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This presentation is designed to help you understand why weeds should be controlled in pastures and the steps to consider in controlling them. It also includes images and descriptions of weeds that are common in NC pastures.

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A weed is a plant growing in a place where you do not want it to grow. In pastures and hayfields, it is impossible to have a "pure" stand of grass; there will always be plants that volunteer from the seedbank or from neighboring fields. It is important to control weeds to an acceptable level, however, because they can reduce yield and quality of desired plant species and interfere with hay drying. Weeds, such as the ones pictured here, also have the potential to cause injury or death to livestock if the weed plants are toxic. Top image – Wild Parsnip – poisonous to cattle mostly, but also horses, sheep and swine. Bottom image – Jimson Weed – poisonous to cattle mostly, also horses, sheep, dogs, and man.

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Pasture Weed Management

- Steps to controlling weeds
  - ID weeds you have (scout 10-15 sites)
  - Sources of help...
    - Identifying Seedling & Mature Weeds (AG-208)
    - Weed Identification in Pastures, Hayfields, and Sprayfields (AG-764W)
    - Weeds of the North Central States. University of Illinois, Circular 718.
    - <http://oak.ppws.vt.edu/weedindex.htm>
    - <http://weeds.cropsi.illinois.edu/weedid.htm>



The first, and most important step, in weed control is identifying the weed or weeds you have. This will allow you to determine if they need to be controlled. Take time to walk through your fields and scout at least 10 to 15 sites in a field. Identify the plants and seedlings at each site. It is usually easier to do this between seasons and about a week or two after cutting or grazing. Be sure to keep a record of what weeds you have in each field and when you start seeing them. This will help you determine whether your control program is working. Some weeds may take several years to get under control.

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Pasture Weed Management

- Steps to controlling weeds
  - ID weeds you have
  - Prevent spread of weeds



Many weeds are easily spread. Prevention is any action you take to keep weeds from getting established in your pasture to start with. Many weeds are spread by seeds that are dispersed by hay bales, plants that reach maturity (don't let that happen), livestock movements, equipment (particularly mowing equipment), wind, water, and wildlife. Another way of introducing weed seed is through planting grass seed contaminated with other seeds, use certified seed!

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Pasture Weed Management

- Steps to controlling weeds
  - ID weeds you have
  - Prevent spread of weeds
  - Cultural control
    - Manage for your pasture species, TAKE SOIL TESTS FOR THE ENTIRE PASTURE



Cultural control increases the competitiveness of forage. Provide for proper fertilization by using soil test to determine pH, fertility, and recommended fertility needs for the species of grass you are growing. Then you can take advantage of additional cultural methods to help manage weeds. Remember that there is now a \$4 charge per sample received by the NCDA&CS Soils Lab between late November and March 31...be sure to take/submit your soil samples by mid-November to avoid this fee. One sample is usually good for up to 5 acres if the entire area has the same soil types, same crop, and has had the same practices done to it

(fertilizing/liming/etc.). A single sample will consist of at least 12 cores or sub-samples combined together (composite sample). Collect the cores in a plastic bucket, mix, and fill your sample box with this composite sample. Complete the sample form and mail/ship to the NCDA&CS Soils Lab. Make the recommended corrections based on soil test results.

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Pasture Weed Management

- Steps to controlling weeds
  - ID weeds you have
  - Prevent spread of weeds
  - Cultural control
    - Manage for your pasture species, TAKE SOIL TESTS FOR THE ENTIRE PASTURE
    - Grazing Management



Grazing management in pastures can help control weeds. Rotational grazing helps to control weeds by giving desired plants the opportunity to rest and grow undisturbed before being grazed again. In rotational grazing systems, animals will often consume weeds they would avoid in continuous grazing systems.

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Pasture Weed Management

- Steps to controlling weeds
  - ID weeds you have
  - Prevent spread of weeds
  - Cultural control
    - Manage for your pasture species, TAKE SOIL TESTS FOR THE ENTIRE PASTURE
    - Grazing Management
    - Mechanical Control



Mechanical control, primarily mowing, will help control some weeds especially broadleaf weeds. Negative aspects are cost of mowing (fuel and time), it may not help with larger weeds, and it can spread weed seeds and encourage greater infestation. If there is no chemical control labeled for a particular weed or if weeds are too mature, mowing may be your only choice. Always mow at the proper height! In some cases burning, when safe and permitted, may control some weeds in forages.

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Pasture Weed Management

- Steps to controlling weeds
  - ID weeds you have
  - Prevent spread of weeds
  - Cultural control
    - Manage for your pasture species, TAKE SOIL TESTS FOR THE ENTIRE PASTURE
    - Grazing Management
    - Mechanical Control
    - Biological Control



Did someone say there was kudu in this field?

Biological control is the use of natural systems to suppress weeds. As a newer approach to weed management there is much still to be learned. This is generally a longer term approach. It includes the use of natural agents such as plants, herbivores, or insects to suppress weeds. Biological control is usually not complete and may take several years to become sufficiently effective.

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Pasture Weed Management

- Steps to controlling weeds
  - ID weeds you have
  - Prevent spread of weeds
  - Cultural control
    - Manage for your pasture species, TAKE SOIL TESTS FOR THE ENTIRE PASTURE
    - Grazing Management
    - Mechanical Control
    - Biological Control
    - Chemical Control



NC COOPERATIVE EXTENSION

Chemical control is the use of herbicides. Important decision-making considerations for chemical control are presented on the next slide.

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Pasture Weed Management

Considerations for choosing an herbicide....

- Correct identification of weed
- Type of pasture/forage
- Animal species
- Post-application restrictions
- Carryover



Herbicide Injury on Tomato  
See how in the next slide...

NC COOPERATIVE EXTENSION

There are many decisions involved with the use of herbicides, beginning with the correct ID of the weeds present, familiarity with the weed type (grass or broadleaf, annual or biennial or perennial, cool season or warm season), followed by choice of herbicide and determining the correct timing and rate of application. Consider spot-spraying weeds. **For some herbicides there are restrictions for grazing animals. There may also be haying restrictions. Always read and follow label directions and pay attention to any grazing and haying restrictions. The label is the law!**

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**Pasture Weed Management**

Carryover injury to vegetable and flower crops

- Herbicides of concern include Curtail, ForeFront, Grazon, Milestone, Redeem, & Surround
- Presence of herbicide residue in manure, compost, hay, or grass clippings applied to soil can result in injury to desirable plants
- Follow label directions listed under:
  - "Restrictions in Hay or Manure Use"
  - "Use Precautions and Restrictions"



Illustration from ForeFront HI herbicide label

Many farmers and home gardeners have reported damage to vegetable and flower crops after applying horse or livestock manure, compost, hay, or grass clippings to the soil. The damage was caused by residues from herbicide products listed in this slide and belonging to the class of herbicides known as *pyridine carboxylic acids*. These herbicides can remain active for extended periods of time even after passing through an animal's digestive tract, excreted in urine and manure, and composting! The label on each of these herbicides contains detailed instructions, including animal feeding restrictions and safe use of manure or crop residues. When used as directed, these herbicides should not cause problems on non-target plants.

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**Pasture Weed Management**

- Warm Season
  - Those weeds that are present during the warmer periods of the year...late spring and summer, into early fall.
- Cool Season
  - Those weeds that are present during the cooler periods of the year...late fall through early spring.

The proper timing of herbicide application cannot be overemphasized. The best way to control weeds post-emergence with herbicides is when the weeds have germinated, are young, and are actively growing. This time varies according to whether the weeds are cool season or warm season. As the name implies, warm-season weeds are those that grow during the summer months. The best time to control warm-season weeds with herbicides, therefore, is from April to mid-July for most species. Cool-season weeds grow best in late fall through early spring. The best time to control cool season weeds with herbicides is from October through December. Also possibly from February through April.

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Pictures and short descriptions of common weeds will be presented. For specific herbicide recommendations, consult the section on “Chemical Weed Control in Hay Crops and Pastures” in the current NC Agricultural Chemicals Manual.

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Dogfennel is a perennial weed. It can grow more than 6 feet tall. The leaves are divided into very fine segments. The stems are hairy, especially when young, but leaves are always hair-less. The stems are soft and easily broken when young, but they become very tough and woody as the plant ages. When crushed, the leaves and stems have a very distinct odor that is slightly sour and musty.

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Horsenettle is a perennial plant that grows from rhizomes and has obvious spines on the leaves. The plant can reach 3 feet tall. Leaves are covered on both surfaces with hairs. Stems are angled at the nodes, become woody with age, and have prickles and hairs. Flowers occur in clusters and are star-shaped. The fruit is a berry, green when immature, turning yellow and wrinkled with maturity. The plant is capable of poisoning livestock if eaten in sufficient quantity; however, consumption rarely occurs due to the prickly stems and leaves

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Pasture Weed Management

- Common Lambsquarter
- Annual
- Many branches



Lambsquarter is an annual weed that grows upright, 1 to 4 feet tall, with many branches. The leaves have a wavy or coarsely toothed margin with a soft gray or white mealy coating on young leaves and on the undersides of mature leaves. It is a rapid-growing weed with high water use and is very competitive in most situations

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Pasture Weed Management

- Mare's Tail or Horseweed
- Annual



Mare's tail, or horseweed, is an annual weed. It is an erect weed that can reach 6 feet. Leaves will be 3 to 4 inches long at the base and will taper off toward the top of the plant. The mature plant will flower out later in the summer and will have white or pink flowers.

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Pasture Weed Management

- Pigweed or Amaranth
- Annual
- Red stems
- Thrive in disturbed soils
- Some species have spines



Pigweed and amaranth are annual weeds. There are approximately 60 species, with foliage ranging from purple and red to gold. They have an extended period of germination, rapid growth, and high rates of seed production. They have red stems and can reach 6½ feet tall. They have a shallow taproot that is often reddish in color. These weeds are often confused with lambsquarter. Pigweed can be very toxic if eaten in large quantities because of the potential nitrate accumulation. Spiny amaranth and redroot pigweed are the two most common types that thrive in disturbed soils.

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Pasture Weed Management



- Pokeweed
- Perennial
- Usually found along fence lines



Pokeweed is a perennial weed that can grow from 1 to 10 feet tall. It has leaves with points at the end and crinkled edges. The stems are often pink or red. The flowers develop into dark purple berries. Pokeweed usually grows along fence lines

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Pasture Weed Management



- Ragweed
- Annual
- Prefers heavy soils



Ragweed is an upright annual weed with single leaflets that are deeply lobed, with hairs on the upper and lower surfaces. It has a taproot with many hairs. Ragweed emerges in the spring, often in cultivated areas, but is also found in pastures and along roadsides and ditches. It prefers heavier soils.

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Pasture Weed Management



- Showy Crotonia
- Annual
- Legume



Showy crotonia is an annual weed/legume with relatively showy yellow flowers and distinctive seed-pods. The stout, erect stem reaches 6 feet. Stems become waxy and somewhat angled with age. Leaves are covered with hairs on the lower surface. Showy crotonia can produce fruit pods that are 1 to 2 inches in length and take on the appearance of an inflated cylindrical pod. The fruit turns brown to black when mature, and the seeds within the fruit often become unattached, resulting in a “rattlebox” sound when shaken. Seeds are considered mildly toxic and can cause problems if consumed in large quantities.

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Pasture Weed Management



- Sicklepod
- Annual



Sicklepod is an annual weed with erect, nearly hairless stems, reaching 1 to 6 feet tall. The fruit is a long pod, and the seed is inside. Sicklepod has a taproot. The leaflets are also photosensitive. The leaflets fold upward by flexible petioles at night or on cloudy days. Sicklepod plants and seeds are potentially toxic.

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Pasture Weed Management



- Ironweed
- Annual



Sida species, also known as ironweed, are erect annual weeds commonly found late in the season. The two main species are prickly sida and arrowleaf sida. Sida species stems grow 8 to 20 inches long. Both species seedlings have two heart-shaped cotyledons and small spines that occur at the base of each leaf petiole.

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Pasture Weed Management



- Common Mullein
- Biennial



Woolly mullein is a biennial weed. The first year, it produces a rosette; the next year, it produces a stalk with yellow flowers. It is a hairy plant that can grow to 6 feet or more. It prefers well-lit, disturbed soils, where it can appear soon after the ground receives light, germinating from long-lived seeds that persist in the soil seed bank. It is intolerant of shade from other plants and unable to survive tilling. Although individual plants are easy to remove by hand, populations are difficult to eliminate permanently.

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Pasture Weed Management

- Bahiagrass
- Perennial grass
- Rhizomatous



Bahiagrass is a commonly found perennial grass that spreads by rhizomes and is easily recognized by its characteristic Y-shaped black seed-head. This fast-growing invasive grass forms a dense, low-growing sod, with small, narrow leaves. Bahiagrass can be used as a forage grass

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Pasture Weed Management

- Barnyardgrass
- Annual
- Leaves 4-20 inches long



Barnyardgrass is an annual with thick stems that may reach 5 feet tall. Leaves range from 4 to 20 inches in length. Leaves have a distinct white midvein that becomes keeled toward the basal portions of the leaf.

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Pasture Weed Management

- Broomsedge
- Perennial
- Found in low pH and nutrient poor soils



Broomsedge is also called Virginia bluestem or broomstraw. Broomsedge is a perennial grass that forms clumps. It often goes unnoticed until it matures into a reddish-brown clump of broomlike stems. The plant sends up slender stems that can reach 3 feet tall in late summer. It grows on nutrient-poor soils and is especially tolerant of low pH. Broomsedge's ability to produce allelopathic chemicals suppresses the germination and growth of competitive species. In effect, it makes its own natural weed-killers.

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Broadleaf signalgrass is a spreading annual often found growing along the ground with tips ascending. The plant may reach 3 feet in height. The leaf sheaths and blades are often maroon-tinged. The plant is most identifiable by the short, wide leaves, rooting nodes, flattened spikelets, and lack of hairs on the leaf blades

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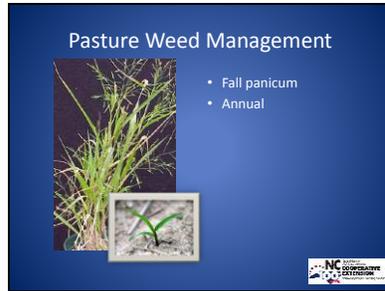
Crabgrass is an annual grass with seedlings that sprout quickly, forming a clump with extensive roots. Large crabgrass seedlings are pale green and covered with coarse hairs. Once established, it is difficult to weed out because it roots at the nodes.

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Dallisgrass is a perennial grass often mistaken for crabgrass. It can be readily identified by its seedhead, which has hairy spikelets in four rows on three to eight alternate branches. Rank seedheads in late summer can be infected with an ergot-like fungus, turning them gray to black and sappy. Cattle eating a significant amount of the infected seed-heads can develop an illness called dallisgrass staggers, which is serious but not usually fatal. Dallisgrass can be used as a forage grass

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Fall panicum is an annual grass that may reach 7 feet tall. A primary identifying characteristic is the “zigzagged” growth pattern it takes on due to bending at the nodes. Nodes along the stem are usually swollen and bent in different directions, which contributes to the rather unusual growth habit of this weed. It has a fibrous root system with stems that are capable of rooting at the nodes. The seedhead is a wide, spreading panicle that develops a purplish tint when mature.

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Foxtail is a name for three different species of annuals. All are very similar grasses and can mainly be differentiated when mature. Foxtail is a clump-forming grass with a seed-head that resembles a fox’s tail. Giant foxtail has characteristic foxtail-like seed heads that droop when mature and leaves with many hairs on the upper leaf surface. Giant foxtail is generally larger and has a nodding seed head, unlike the other foxtails. Yellow foxtail has a characteristic foxtail-like seed head that appears yellow when mature; its leaves have long, silky hairs at the base only. Green foxtail has a characteristic foxtail-like seed head and leaves with no hairs

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Goosegrass is an annual grass that has a prostrate growth habit and is often white in the center with a wagon-wheel-like appearance. It grows well in compacted soils. Plants often appear compressed to the soil as if they have been repeatedly stepped on. The distinctive white center of goosegrass distinguishes it from most other grass weeds

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Pasture Weed Management

- Johnsongrass
- Perennial
- Spreads by rhizomes and seeds



Johnsongrass is an aggressive perennial grass that spreads by rhizomes and seeds. It is a coarse grass with stout rhizomes. It grows in dense clumps and can reach 8 feet tall. The leaves are smooth, 6 to 20 inches long, and have a prominent white midvein. The roots are fibrous. Rhizomes are found close to the soil surface and have purple spots and scales at the nodes. Johnsongrass can be poisonous to livestock after it becomes wilted from frost or new growth following a drought or cutting. During hot, dry weather, johnsongrass can contain enough prussic acid to kill livestock if eaten in any quantity. It can cause death from nitrate poisoning

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Pasture Weed Management

- Nutsedge
- Perennial
- Triangular stems
- Purple and yellow species



Nutsedge (yellow and purple) is sometimes incorrectly called nut grass, but it is a sedge. Sedges can be distinguished from grasses by the stem. Sedges always have a three-sided or triangular stem. Purple nutsedge is a native of India and is more commonly a problem in warm-season grasses. Both species are perennials that produce tubers on underground rhizomes. The two species can be distinguished by the color of the seed heads and location of the tubers on the rhizomes. Yellow nutsedge has a yellowish-tan seed head, whereas purple nutsedge has a red-purple seed head. In yellow nutsedge, the tubers only grow on the ends of rhizomes, while purple nutsedge will grow tubers in a chain connected by rhizomes. Yellow nutsedge has tubers of a chestnut (tan) color, and purple nutsedge has hairy tubers of a charcoal (black) color. Purple nutsedge is generally more difficult to control, so positive identification is important

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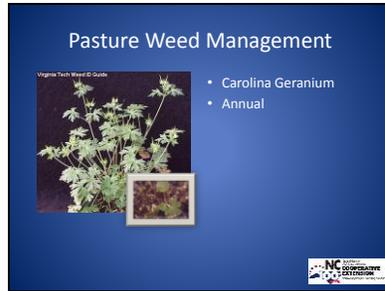
Curly dock is a perennial weed. Curly dock has a deep taproot, a basal rosette of wavy-margined leaves, and an unbranched stem that may reach 5 feet tall. Lower rosette leaves are dark green with wavy margins. The leaves become reddish-purple with age. As the plant matures, effective control becomes more difficult as the taproot develops

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Carolina false, common, and cat's ear are three species of dandelion. Carolina false dandelion is a winter annual or biennial weed, whereas common and cat's ear dandelions are perennials. The hairy leaves of Carolina false dandelion are deeply lobed and form a basal rosette with a taproot. The flower stalk can have many branches that end with flowers, unlike common and cat's ear dandelion. Cat's ear dandelion leaves are densely hairy, and the lobes of the leaves are more rounded than other dandelions. Young leaves of common dandelion are hairless.

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Carolina geranium is an annual weed that initially forms a basal rosette, with subsequent stem elongation and branching as the plant matures. The stems are erect, freely branching near the base to grow 28 inches tall. The stems are usually pink to red and densely hairy. It has divided leaves and distinctive “crane’s bill” fruit.

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Henbit is an annual with square stems and pink-purple flowers, reaching 16 inches tall. The leaves are circular to heart-shaped, with hairs on the upper leaf surfaces and along the veins of the lower surface. The lower leaves occur on petioles, while the upper leaves are without petioles (sessile)

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Plantains: blackseed, broadleaf, and Buckhorn are perennial weeds that reproduce by seeds and roots. They form a spreading or upright basal rosette of narrowly oval leaves that grow above a long, sturdy taproot. The leaves of buck-horn plantain are longer and narrower than those of the other plantain species; they are also dark green, are some-times twisted and curled, and grow up to 1½ inches wide and 8 inches long.

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Red sorrel is a perennial weed. It reproduces by triangular seeds and extensive, shallow, horizontal roots. It has arrow-shaped leaves; a slender, wiry stem with sheathed nodes; and a red to rust-brown color. Seedlings resemble a rosette, made up of many leaves whose shape changes with age from egg- to spade- to arrow-shaped. Flowering stems are slender and erect, reaching heights from 6 to 18 inches. A sheath surrounds the stem like a collar until it turns brown and shatters with age.

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Virginia pepperweed is an annual weed that develops as a basal rosette initially, eventually producing flowering stems that have a bottle-brush appearance. Rosette leaves are lobed along both sides of the leaf. Rosette leaves do not usually persist once flowering stems are produced. The fruits are flattened and have a winged structure around the exterior

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Wild garlic and wild onion are perennial weeds that grow from bulbs. Wild garlic tends to persist later in the growing season than wild onion. Wild garlic sets a flowering stem that can have leaves growing off of it up to half its height, with a vegetative bud (bulbil) in the inflorescence instead of flowers. Wild onion leaves grow from the base of the bulb. Wild garlic is often confused with wild onion, but the two may be easily distinguished after a closer examination of the leaf cross-section. The leaves of wild garlic are hollow and round, while those of wild onion are flatter and more solid

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Wild mustard is an annual weed with characteristic yellow mustard flowers. It has a taproot in combination with a fibrous root system. The lower leaves occur as a rosette, are petiolated, and are unevenly lobed with toothed margins. Upper leaves become progressively smaller up the stem, are not lobed, and either clasp the stem or have short petioles.

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Annual bluegrass (or *Poa annua*) is a clump-forming annual grass that tolerates close mowing; otherwise, it may reach 11 inches in height. It is primarily a weed of lawns and turfgrass, but it does grow in pastures. Leaves have a distinctive boat-shaped tip.

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Hairy vetch is an annual or perennial herb in the pea family. It has a climbing stem that can reach 6½ feet. The whole plant has a white-woolly appearance because of its long, soft hairs. Hairy vetch grows best in dry, sandy soils.

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## Pasture Weed Management

This presentation was based on the following NC Cooperative Extension Publication:  
**Weed Identification in Pastures, Hayfields, and Sprayfields.** 2013.  
Spearman, Shooter, Conrad-Acuna, Wells, and Wood (AG-764W)

Weed images are from:

- Virginia Tech Weed Identification Guide  
<http://oak.pwvs.vt.edu/weedindex.htm>
- North Carolina State University Turffiles  
<http://www.turffiles.ncsu.edu/Default.aspx>
- Weed Control Strategies for Piedmont Pastures. PowerPoint presentation by Sam Groce, Chatham County Extension Service.

