Dear Grower,

Well... its been another challenging year with weather related issues all season long. Frost and freeze plus poor pollination in April affected fruit quality and quantity. Some growers ended the season with maybe 10% of a crop with most in the 50-60% range!

If that wasn't bad enough, we had scattered hail in the Spring throughout the county, plus unexpected insect pressure from "minor" pest such as: Plum curculio at Petal Fall, Plant bugs late season along with San Jose scale, especially on Red Delicious. The only bright spot was the reduced incidents of disease pressure, especially Glomerella leaf and fruit spot (GLS).

continued on page 2

Greetings!

I hope everyone had a wonderful (and warm!) holiday. Thank you for waiting patiently for my arrival—It's hard to believe nearly a year has passed since I inter-viewed! For those who I haven't yet met, my name is Sara Villani and I am the new apple and ornamental pathologist at NC State University stationed at the Mountain Horticultural Crops Research and Extension Center in Mills River.

Before arriving at NCSU, I was a research technician in Dr. Kerik Cox's Tree Fruit and Berry Pathology program at Cornell University's NYS Agricultural Experiment Station in Geneva, NY. In 2012 I began working towards my PhD in Kerik's program as part of Cornell's Employee Degree Program. My research focused on mechanisms of fungicide resistance in the apple scab pathogen Venturia inaequalis. However, as Kerik's technician I was heavily involved in disease diagnostics, antibiotic and fungicide trials, and participating in many extension-related activities. In November I finished up things at Cornell and have been living in my new home in Arden, NC for the past month. I am excited to begin working with the passionate apple stakeholders of North Carolina! The challenges of understanding and managing Glomerella Leaf Spot and Fruit Rot, in addition to the multitude of other apple diseases that can strike at any point in this region will certainly keep me on my toes! In the coming weeks/months I'll be working with local extension agents to make visits to your orchards. In the meantime feel free to contact me (smvillan@ncsu.edu or 828-684-3562).
Because of the tremendous GLS pressure in 2014 most growers stayed on top of their cover sprays, plus the fact we were very dry throughout the Summer. I saw some apple blocks growing on sandy soils, it got so bad, trees were shedding leaves and fruit prematurely.

Then the rain came at harvest and didn't stop until the end of the season. On a more positive side, most packers and direct markets reported a good season related to movement and prices. As for processing, prices were not as high as we had hoped, most ranging from 8-15 cents lb. The majority of fruit (on the trees) was harvested despite the rain and shortage of labor. Talking with growers, labor is still the major concern for 2016. A number of blocks were not picked because of this problem.

We plan to have a grower panel discussion during the Winter Apple School at Blue Ridge Community College (information included in this newsletter) to discuss the pros and cons of H2A workers who were used by local growers in 2015. The school's educational program includes speakers with a wide range of expertise. We will address orchard management issues, production topics such as insect management and diseases. Our keynote speaker is Mr. Phil Schwaller, Tree Fruit Pomologist with MSU.

With unseasonable temperatures in December we are all concerned with dormancy/rest. JD Obermiller reported our chilling hours were at 0 at the end of December! But, with colder temperatures in January it looks like we are on track for a normal Winter. As of 8am, Tuesday, January 19, 2016 we have received 336 chilling units. Henderson County typically receives in excess of 1,000 chilling hrs annually.

The Apple Team looks forward to seeing/visiting with you at the Winter Apple School, Wednesday, February 3rd.

Sincerely, Marvin

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**Conservation Programs**

The Henderson County Soil and Water Conservation District (HCSWCD) is currently accepting applications for North Carolina Agriculture Cost Share Program (NCACSP), Agriculture Water Resources Assistance Program (AgWRAP) and Community Conservation Assistance Program (CCAP). These programs are voluntary and are funded through the NC Department of Agriculture and Consumer Services—Division of Soil & Water Conservation (NCD&A-CS—SW) and administered through the HCSWCD to fund the installation of various Best Management Practices (BMP’s) to improve water quality.

These programs can provide technical assistance and help pay a portion of the costs for installation of accepted water quality improvement practices. To be eligible for either program, there must be an existing water quality problem. The BMP’s must be designed by the HCSWCD, be maintained for up to 10 years, completed after a signed contract is approved and meet our specifications.

If you have any questions or think your water quality problem might qualify for assistance, please call the Henderson County SWCD (828) 697-4949.

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**Pruning Mature Trees in a Semi-Dwarf Apple Orchard**

By James Schupp, Penn State University.

Apples are a long-lived perennial crop, thus most fruit farms have several blocks of trees that vary in age and size. Many orchard enterprises have adopted intensive (≥ 518 trees per acre) orchard systems over the past 25 years. However, blocks of larger semi-dwarf trees at medium density still exist on many farms, and often these blocks still have a significant role to play in the orchard enterprise. This includes the production of "standard" varieties, such as Delicious, Golden Delicious, York, Rome, etc. Productive semi-dwarf blocks can play an important role in maintaining annual cash flow while older, less profitable blocks are being replaced. Establishing new orchards requires multiple years of planning to obtain the right trees, establish the canopy, come into production, and generate a positive return on investment. While medium density orchards are no longer recommended, existing semi-dwarf orchards will be in use for some time and must be properly managed for optimal yields of marketable fruit.
Purpose of pruning
Pruning is an important management practice for fruit size and quality. Pruning is defined as the cutting away of a portion of a plant for horticultural purposes. In fruit production these purposes include influencing plant growth to modify canopy shape, renewal of the fruit bearing surface, and to improve light and spray distribution within the canopy. In semi-dwarf apple orchards, most pruning is done to improve light distribution to increase fruit quality.

Annual pruning and timing
Pruning for light distribution maintenance is an ongoing and cumulative practice that should be done annually. Healthy trees will produce considerable regrowth in a single season, recreating shade. Pruning trees annually is required to avoid corrective pruning, which can result in severe adjustments to the canopy volume.

Most maintenance pruning should be done while trees are dormant. Dormant pruning allows for better visibility of the branches, increasing the speed and accuracy of the work, and doesn’t compete for limited labor supplies with other seasonal tasks. Delayed dormant pruning, shortly after bloom, removes photosynthetic leaf surface at a time when carbon reserves are at a seasonal low. Pruning at this time has a strong inhibition of vigor, and can be used to help manage excessively vigorous trees.

Pruning can also be done in late autumn after harvest. In late autumn and early winter, the trees are not yet fully acclimated to tolerate cold temperatures. Pruning trees at this time can make them more sensitive to low temperature injury. It is best to wait until the trees have been exposed to freezing temperatures and until the leaves have begun to turn yellow before beginning early dormant pruning. Keep a watchful eye on the long range forecast and suspend pruning when a severe drop in temperature is forecast. Recently pruned trees can be damaged when temperatures suddenly drop 50-60 degrees to 0°F or below. This increased sensitivity is greatest within 48 hours after pruning and gradually declines over a two week period.

The central leader blueprint
Over the past 40 years, the central leader (CL) became the predominant training system for semi-dwarf trees. Central leader training favored good light interception and light distribution, leading to high yields of quality fruit. Two other factors led to the widespread adoption of central leader tree training: it was relatively easy to teach, and was compatible with the natural growth habit of apple tree canopies.

Central leader trees have a permanent tier of scaffold branches starting 24 to 35 inches from the graft union and three or four additional tiers of semi-permanent scaffold branches at three foot intervals going up the leader. Each tier of scaffolds going up the leader should be smaller and shorter than the branches in the previous tier. There should be no more than five scaffolds in the bottom tier, with four being the norm. There should be no more than four scaffolds in the successive tiers, and three is often adequate.

The following are generalized guidelines for pruning to maintain the mature CL apple tree canopy:

Make mostly thinning cuts
A mature semi-dwarf apple tree has greater canopy volume, and more branching than is optimal for fruit color and quality, therefore most pruning cuts should be thinning cuts, which remove the entire branch at its origin. Pruning branches results in a localized stimulation of vegetative regrowth. If a portion of the branch is left, this regrowth is likely to be stronger, because such heading cuts leave buds in close proximity to the localized stimulation.

One particularly unproductive form of this cut is the bench cut, in which a large, upright scaffold limb is stubbed back to a flatter side branch on the bottom of the limb. The bench cut is made in the misplaced hope that the tree will conform to the flatter angle of the branch to which it is “benched”. The actual growth response from bench cuts is a flush of several strong shoots near the cut, which often serve to shade the rest of the canopy as effectively as the section of limb that was removed, and without the compensation of the fruits that the original limb would have produced. The second most frequent type of cut is referred to as stubbing back, in which horizontal branches in the upper canopy are shortened to a weaker side branch. This cut is useful to maintain the conic shape and allow sunlight to reach the lower canopy section. Regrowth from this cut is restricted by the flat branch angle and the presence of fruiting spurs on such limbs. At the base of the branch, there is a slight ridge, called the collar. The thinning cut should be made to retain the collar, so as to result in the smallest wound and rapid healing of the cut surface.

Make large cuts first
Large upright limbs compete with the leader. If not removed, the cone shape of the canopy is lost, and with that is lost

continued on page 4
Any hope of good light distribution. Remove limbs that are greater than \( \frac{1}{4} \) the diameter of the leader. Match the tools to the size cuts that are being made. This ensures that one large cut is made when necessary, as opposed to several smaller insufficient cuts to thin the canopy.

**Select branches based upon branching angle**

Leave branches with an angle between 45 and 65 degrees from vertical to achieve a desirable balance of vegetative growth and fruiting. Upright branches are too vegetative and vigorous, while pendant branches are weak and tend to produce small fruit.

**Start in the top**

Sunlight first hits the top of the canopy, and then filters down through. The premise of the CL tree is to allow sufficient sunlight to pass through to illuminate the lowest branches. It follows that if the top is over-grown the rest of the canopy will have insufficient sunlight. One way to focus pruning to address the causes of shade is to start pruning operations in the top. While pruning the upper canopy, adjust the tree height to the desired level by pruning to a weaker side branch. Tree height should be limited to twice the free alley width. If eight feet of free alley is needed to operate equipment, then 16 feet is the maximum height for that orchard. Should the trees be left taller than 16 feet in this example, cross-row shade will result. Thin out the remaining branches to create an even distribution of light. This entails removal of otherwise acceptable limbs to eliminate dense areas in the canopy.

**Pruning severity**

Sometimes the need for corrective pruning arises, due to crop failure or management error. Severe pruning can reduce flowering and yield (by 30% or more), and can stimulate excessive vegetative growth and increase bitter pit. If severe corrective pruning cuts are made, no more than \( \frac{1}{4} \) of the canopy volume should be removed in a given year. Initial corrective pruning should focus on making a few large cuts, and the remainder of the tree should be thinned out lightly, if at all. The vigorous regrowth that follows heavy pruning can be managed with two or more applications of prohexadione calcium (Apogee/Kudos), at moderate-to-high rates. Root pruning is an alternative technique to get long-term control of vigor from severe limb pruning (call or write for details). Summer pruning can be used to remove some of the vigorous shoots sprout following heavy dormant pruning. Summer that pruning can improve red fruit coloration, but will not correct the invigoration of growth or the reduction in flowering that result from such cuts.

**Pruning the upside down tree**

Some older blocks of large apple trees may not conform to the central leader shape. Some of these were not trained to CL, but instead formed a multi-leader vase- or globe-shaped canopy. Others began as CL trees but large upright scaffolds were not removed. The leader has lost dominance and the result is an inverted cone, or "upside down" tree. Should the grower correct such trees or not? To correct such a block will require severe pruning, which will have negative consequences, as previously described. Suffering a yield reduction in a block that has been retained to maintain cash flow may be counter-productive. On the other hand, renovating the block may restore marketable fruit size and fruit quality in just two or three years. The health of the block, the variety, and its place in the portfolio of the enterprise are factors that weigh on the decision to renovate.

It may not pay to renovate varieties that don't require 50% red fruit color to sell. Granny Smith does well in a multi-leader tree, as do varieties destined for processing. Trees that have only a short-term future needn't be renovated either. For these situations, make thinning cuts to open the canopy up to sunlight and spray penetration and leave the canopy shape in its present state. One strategy for this type of tree is to prune each large scaffold as if it were a leader. If the decision is made to renovate the orchard, remove about a third of the excess canopy the first year, focusing on making a few large cuts and with an eye toward restoring the cone shape (Figure 9). Plan on using prohexadione calcium to manage excessive vigor, and on summer pruning to reduce shading from regrowth. The process of recovering the cone shape is continued in the second and third years by thinning out and shaping the canopy with large (saw) and medium (lopper) cuts.

Fruit on trees undergoing renovation should receive multiple calcium chloride sprays and should not be placed in long-term storage until the vigorous response to severe pruning is over. Nitrogen applications to trees being renovated should be sharply restricted unless leaf analysis reveals a deficiency. Another useful system for renovating upside down trees is to convert them to Central Leader-Palmette. In this system the bottom tier of scaffolds is retained, and all major limbs growing perpendicular to the row direction above the bottom tier are removed. This system provides the pruning crew with a quick and unambiguous rule for which branches to remove. It also results in a more favorable distribution of light by creating a narrow tree wall canopy in the top of the tree.

**In conclusion**

Prune to thin the canopy with as few cuts as possible, remove hangers and risers, stub back to a cone and don't get carried away!
Budding and Field Production of Apple Nursery Stock

In today’s competitive apple industry the Tall Spindle System has become the national and international orchard standard, requiring 1,000 - 1,300 t/a, producing 3,300 bu accumulated over the first five years. This goal requires us to have some yield in the second leaf which can start to cover a lot of the initial costs right away. One of the key components to reaching this goal is to fill your allotted space (10ft tall) in the first two seasons. It is important to plant a vigorous well feathered tree on the right root stock combination.

To help local growers accomplish this objective, the NC Cooperative Extension is conducting a one day Budding and Field Production Apple Nursery Stock Workshop.

Who: Henderson County Cooperative Extension
What: Budding and Field Production Apple Nursery Stock Workshop
When: Wednesday, February 24, 2016
Where: Henderson County Extension Center, 100 Jackson Park Rd., Hendersonville NC
Please RSVP by Monday, February 22, 2016. Call 697-4891 or email ivy_olson@ncsu.edu.

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2015 Commercial Peach Production Meeting

This year’s Upstate Peach Meeting will be held on Tuesday, January 26th at the Gaffney County Extension Office (1100 West Floyd Baker Blvd., Gaffney, SC 29340) from 5:00 - 8:00 pm. Speakers will include Dr. Juan Carlos Melgar (horticulture), Dr. Guido Schnabel (disease), Greg Henderson (soils/nutrition), and Wayne Mitchem (weeds).

Please make plans to attend and RSVP Kim at 864-596-2993 ext. 0 no later than Friday, January 22nd so that we can prepare. There is a $10 fee for the meeting and the full meal served like always so please come hungry for food and knowledge.

Meeting is being sponsored by: Liz Taylor, Morrow Insurance & Mrs. Margo Breich, Bayer Crop Science

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The 2016 SOUTHEASTERN APPLE GROWERS MEETING

Sponsored by the NC Apple Growers Association, Inc.,
February 9th & 10th, 2016 at the Double Tree by Hilton Asheville-Biltmore,
115 Hendersonville Road, Asheville, NC 28803.

We are excited to announce that our meeting will be held back-to-back with the Annual Meeting of the NC Tomato Growers Association and Winter Vegetable Conference! Please check your USPS mail and/or our website, www.ncapplegrowers.com for pre-registration, exhibitor and sponsorship update

PLEASE NOTE ALL REGISTRATIONS MUST BE MAIL USPS
to NCAGA, P O Box 58, Edneyville, NC 28792
Important Dates:

January 9th & 10th - Southeastern Apple Growers Annual Meeting and Show
Held at the Doubletree Hotel in Asheville. For more information visit ncapplegrowers.com

February 19th - Winter Grape School, 8am - 5pm at St. Paul Mountain Vineyard, Edneyville, NC. For more details and to register, call 697-4891.

March 10th - Pesticide Re-Certification class - 9am at the Extension Office in Jackson Park. This class offers 2 "V" credits.

March 17th - Pesticide Re-Certification class - 7pm at the Extension Office in Jackson Park. This class offers 2 "V" credits.

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Every effort has been made to provide correct, complete and up-to-date pesticide recommendations. Nevertheless, changes in pesticide regulations occur constantly and human errors are possible. These recommendations are not a substitute for pesticide labeling. Please read the label before applying any pesticide.

Person with disability and persons with limited English proficiency may request accommodations to participate in programs mentioned in this newsletter, by contacting Marvin Owings at 828 697-4891 or in person at the County Extension Office at least 4 days prior to the event.

170 copies of this public document were printed at a cost of $102.00 or $0.60 per copy.
2016 Winter Apple School Pre-Registration Form
at Blue Ridge Community College
February 3, 2016  8:00am – 5:00 pm

2016 Apple School Pre-Registration Fee/BRAG Annual Dues:
Registration after January 27, 2016

YOUR NAME
Company Name
Grower / Packer / Shipper? (Circle Any That Apply) Grower  Packer  Shipper

BUSINESS ADDRESS
Business Address Street (Line 1 / PO Box)
Business Address Street (Line 2)
Business Address City, State Zip (Line 3)
Business Phone #1
Business Fax #
Cell Phone #
E-Mail Address
Web Address

MAILING ADDRESS
Same As Business Address? (If yes, circle Yes. If Mailing Address is different, please provide below) Yes
Mailing Address Street (Line 1)
Mailing Address Street (Line 2)
Mailing Address City, State, Zip (Line 3)

BRAG MEMBERSHIP (for Official Use)
BRAG Membership (Circle Membership Type) General  Associate  Honorary
Event Sponsor?  (If yes, circle Yes) Yes

Return Your Check Made Payable to: Blue Ridge Apple Growers Association
Addressed to: BRAG, P.O. Box 578, Edneyville NC 28727
2016 Winter Apple School Agenda
February 3, 2016
Blue Ridge Community College
Conference Hall, Hendersonville, NC

7:00 - 8:40 Registration, Coffee & Pastries, Visit Exhibits

8:40 - 8:45 Welcome, Mr. Marvin Owings
County Extension Director, Henderson County Extension Service

8:45 - 9:00 Welcome, Mr. Tommy Thompson, Chairman - Henderson County Board of Commissioners;

9:00 - 9:45 Moderator: Mr. Trey Enloe "Pros and Cons of our local 2015 H2A Program", Panel Discussion Mr. David Coston, Coston Farms, Mr. Jason Justice, D&M Orchards, Mr. Allan Henderson, Henderson’s Best Apples

9:45 - 10:15 “A Look at the French Hard Cider Industry and How this New Industry Effects Local Apple Sales”. A discussion with local cider producers. Mr. Marvin Owings, CED Henderson County

10:15 - 10:30 BREAK

10:30 - 11:00 "Local Multiple Applications of Maxcel and Promalin to produce Feathered Trees" Mr. J. D. Obermiller, NCSU Research Service

11:00 - 11:45 "Growing Quantity and Quality Fruit“ Key Note Speaker, Mr. Phil Schwaller, Michigan State University, Tree Fruit Pomologist.

11:45 - 12:00 BRAG in Review, Awards & Election of Officers & Directors

12:00 - 1:15 Sponsored Lunch / Visit Vendors

1:15 - 2:00 “Experience Using Retain to Manage Harvest and its Effect on SE Varieties” Mr. Phil Schwaller, Michigan State University, Tree Fruit Pomologist.

2:00 - 2:30 2015 “Minor” Insect Pest, ID and Recommendations”
Dr. Jim Walgenbach, NCSU Entomology Dept.

2:30 - 3:00 “Local NEWA Weather Station Pest Forecast” Mr. Trey Enloe, Manager, Lewis Creek Farms

3:00 - 3:15 BREAK

3:15 – 3:45 “NC 140 Update & Planting Orchards for the Future“ Dr. Mike Parker, Horticulture Science Dept. NCSU

3:45 – 4:15 "Canker Disease Management and Control" Dr. Sara Villani, NCSU Plant Pathology Dept.