

Top Ten Reported Problem Weeds on Carolina Organic Produce Farms

Information from: The Virginia Tech Weed Identification Guide

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1. Amaranth/Pigweed
Palmer, Redroot, Spiny
2. Bermudagrass
3. Johnsongrass
4. Nutsedge
Purple, Yellow
5. Chickweed
6. Crabgrass
Large, Smooth
7. Thistle
Bull, Canada, Musk, Star, Tall
8. Nettle
Horse, Stinging
9. Lambs Quarter
10. Sicklepod



Palmer Amaranth: *Amaranthus palmeri*

Weed Description: An erect summer annual that may reach 6 1/2 feet in height. Palmer amaranth closely resembles many other pigweed species, and is found throughout the southern United States from southern California to Virginia.

Seedling: Stems below the cotyledons (hypocotyls) are without hairs (glabrous) but may sometimes be slightly hairy, and are often red in color. Cotyledons are narrow (10-12 mm long) and green to reddish in color on the upper surface. Lower surfaces of cotyledons have a reddish tint. First true leaves are alternate, ovate in shape, and are slightly notched at the tip of the leaf blade (apex).

Leaves: Alternate, without hairs (glabrous), and lance-shaped or egg-shaped in outline. Leaves are 2 to 8 inches long and 1/2 to 2 1/2 inches wide with prominent white veins on the undersurface. Leaves occur on relatively long petioles.

Roots: Taproot that is often, but not always, reddish in color.

Fruit: A single seeded utricle that reaches 2 mm in length and are wrinkled when dry. Each utricle splits open in the middle to expose a single glossy black to dark brown seed that is 1 to 1.2 mm long.

Stems: One central stem occurs from which several lateral branches arise.

Flowers: Small, green, inconspicuous flowers are produced in dense, compact, terminal panicles that are from 1/2 to 1 1/2 feet in length. Smaller lateral inflorescences also occur between the stem and the leaf petioles (leaf axils). Male and female flowers occur on separate plants. Each terminal panicle contains many densely packed branched spikes that have bracts that are 3 to 6 mm long.

Identifying Characteristics: Dense, compact terminal panicles and relatively tall plants with alternately arranged leaves with petioles that are longer than the leaves. Palmer amaranth is often confused with other similar pigweed species. However, no other pigweed species have terminal panicles that reach 1 1/2 feet in length. Additionally, the terminal spike of palmer amaranth is much smoother and narrower and less spike-like than either Redroot Pigweed (*Amaranthus retroflexus*) or smooth pigweed (*Amaranthus hybridus*). The leaves of palmer amaranth are also without hairs and have prominent white veins on the undersurface unlike those of redroot pigweed. These species may also resemble Common Lambsquarters (*Chenopodium album*) in the cotyledon stage, however common lambsquarter's cotyledons often have a mealy gray cast and the first true leaves are alternate, unlike any of the pigweed species.



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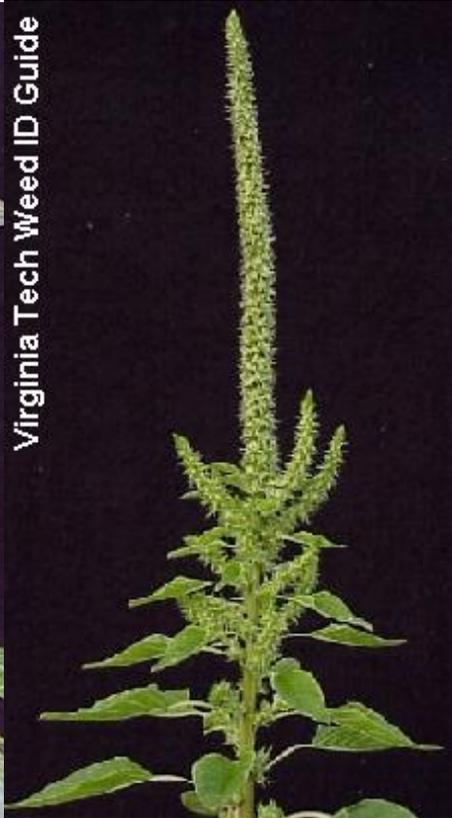
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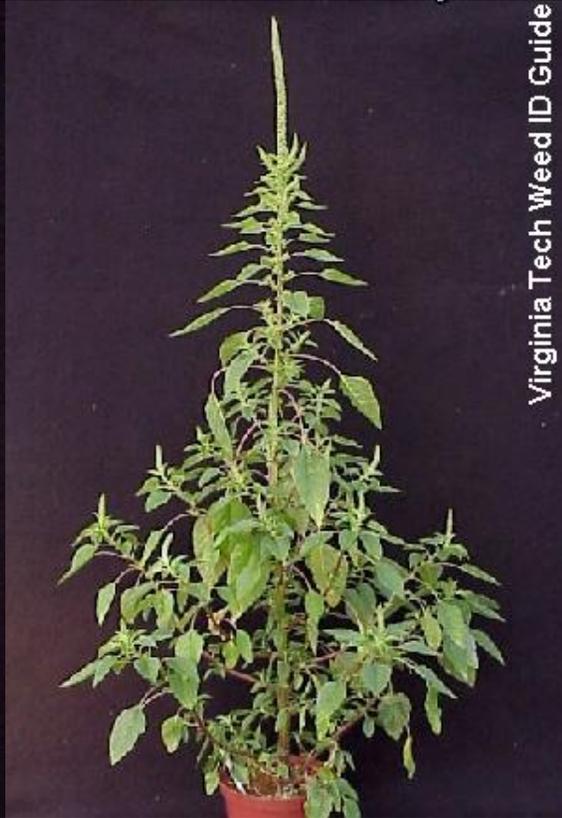
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Redroot Pigweed: *Amaranthus retroflexus*

Weed Description: An erect summer annual that may reach 6 1/2 feet in height. Redroot pigweed is an abundant seed producer that may be found throughout the United States in horticultural, nursery, and agronomic crops, landscapes, roadsides, and also in pastures and forages.

Seedling: Stems below the cotyledons (hypocotyls) are without hairs (glabrous) but may sometimes be slightly hairy, and are often red in color, especially near the base. Cotyledons are narrow (10-12 mm long) and green to reddish in color on the upper surface. Lower surfaces of cotyledons have a reddish tint. First true leaves are alternate, ovate in shape, and are slightly notched at the tip of the leaf blade (apex). Hairs may occur on the leaf margins and along veins, especially along the lower leaf surfaces.

Leaves: Alternate, ovate in outline, with petioles that reach 1/2 inch in length. Leaves have wavy margins and hairs that occur along the veins of the lower leaf surfaces.

Stems: Stout, erect, branched, and reaching 6 1/2 feet in height. Stems usually have short hairs, especially near the upper portions of the plant.

Roots: A shallow taproot that is often, but not always, reddish in color.

Fruit: A single seeded utricle that reach 2 mm in length and are wrinkled when dry. Each utricle splits open in the middle to expose a single glossy black to dark brown seed that is 1 to 1.2 mm long and ovate in outline.

Flowers: Small, green, inconspicuous flowers are produced in dense, compact, terminal panicles that are approximately 3/4 inch wide and from 2 to 8 inches in length. Smaller inflorescences also occur between the stem and the leaf petioles (leaf axils). Male and female flowers occur on the same plant (monoecious). Each terminal panicle contains many densely packed branched spikes that have bracts that are 4 to 8 mm long and 2-3 times longer than the sepals.

Identifying Characteristics: Dense, compact terminal panicles and relatively tall plants with alternately arranged leaves. Redroot pigweed is often confused with other similar pigweed species. For example, smooth pigweed is very similar, however this species has terminal panicles that appear less dense, compact, and bristly than those of redroot pigweed. Additionally, the bracts of smooth pigweed are only slightly longer than the sepals, unlike those of redroot pigweed. Palmer Amaranth (*Amaranthus palmeri*) also resembles redroot and smooth pigweed, however the terminal panicles of this species are much longer and narrower than the other pigweed species. These species may also resemble Common Lambsquarters (*Chenopodium album*) in the cotyledon stage, however common lambsquarter's cotyledons often have a mealy gray cast, and the first true leaves are alternate, unlike any of the pigweed species.

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Spiny Amaranth or Spiny Pigweed:

Amaranthus spinosus

Weed Description: A summer annual that is very similar in appearance to other pigweeds but has spines along the stems. Spiny amaranth is primarily a weed of pastures and hay fields, and occurs less often in agronomic crops and turfgrass. Spiny amaranth is found throughout the eastern half of the United States.

Seedling: Stems below the cotyledons (hypocotyls) are usually reddish in color but sometimes green, without hairs. Cotyledons are without hairs, long and narrow.

Leaves: Alternately arranged along the stem, ovate in outline. Leaves are approximately 1 1/4 to 2 1/2 inches long, without hairs, and occur on long petioles.

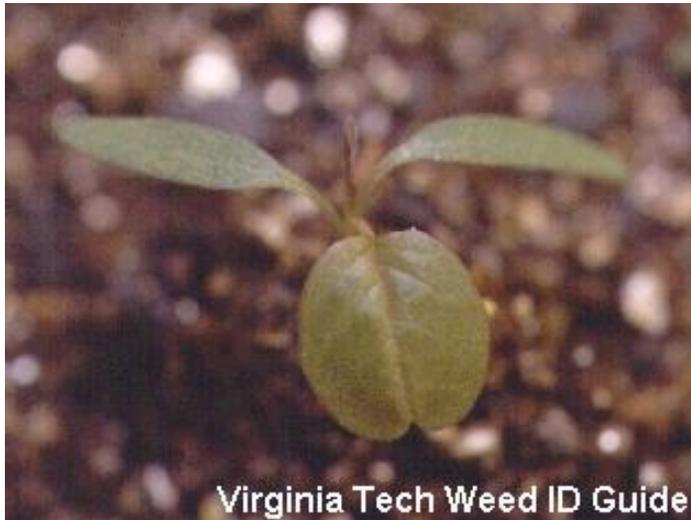
Stems: Erect, branching, without hairs, reaching 5 1/2 feet in height. A pair of spines that are from 5 to 10 mm long occurs at the base of most of the leaf petioles.

Flowers: Seedheads occur at the ends of stems and also in small clusters in the area where the leaf petioles meet the stem (leaf axils).

Fruit: An utricle that is 1 1/2 to 2 mm long.

Identifying Characteristics: Plants that resemble most other pigweed species but with pairs of spines at the base of the leaf petiole and the central stem. The spines of spiny amaranth help to distinguish it from all other closely related pigweed species, like Redroot Pigweed (*Amaranthus retroflexus*), Palmer Amaranth (*Amaranthus palmeri*), and smooth pigweed. This weed may also be confused with Spiny Cocklebur (*Xanthium spinosum*) however the spines of this weed are 3-parted unlike those of spiny amaranth.





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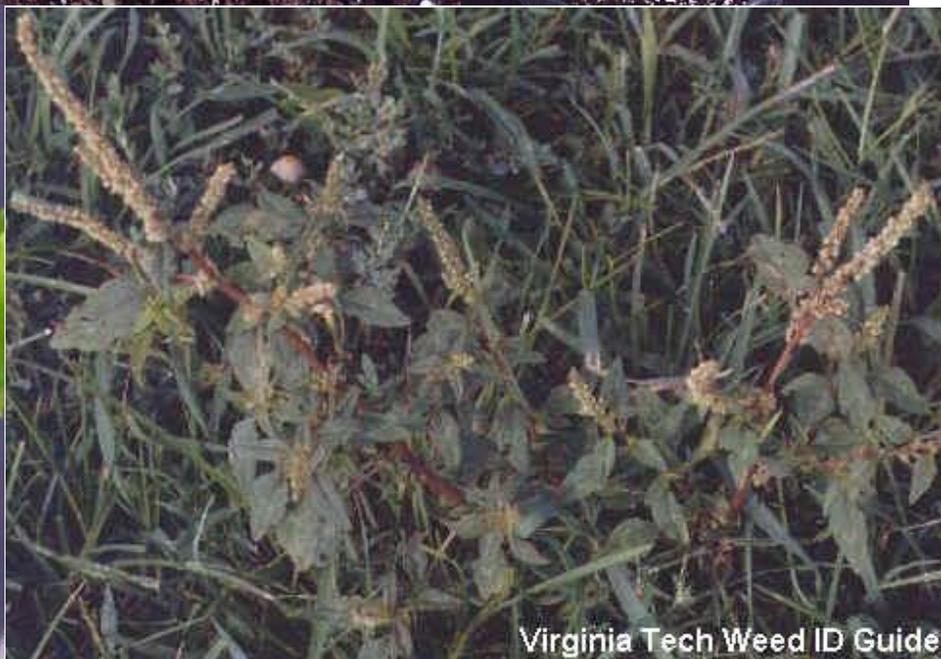
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Bermudagrass or Wire Grass: *Cynodon dactylon*

Weed Description: A perennial grass that has both rhizomes and stolons and is capable of forming a turf or mat of fine leaves. Several varieties of bermudagrass are cultivated for use as lawn and pasture grasses, however this weed has developed into a very troublesome and hard-to-control weed in agronomic crops, landscapes, nurseries, and turfgrass.

Bermudagrass is found throughout the southern United States, as far north as southern New Jersey.

Seedling: Leaves are rolled in the bud, leaf blades are smooth on both surfaces, and the ligule is a row of hairs approximately 1/2 mm long.

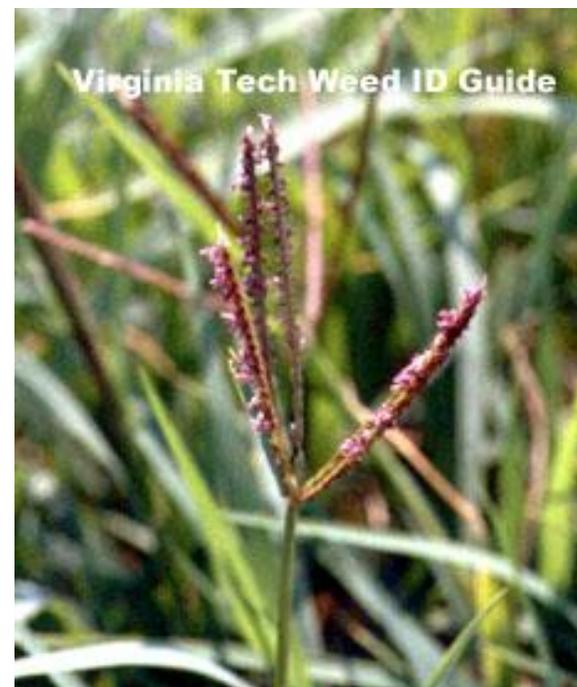
Leaves: Leaves are rolled in the bud, without auricles, and have a ligule that is a fringe of hairs approximately 1/2 mm long. Hairs occur at least on the leaf margins in the collar region (the region where the leaf blades join to the sheath). Leaf blades are approximately 2 to 7 inches long by 2 to 5 mm wide and smooth to only sparsely hairy above but usually only with a few hairs near the leaf base. Leaves emerge from opposite sides of the stem and have margins that are slightly rough.

Stems: Leaf sheaths are usually distinctly flattened with relatively long hairs (1 to 3 mm) near the collar only.

Roots: Rhizomes and stolons both occur on the same plant. Rhizomes are scaly and often form an almost impenetrable mat. Stolons are flat, smooth, usually bent and root at the nodes.

Flowers: Inflorescence consists of 3 to 7 fingerlike spikes that originate from a single point. Individual spikes are approximately 1 to 3 inches long and flattened. Spikelets are arranged in 2 rows on each spike and each of these spikelets produces a single lance-shaped seed (1 1/2 mm long).

Identifying Characteristics: A persistent grass weed with both scaly rhizomes and stolons that root at the nodes. Additionally, the tuft of hairs in the collar region helps to distinguish this weed from most other grasses. Nimblewill (*Muhlenbergia schreberi*) is similar in appearance and growth habit, however nimblewill plants are generally smaller than those of bermudagrass and have a membranous ligule unlike the ligule that is a fringe of hairs on bermudagrass.





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Johnsongrass: *Sorghum halepense*

Weed Description: A perennial from rhizomes that may reach 6 1/2 feet in height. Johnsongrass is capable of rapidly colonizing a variety of different environments due to the large amounts of seed and rhizomes produced by this plant. Originally introduced as a forage crop, this weed is now one of the most common and troublesome weeds of most agronomic and horticultural crops, as well as roadsides, pastures, and hay fields. Found in the United States from Massachusetts to Iowa, south to Florida and Texas, and also in southern California.

Seedling: Leaves are rolled in the shoot, auricles are absent, and the ligule is membranous and may be toothed at the top. Leaf blades are without hairs (glabrous) on both surfaces and develop a prominent white midvein with maturity.

Leaves: Rolled in the shoot, without auricles, 6 to 20 inches long by 10 to 30 mm wide, with a prominent white midvein. Leaf blades are usually without hairs (glabrous) on both surfaces, however some hairs may be present at the base of the leaf blade. The ligules are 3 to 4 mm long, membranous, and often toothed at the top. With maturity, some ligules may develop a fringe of hairs in the upper portion of the ligule, and remain membranous towards the base.

Stems: Round to somewhat flattened, usually without hairs but sometimes hairs may be present along the margins. Sheaths may be green to maroon, especially near the base of the plant.

Roots: A fibrous root system and thick rhizomes.

Flowers: Seedhead a large, open panicle, often with a purplish tint. Seed are oval, 3 to 5 mm in length, and dark red to black at maturity.

Identifying Characteristics: Johnsongrass is often mistaken with Barnyardgrass (*Echinochloa crus-galli*) and/or Fall Panicum (*Panicum dichotomiflorum*) prior to seedhead formation. However, johnsongrass has a membranous ligule unlike that of fall panicum or barnyardgrass and johnsongrass seedlings do not have hairs on the lower leaf surface like those of fall panicum. Johnsongrass seedlings and mature plants also resemble shattercane (*Sorghum bicolor*), but shattercane does not have rhizomes like johnsongrass.





Shattercane Johnsongrass



Purple Nutsedge: *Cyperus rotundus*

Weed Description: A perennial from rhizomes and tubers that may reach 2 1/2 feet in height. The stems are 3-sided and triangular in cross section and the leaves are yellow to green in color with a distinct ridge. Found throughout the southeastern United States as a common weed of agronomic and horticultural crops, nurseries, turfgrass, and landscapes.

Seedling: Seedlings rarely occur. Most plants from rhizomes and/or tubers. Leaves do not have ligules or auricles and have a distinct ridge along the midvein, but are nevertheless often mistaken for grasses.

Stems: Erect, unbranched, and 3-sided and triangular in cross section. Stems are usually solitary and produce terminal spikelets.

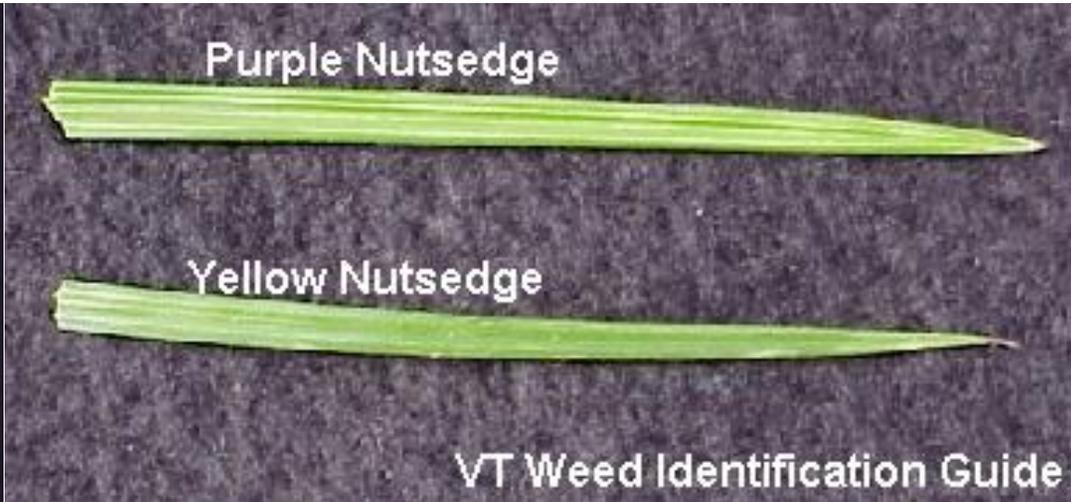
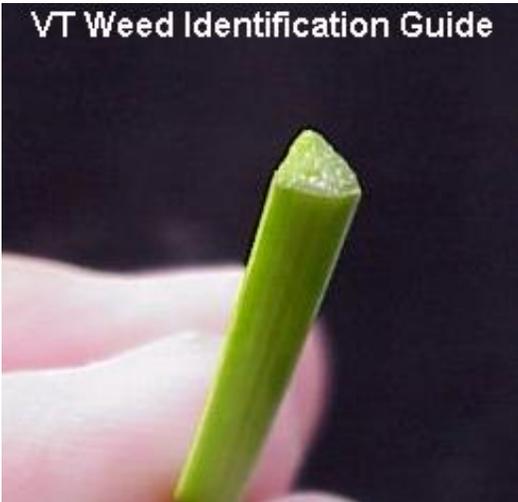
Leaves: Dark green in color and have a distinctly shiny appearance. Leaves are 5 to 8 mm wide and have a distinct ridge along the midvein. Leaves are produced in groups of 3 from the base of the plant. Leaves are without hairs (glaucus) and no auricles or ligules are present. The leaves of purple nutsedge taper abruptly to a sharp point, unlike the gradual taper of yellow nutsedge leaves.

Roots: Rhizomes and tubers occur on the same plants. Tubers are oblong, ridged, initially white in color, eventually turning brown or black, and are bitter to the taste. Purple nutsedge produces chains of tubers that develop along the entire rhizome.

Flowers: Spikelets occur at the ends of the solitary stems in a cluster where the flower stalks arise from a common point (umbel-like). Individual spikelets are reddish-purple to reddish-brown in color.

Identifying Characteristics: Yellow Nutsedge (*Cyperus esculentus*) is very similar in appearance and growth habit to purple nutsedge, and the two are often confused. However, the leaves of yellow nutsedge taper to a point gradually whereas those of purple nutsedge taper to a point abruptly. Additionally, the seedhead of yellow nutsedge is yellow in color, while that of purple nutsedge is purple. Lastly, the tubers of purple nutsedge are often connected in chains and bitter to the taste, while those of yellow nutsedge are solitary and sweet to the taste. Rice flatsedge (*Cyperus iria*) and Green Kyllinga (*Kyllinga brevifolia*) are also similar when young, however rice flatsedge has a fibrous root system and green kyllinga has rhizomes that are usually red to purple in color.





Yellow Nutsedge: *Cyperus esculentus*

Weed Description: A perennial from rhizomes and tubers that may reach 2 1/2 feet in height. The stems are 3-sided and triangular in cross section and the leaves are yellow to green in color with a distinct ridge. Found throughout North America as a common weed in agronomic and horticultural crops, nurseries, turfgrass, and landscapes.

Seedling: Seedlings rarely occur. Most plants arise from rhizomes and/or tubers. Leaves do not have ligules or auricles and have a distinct ridge along the midvein, but are nevertheless often mistaken for grasses.

Leaves: Yellow to green in color and have a distinctly shiny appearance. Leaves are 5 to 8 mm wide and have a distinct ridge along the midvein. Leaves are produced in groups of 3 from the base of the plant. Leaves are without hairs (glabrous) and no auricles or ligules are present. The leaves of yellow nutsedge taper gradually to a sharp point.

Stems: Erect, unbranched, and 3-sided and triangular in cross section. Stems are usually solitary and produce terminal spikelets.

Roots: Rhizomes and tubers occur on the same plants. Tubers are round, ridged, initially white in color, eventually turning brown or black, and are sweet to the taste. Yellow nutsedge produces solitary tubers that arise either from the basal bulb or from a rhizome. Several tubers do not arise along the entire rhizome, as in purple nutsedge.

Flowers: Spikelets occur at the ends of the solitary stems in a cluster where the flower stalks arise from a common point (umbel-like). Individual spikelets are yellow to brown in color.

Identifying Characteristics: Purple Nutsedge (*Cyperus rotundus*) is very similar in appearance and growth habit to yellow nutsedge, and the two are often confused. However, the leaves of purple nutsedge taper to a point abruptly whereas those of yellow nutsedge gradually taper to a point. Additionally, the seedhead of purple nutsedge is purple in color, while that of yellow nutsedge is yellow. Lastly, the tubers of purple nutsedge are often connected in chains and bitter to the taste, while those of yellow nutsedge are solitary and sweet to the taste. Rice flatsedge (*Cyperus iria*) and Green Kyllinga (*Kyllinga brevifolia*) are also similar when young, however rice flatsedge has a fibrous root system and green kyllinga has rhizomes that are usually red to purple in color.





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Common Chickweed: *Stellaria media*

Weed Description: Prostrate, winter annual that is found throughout North America except for in the far west. Common chickweed is primarily a weed of turfgrass, lawns and winter small grains.

Seedling: Cotyledons are ovate, 1-12 mm long by 0.25-2 mm wide, with a slender reddish hypocotyl that is sparsely hairy.

Leaves: Arranged oppositely, oval or elliptic in outline. Leaves range from 1/2 to 1 1/4 inches in length, are light green in color and smooth or possibly hairy toward base and on the petioles. Upper leaves are without petioles (sessile), while lower leaves are long petiolated.

Roots: A shallow, fibrous root system.

Stems: Usually running prostrate along the ground, rooting at the nodes, with the upper portion erect or ascending and freely branching. Stems are light green in color and with hairs in vertical rows.

Fruit: An oval, one-celled capsule, whitish in color, containing numerous seeds.

Flowers: Alone or in small clusters at the ends of stems. Flowers are small (3-6 mm wide) and consist of 5 white petals that are deeply lobed, giving the appearance of 10 petals.

Identifying Characteristics: The oppositely arranged small oval or elliptic leaves and stems with rows of hairs are both characteristics that help in the identification of common chickweed. Mouseear Chickweed (*Cerastium vulgatum*) is very similar in appearance and growth habit, however this species is densely covered with hairs unlike common chickweed.





Large Crabgrass: *Digitaria sanguinalis*

Weed Description: Summer annual, having a prostrate or ascending growth habit with stems that root at the nodes. Major distribution in North America from Canada south to Virginia, Kentucky, and Texas, west to California. Usually not found in the lower south.

Stems: Prostrate, spreading, branched, and rooting at the nodes.

Seedling: Sheaths and blades usually densely hairy, with a jagged membranous ligule. Hairs on the blade and sheath are at a 90 degree angle to the plant surface. Seedlings are upright, leaves are rolled in the bud, and the first leaf blade is lanceolate to linear.

Roots: Fibrous root system.

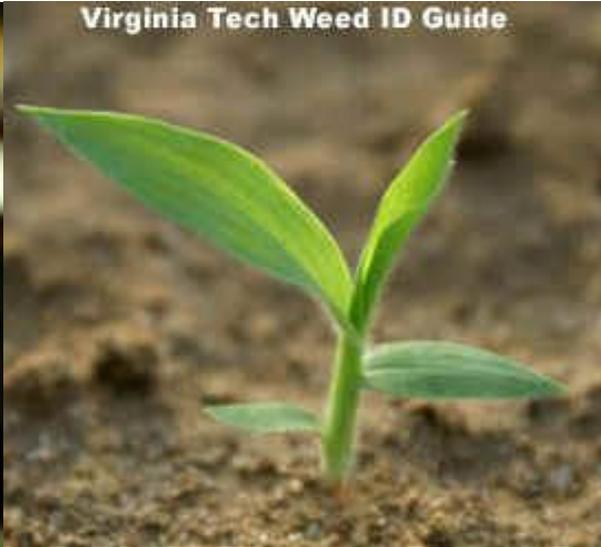
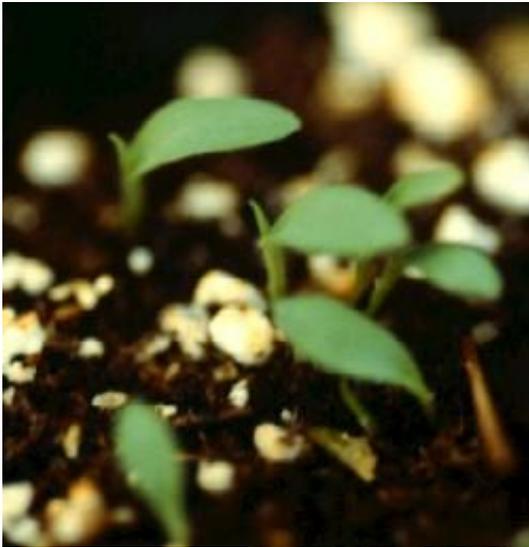
Leaves: Blades 1 1/4 to 8 inches long, 3-10 mm wide, with hairs on both surfaces. Sheaths hairy and closed. Ligules are 1-2 mm long, membranous and appearing as if cut off straight across the end, with uneven teeth or margin. Leaves and sheaths may turn dark red or maroon with age.

Flowers: Seed head composed of 4-6 branches (spikes) at the top of stems, each approximately 1 1/2 to 7 inches long. Spikelets are elliptic and in two rows along the spike.

Seed: Shiny, yellowish-brown, 2-3 mm long.

Identifying Characteristics: Densely hairy leaf and sheath and relatively large membranous ligule. Similar in appearance to Smooth Crabgrass (*Digitaria ischaemum*), but smooth crabgrass does not have hairs on leaves and sheaths, only a few hairs may be found in the collar region. Additionally, large crabgrass roots at the stem nodes while smooth crabgrass does not.

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Smooth Crabgrass: *Digitaria ischaemum*

Weed Description: Summer annual, having a prostrate or ascending growth habit, with leaves and sheaths that do not have hairs and stems that do not root at the nodes. Found throughout the United States.

Seedling: Sheaths and blades not hairy, few hairs at mouth only, with a jagged membranous ligule. Seedlings are upright, leaves are rolled in the bud, and the first leaf blade is lanceolate to linear.

Stems: Prostrate or lying on the ground with tips ascending (decumbent) up to 60 cm long, branching at lower nodes but not rooting.

Flowers: Seedhead composed of 2-6 branches (spikes) at the top of stems, each 10 cm long. Spikelets 1.8-2.1 mm long, 0.8-0.9 mm wide, in two rows along the spike, with short mushroom-like hairs.

Leaves: Blades 5-14 cm long, 2-7 mm wide, without hairs. Sheaths are without hairs and closed, with hairs in the collar region only. Ligules are 1-2 mm long, membranous with even margins. Leaves and sheaths may turn dark red or maroon with age.

Roots: Fibrous root system.

Identifying Characteristics: Sheath and leaves without hairs, mushroom-like hairs on spikelet. May be distinguished from Large Crabgrass (*Digitaria sanguinalis*) by the absence of hairs on the leaves and sheath, and only a few hairs found in the collar region. Additionally, smooth crabgrass does not root at the nodes like large crabgrass.



Bull Thistle: *Cirsium vulgare*

Weed Description: An erect biennial with spines on the leaves and stems. Found throughout the United States, primarily a weed of pastures.

Seedling: Cotyledons egg-shaped, young leaves develop as a rosette. Leaves are oblong with small spines along the margins. Second true leaf and subsequent young leaves contain many hairs on the upper surface.

Flowers: Clustered or solitary at the ends of branches. Flowers are 1.5-2 inches wide, rose to reddish-purple, and surrounded by spiny-tipped bracts.

Fruit: An achene (3-4 mm long).

Leaves: Arranged alternately on the flowering stem, lanceolate with deeply cut margins and stiff spines on the lobes. Leaves are coarsely hairy on the upper side and contain softer whitish hairs below. Leaf bases continue down the flowering stem.

Stems: 2 to 5 feet tall, branching, hairy, green or brown with age, and with the leaf margins extending down the stem (spiny "wings").

Roots: Taproot.

Identifying Characteristics: Spiny-winged stems and leaves with rough hairs on the upper surface and softer whitish hairs below. This weed is often confused with Musk Thistle (*Carduus nutans*), but the leaves of mature musk thistle plants usually lack hairs. Additionally, Canada Thistle (*Cirsium arvense*) is a perennial from rhizomes, and young plants do not develop as a rosette, unlike bull thistle.





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Canada Thistle: *Cirsium arvense*

Weed Description: Perennial by rhizomes, 2 to 6 feet in height. Often a persistent spreading weed of many pastures.

Seedling: Cotyledons are club shaped, dull green in color and relatively thick. Young leaves covered with short hairs. Leaf margins are wavy with spines. Shoots that emerge from rhizomes lack cotyledons.

Roots: An extensive rhizome system that can extend up to 3 1/2 feet into the soil in a creeping horizontal growth pattern.

Stems: Grooved, branching at top, glabrous early but becoming pubescent with maturity.

Leaves: Alternate, sessile, simple, oblong to lanceolate. Leaves are irregularly lobed, developing into triangular indentations with age, with spiny margins. Upper surface of mature leaves is dark green and hairless, while the lower surface is light green in color and may be with or without hairs.

Flowers: Heads are numerous, 3/4 to 1 1/4 inches in diameter, and are composed of pink, purple, or rarely white disk flowers surrounded by spineless bracts. Flowers are present from June through August.

Fruit: A flattened, brownish achene 2 1/2 to 4 mm long which encloses the seed.

Identifying Characteristics: Plants in patches due to horizontal rhizome growth. Young leaves are covered with short hairs (illustrated above). The flowers of Canada thistle do not have spines or prickles unlike bull or musk thistle. Stems are also spineless unlike Bull Thistle (*Cirsium vulgare*) or Musk Thistle (*Carduus nutans*).





Musk Thistle or Nodding Thistle: *Carduus nutans*

Weed Description: An erect biennial with spiny leaves and stems that may reach 6 feet in height. Primarily a weed of pastures, hayfields, roadsides, and noncrop areas that can be found throughout the United States.

Seedling: Cotyledons are rectangular to oblong in outline, approximately 7 to 15 mm long and 2 to 6 mm wide. Cotyledons occur with little to no petioles (sessile) and have distinctive white veins on their upper surface. Young leaves are essentially without hairs and immediately take on a rosette growth habit. **Stems:** Erect, branched, with spines extending down the stem from the leaf bases.

Roots: Large, thick taproot that is hollow near the soil surface.

Leaves: During the first year of growth a basal rosette of leaves form with the first 2 true leaves being opposite and all subsequent leaves alternate. During the second year of growth, the rosettes elongate and flowering stems are produced. All leaves that occur on the flowering stems are also alternate. All leaves are dark green in color with light green to white midribs and veins. Leaves are lanceolate in outline, deeply lobed and approximately 10 inches long by 4 inches wide. Three to five spines occur along the margins of each lobe, and these white or yellow spines are approximately 2 to 5 mm long. The leaf bases extend down to the stem, and the leaves become progressively smaller up the stem.

Fruit: An achene that is tan to brown in color and approximately 4 mm long. Achenes are oblong in outline and have a white pappus that resembles white hairs.

Flowers: Solitary flower heads are produced at the end of branches. Individual flowers are 1 to 2 inches wide and are pink to violet or purple in color. Spiny bracts occur below the flower heads and these are often tinted purple in color.

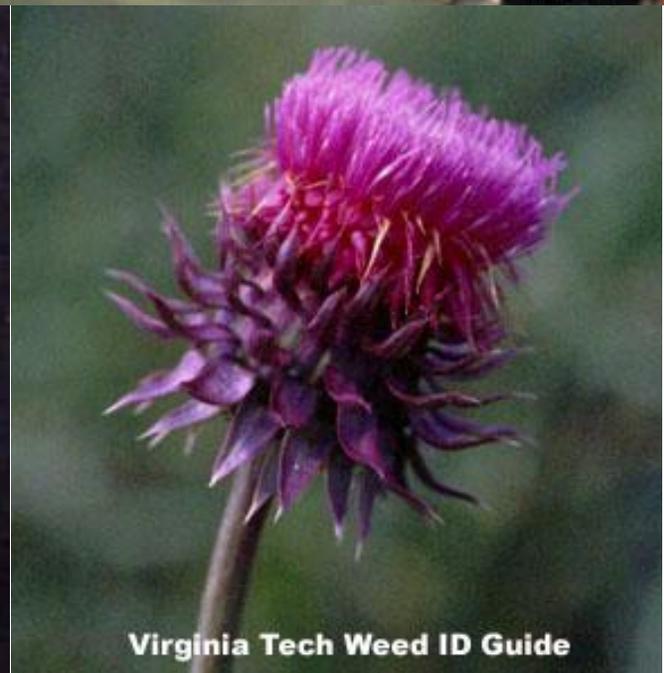
Identifying Characteristics: Erect, spiny biennial with deeply lobed leaves and relatively large flowers that are pink to violet or purple in color. Musk thistle is similar in growth habit and appearance to Bull Thistle (*Cirsium vulgare*), however bull thistle has many hairs on the upper surface of the leaf blades unlike musk thistle which mostly lacks hairs. Additionally, the flower heads and bracts of bull thistle gradually taper to a point when compared to those of musk thistle. Musk thistle may also be confused with Canada Thistle (*Cirsium arvense*), but Canada thistle has



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Star Thistle or Spotted Knapweed: *Centaurea maculosa*

Weed Description: A biennial or occasionally perennial that forms a basal rosette during the first year of growth and produces a flowering stem during the second year. Spotted knapweed is primarily a weed of pastures, hayfields, roadsides, and sometimes turfgrass.

Seedling: Cotyledons round at the apex and narrowing to the base. The first true leaves are similar but narrow to a petiole.

Leaves: Leaves form a basal rosette during the first year of growth, are deeply lobed, and are approximately 6 inches long. Leaves that are produced on the flowering stems are alternate and finely dissected. Leaf surfaces often have inconspicuous short hairs but leaf margins have more noticeable tough hairs.

Stems: Flowering stems are slender and wiry, branching, and covered with downy hairs.

Roots: Taproot.

Flowers: Solitary flowers are produced at the ends of branches and are approximately 8 to 15 mm wide. Individual flowers are pink to purple in color and have a “cone” of bracts below.

Fruit: An achene that is light green to brown in color and approximately 3 mm long by 2 mm wide.

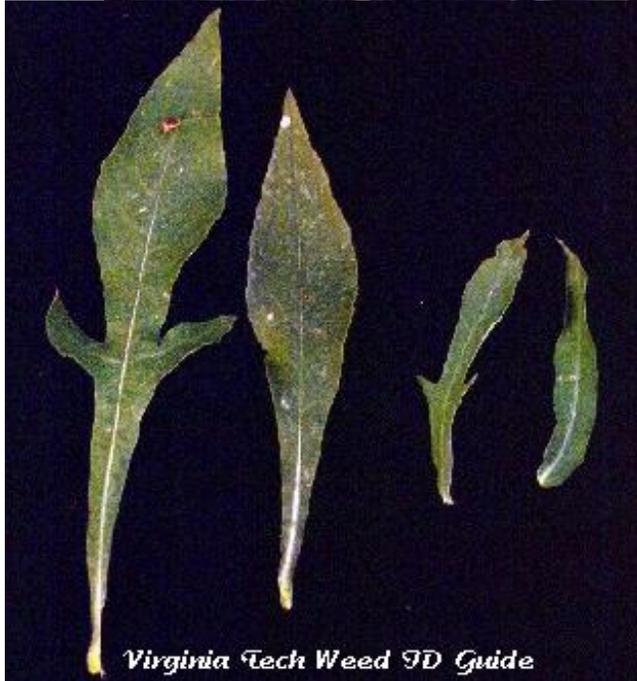
Identifying Characteristics: The finely dissected leaves and bracts below the pink to purple flowers help to distinguish this weed but this weed is commonly confused with both Cornflower (*Centaurea cyanus*) and corn cockle (*Agrostemma githago*). However, the rosette and flowering stem leaves of spotted knapweed are much more deeply lobed than those of cornflower or corn cockle. Additionally, the leaves of corn cockle are joined across the stem and the stems of this plant are swollen at the nodes, whereas neither of these characteristics occurs with cornflower or corn cockle.



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Virginia Tech Weed ID Guide

Tall Thistle: *Cirsium altissimum*

Weed Description: A biennial thistle with distinctive pink flower heads, hairy stems, and densely white pubescent (tomentose) leaf undersides. These plants may reach as much as 9 1/2 feet in some areas and typically flower from July to October. Tall thistle is found as a weed of pastures, hay fields, roadsides, railroads, and other non-crop areas.

Leaves: Arranged alternately along the flowering stems. Leaves are mostly without hairs above (glabrous) and are densely white pubescent (tomentose) beneath. Leaf margins are usually not lobed (entire) but spines occur along the leaf margins. Leaves typically occur without petioles and are attached directly to the stem (sessile), or some may occur on short petioles. Leaves may reach as much as 12 inches in length and 4 inches in width.

Stems: Stems are erect, branching, with many hairs. Stems may reach heights of 9 1/2 feet or more in certain areas.

Roots: A taproot.

Fruit: An achene 6 mm long and 2 mm wide.

Flowers: Single flower heads occur at the ends of the flowering stems. Each flower may reach as much as 1 1/3 inches in height and width. Subtending bracts occur below the flower head. Flowers are pink to purplish in color.

Identifying Characteristics: The distinctive bulbous-like base below the pink to purplish flowers helps to identify this plant as one of the *Cirsium* species. The mostly entire leaves with spiny margins and tomentose leaf undersides are also characteristics that help to distinguish this plant from Canada Thistle (*Cirsium arvense*), Bull Thistle (*Cirsium vulgare*), or Musk Thistle (*Carduus nutans*).





Horsenettle: *Solanum carolinense*

Weed Description: A perennial from rhizomes with conspicuous spines on the leaves and stems that may reach 3 ft in height. Horsenettle is found throughout the southeastern, eastern, and north-central United States. All parts of the plant, except the mature fruit, are poisonous to livestock even when this weed is consumed in dry hay. However, consumption of this weed rarely occurs due to the prickly stems and leaves.

Seedling: Cotyledons oblong, glossy green above, light green below with hairs on the margins. Short, stiff hairs cover the hypocotyl, which is often purple-tinged.

Leaves: Simple, elliptic-oblong to oval, alternate, petioled, 2 1/2-4 1/2 inches long and covered on both surfaces with star-shaped hairs. Leaves also emit a potato odor when crushed, and contain prominent prickles (6-12 mm long) on the midvein and petiole.

Roots: Deep, spreading rhizomes.

Flowers: Occur in clusters on prickly flower stalks and are star-shaped with 5 white to violet petals and a yellow cone-shaped center, which is actually 5 stamens with yellow anthers.

Fruit: A berry, 1/2-3/4 inches in diameter, green when immature turning yellow and wrinkled with maturity. A single berry may contain from 40 to 120 seed.

Stems: Angled at the nodes, become woody with age, and also have prickles and star-shaped hairs.

Identifying Characteristics: Stems and leaves with prickles and star-shaped hairs. Horsenettle might be confused with other solanaceous species like Clammy Groundcherry (*Physalis heterophylla*). However, groundcherries do not have prickles on the stems and leaves and have papery membranes enclosing their berries.





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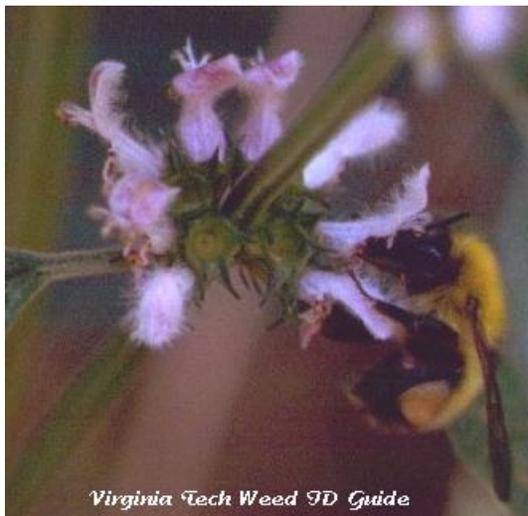
Stinging Nettle: *Urtica dioica*

Weed Description: A perennial weed that is perhaps most notably known for the skin irritation that this weed causes when contacted. The hairs and spines on the leaves and stems of this weed release formic acid when touched, which gives a burning or stinging sensation to humans. Stinging nettle is primarily a weed of landscapes, orchards, pastures, and roadsides. This weed reproduces by seed and rhizomes, which are underground stems that are capable of generating new plants. Stinging nettle is found throughout most of the United States.

Leaves: Arranged oppositely along the stem, occurring on petioles. Leaves are egg-shaped to lanceolate in outline with serrated or toothed leaf margins. Mature leaves are mostly without hairs, except for the long hairs capable of 'stinging' humans that occur on the lower leaf surface. Younger leaves usually have both short hairs and the longer 'stinging' hairs on the upper leaf surfaces. Long, pointed stipules occur in the area between the stems and leaf petioles.

Stems: Erect, reaching 6 1/2 feet in height, usually unbranched. Stems are angled and have long, 'stinging' hairs.

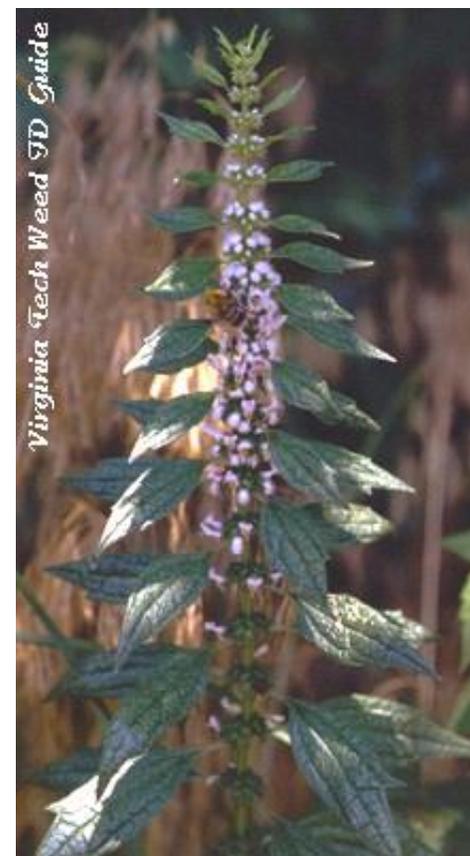
Roots: Rhizomes.



Flowers: Relatively inconspicuous and green to yellowish in color. Flowers occur in clusters that arise from the area between the stem and leaf petioles (leaf axils).

Fruit: An achene.

Identifying Characteristics: A perennial with rhizomes, lanceolate leaves with toothed margins, erect usually unbranched stems, and fairly long 'stinging' hairs. These characteristics help to distinguish it from most other weed species.



Common Lambsquarters: *Chenopodium album*

Weed Description: Summer annual to 3 1/2 feet in height capable of producing thousands of seeds.

Seedling: Cotyledons elliptic (12-15 mm long), dull green with a mealy gray cast on the upper surface and maroon on the underside, turning green with age. Hypocotyls are hairless, green or tinged with maroon. The first pair of true leaves are opposite, all other leaves are alternate. Seedling leaves are triangular and also have a mealy gray cast.

Leaves: Alternate, light green, rounded, triangular, 1 1/4 to 10 inches long and on a long petiole.

Stems: Erect, hairless, grooved, branching and light green with red coloration in varying degrees.

Roots: Short, much-branched taproot.

Flowers: Small and clustered into panicles at tips of branches and upper leaf axils. Flowers are green, inconspicuous, without petals and occur from June to September.

Fruit: An utricle with a thin papery covering over the seeds.

Identifying Characteristics: Cotyledons and seedling leaves have a mealy gray cast. Cotyledons of common lambsquarters and Redroot Pigweed (*Amaranthus retroflexus*) are similar, however redroot pigweed cotyledons have a prominent midvein while lambsquarter cotyledons do not.





Sicklepod: *Cassia obtusifolius*

Weed Description: An invasive summer annual, reaching 1-6 ft in height. Found throughout the southeastern United States and north to east Kansas, Illinois, and Michigan.

Seedling: Cotyledons are rounded, much more so than the subsequent egg-shaped leaflets. Distinctive veins (3-5) also occur on the cotyledons.

Stems: Erect, branched, and without hairs (glabrous).

Fruit: Brownish, angular seed are produced in a long (4-8 inches long, 3-5 mm wide), slender, curved seed pod (a legume).

Roots: Taproot.

Leaves: Arranged alternately up the stem, and consist of 4-6 leaflets that are arranged oppositely from one another (pinnately compound). The basal pair of leaflets smallest, terminal pair largest. Individual leaflets are egg-shaped, with the broadest end above the middle (obovate), 1 to 3 1/2 inches long, 1/2 to 1 inch wide.

Flowers: Contain yellow petals on stalks that arise between stems and leaves (axillary flowers).

Identifying Characteristics: Plants with yellow flowers, long narrow seed pod, and pinnately compound leaves with the terminal pair of leaflets the largest. This weed is similar to Coffee Senna (*Cassia occidentalis*) in growth habit and appearance, especially during the seedling stage. However, the leaflets of coffee senna are more numerous and pointed when compared to sicklepod.





Sicklepod in Soybeans