



Growing Fall Vegetables from Seed

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Workshop Sponsor: **Pender County Extension Master Gardener Volunteer Association**

- Materials funded through plant sales and other fundraisers:
 - **Fall Plant Sale** featuring Master Gardener 'Home Grown' plants, Poplar Grove Farmer's Market, Sept. 18, 8am – 1pm (rain date: Sept. 25)
 - **Fall Bulb Order** – Due Oct. 16 w/payment
 - **Zone 8 Garden by the Month** planner, \$9
 - **Gardener's Table Cook Book**, \$10

Become an Extension Master Gardener!

- **Volunteer Program** – EMG's help with educational outreach
- **Next training class:** Spring 2014
- Classes meet at Extension office
- Fee: \$75-\$100
- Volunteer 40 hours within 1 year of completing training



Review Presentation

<http://pender.ces.ncsu.edu/fallvegetableseed>


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FallVegetableSeed

Growing Fall Vegetables From Seed



- 4-H Youth Development
- Agriculture & Food
 - Animal Agriculture
 - Commercial Horticulture, Nursery & Turf
 - Farm Health & Safety
 - Field Crops
 - Food Safety & Processing
 - Local Foods
 - Pest Management
 - Specialty Crops
- Community

Today's Class

Part 1: Introduction

- Sowing direct in the garden
- What you can grow
- Starting seeds in containers

Part 2: Hands On!

- Transplanting seedlings
- Sowing seeds

Part 3: Wrap Up

- Caring for your seedlings
- Saving your own seed
- Evaluation



Why Grow From Seed?

- **Less expensive**, especially if you need a lot of plants
 - If only need a few plants, may be easier to purchase transplants
- **Allows you to grow much wider range of varieties**
- Some crops **must be started** from seed (eg. root crops)
- Lots of **fun!**



Tuscan Kale is rarely available from garden centers

Seed Sources

- **Local Garden Centers, including:**
 - **Farmer Supply**, Wilmington
 - **Pender Pines**, Hampstead
 - **Burgaw Milling**, Burgaw
- **Online/Mail Order, including:**
 - **Johnny's Select Seed**
 - **Pinetree Garden Seed**
 - **Park Seed**
 - **Burpee**
 - **Many more!**



Seeding Methods

Sow Direct

- Seeds planted directly in garden
- Most vegetables can be grown this way but riskier (weather, rodents)

Sow in Pots/Containers

- Seeds started in containers of potting soil, then transplanted



Sowing Direct

Methods:

- Sow in **single row**
 - Each plant individual
- Broadcast seed in **wide rows or patches**
 - Thick tangle of plants
- **Best method depends** on what you are growing – some crops can be grown both ways (eg. Lettuce)



Soil Preparation

- **Sunny spot** with **well drained soil** or raised beds
- Till in **compost, lime** (if needed), and **slow release fertilizer**
 - **Soil test** to determine lime and nutrient needs
 - New fee begins late Nov., \$4 per sample!
- **Rake level!**



Slow Release Fertilizers

- **Provide nutrients over extended time**
- Less likely to burn crops than granular fertilizers (eg. 10-10-10 or 8-8-8)
- **Time release fertilizers** (e.g. Osmocote) = slowly release nutrients over 3-4 months
- **Organic fertilizers** (e.g. Plant-tone) naturally slow release – nutrients not readily available in cold weather



Sowing Depth

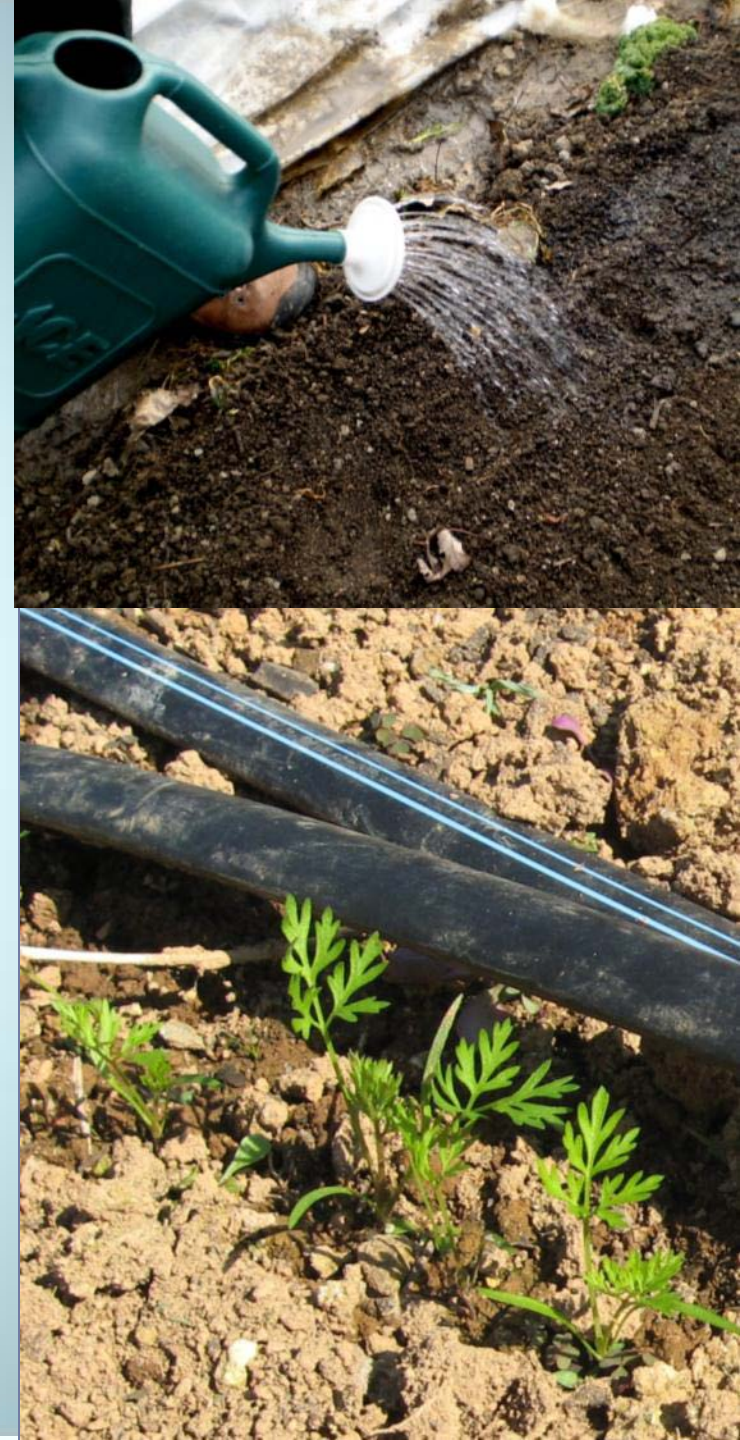
- Small seed, $\sim \frac{1}{2}$ "
- Large seed, ~ 1 "
- Make a shallow trench when sowing in single rows
- Scatter seed on surface and rake in or sprinkle soil on top when sowing in patches



Watering

- Essential to keep top few inches moist until seedlings germinate
- Check daily, water **gently** as needed
- As crops grow, reduce watering
- Can begin low dose **liquid fertilizer** (MiracleGro, compost tea) when reach 2"-3" tall – not necessary if slow release added at planting time –Don't overuse!

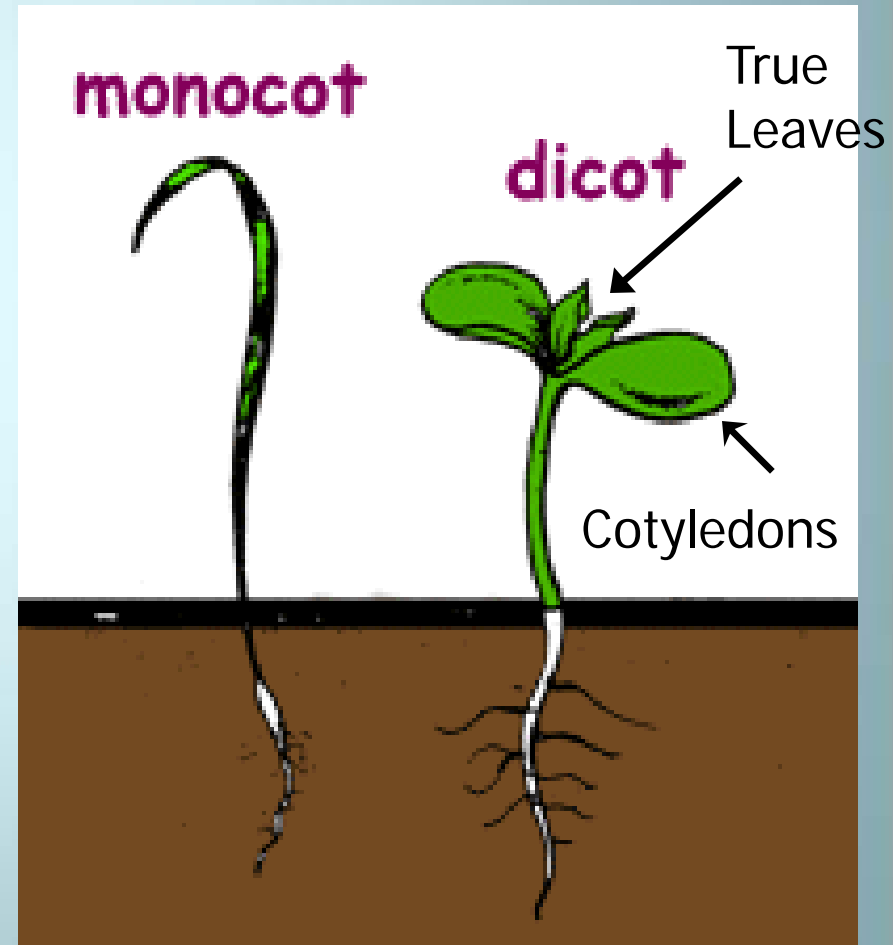
Soaker hoses should be placed directly beside row



Germination

- Most seed germinate in 4-7 days
- **Cotyledons** = seed leaves, stored food
- **True Leaves** = emerge after the cotyledons
- **Monocots** = grasses, lilies, corn, wheat, iris
- **Dicots** = most vegetables and flowers

All **monocots** emerge with one grass like leaf. **Dicots** emerge with 2 cotyledons



Thinning

- Don't expect 100% germination – typically sow more seed than needed
- Very important to **thin seedlings**
 - Reduces pests
 - Increases crop quality and size



Thin seedlings by pinching or cutting off excess plants instead of pulling them up.

Successive Crops

- Sow or plant new crop every 2-3 weeks to extend harvest time
 - Necessary for 1-time harvest crops (eg. cabbage, beets)
 - Not needed for crops with long harvest season (kale, collards)





What You Can Grow This Fall

Warm Season Crops

- Do not tolerate frost
- Not too late to start certain fast growing crops

Cool Season Crops

- Plant now, harvest fall-winter
- All tolerate light frost
- Some tolerate hard frost (under 28 degrees)

Warm Season Crops for Fall

- Killed by frost – 1st frost:
 - Late October inland
 - Early November coast
- **Must mature quickly** – less than 60 days
- **Insect and disease pressure will be high**
- Yields reduce as temperatures cool off (mid October)



It's not too late to start basil from seed or cuttings. Containers can be brought indoors in winter.

Warm Season Crops

- Not too late for these if you plant by end of August:
 - **Seed Direct:**
 - Green beans
 - Southern peas
 - Okra
 - **Seed Direct or in Pots:**
 - Cucumber
 - Squash
 - Basil
- Too late to seed melons, tomatoes, peppers, eggplant



Cool Season Vegetables

Winter Hardy:

- Tolerate heavy frost (below 28 degrees)
 - Harvest through winter: **Cabbage, kale, collards, carrots, parsley**
 - **Swiss chard** - harvest fall and spring
 - **Onion, garlic, leeks** – plant fall, harvest spring



Half Hardy Vegetables

- Tolerate light frost (26-28 degrees), usually productive through December
 - **Broccoli, cauliflower**
 - **Chinese greens**
 - **Cilantro, dill**
 - **Lettuce, spinach, arugula**
 - **Radish, beets**
 - **Turnips, mustard greens**
 - **Rutabaga, kohlrabi**
- Extend season with cold frames or row covers



Extend Winter Harvest



**Cold
Frames**

**Reemay
Frost
Protection
Cloth**



Root Crops

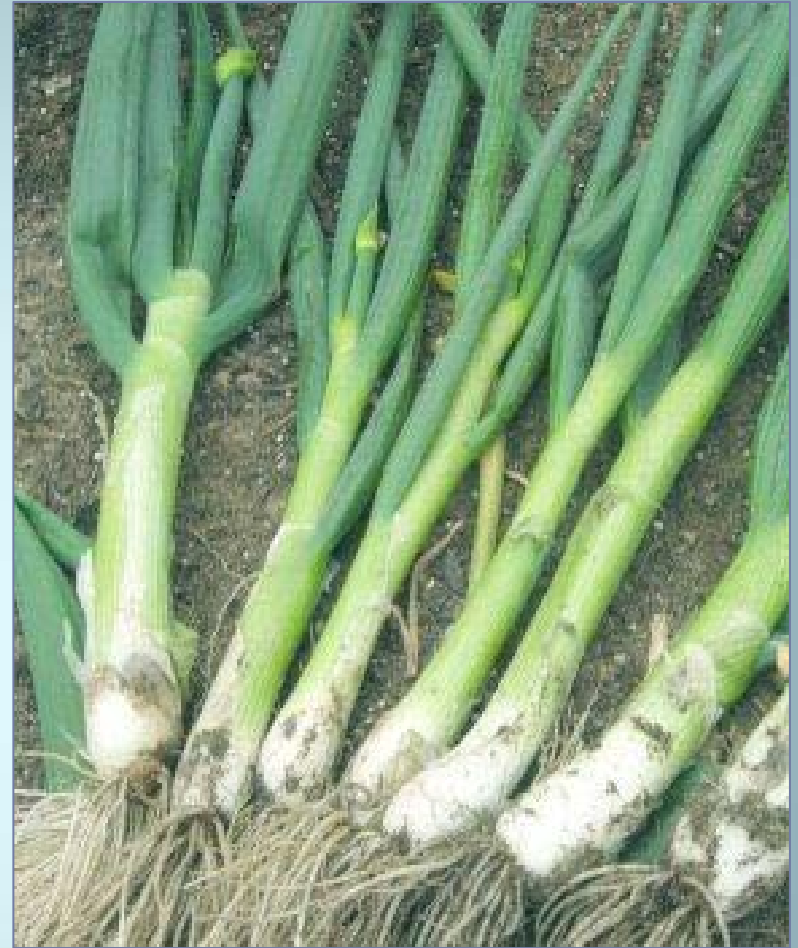
- **Sow direct, Aug-Sept**
- **Carrots, beets, rutabaga, radish, turnips**
- **Need sandy, loose, well drained soil for good root development**
- **One harvest – sow new batch every few weeks**
- **Final spacing – depends on size of root**



Root disturbance will result in forked carrots – this is true for most root crops.

Onions and Their Relatives

- **Sow direct**, Sept - Oct
- **Onions** – seed, short day varieties
- **Garlic** – cloves, soft neck varieties
- **Leeks** – seed, plant in shallow trench
- Harvested in spring
- Need rich soil with good drainage



Green onions/scallions are very easy to grow – sow August – Sept. Ready to harvest in 50-60 days.

Leafy Greens

- Most are quick growing, ready to harvest in 30 to 40 days, sow Aug-Early Oct.
- **Sow Direct:** mustard and turnip greens – broadcast seed to make a 'patch'
- **Sow Direct or Start in Pots:** Romaine lettuce, leaf lettuce, chard, spinach, arugula, Asian greens
 - Sow singly in rows or broadcast
- **Multiple harvests**, except Romaine lettuce



Lettuce grown in 18" wide rows – broadcast seed over soil surface

Cool Season Annual Herbs

- Sow direct or start in pots Aug.-Sept.
- **Dill, Cilantro** – half hardy
- **Parsley** – winter hardy
 - Soak seed in water 6-8 hrs.
- **Perennial Herbs:** chives, sage, oregano, thyme, rosemary – start seed in spring or purchase plants spring or fall



Crucifers / Cole Crops

- **Broccoli, Cauliflower, Cabbage, Bok Choi, Chinese Cabbage, Collards, Kale, Kohlrabi**
- Slower growing - start seed August
- Large plants, space individual plants 18" to 2' apart
- Sow direct then thin or transplant to final spacing
 - Kale for baby leaves – sow thick/'patch'
- OR start in containers and set out young plants in Sept.



Give cole crops plenty of space!

Containers

- Many vegetables grow well in containers!
- Larger plants need larger/deeper containers!
- For best results use **potting soil** (not garden soil) and **slow release fertilizers**
- Water frequently in warm weather



Fall Vegetables for Containers

- **Shallow Containers**
 - Lettuce, Spinach, Arugula
 - Parsley, Cilantro, Dill
 - Radish, Beets
 - Swiss Chard
 - Green Onions
- **Deep Containers**
 - Cabbage, Chinese Cabbage
 - Broccoli, Cauliflower
 - Kale, Collards
 - Squash, Cucumbers



Root crops can be grown in containers – carrots need deep pots!

Starting Seed in Containers

- Allows greater control over growing conditions
- Higher germination rate
- Good for small or expensive seed
- In fall, no need for a greenhouse!
- **Grow outdoors** on tables or driveway (protect from heavy rain, cats and toads)



Sowing in Containers

Options:

- Sow in **pot/cell** (peat pot, 4 or 6 pack) then transplant to garden
- **Sow in flat**, transplant to pot/4 pack to grow on
- **Sow in container** in which they will grow (lettuce, spinach)



Direct Light

Stretched or leggy seedlings = not enough light



Stocky seedlings, cotyledons close to soil surface



Containers

- **Purchased**
 - Peat Pots
 - Cover pot when plant out
 - Plastic
- **Recycled**
 - Yogurt containers, plant pots, anything (not too deep)!
 - Disinfect – 9:1, water:bleach, soak 5 mins.
- **Most important factor = Drainage Holes!**



Potting Soil

- Look for seed starter mix or Metro 360
 - Fine textured, peat moss and vermiculite, NO bark
 - No fertilizer needed
 - Moisten soil before sowing
 - **Not garden soil!**



Sowing

- **Evenly fill containers to within ½" of top**
- Sprinkle seed over soil (not too thick!), make rows, or plant individually
- **Planting depth depends on seed size**
 - 2x diameter of seed
- **No need for fertilizer!**
- **Water gently** – until water runs out of bottom of pot
- Place cover over top, or put in plastic bag (optional)



Sow Seeds

Parsley 'Italian Flat' – flat leaf, preferred culinary. Germinates in 10-14 days.



Cabbage 'Early Jersey Wakefield'
Faster maturing but less cold hardy than round headed varieties. Heirloom. Excellent flavor.



Growing On

- Remove cover/bag as soon as germinate!
- **Fertilization** not necessary until true leaves appear
 - **Weak rate of liquid fertilizer every other day**
- **Water carefully**
 - Overwatering caused by watering too often, not too much at one time



Transplanting

- Transplant when first set of **true leaves** appear
- **Lift from beneath** with label, pencil or dibber
- Hold by **cotyledon** or leaf, **NOT stem!**
- Can transplant **up to cotyledon**, especially if leggy
- Keep out of direct sunlight for a day, **water well**



Transplant Seedlings:



'Italian Sprouting' Broccoli

Main head ready in ~ 70 days, then produces lots of side shoots.

Heirloom.

'Red Russian' Kale

Lacy leaves with purple mid vein. Great texture and taste. Grow for baby leaves or harvest mature through winter. Heirloom.



Follow Up Care

- **Seeds: Cabbage, Parsley**
 - Remove from plastic bag as soon as germinate
 - Place in sun
 - Check water daily
 - Begin liquid fertilizer when true leaves appear
- **Cabbage** should germinate in 3-4 days, and ready to transplant to 4 packs in ~10 days
- **Parsley** should germinate in 10-14 days and be ready to transplant to garden in 4 weeks



Follow Up Care

- **Seedlings:**
Kale, Broccoli
 - Keep out of sun for 1 day, then place in sun
 - Check water daily
 - Liquid fertilize 2-3 times per week
 - Set out in 3-4 weeks
 - Space 2' apart
 - Can plant kale closer to harvest baby leaves



Setting Out

- Plants are ready to set out when their roots have filled the container
- Potting soil should be completely covered when set out
- Monitor **watering** closely – check daily
- Mix in slow release or organic **fertilizer** at planting time, continue to liquid feed for few weeks



Healthy roots are white and crisp

Saving Seed

- **Must allow to fully ripen/mature**
 - Easy for tomatoes, melons – are harvested when fully ripe
 - Less convenient for squash, beans, and others – must leave on the plant, reduces production
 - For broccoli, cabbage, kale, etc. must allow to bloom out, wait for seed pods to form and ripen (June!)

Broccoli Flowers



Saving Seed

- **Clean seed**
 - If inside a fruit or berry, remove all fleshy material
 - For dry seed, separate seed from seed pods
- **Air dry** somewhere out of direct sunlight
- **Store somewhere cool and dry or in refrigerator**
 - To keep dry, store in sealed plastic bags
- **Most vegetable seed will store for years if refrigerated**



Broccoli Seed

Saving Seeds

- **Hybrids**
 - Will not come true from saved seed
 - You can save seed – offspring may or may not be as good as parent plant
- **Open Pollinated Varieties**
 - Come true from saved seed
 - Many heirloom varieties



'Red Russian' is an heirloom kale variety and will come true to type from open pollinated seed.

Food Gardener Emails

- When to plant, pest alerts, upcoming classes and more!

- To subscribe: send an email to mj2@lists.ncsu.edu
- Leave the subject line blank
- In the body of the message put: **subscribe foodgardener**

- Also posted on **Pender Extension Website:**
<http://penders.ces.ncsu.edu/>

The screenshot shows the NC State University Cooperative Extension website for Pender County Center. The header includes the NC State University logo and the Cooperative Extension logo with the tagline "Empowering People - Providing Solutions". A search bar is located in the top right corner. The main content area is divided into several sections:

- 4-H Youth Development:** Agriculture & Food, Animal Agriculture, Commercial Horticulture, Nursery & Turf, Farm Health & Safety, Field Crops, Food Safety & Processing, Local Foods, Pest Management, Specialty Crops.
- Community:** Forest Resources, Health & Nutrition, Home & Family, Law & Garden, Soil, Water & Air.
- Featured Content:** "Brown Marmorated Stink Bug Management Addressed in New Tomato Webcast" - The latest Focus on Tomato webcast helps consultants, growers, applied researchers and other practitioners better understand and manage the brown marmorated stink bug, particularly in tomato crops.
- Featured Extension Videos:** "Facts about Corn" and "Preparing Insect and Plant Disease Samples".
- News:** "Spiders... big spiders... oh my!" - Eastern NC is home to two quite large spiders: the black and yellow garden spider (Argiope aurantia) and the golden silk spider (Nephila clavipes). "How to Water Vegetables and Herbs" - Correct watering can make the difference between a bumper crop and complete failure. "Spiders Are a Gardener's Best Friend!" - Like all spiders, the large black and yellow argiope, also known as the garden spider, is an important predator of many types of insect pests.
- Events:** "Growing Fall Vegetables from Seed" (Aug 22, 2018), "Pender County Cooperative Extension, 801 S. Walker St., Burgaw" (2 days away), "Growing Fall Vegetables from Seed" (Aug 24, 2018), "Wesleyan Chapel United Methodist Church, 10255 U.S. 17, Wilmington" (2 days away), "Pender County Beekeepers" (Aug 29, 2018), "801 S. Walker Street, Burgaw, NC" (1 week away).
- Coastal NC Landscape Plant Dos and Don'ts:** As with any area, proper plant selection along our beaches and barrier island is very important. A new publication, "Beach Plant for Coastal North Carolina Landscaper," has just been published.
- Ask an Extension Master Gardener:** Wed Sep 11, 2018 9:00 AM - 1:00 PM. Farmers' Market, Poplar Grove Plantation, Hwy 17, Hampstead.

At the bottom, there is a "Tweets from @nce_news" section and a "Pender County Center" contact box with the address: 801 S. Walker St, Burgaw, NC 28425, phone: (910) 259-1235, and office hours: 8:55 Mon-Fri.



Extension
Master
Gardener

NC COOPERATIVE EXTENSION

'Ask an Extension Master Gardener'

Ask questions, bring samples for id, soil test supplies, pick up information

- **Poplar Grove Farmer's Market**, 2nd Wed of each month, April – October (9am – 1pm)
- **Hampstead Library**, 3rd Monday of each month, April - October (10:30am – 1pm)
- **Extension Office, Burgaw**, Mondays 1pm – 4pm; Thursdays 9am – Noon, March – October
- **Events:** Poplar Grove Herb Fair, Burgaw Springfest, Blueberry Festival . . .

Pender County

Cooperative Extension

801 S. Walker St., Burgaw

259-1235

Visit <http://pender.ces.ncsu.edu>
to submit questions to our 'Ask an Expert'
widget, keep up with gardening news, and
find out about upcoming events!

