation
- preparing pre-stamped, pre-addressed envelopes to bring to camp

The best in-camp interventions for homesick campers include:

- staying busy
- talking with someone
- remembering that you’re not at camp for your whole life—just a few weeks
- writing letters home
- remembering all the fun activities that camp offers and doing them

*Continued On Page 2*
4-H Summer

Summer is rapidly approaching and kids will be out of school before we know it. Summer is an especially fun time for the 4-H program. At the state level, NC 4-H operates five camping centers from the western part of the state to the coast. These camping centers offer great opportunities, from the traditional 4-H camp for 8-14 year olds, to Cloverbud camp for 5-8 year olds to try a shorter version of camp, to specialty camps featuring a variety of topics from outdoor adventures to sailing.

Many leadership opportunities are available for teenagers to expand their horizons. With the Citizenship NC Focus, teens get to learn more about the legislative process in Raleigh. The 4-H Congress provides the opportunity to stay in a dorm at NC State and meet other 4-H participants from across the state.

If you want to stay local, then 4-H Super Summer activities offer summer enrichment workshops for 5-12 year olds. The activities vary from workshops that last a couple of hours to our full-day camp, Pizza Adventure Week. The workshops provide an opportunity to explore the community and explore interests.

Some summer opportunities must be earned by participating in a 4-H club work. For example, those who do an electricity project may earn $1.05 per day then approximately $3.5 billion would be available in the state’s economy. A vibrant local food economy ranging from how to set up a work topic ties to educational information on organizations, such as Slow Food USA and many other numerous topics available through 4-H. As you explore different ways to keep your kids engaged this summer, check out our listing of camp and 4-H Super Summer opportunities. Our 4-H blog lists more details on some of these events. Plus, the blog lists ideas for fun with fruits and vegetables, visiting a mill and the cheese factory, to collecting ingredients for pizza, from seeing cows grazing in the garden and cooking in the kitchen, they try foods they may not usually eat. Some children have been known to eat raw garlic cloves, but there was no coercion for that all!

The grand finale can be a little messy with flour and kneading, but pizza of many shapes and sizes are formed. Many kids are surprised at how much work goes into making a pizza from scratch.

When participants get back home, some parents have reported their children have been more excited about working in the kitchen and cooking things. The week is designed for 6-10 year olds and goes from 9:00-3:00, Monday-Thursday. It is an active week!

Mark July 23-26 on your calendar, and get a registration form by contacting the Extension office at 264-3061.

You Can Explore So Many Topics Through 4-H!

Categories with just a few examples:

- Plants and Animals
- Science and Technology
- Environmental and Earth Science
- Healthy Lifestyles
- Personal Development/Leadership
- Citizenship and Civic Education
- Consumer and Family Sciences

FAMILY & CONSUMER SCIENCES

N.C. Cooperative Extension

Partners With 10% Campaign To Promote Local Foods

We are encouraging everyone to purchase at least 10 percent of their food from local growers and food producers this season and sign up for the 10% campaign on the website www.nc10percent.com. Campaign participants will receive one weekly email reminder to report how much money they spent on local food. The website will show consumers how the dollars spent on local foods will grow.

In addition, the 10% Campaign website provides a “Find Local Foods” page with links to help consumers find local food and farm products in their own communities. A “Learn More” page includes links to information on a variety of partner organizations, such as Slow Food USA and Eat Smart, Move More NC. There are also links to educational information on topics ranging from how to set up a workplace community-supported agriculture program to how to cook seasonal, local products.

North Carolinians spend about $35 billion a year on food. If each person spent just 10 percent on food locally, roughly $8.05 per day, then approximately $3.5 billion would be available in the state’s economy. A vibrant local food economy will support farms, food and manufacturing businesses and create jobs.

Participating in the 10% campaign will give us an objective measurement of the growth in demand for locally-grown and produced food. This will help bring in grant funding for infrastructure enhancements and for investors to see that putting money into local food efforts will pay off.

Plus, infusing fresh and flavorful fruits and vegetables into diets can significantly reduce diet-related diseases and long-term health care expenses for everyone.

Camp and Homesickness

Continued From Page 1

- If possible, visit the camp ahead of time so that your child will be familiar with the cabins and other general surroundings.
- Consider arranging for a first-time camper to attend with a close friend, relative, or camp “buddy.”
- Do not tell your child in advance that you will “rescue” him/her from camp if he/she doesn’t like it.
- Discuss what camp will be like well before your child leaves, acknowledging feelings; consider role-playing anticipated camp situations such as using a flashlight to find the bathroom.
- Send a letter to your child before camp begins so he/she will have a letter waiting for his/her arrival.
- Allow your child to pack a favorite stuffed animal and/or picture so that your child will have a reminder of home.

More tips are online at www.acacamps.org/media-center/how-to-choose/homesickness.
Diane Brown
Leads Extension And Community
Association State-wide as President

Watauga County native Diane Brown is serving as state president for Extension and Community Association, formerly known as home demonstration, then extension homemakers. Club members have provided volunteer hours for over 100 years to contribute to the well-being of families across the state. There are many programs and services today that were started by home demonstration, such as school lunch programs, libraries and bookmobiles.

Diane’s leadership inspires volunteers across the state. “It’s time to ask ourselves, ‘What can I, an ordinary woman, do to provide extraordinary service to my community?’” North Carolina Cooperative Extension encourages us to look at our local needs and work with our Liaison Agents to strengthen families across our great state.” Thank you, Diane, for all you do locally and state-wide.

Time To Get Into Shape
FOR WARM WEATHER SEASON

By Margie Mansure, Extension Agent and Registered Dietitian

It’s time to pull out the summer wardrobe. If your shorts are a bit tighter than last year, here are a few practical suggestions:

- Eat at least three meals a day, and plan your meals ahead of time. Whether you’re eating at home, packing a lunch, or eating out, an overall eating plan for the day will help keep you on track.

- Balance your plate with a variety of foods. Half your plate should be filled with fruits and vegetables, about one fourth with lean meat, poultry or fish, and one fourth with grains.

- Focus on your food. Pick one place to sit down and eat at home. Eating while doing other things may lead to eating more than you think.

- Know when you’ve had enough to eat. Quit before you feel full or stuffed. It takes about 20 minutes for your brain to get the message that your body is getting full. When your brain gets this message, you stop feeling hungry. So, fast eaters, slow down and give your brain a chance to get the word.

- Get plenty of fiber from fruits, vegetables, beans and whole grains. Fiber can help you feel full longer and lower your risk for heart disease and type 2 diabetes.

- Snack smart. Plan for nutritious snacks to prevent between-meal hunger.

- Avoid oversized portions by using smaller plates, bowls and glasses. The standard ten-inch plate may be too large for you. Switch to eight-inch or appetizer-sized plates, and you will automatically portion and eat less.

- Get into the kitchen and stay in charge of what you’re eating. Cooking more often at home not only allows you to balance what’s on your plate but also enables you to choose healthier fats, less sodium and increase the fiber in your diet while balancing the amount of calories you eat.

- Watch out for liquid calories. The calories in fruit juices and drinks with added sugar, sports drinks, sugar-laden coffee beverages, soft drinks, and alcoholic beverages can add up fast.

Blue Ridge Women In Agriculture Seeks Volunteers!

Blue Ridge Women in Agriculture (BRWIA) is seeking volunteers to assist farmers participating in the 2012 High Country Farm Tour. Volunteers will spend the day on a beautiful farm while helping to direct parking, greet and register visitors, and accept payment for farm tour tickets, BRWIA tote bags, and cookbooks. In exchange for volunteering on one day of the tour, volunteers will receive a free ticket to attend the other day of the tour. The High Country Farm Tour is not possible without the support of volunteers. Together, we can strengthen our local food system. Sign up to volunteer with BRWIA by emailing contactbrwia@gmail.com with the subject “Farm Tour Volunteer.” Please include your name, phone number, and address.

SAVE THE DATE!
2012 High Country Farm Tour

Saturday and Sunday, August 4 and 5, 2-6 p.m.

Celebrate the abundance of the Blue Ridge Mountains while supporting local farms in Watauga, Ashe, Wilkes, Avery, Caldwell and Alleghany Counties. Join Blue Ridge Women in Agriculture (BRWIA) for the 2011 High Country Farm Tour, August 4th and 5th, 2-6PM. Tickets are $25 in advance or $30 if purchased at a farm and entitle the passengers of one vehicle to visit farms on both days of the tour, or pay $10 per farm. Tickets will be available for purchase online and at local retail establishments soon.

Please visit www.brwia.org for more information!

Grow Your Own Lettuce

There’s nothing like the feeling of walking outside, cutting lettuce, and tasting a delicious salad. Lettuce is a rewarding vegetable to grow in the home garden or even in a container. From baby leaf lettuce to big, crisp heads, lettuce is easy to grow in spring and fall when the soil is cool. A major benefit is it’s $7.00 per pound that you save.

Lettuce seeds may be planted directly in the soil after the beginning of May. They typically sprout in two to eight days when soil temperatures range between 55 and 75 degrees.

Prepare your bed by loosening the soil to at least ten inches deep. A soil test will let you know how much lime and other fertilizers you may need to add. The pH should be 6.0 to 6.7. Add a one-inch layer of compost to the surface of the bed. Sow seeds a quarter of an inch deep and one inch apart in rows or squares or simply broadcast them over the bed.

As the seedlings grow, thin leaf lettuce to six inches apart. Thin romaine lettuce to ten inches, and allow twelve inches between heading varieties. After thinning, mulch between plants with grass clippings, chopped leaves or another organic mulch to deter weeds and retain soil moisture.

For extra flavor from your salad bed, sprinkle in a few seeds of dill, cilantro or other cool-season herbs. There are salad seed mixtures available that contain a variety of seeds.

Never allow the soil to dry out while lettuce is growing. In most soils, you’ll need water lettuce every other day during rains.

Harvest lettuce in the morning after the plants have had all night to plump up with water. Wilted lettuce picked on a hot day seldom revives, even when rushed to the refrigerator. Pull (and eat) young plants until you get the spacing you want. Gather individual leaves or use scissors to harvest handfuls of baby lettuce. Rinse lettuce thoroughly with cool water, shake or spin off excess moisture, and store it in plastic bags in the refrigerator.

Organic Gardening 101 Workshop

Designed for beginning gardeners or those who would like to switch to organic methods. Topics include garden planning, seed starting, companion planting, how to attract beneficial bugs, pest management, soil tests and amendments, composting and vermi-composting, growing herbs, landscape planning and edible landscaping. Cost is $20.00 for all four days. Reserve your spot by paying in advance, NC Cooperative Extension, 971 West King St., Boone. For more information call 264-3061.

Organic Gardening 101 offered July 30 through August 2, 9:00 until 12:30 at former ASU Sustainable Development Farm in Valle Crucis.
### Crop Rotation for the Small Garden

#### By Carol Hancock, Extension Master Gardener Volunteer

Small backyard vegetable gardens can be susceptible to the same plant diseases and insects that plague bigger farms. The use of chemical controls for these problems might be undesirable or unavailable in the home setting. The age-old practice of crop rotation is one way to prevent or lessen some of these problems, even in a small garden. Crop rotation means changing the crop each year on the same piece of ground. Home gardeners tend to plant what they like and find easy to grow. This tendency leads to cultivating the same crops on the same areas of land year after year. Growing vegetables from the same botanical family or vegetables that have the same nutritional requirements in one garden area more often than once every three years may lead to a decline in soil fertility and higher incidence of certain insect pests and disease problems. Soil-borne disease organisms can remain in the soil for long periods of time, and some of these tend to attack vegetables from the same botanic families.

#### Three Reasons to Rotate Vegetable Crops:

1. **Reduction of harmful insects and plant diseases by rotating the location of plants from the same families on a piece of ground.**
2. **Better plant nutrition by rotating location of the same families on a piece of ground.**
3. **Improvement of soil structure by rotating plants that have roots at various depths and that are cultivated with different techniques.**

#### Common Vegetable Families:

Although the parts of vegetables that we eat (roots, leaves, stems, etc.) may be different, botanically the plants may belong to the same family.

- **Sunflower family:** lettuces, sunflowers
- **Pea family:** peas, beans, jicama, peanuts
- **Mustard family:** melons, squashes, gourds
- **Carrot family:** peppers, tomatoes, eggplant, potato

#### Master Gardener Corner

### Wheat Flour Terms Demystified

#### Wholesome Pizza Crust Recipe

This is a fast, inexpensive recipe for wholesome pizza crust.

- 1.5 cups whole wheat flour
- 1.5 - 2 cups unbleached all-purpose flour
- 1 package rapid rise yeast
- 1 cup very warm water, 125 to 130 degrees
- 2 tablespoons olive oil

In a large bowl, combine 1.5 cups whole wheat flour, yeast package, and salt. Stir very warm water and olive oil into bowl until well incorpo- rated. Gradually add the all-purpose flour to form non-sticky dough. On a lightly floured surface, knead until smooth and elastic, around 5 to 8 minutes. Cover and let rest for 10 minutes or more. Stretch your dough over a cookie sheet or pizza pan. Cover with spaghetti or pizza sauce and toppings such as bell peppers, olives, fresh spinach, mushrooms and onions. Top with Italian style cheese and bake in a 400 degree oven for 20 to 25 minutes, or until golden brown.

#### Three Reasons to Rotate Vegetable Crops:

<table>
<thead>
<tr>
<th>First Year</th>
<th>Second Year</th>
<th>Third Year</th>
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<tbody>
<tr>
<td><strong>A</strong></td>
<td><strong>B</strong></td>
<td><strong>C</strong></td>
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The above example of crop rotation is a very simple one. Many home gardeners with limited space like to grow more than three crops. The arrangement of crops depends on many factors such as size and shape of beds, climate and soil in growing areas and number of crops to be grown. The planning process can seem complicated when juggling numerous plants in a limited space. A hand-drawn diagram of the garden spaces available and vegetable-named index cards to be laid in the appropriate spaces to be planted can be useful. A written record of each year's rotation is essential to keeping track of the plan.

In small home gardens, other crop rotation options may be considered. If space is very limited, the gardener may choose to grow only beans and their family members in year one, only tomatoes and their family members in year two and only squash family members in year three. Another option, if space allowed, would be to move the entire garden plot to another garden area each year. The plot that is now vacant would benefit from a planting of some soil-amending cover crop (green manure) such as annual rye, crimson clover or buckwheat. This is a great way to improve the soil prior to the return to vegetable cultivation.

Experiencing with crop rotation in the small garden may lead to healthier and more productive vegetable crops. Such a practice that contributes to reliability and sustainability can become a valuable part of gardening technique.
WEB SOIL SURVEY: A FREE ONLINE MAPPING RESOURCE

S
o we're well into the 21st century and while we don't have the flying cars and rocket packs that they were promising 30 years ago, technol
ogy has come a long way when it comes to user-friendly mapping resources. The folks at USDA/NRCs have a free, online, and pretty-easy-to-figure-out GIS system that can help you map your property, soil types, and give you general management recommendations based on your soils.

You used to have to go to the soil and water office and get a bulky 8 lb book or sort through a stack of old maps to get a punched-out "soil map" of about 24" x 36". These days it's WAY easier. With this free GIS service, you can access and download your soil maps and data and determine the suitability of the soils for particular uses. To access the Survey to map your property and check out your soil survey information, go to the link http://websoilsurvey.nrcs.usda.gov and it will take you to the Web Soil Survey homepage.

From there, you can click the green button to get started.

There are lots of tabs and features on the next page, but don't be scared. On the left side of the page, you can click on the "soil map" tab and enter the address or nearest road of your farm or property's location, which will then pull up a map. Once your map is pulled up, you can click on the "shopping cart (free)" tab on the site and it compiles all of the information for your trees and landscape. You'll be amazed at the wonderful insects you'll get to observe.

While this online resource will NOT give you specific fertilizer or chemical recommendations for your trees or crops, it's a really good general soil resource and quick way to produce a soil map of your property, which helps you see the different soil types on the property that you might need to soil sample. I've only scratched the surface of what you can do with this free online resource. But if you have some time, I recommend visiting the site and clicking through it to learn more about the soils on your farm or property.

Putting Flowers To Work To Attract Beneficial Insects

The mild winter we've just experienced may or may not prove to bring increased insect populations during the growing season. Regardless, all gardeners should think about incorporating different plants in the garden that help attract natural predators. Many beneficial insects are attracted to flowering plants, so it's easy to bulk up the color and beauty of an ordinary vegetable garden while getting free insect control, while also trying to attract? Lacewings, ladybugs, parasitic wasps, hoverflies, minute pirate bugs, and ground beetles are all on your side.

When the first garden crops begin to take hold with lush growth, you may notice aphids, slugs, cabbageworms, caterpillars, and other pest insects. Natural predators can help keep pest populations lower and offer cool observations of nature. A magnifying glass and a hand lens is the best way to observe some of the alien-like transformations taking place.

Some natural predators simply "hunt" other bugs, lacewings, hoverfly larvae, and ladybugs (adults and larvae) all eat the insect pests they are after. Other parasitic insects, such as the Trichogramma wasp, will lay their eggs in a host insect, and the hatched larvae will attack the host. All these beneficial insects are attracted by flowering plants. Beneficial insects feed on plant nectar for carbohydrates and pollen for a protein source in order to keep their energy levels up for hunting prey. These plants also provide a place of shelter for the beneficial insects. Some flowers are better than others for feeding and, thus, attracting good bugs. Lucky for us, they can also add ornamental interest to our vegetable garden beds.

Bachelor Buttons, also called Cornflower (Centaurea cyanus), are attractive blue flowers that attract a wide range of beneficial insects and pollinators. This is an easy annual to direct seed in the garden, and they reseed so you can enjoy them for many years to come. Fennel (Foeniculum vulgare) is a delicious edible plant whose flowers are irresistible for many insects. The flower umbel is virtually a huge landing pad for beneficial wasps, hover flies, and bees to congregate upon. Fennel is also a butterfly host plant, meaning the caterpillars that feed upon it will turn into a type of swallowtail butterfly. Mints (Mentha species) are notorious for their ability to spread wild and free in the garden, but they also attract beneficia
tens by the dozen. The plants literally buzz with the insect activity on the flowers! Anise hyssop (Agastache foeniculum) is another beautiful perennial plant that has purple flower spikes and fragrant leaves to enjoy. Butterflies, pollinators, and beneficials all appreciate its presence in the garden. Other plants that boast beauty and the ability to attract beneficial insects include: yarrow, asters, cosmos, dill, sunflowers, borage, sweet marjoram, sweet alyssum, catmint, coneflowers, coreopsis, wild bergamot, bee balm, lupines, peonies, catmint, and lobelias. You can buy beneficial insects from companies that specialize in insect rearing. But the best, and cheapest, option for home gardeners is to attract beneficials that are already present in your immediate ecosystem. Planting flowering plants that feed and house insects is the first step. Minimizing or even eliminating pesticide use is also extremely important. Pesticides kill beneficial insects, and it's not just conventional pesticides that are to blame. Organic pesticides are generally broad-spectrum and are just as lethal as conventional pesticides if sprayed on beneficial insects. Help control your garden pests by planting a diverse mix of flowering plants that are easy on the eyes and help attract beneficial insects to your garden and landscape. You'll be amazed at the wonderful insects you'll get to observe and benefit from!
Updated USDA Plant Hardiness Zone Maps

In January 2012, the USDA released an updated plant hardiness zone map to benefit growers, home gardeners and researchers. The new map has greater detail than the older version, which was last updated in 1990. The plant hardiness zones are based on the average extreme minimum temperatures in a given location. Horticultural experts and climatologists helped provide information for the new updated regions.

Two new growing zones (Zone 12 and Zone 13) were added to the map to better define tropical growing conditions. Those of us in the High Country generally fall into Zone 6a; though because of the variety of microclimates in the mountains, some variation exists from site to site. The plant hardiness zone is a useful tool for determining what can and can’t grow well in our often-extreme mountain conditions.

Resources for New and Beginning Farmers

Thankfully, most consumers today are becoming aware of the disconnect between the food on our tables and where the food is produced. People are embracing the trend of supporting local farms and rekindling relationships with farmers that grow the fruits and vegetables our bodies need. While agricultural statistics tell us that forty percent of farmers in the United States are over the age of 55, there are a growing number of new and beginning farmers that are helping to fill the shoes of a new generation of food producers.

New and beginning farmers are classified by the USDA as having less than ten years of active farming or ranching experience. These farmers face many hurdles including access to affordable farmland, securing financial loans for farm equipment, and developing business skills all while keeping up with the rigorous demands of growing agricultural crops and livestock. Luckily there are many programs and resources that are becoming available to help this population of new growers build a successful farm business. The USDA’s Alternative Farming Systems Information Center (AFSIC) has compiled a wide range of resources for business planning, farm internships, risk management, farm succession planning in addition to crop production guidelines to help new and beginning farmers better prepare for running a farm business. Many universities and organizations across the country are developing tools to serve this group of agricultural entrepreneurs. In North Carolina, the Center for Environmental Farming Systems (CEFS), which was established by NC State and NC A&T Universities, has created a toolbox of marketing, business planning, and capital and credit options available at url.cefs.ncsu.edu. 

The NC BRing New Farmers to the Table project has provided training for Extension agents to better address the needs of new and beginning farmers. Support exists for growing the next generation of food producers to grow local, healthy food that supports communities and helps our food system become more sustainable and accessible.

For more information, visit these additional websites: http://afsic.nal.usda.gov/farms-and-community/beginning-farmers and http://www.beginningfarmers.org, or contact the Watauga Cooperative Extension Service at 828-264-3061.

PERMEABLE PAVERS WORKSHOP

Most parking lots form puddles. As those puddles grow, gas, oil, trash, and other pollutants accumulate until the storm water flows into a storm drain and into a creek. But this does not happen at the new Casey and Casey Law Office parking lot in downtown Boone. In fact, when rainwater lands on this parking lot, it infiltrates and disappears from the surface! Pretty amazing! This is beneficial to the nearby creek, because it cleans, cools, and slows the water down. Under this permeable parking lot, there are layers of gravel and aggregates allowing the water to infiltrate before flowing into the creek. Dr. Bill Hunt of the NC State University Storm Water Team will be in Boone on June 19th for the Permeable Pavers workshop, providing permeable pavement research and informative insights on innovative storm water management.

NCDENR Division of Water Quality is updating their Permeable Pavement Design Chapter. The revised design guidance will promote the use of permeable pavements across most of the footprint of North Carolina. The revision will focus on two design alternatives: infiltration-based permeable pavement and detention-based permeable pavement. How each is credited, designed, constructed, and maintained will be the focus of the workshop. Permeable pavement is poised to become one of the most frequently used storm water practices in the state. Come and learn the details! This workshop is designed for Engineers, Landscape Architects, Water Quality and Storm Water Administrators, Land Surveyors, Regulators, Planners. The workshop will be held June 19th. It will cost $125 if registering at least one week in advance. If registering within one week of the workshop.
Where To Find Organic Farm & Garden Supplies in the High Country?

A few years back, trying to buy organic fertilizers and pest control products in the High Country meant, when such supplies could be found locally at all, many stops and long travels. Fortunately, a number of local farm and garden suppliers have stepped up and now carry a nice selection of organic growing supplies for both the small gardener and the commercial-scale organic grower. The following Ashe & Watauga County vendors are listed in alphabetical order, so be sure to read all the great options below. Also, please remember that organic supplies are still a new field for some of these vendors, so please be patient and supportive as they try to serve you! This list is probably not yet complete. If you know of an organic supplier that I have overlooked, please e-mail the information to richard_bogdan@ncsu.edu.

Boone Stockyards
(828-262-0757) – Boone Stockyards in Deep Gap began stocking an OMRI-listed organic fertilizer, Perdue Micro-Start 3-2-3, in ton-totes a few years back, and the product has become wildly successful for them. The last time I checked with the proprietors, they said that they intended to keep it on the market, because it was selling very well. Perdue also carries OMRI-listed insecticides (Serenade in 12 lb. bags), and more. In general, their products are geared toward commercial-scale growers, but ambitious home gardeners may also wish to investigate their stocks.

David Miller Farm Supply
(828-297-4488) – Growers both large and small can find fertilizers such as bone meal (in 4.5 lb. or 24 lb. bags), Neptune’s Harvest 2-3-1 Fish & Seaweed Fertilizer in gallon jugs, Espoma Plant Tone (in sizes from 4 lb. to 40 lb.) and Perdue Micro-Start 3-2-3 (in 50 lb. bags or ton-totes) at David Miller Farm Supply, located in the Zionville area. Their pest control products at present are mostly in smaller packages (e.g., they carry Serenade biofungicide in 32 oz ready to use & concentrate formulations), but they do stock DiPel DF in 1-lb bags and are more than willing to work to custom-order or stock more organic products that customers request. They also now carry Countryside Organic Feed, including Organic Soy-Free Poultry Layer Feed, Starter Feed, Scratch, Cattle, Goat, and others available via special order.

Eric Grig
(828-982-9118) – Eric Grig is a local (East of Jefferson, near the Wagoner Rd. entrance to New River State Park) grower who is starting a sustainable homestead supply store. At present, he has bulk Rock Phosphate available for sale in ton-totes, and he will soon also be selling other organic fertilizers (Fish Emulsion, etc.) plus industrial-grade tarps, Yanmar Tractors, and more.

Parsons Farm Supply
(336-246-4399) – Parsons, on the Back Street of West Jefferson, has long been a good source for alfalfa meal and a few other organic fertilizers, which they carried as feed. Now they have branched out to carry the full line of organic products offered by Seven Springs Farm Supply (see www.7springsfarm.com/catalog.html), plus Perdue Micro-Start 3-2-3 (in 50 lb. bags or ton-totes), and a growing list of other organic materials. Their bagged lime is also acceptable for use in organic production.

Southern Ag & Insecticides
(828-264-8843) – Southern Ag primarily serves larger-scale growers. While the bulk of their business remains conventional grower supplies, they have begun to stock some important organic pest control products and can special-order many more. Right now, they stock Cease (in 1-gallon jugs, a biofungicide also marketed as Rhapsody), Oxidate (in 5-gallon jugs), DiPel DF in 1-lb bags, Gnatrol, plus their own Conserve Naturalyte Insect Control (a dilute spinosad product) and Triple Action Neem Oil that have been recently listed by OMRI. Southern Ag can also special-order Mycotal-O (the biological insecticide Beauvaria bassiana), Serenade, Entrust (the full-strength version of Spinosad insecticide) and any other OMRI-listed materials produced by BioWorks (Plant Shield, SuffOil, etc.). Also, they carry a Fish Emulsion in 5-gallon jugs.

Southern States
(828-264-8888) – Southern States in Boone carries several organic fertilizer products by Espoma and NatureSafe.
HOME CHICKEN PRODUCTION

This year is the earliest spring I can remember and also the highest cattle prices in my lifetime. This will give the cattle producers the possibility for a great year in the cattle business. This year offers a great opportunity to look at our operations and make some changes to increase profitability and the sustainability of our production. There are several key areas to examine: forages, reproductive efficiencies, and cow productivity.

Forages make up the base for any livestock operation. Our pastures are predominantly cool-season grasses and clovers. To improve our forages we need to examine several areas—starting with fertility. Soil fertility can be defined as the capacity of a soil to provide plants with the nutrients they require. The first step to insure that forages will have the correct nutrients is pH. The pH of the soil determines the acidity or basicity of a soil and is measured on a scale of 1 to 14. A pH of 7 is neutral. The ideal pH for our forages should be in the range of 5.6 to 6.7. Most of our soils in Watauga County are acidic and test below 5.6. Even with additional fertilizer, the growth of the forages will be limited due to nutrients being unavailable because of acidic soil.

Now is the best time to evaluate your hay and pasture forages. Is the stand thick enough with nutritious forages? Are there weeds or bare spots? Most forage in the High Country will benefit from re-seeding; this will thicken the stand and provide some weed control. The past few years, we have had drought and some that is a crap that has thinned the stands of forages. Now is a great time to reseed grasses. The county Soil and Water Conservation District has a no-till seed for rent ($264.06/acre) and potential seed for re-seeding into existing forage stands.

A cow’s main purpose on the farm is to produce a calf every 365 days. I hear a lot of producers say, “That cow missed her calf, but she is a good cow. I better give her another year.” This really makes me cringe! If a cow is not breeding or loses a calf, then her usefulness as a cow is diminished. This loss can be a cow one for (loss when we sell) about $1,800/500 lbs. and she has $0. The prices for cull cows has been consistently above $625/100 lbs. This offers an opportunity to make hybrid vigor. One of the first areas to determine is to become active with the herd. Be sure to select a breed that will compliment the good traits you have built in your herd. When I think about cow productivity, she needs to have a calf to wean, weigh 50% of her body weight, be rebred, and maintain a body condition score of 5 to 6.5. The important thing is to keep working to improve and maintain a cow herd that is productive.

In the search for a productive cow, we need to determine how to increase her productivity. One of the first areas to make an improvement is to be sure to use hybrid vigor. Many commercial heifers are inefficient and reinvest in replacements. Reproductive efficiency starts as a heifer. The heifer should be fed to reach 75% of her expected mature weight by breeding. Feeding should be about 12 lbs. This allows the heifer to calve at two years old. Heifers that calve earlier, have a longer reproductive life. Heifers should be bred ahead of the mature cows to allow good growth of the calf and to breed back with the herd.

One way to increase your reproductive efficiency is to restrict the calving season. Fewer calves are lost to calving problems and disease if there is a defined calving season. If you hold your calving season to 90 days or less, then the vaccination program for your herd will be more effective. The calves will be more uniform in size and age and likely to be more consistent. It takes about two minutes of dipping the birds to loosen the feathers. If you are not doing a large batch of birds, you can hand pluck or purchase a plucker. There are small models available. There is $2.50 per bird. It is a great investment if you plan on doing this long term.

After the heifers have been removed, then you will remove the intestines from the birds. This will allow the birds need to be cooled for two hours before further processing. If the birds are not properly cooled, they will be tough and not as good to eat. The last area is to become active with the herd. Adopt a defined calving season, and follow an effective vaccination program. Don’t forget the bulls.

The last area is to become active with your county, state, or national associations. If you don’t join, at least read and keep up to date with news that affects beef. I hear lots of talk about local, organic, natural, and conventional beef. The one thing that holds true is we all breed producers and still produce a high-quality protein that fits a recommended diet.

CATTLE PROFITABILITY, PLANNING FOR THE FUTURE

This year offers a great opportunity to look at our operations and make some changes to increase profitability and the sustainability of our production. There are several key areas to examine: forages, reproductive efficiencies, and cow productivity.

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LIVESTOCK TIPS FOR SUMMER

- Provide clean, fresh water at all times
- Deworm the cowherd if not done earlier
- Watch for eye and foot infections
- Vaccinate calves
- Prepare hull middens
- Watch for eye infections
- Control summer pasture weeds
- Keep mineral available
- Use integrated pasture management to prevent worm losses in sheep/goats
- Check barn nuts and dusters and fill weekly

UPCOMING EVENTS

May 15-Paradise Management for Horses Dr. Nikki White Ag Center 6 to 8 pm
Please RSVP For Classes

AGRICULTURE, NATURAL RESOURCES & ENVIRONMENT
Agriculture, Natural Resources & Environment
IPM on Cucurbit Crops

Whether you love sweet watermelons and cantaloupes in the heat of summer, crisp cucumbers for salads and pickles, savory summer squash and zucchini for stir fries, or hearty pumpkins and winter squashes for once season cools off, cucurbit crops (i.e. - the family Cucurbitaceae) offer a wide range of crop opportunities for High Country area growers.

The cucurbits are relatively high-yielding, generally easy (if heavy) to handle during harvest and marketing. A number of pests and disease problems that demand a conscious, comprehensive, and integrated pest management strategy. Cooperative Extension will be hosting a field day on Cucurbit Production, Pest Management, and Marketing at Deb & Sanford Fishel’s farm in Grassy Creek, NC (Ashe County) on Tuesday, August 14, 2012. As an introduction to the topic in advance of this field day, we are reprinted the Cucurbit section of the Cornell University Resource Guide for Organic Insect and Disease Management.

The full guide can be found at http://web.ppmb.cals.cornell.edu/resource-guide/index.php and does a great job of covering the pests, diseases, and management options for some of the most important vegetable crops of the High Country region.

Introduction

The Cucurbitaceae is a large family that includes major vegetable crops including cucumber, muskmelon, watermelon, summer squash, winter squash, pumpkin, gourd, and bitter melon. A similar pest and disease complex affects these crops, though individual varieties differ in susceptibility to various pests.

I. Insect Control

Aphids (Primarily Aphis gossypii)

Aphids do not cause serious direct injury to cucurbits, but various species of aphids can transmit virus diseases to cucurbits. The use of resistant varieties is the only reliable control for diseases caused by viruses. Aphid feeding may cause the leaves to become distorted. Honeydew (a special name for fecal matter of aphids) may also serve as a growing medium for sooty mold, a fungus that can disfigure the fruit with black blotches.

Cultural Control:

1. Reflective mulches may help to repel aphids while also providing horticultural benefits.
2. Separate planted fields from existing fields
3. Natural enemies will help keep aphid populations in check, but will be less effective in very hot weather when aphids reproduce rapidly.
4. Refrain from using broad-spectrum insecticides.
5. Eliminate virus host plants such as burdock, pokeweed, and other perennial broadleaf weeds

Materials Approved for Organic Production:

1. Winter squash, pumpkins and zucchinis are particularly susceptible. Butternut squash (C. moschata) is resistant.
2. Soon after crop harvest, plow the vine debris deeply to bury over larvae.
3. Rotate fields.
4. In small plantings, it may be possible to manually remove the larvae. Find the sawdust-like frass on the affected plant stem, and then locate the larva by slicing lengthwise along the stem until you reach it. Destroy the larva, and then cover the slit stem area with soil.
5. Keep floating row covers in place after transplanting or direct seeding until flowering.

Squash Bug (Anasa tristis)

The squash bug sucks sap from the leaves and stems of squash and pumpkins and causes the leaves to wilt and then turn black and crisp. This insect can also feed directly on the fruit and cause severe damage. The adults are dark gray and about 5/8 inch in length. They live through the winter in protected areas both under debris in the fields and in buildings and lay eggs on the underside of leaves in the spring and summer. The eggs hatch into light green or gray nymphs that congregate on leaves or fruit.

Cultural Control:

1. Different cucurbits vary in their susceptibility (see Cornell 2004).
2. Crop rotation and sanitation are very important. Avoid planting cucurbits near the field.
3. During the summer, adults tend to congregate under shelter at night. Place boards on the soil surface near the squash in the evening, and the next morning collect and destroy the pest.
4. Destroy egg masses on the underside of leaves.
5. A parasitic fly, Trichopoda pennipes, affects adult squash bugs and several wasps parasitize the eggs. Provide habitat for these in or near the field.
6. If squash bugs are a problem on your farm, avoid heavy mulch or no-till in susceptible crops such as cucumbers. Squash bugs like shelter and appear more numerous in reduced tillage or mulched crop systems.

Materials Approved for Organic Production:

1. Pyrethrum on young nymphs
2. Neem (2 of 3 recent studies show good control

Squash Vine Borer (Melititia cucurbitae)

The squash vine borer is found only on squash and pumpkins. Keep a look out for wilted plant parts that may have been bored by a white “worm” in the squash vines. The vine borer is the larva of a moth that lays its eggs at the base of the plant. It overwinters as a larva in the soil. For reasons that are unclear, squash vine borers tend to be less of a problem in large plantings than in smaller ones.

Cultural Control:

1. Different cucurbits vary in their susceptibility (see Cornell 2004).
2. Crop rotation and sanitation are very important. Avoid leaving cu curbit crop debris available for future generations of adult squash bugs.
3. During the summer, adults tend to congregate under shelter at night. Place boards on the soil surface near the squash in the evening, and the next morning collect and destroy the pest.
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5. Keep floating row covers in place after transplanting or direct seeding until flowering.

Materials Approved for Organic Production:

1. Application of approved products is not currently a viable management option. Once the larvae bore into the stems, insecticides are generally not effective. Treatments could be effective if applied to the base of the plant prior to the insect entering the plant.

Striped Cucumber Beetle (Acalymma vittatum)

Stripped cucumber beetles (SCB) are 1/4 inch long with black and yellow longitudinal stripes and black head and abdomen (View photo 2.3). In the Northeast, they pass the winter as adults sheltered under plant debris and become active in the spring as soon as cucurbits appear. The overwintered generation lives until August and feeds on all plant parts. Small seedlings are very susceptible and are often killed. Once the plants attain 4-5 true leaves, they are more tolerant of stripped cucumber beetle feeding; however, disease transmission is still important (see below). The beetles lay their eggs at the base of cucurbit plants. These hatch into larvae, which feed below ground on the roots and crowns of the plants. The new generation of adults emerges in July and can cause feeding damage to pumpkins and other cucurbit fruit. They will overwinter and then feed on next year’s crop.

The cucumber beetle also carries the organism that causes bacterial wilt, which can be more damaging than the insect. Cucumbers, summer squash, zucchini, and melons are the most susceptible. Reducing the numbers of beetles is the primary way to reduce the risk of wilt.

A related species causing similar damage is the spotted cucumber beetle, which is yellow green with 12 black stripes.

Materials Approved for Organic Production:

1. Pyrethrum on young nymphs
2. Neem (2 of 3 recent studies show good control

Predatory Nematodes

Could they be of help against cucumber beetles? What about other vegetable pests?

Predatory nematodes of the Heterohabditis (abbreviated as Hb) and Steinernema (abbreviated as Sc or Sf depending upon species) are now available from several beneficial insect and biocontrol companies to help combat against many vegetable pests. These beneficial nematodes attack pests whose life cycles include an underground or soil-dwelling phase. In particular, the Steinernema species have been shown by several studies to be effective against such vegetable pests as armyworms, cutworms, corn earworms, and corn rootworms.

To date, the efficacy of beneficial nematodes against the major cucurbit insect pests described above has not been proven, but some vendors are at least claiming that Sc and Sf nematodes can combat cucumber beetles in filled fields, and Hb nematodes can act against cucumber beetles in no-till production.

If you are curious about exploring the use of beneficial nematodes against vegetable insect pests in general, see the following excellent Extension sites:

- [www.biocontrol.entomology.cornell.edu/pathogens/nematodes.html](http://www.biocontrol.entomology.cornell.edu/pathogens/nematodes.html)
- [cruc.cahe.usu.edu/cepublications/pnu0554/pnuw0554.pdf](http://cruc.cahe.usu.edu/cepublications/pnu0554/pnuw0554.pdf)
- [www.hort.uconn.edu/ipm/home-gardn/htms/39nemat.htm](http://www.hort.uconn.edu/ipm/home-gardn/htms/39nemat.htm)

If, after reading the above sites, you want to try-out beneficial nematode augmentation in your own fields, the following vendors presently sell the beneficial nematode species described above:

- [www.arbico-organics.com/category/beneficial-nematodes](http://www.arbico-organics.com/category/beneficial-nematodes)
- [http://greenmethods.com/site/biocontrols/nematodes/](http://greenmethods.com/site/biocontrols/nematodes/)
- [www.rinconvitova.com/nematode.html](http://www.rinconvitova.com/nematode.html)
- [www.hort.uconn.edu/ipm/home-gardn/htms/39nemat.htm](http://www.hort.uconn.edu/ipm/home-gardn/htms/39nemat.htm)

Upcoming Ag Events

Cucurbit Specialty Crops Field Day, on Tuesday, August 14, 2012, at Deb & Sanford Fishel’s Farm in Grassy Creek, NC (Ashe County). Details TBA.
II. Disease Control

The table below for diseases is adapted from the Cornell Pest Management Guidelines for Vegetables (Cornell 2004).

<table>
<thead>
<tr>
<th>Disease</th>
<th>Cucumber</th>
<th>Muskmelon</th>
<th>Pumpkin</th>
<th>Summer squash</th>
<th>Winter squash</th>
<th>Watermelon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacterial wilt</td>
<td>H, R</td>
<td>M</td>
<td>M, Y</td>
<td>M</td>
<td>L</td>
<td>-</td>
</tr>
<tr>
<td>Powdery mildew</td>
<td>M, R</td>
<td>M, R</td>
<td>H, R</td>
<td>M, R</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Black rot (gummy stem blight)</td>
<td>L</td>
<td>M</td>
<td>M</td>
<td>L</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Fusarium wilt</td>
<td>-</td>
<td>H, R</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fusarium crown rot</td>
<td>L</td>
<td>L</td>
<td>H</td>
<td>M</td>
<td>M</td>
<td>L</td>
</tr>
<tr>
<td>Phytophthora blight</td>
<td>H</td>
<td>L</td>
<td>H</td>
<td>H</td>
<td>H</td>
<td>H</td>
</tr>
<tr>
<td>Angular leaf spot</td>
<td>L, R</td>
<td>L</td>
<td>M</td>
<td>L</td>
<td>M</td>
<td>L</td>
</tr>
<tr>
<td>Downy mildew</td>
<td>M, R</td>
<td>M, R</td>
<td>H</td>
<td>M</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>Viruses</td>
<td>L, R</td>
<td>H</td>
<td>M</td>
<td>H, R</td>
<td>M</td>
<td>L</td>
</tr>
</tbody>
</table>

Table 1. Disease Susceptibility of Cucurbits (View Table 1 to the right)

R=resistant varieties exist; L=low (occurs, but rarely in damaging levels); M=moderate; H=high level of susceptibility to pest; V=variable susceptibility among varieties; - = pest tolerance for a particular crop is unknown.

Diseases caused by bacteria

1. Use varieties that are less attractive to the beetles or less susceptible to bacterial wilt (see Cornell 2004.)
2. Crop rotation and sanitation are important. Avoid leaving cucurbit crop debris available for overwintering sites. Plow debris under after harvest, and plant a cover crop to reduce the overwintering population. Keep headlands mowed. Rotate cucurbits to distant fields to help delay infestations.
3. Floating row covers are very effective for avoiding beetle damage. Remember to temporarily remove the covers periodically to weed early and leave off permanently when the flowers appear to allow pollination.
4. Use of trap crops is possible for this pest. Cultivars vary dramatically in their attractiveness to beetles. The inexpensive variety Dark Green Zucchini is very attractive and takes up little space (see Cornell 2004). Blue Hubbard squash is also an effective trap crop that is not susceptible to wilt. A trap crop can be planted early around the perimeter of the cash crop and allowed to attract beetles. It should then be sprayed repeatedly with an insecticide or flame on a cool morning after attracting beetles. Be sure the trap crop completely encircles the main crop to gain the most benefit and discourage entry to the main crop. At low populations, sprays may not be needed.
5. Yellow sticky cups or tape can trap many SCB adults. They should be replaced regularly as they become saturated with beetles and field debris.
6. Use transplants instead of direct seeding. They will be older when beetles arrive and therefore more tolerant, or you can plant later after peak beetle activity is over.

Materials Approved for Organic Production:

1. Kaolin clay (Surround). Growers report repelency if it is applied frequently, twice a week.
2. Pyrethrum is reported to give some control by growers.
3. A Tank mix of Kaolin clay and pyrethrum may be worth trying.
4. Application of beneficial nematodes to the root systems of plants with early season SCB populations will reduce, but not fully control, the following generation.
5. Rotenone is somewhat effective. (Note: No formulations are currently OMRI approved, check with the certification agency.)

Diseases caused by fungi and fungal-like organisms

1.  Use varieties that are less attractive to the beetles or less susceptible to bacterial wilt and other diseases can be found on the Cornell Vegetable MD Online website (McGrath 2001).
2.  Plant disease-free seed. Do not use seed from an infected fruit.
3.  Moisture is necessary for the pathogen to enter and the fruit could rot in storage. Cutting stems short can help reduce injury.
4.  Avoid injuring fruit when harvesting, as these wounds allow the pathogen to enter and the fruit could rot in storage. Cutting stems short can help reduce injury.
5.  As soon as a cucurbit crop is harvested, the decaying crop debris should be plowed under to destroy infected debris and reduce inoculum.

Cultural Control:

1. Crop rotation to a non-cucurbit crop for 2 years.
2. Plant disease-free seed. Do not use seed from an infected fruit.
3. Moisture is necessary for the pathogen to infect. Optimal conditions for the pathogen are: relative humidity of 85% or higher and 1-10 hours of free moisture on leaves (due to rainfall, dew or irrigation). Thus, it is important to minimize free moisture on the leaf surfaces by using drip rather than overhead irrigation.
4. Avoid injuring fruit when harvesting, as these wounds allow the pathogen to enter and the fruit could rot in storage. Cutting stems short can help reduce injury.
5. As soon as a cucurbit crop is harvested, the decaying crop debris should be plowed under to destroy infected debris and reduce inoculum.

Black Rot and Gummy Stem Blight
Black rot is caused by the same fungus, Didymella bryoniae, that causes gummy stem blight. Black rot is the fruit-infecting phase of the disease and is most common on butternut squash and pumpkins (View photo 2.7). The black rot fungus penetrates the rind, allowing entry to other organisms that cause the whole fruit to rot. Gummy stem blight refers to the foliar and stem-infecting phase of the disease (View photo 2.8), which is commonly seen on muskmelons and watermelons.

Cultural Control:

1. Control of bacterial wilt depends on control of the cucumber beetle. Therefore, all the measures described above for control of SCB will aid in the control of bacterial wilt as well.
2. Resistant cucumber varieties, such as County Fair pickling cucumber, are becoming available.

Materials Approved for Organic Production:

(See cucumber beetle controls.)

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Application of approved products is currently an effective management option.

Downy Mildew

Downy mildew, caused by the fungal-like organism Pseudoperonospora cubensis, can be particularly severe during wet and humid weather. Symptoms

Continued On Page 11
Fusarium wilt is a serious disease of cantaloupe and muskmelon. Mature plants are most commonly affected by this pathogen, with symptoms including yellowing of older leaves and wilting of runners. Vascular discoloration will be apparent if the stem is cut along its length near the crown. Fusarium crown rot can attack all cucurbits. Symptoms include wilting of leaves, followed by plant death, which can occur within several days (View photo 2.10). Necrotic rot of the crown and upper root area can be seen. Fruit can also be attacked at the fruit-soil interface.

Cultural Control:
1. Crop rotation is ineffective for the Fusarium wilt of melons and cucumbers, but the crown rot organism persists for only 2 years and so a 3-4 year rotation is effective.
2. Liming the soil to a pH 6.5-7.0 can reduce wilt.
3. Resistant varieties are the best defense. The muskmelon variety Athena is resistant.

Materials Approved for Organic Production:
Trichoderma (Taz2) may have some efficacy against Fusarium species.

—Powdery Mildew

Phytophthora blight, caused by the fungal-like organism Phytophthora capsici, is a difficult problem. The disease is currently limited to certain regions; however, the range of the pathogen appears to be increasing each year. There is no treatment available once the plants are infected. Symptoms include a sudden wilt of infected plants and/or white yeast-like growth on affected fruit (View photo 2.11).

Cultural Control:
1. Select well-drained sites or improve soil drainage. Reduce humidity in the crop canopy will help prevent downy mildew infections.
2. Avoid overhead irrigation.

Materials Approved for Organic Production:
Copper compounds (one poor result in recent studies; four good and three poor results against different species of downy mildew on other crops).

—Powdery Mildew

Phytophthora blight, caused by the fungus Phytophthora capsici, appears later in the growing season than bacterial wilt and can reduce yields by decreasing the size or number of fruit. Fruit quality can also be reduced because of sunscald, lower sugar content, or incomplete ripening. The disease is quite easily recognized by a white powdery growth on both upper and lower leaf surfaces (View photo 2.12). As the disease advances, the leaves yellow, turn brown and die (View photo 2.13). All cucurbit species are susceptible although resistant varieties of cucumber, melon, summer squash, winter squash, and pumpkin are available.

The fungus is thought to blow into the Northeast from southern states each year and probably does not overwinter in this region outside of greenhouses.

Cultural Control:
1. Growing the crop in smaller parcels may slow disease spread.
2. Field-grown plants are resistant until fruit start to enlarge, unless they are stressed such as by heavy weed competition.
3. Vigorous indeterminate varieties may maintain sufficient numbers of healthy leaves to tolerate PM longer in the season.
4. Grow resistant or tolerant varieties (see Cornell 2004).

Materials Approved for Organic Production:
1. Sulfur.
2. Copper (one good, one fair, and 5 poor results).
3. Mineral oil (two fair and one poor result).
4. Several plant oils are reported to reduce powdery mildew.
5. Potassium bicarbonate (two of 13 studies showed fair control; 11 poor).
6. Bacillus subtilis (Serenade) (One of seven studies showed fair control; 6 poor).
7. Combinations of oil and potassium bicarbonate have been more effective than either alone.

—Less Common Diseases

There are many diseases of cucurbits that can be present at low levels or are important only in certain regions. Generally, these all respond to cultural techniques such as a good four-year rotation, pathogen-free seed, raised beds, good soil drainage, careful watering preferably with trickle irrigation, and vigorous plants.

—References


Greening our Creeks on St. Patty’s Day

It was a perfect day to green the creeks on St. Patty’s day in Boone. Fifty-two participants came out for the “Greening our Creeks“ day hosted by the Watauga County Cooperative Extension. Participants took home a total of 2,500 live stakes including Elderberry, Buttonbush, Silky dogwood, Silky Willow, and Ninebark. Thousands of feet of stream will be planted this week to protect our rivers! As part of the workshop, participants also planted 50 ft of Kraut Creek behind the new Synagogue in town. These native woody plants have extensive root systems that stabilize the soil on stream banks during rainfall and high water flow. The shade produced by the shrubs helps maintain the cooler temperatures that our mountain fish and aquatic life need to survive, while the leaves help provide habitat and food for insects and fish. (Leaves fall into the stream, aquatic insects eat and live in the leaves, trout eat the insects) “Greening our Creeks“ with vegetation is really important because it acts as a filter to prevent sediment, fertilizers, pesticides, bacteria, pathogens, and heavy metals from entering our rivers. Wendy Patoprsty would like to thank BB&T for sponsoring the lunch provided to the participants; National Committee for the New River, the Watauga River Partners, and Brushy Fork Environmental for the expertise they provided; and A&T State University grant for providing the free plants. Live stakes need to be installed while they are dormant. Because this event was so well attended, we will be hosting another live stake giveaway day in the fall.
The Daniel Boone Native Garden is partnering with the NC Cooperative Extension Watauga County Center, the High Country Audubon Society, and other local partners to offer educational programs for children and adults throughout the growing season.

During the month of June, programs will be offered each Saturday morning on topics including: gardening to attract butterflies and birds, easy-to-grow native plants for the landscape, and useful aspects of native plants. Other horticultural programs will be conducted July - September, led by Extension Agent Meghan Baker and Extension Master Gardener Volunteers. For more details on the program schedule and starting times, please visit the Daniel Boone Native Garden website: www.danielboonegardens.org or the Watauga County Extension Service’s blog: wataugaces.blogspot.com.

**CALENDAR**

**MAY**

15  Parasite Management for Horses Dr. Niki Whitley Ag-Center 6 to 8 pm, RSVP

**JUNE**

4   4-H Super Summer Begins
7-8  Residential Rain Garden Certification
11  Explore 4-H Meeting for 5-9 year-olds
19  Permeable Pavers Workshop
24-29 4-H Camp

**JULY**

14  Hands-on Canning Class
23-26 4-H Pizza Adventure Day Camp
26  Mountain Greenery Field Day
30-Aug 2  Organic Gardening 101

**AUGUST**

4-5  High Country Farm Tour
14  Cucurbit Specialty Crops Field Day - RSVP
18  Hands-on Canning Class

To see an updated Calendar of Events, please visit our blog at wataugaces.blogspot.com.

**OUR MISSION:**

“North Carolina Cooperative Extension partners with communities to deliver education and technology that enrich the lives, land and economy of North Carolinians.”

For a complete list of all workshops and short-courses offered by NC State University Department of Biological & Agricultural Engineering, please visit our website at: www.bae.ncsu.edu/training_and_credit/workshops.php

For questions about registration, please contact: Cathy Smith at 919-515-6780 or cathy_smith@ncsu.edu or Christina Shepard at 919-513-2192 or chrissie_shepard@ncsu.edu.

For questions about the program, please contact: Mitch Woodward at mdwoodward@gmail.com.

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