

Identification of Broadleaf Weed Seedlings Commonly Found in Florida Sugarcane: A Quick Reference Guide¹

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Many broadleaf weed species are found in sugarcane fields on organic soils in the Everglades Agricultural Area and surrounding mineral soils in south Florida. Weeds compete with sugarcane for light, water, and nutrients, resulting in significant sugarcane yield loss when adequate control measures are not taken. The mature weeds also produce seeds and increase weed control problems by being a source of seedbank replenishment and reinfestation in subsequent years.

Proper broadleaf weed identification is an important first step in developing a successful weed management program in sugarcane. Identification of broadleaf weeds at the seedling stage and early in the vegetative stage of growth when they are most vulnerable to control measures is important in developing effective management plans.

Broadleaf weed seedlings have two seed leaves or cotyledons. True leaves are wide or broad with a main vein (midvein) in the center; smaller veins form and branch, resulting in netlike venation. Stems can be rounded or angled in cross-section. Roots are fibrous or can have a primary taproot with smaller lateral roots, or both. Broadleaf weeds are classified as annuals, biennials, or perennials based on their life cycle. Annuals live and produce seeds within one year. Biennials live more than one year but not more than two years. Perennials produce vegetative structures that

allow them to regrow for three or more years, although some also produce seeds.

This publication describes the proper identification of broadleaf weed seedlings commonly found in Florida sugarcane fields and aims to assist growers in selecting effective control measures. Identification of broadleaf weeds at the seedling stage is important because control measures should be implemented when weeds are at the early vegetative growth stage.

Vegetative Parts for Identifying Broadleaf Seedlings

Broadleaf weed seedlings can easily be identified by specific characteristics of the cotyledons, leaves, and stems (Figure 1). Cotyledons vary in shape and size, and generally reach their full size by the time the first true leaves develop and become visible (Figure 2). Cotyledons can be smooth, hairy, or rough. The size and shape of first true leaves and later leaves will vary considerably among species (Figure 3). Leaves may be alternate, opposite, or whorled, or form a basal rosette around the stem (Figure 1). Margins of leaves can be entire, wavy, rounded, toothed (serrated), or lobed (Figure 4). The shape of leaves will vary considerably among species. Leaves may be attached to the stem by a petiole (leafstalk), or they may be sessile (attached directly to the stem).

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Common Lambsquarters (*Chenopodium album*)

Family: Chenopodiaceae (goosefoot family).

Life Cycle: Annual.

Cotyledons: Linear, green, and hairless.

Leaves: First true leaves and subsequent leaves are lanceolate to ovate. The first pair of leaves is opposite with smooth margins. Later leaves are alternate and have unevenly toothed margins, a gray-mealy coating on the underside and above the surface, and long petioles.

Stem: Green or tinged with red, hairless, covered with mealy white granules, and erect.



Figure 5. Common lambsquarters seedlings.

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Spiny Amaranth (*Amaranthus spinosus*)

Family: Amaranthaceae (pigweed family).

Life Cycle: Annual.

Cotyledons: Linear, dull green on the upper surface, bright red beneath, and hairless.

Leaves: First true leaves are ovate, hairless, dull green, and slightly notched at the tip. Subsequent leaves are egg-shaped, hairless, slightly notched at the tip, and alternate,

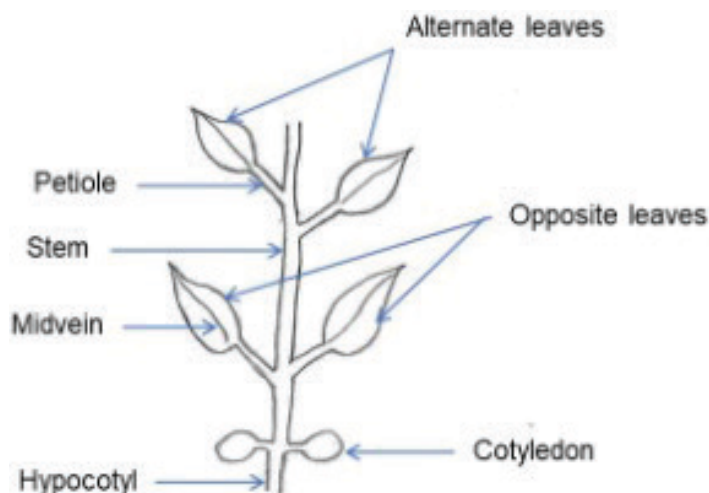


Figure 1. Parts of a broadleaf plant.

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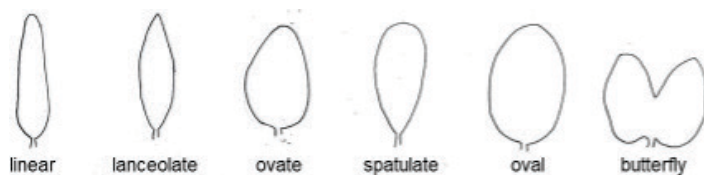


Figure 2. Cotyledon shapes of broadleaf weeds.

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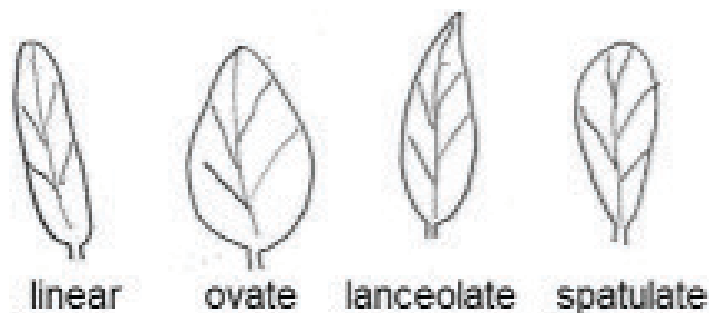


Figure 3. Leaf shapes of broadleaf weeds.

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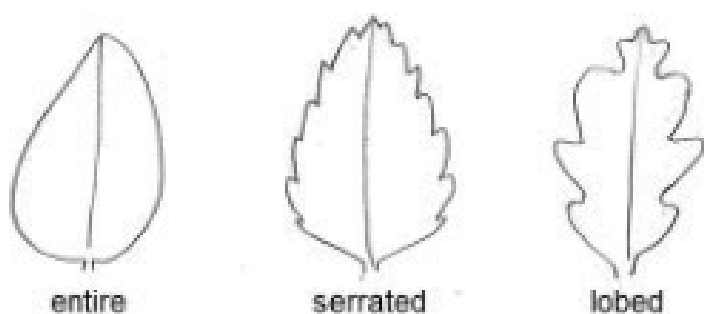


Figure 4. Leaf margins of broadleaf weeds.

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The identifying characteristics of 14 broadleaf weed seedlings commonly found in Florida sugarcane fields are listed below to help with their identification.

and they have long purple petioles. The leaves sometimes have a reddish hue along the midvein. Leaf margins are wavy.

Stem: Red, hairless, erect, with a pair of very sharp, stiff spines at the nodes.



Figure 6. Spiny amaranth seedlings.
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Smooth Pigweed (*Amaranthus hybridus*)

Family: Amaranthaceae (pigweed family).

Life Cycle: Annual.

Cotyledons: Linear and reddish green.

Leaves: First true leaves are ovate, green, hairless, and slightly notched at the tip. Subsequent leaves are oval to egg-shaped, hairless, alternate, green above and light green below, and slightly notched, with long petioles. Leaf margins are less wavy.

Stem: Red to green but reddish toward the base; usually slightly hairy on upper parts, and erect. The nodes do not have any spines.



Figure 7. Smooth pigweed seedlings.
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Livid Amaranth (*Amaranthus blitum*)

Family: Amaranthaceae (pigweed family).

Life Cycle: Annual.

Cotyledons: Linear, purplish, and hairless.

Leaves: First true leaves are ovate, purplish-green, hairless, and notched at the tip. Subsequent leaves are ovate, hairless, alternate, notched at the tip, and reddish-green or green, with long purple petioles. Leaf margins are entire.

Stem: Red, hairless, prostrate to ascending or radiating from the base; can be branched.

Common Purslane (*Portulaca oleracea*)

Family: Portulacaceae (purslane family).

Life Cycle: Annual.

Cotyledons: Linear, succulent, hairless, green or purplish-red on the top surface, and purplish-red underneath.

Leaves: First true leaves are lanceolate and become obovate, green, hairless, succulent, and opposite, with rounded tips. Subsequent leaves are spatulate or obovate, broad, rounded at the tip, narrow towards the base, succulent, red-tinged, hairless, and sessile. The leaves are opposite and oriented 90° from the previous pair. Leaf margins are entire.

Stem: Reddish, succulent, erect at an early stage; becomes prostrate after branching or at later growth stage.



Figure 8. Livid amaranth seedlings.
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Figure 9. Common purslane seedlings.
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American Black Nightshade (*Solanum americanum*)

Family: Solanaceae (nightshade family).

Life Cycle: Annual.

Cotyledons: Ovate to lanceolate, small, and green.

Leaves: First true leaves are ovate. Subsequent leaves are alternate, ovate, dark green, and covered with small hairs. The midvein is evident on the lower surface and the petiole is covered with small hairs. Leaf margins are entire to somewhat wavy.

Stem: Purplish, erect, and hairy.



Figure 10. American black nightshade seedlings.
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Ragweed Parthenium (*Parthenium hysterophorus*)

Family: Asteraceae (sunflower family).

Life Cycle: Annual.

Cotyledons: Rounded paddle shape on short stalks.

Leaves: First true leaves are egg-shaped, opposite, and covered in fine, white hairs. Subsequent leaves form on short petioles and become increasingly lobed and deeply divided. Older leaves form a basal rosette and are light green and hairy with white veins on both sides.

Stem: Basal rosette; later becomes erect, green, and hairy.



Figure 11. Ragweed parthenium seedlings.

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Common Ragweed (*Ambrosia artemisiifolia*)

Family: Asteraceae (sunflower family).

Life Cycle: Annual.

Cotyledons: Spatulate, hairy, with purple spots around the margin. The upper surface is green with a purple underside.

Leaves: First true leaves are lobed and hairy. Later leaves are deeply cleft, twice compound, and hairy. The youngest leaves look opposite and become alternate by the fourth node. Leaves are borne on long, hairy petioles.

Stem: Purple, erect, and hairy.

Coffee Senna (*Senna occidentalis*)

Family: Fabaceae (bean family).

Life Cycle: Annual.

Cotyledons: Rounded, smooth above, with white hairs below (distinguishing it from sicklepod).

Leaves: First true leaf is pinnately compound with 4 oval leaflets that have pointed tips. Subsequent leaves are alternate, pinnately compound, with 4 to 6 pointed leaflets that have pointed tips. Leaf veins are prominent. The terminal

pair of leaflets is larger than the basal pair. Leaf margins are entire and have short hairs.

Stem: Green, erect, and smooth.



Figure 12. Common ragweed seedlings.

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Figure 13. Coffee senna seedlings.

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Sicklepod (*Senna obtusifolia*)

Family: Fabaceae (bean family).

Life Cycle: Annual.

Cotyledons: Rounded with 3 to 5 distinct veins, smooth above; no white hairs below (distinguishing it from coffee senna).

Leaves: First true leaf is pinnately compound with 4 obovate leaflets. Subsequent leaves are alternate, pinnately compound, with 4 to 6 oval leaflets that have rounded tips. The terminal pair of leaflets is larger than the basal pair. Leaf margins are entire and have short hairs. Leaves omit a foul smell when crushed.

Stem: Green, erect, and smooth.



Figure 14. Sicklepod seedlings.
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Pitted Morningglory (*Ipomea lacunosa*)

Family: Convolvulaceae (morningglory family).

Life Cycle: Annual.

Cotyledons: Butterfly shaped and more deeply notched at the tip, with a greater angle of the notch and slenderer and pointed lobes.

Leaves: First true leaves and subsequent leaves are heart shaped, hairless, and alternate, and taper to a more pointed tip. Leaf margins are entire and purple in color.

Stem: Maroon at the base, green at the top, vine-like, and smooth.



Figure 15. Pitted morningglory seedlings.
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Smellmelon (*Cucumis melo*)

Family: Cucurbitaceae (cucumber family).

Life Cycle: Annual.

Cotyledons: Broadly ovate with a slight notch at the tip, green, and hairless.

Leaves: First true leaves and subsequent leaves are rough, rounded, angled but not lobed, alternate, and hairy. Leaf margins are wavy with sharp teeth that point outward. The leaves are borne on long petioles covered with soft hairs.

Stem: Green and covered with soft hairs, vine-like.

Pennsylvania Smartweed (*Polygonum pensylvanicum*)

Family: Polygonaceae (buckwheat family).

Life Cycle: Annual.

Cotyledons: Lanceolate, rounded tips, smooth, with red-dish blotch underneath; gland-tipped hairs on the margins.

Leaves: First true leaves are lanceolate to elliptic. Subsequent leaves are alternate, lanceolate, pointed at the tip, hairy on the upper surface and margins, smooth underneath, sometimes with purple blotches in the center of upper and lower surfaces. Leaves are borne on short petioles surrounded by conspicuous smooth membranous sheaths (ocrea) at the base.

Stem: Smooth, reddish-purple, with swollen and angled nodes surrounded by ocrea (a papery sheath formed by fusion of stipules at the base of a leaf).



Figure 16. Smellmelon seedlings.
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Figure 17. Pennsylvania smartweed seedlings.
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