Laboratory Broadleaf Weed Identification

Tips for Identifying Broadleaf Weeds

- The cotyledon is an important identifying characteristic for broadleaf weeds.
- Shape and position of leaves, presence of pubescence or hairs, and venation are all helpful characteristics.
- When weeds are mature, flower size, shape, and color can be used to distinguish weeds.
- Some broadleaf weeds such as pigweeds or morningglories can be difficult to specifically identify because of natural crossings that can occur between species within the same genera.
- Broadleaf weeds are all dicots

For the weeds listed below, specific information to aid in identification is provided. You will be responsible for identifying all of these broadleaf weeds

alligatorweed balloonvine carpetweed common cocklebur common purslane common ragweed cutleaf groundcherry cypressvine morningglory eclipta entireleaf morningglory giant ragweed hemp sesbania hophornbeam copperleaf horsenettle ivyleaf morningglory

palmleaf morningglory

pigweed sp.

Pennsylvania smartweed

prickly sida
prostrate spurge
purple moonflower
red morningglory
redweed
scouringrush
sharppod morningglory
showy crotalaria
sicklepod
silverleaf nightshade
smallflower morningglory
smellmelon

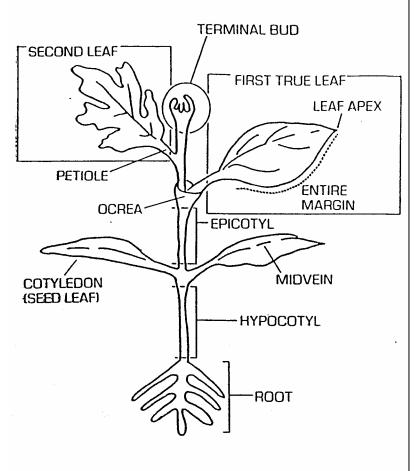
pitted morningglory

spotted spurge Texasweed trumpetcreeper wild poinsettia woolly croton

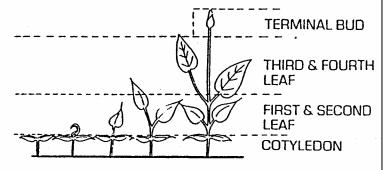
Other broadleaf weeds that you will be responsible for will include: (Will be added later)

You are encouraged to visit the weed science web site (<u>www.lsuagcenter.com/weedscience</u>) where photos of many of these weeds can be viewed.

VEGETATIVE PLANT PARTS



LEAF GROWTH STAGES



ALTERNATE

One leaf attached per node. Newest leaf is of smaller

ANNUAL

A plant that lives a year or less.

COMPOUND LEAF

A composite of two or more leaflets.

COTYLEDON

Seed leaves; the first leaflike structures, usually paired, appearing above ground in most dicotyledonous plants.

DECUMBENT

Lying flat or prostrate, but with the tip growing upward. ENTIRE

Leaf margins that are smooth without irregularly cut or toothed edges.

EPICOTI.

The length of stem above the cotyledons to the growing point. FIRST TRUE LEAF

First leaf to emerge after the cotyledons.

GLABROUS

Without hairs

HYPOCOTYL

The length of stem between the node of the cotyledons and the

LEAF APEX

The outer most tip of a leaf.

MARGIN

The border or edge of any plant part.

That part of the stem from which leaves of branches arise

OCREÁ A membranous sheath surrounding the stem at the point of

attachment of the leaves in members of the smartweed family. OPPSITE LEAVES Leaves attached at the same node on opposite sides of stem.

Leaves at same node are of similar size.

ORBICULAR

Semi-round to egg shaped. PERENNIAL.

A plant that may live several years.

PETIOLE

The stalk of a leaf

PUBESCENT

Hairy of downy, usually with fine soft hairs. Commonly the term is used to indicate hairiness of a generalized instead of a specialized type, and it is used loosely to cover any kind of

RHIZOME

An underground stem, often called rootstock, which provides a means for the spread of some perennial plants.

With teeth-like sawteeth, that is angular and directed forward. SIMPLE LEAF

A single leaf

STIPULES

One of a pair of appendages at the base of the petiole at the point of attachment to a stem.

STOLON

A runner, that is, a branch which grows along the ground and produces adventitious roots.

TAP ROOT SYSTEM

A root system with the primary root markedly larger than the

TERMINAL BUD

The bud at the end (apex) of a stem or branch where new leaves arise. Often referred to as the growing point or apical

An annual plant that usually initiates growth in the fall, lives over winter, and produces seed in the spring.

Steps to Identifying Broadleaf Weeds

STEP 1

Overall characteristics

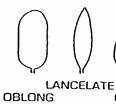
Size, shape, color of plant

STEP 2

Cotyledons

- 1. Shape
- 2. Venation type and prominence
- 3. Hairy or glabrous
- 4. Coloration









SPATULATE OVATE



ROUND

KIDNEY

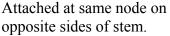
BUTTERFLY

STEP 3

Leaves

- 1. Arrangement on stem (opposite or alternate)
- 2. Shape
- 3. Margin characteristics
- 4. Venation type
- 5. Hairy or glabrous
- 6. If lobed; leaves pinnately or palmately lobed?





OPPOSITE LEAVES

Leaves at same node of similar size



ALTERNATE LEAVES

One leaf per node. New leaf is smaller.









PINNATE VENATION

STEP 4 Root system





Perennial

STEP 5

Other characteristics

Morningglory Identification

Morningglories Common to Louisiana (a) Note cotyledon shape and angle between lobes

- (b) Hairs on stems and leaves
- (c) Leaf shape and texture
- (d) Flower color
- (e) Often times morningglory spp. will cross in nature resulting in plants that show characteristics of two or more species

	1.0	Leaf		Stem		C						Capsule	
Morningglory species	Pubes		Herba- ceous	Pubes -	Inflo- rescence	Sepat		Flower (corolla)					
	Shape	cence	prickles		type	Length	Pubes - cence	Color	Length	Width	Shape	Beak length	Pubes cence
						(ının)		(cm)				(mm)	
Tall		Yes (dense)	No	Yes	Solitary	8 to 14	Yes	White or pink to purple and variegated		3.5 to 5.5	Sub- globose	3 to 4	No
Entireleaf		Yes	No	Yes	Solitary	12 to 24	Yes	Light blue with white throat		2.5 to 4.5	Sub- globose	5	No
lvyleaf	, K	Yes	No	Yes	Solitary	12 to 24	Yes	Light blue with white throat		2.5 to 4.5	Sub- globose	5	No
Purple		No	Yes	No	Solitary	10 to 13	No	Lavender or pinkish lavender (open only at night)		5 to 8	Ovoid	5	No
Pitted	•	No	No	No	Cyme	9 to 11	Yes (slight)	White or sometimes lavender	1.5 to 5 2.3	1.5 to 2	Sub- globose	1	Yes (some)
Cotton (annual or perennial)	*	Yes (slight)	No	Yes	Cyme	7 to 11	Yes	Violet with red violet throat and white uppo band		3.5 to 5	Sub- globose	4	Yes (very)
Sharppod (annual or perennial)		No	No	Yes (slight)	Cyme	8 to 13	Yes	Light violet with light red violet throat and upper band		2.5 to 3	Sub- globose	1	Yes (very)
Palmleaf	×	No	No	No	Solitary	5 to 6	No	Deep violet	1.5 to 2.3	2 to 3	Ovoid (coiled pedunct	2 e)	No
Red	**	No	No	No	Solitary	8 to 9	No	Scarlet with orange tube	2.0 to 2.5	1 to 2	Sub- globose	3 to 4	No
Smallflower		Yes (edge only)	No	Yes	Cyme (dense)	12 to 15	Yes	Light blue	1.2 to 1.6	0.8 to 1.2	Sub - globose	None	No
Cypressvine	美	No	No	No	Cyme	5	No	Deep red	2.2 to 2.8	2 to 3	Sub- globose Ovoid	5 to 6	No
Bigroot (perrenial)		No	No	No	Cyme	17 to 18	No	White with lavender tube		7 to 10	Ovoid	7	No

A Vegetative Key for Identification of Morningglory Species in the Vegetative Stage

By C. BRENT ROGERS and LAWRENCE R. OLIVER

SEVERAL of the morningglory species present in Arkansas are competitive and damaging to crops. It is well documented that morningglory species differ in their susceptibility to specific herbicides. Therefore, it is important to know which species is present before selecting the herbicide for control.

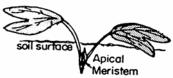
In addition, many postemergence herbicides lose their effectiveness after the target species becomes large, but plant keys often identify species by flowers or other reproductive parts, a time when it is much too late for control measures to be effective or to prevent crop yield reduction.

The following key was constructed to aid in identification of morningglory species while they are still seedlings. Once they identify the species, growers should consult their county Extension agent for control measures to use.

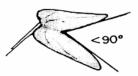
 Cotyledons moderately to deeply lobed; lobes pointed at tip and relatively narrow in proportion to length; lobes approximately 0.4 to 1.3 cm wide — (2).



- Cotyledons shallowly to moderately deeply lobed; lobes more or less rounded and relatively wide in proportion to length; lobes 0.8 to 4.6 cm wide — (8).
- Growing point (apical meristem) and point of cotyledon attachment does not emerge with cotyledons—Bigroot morning glory (Ipomoea pandurata).

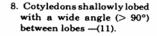


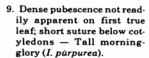
- 2. Apical meristem does emerge with cotyledons (3).
- 3. First true leaf other than heart-shaped (4).
- First true leaf heart-shaped and first true leaf and cotyledons medium to large in size (2 to 4.5 cm wide) — (5).
- First true leaf finely pinnately lobed; cotyledon lobes extremely narrow (< 0.5 cm) with a very wide angle (120 to 150°) between lobes — Cypressvine morningglory (I. quamoclit).
- First true leaf palmately divided, five-lobed; cotyledon lobes narrow, narrow angle between lobes (<90°); cotyledon has reddish cast in early stages Palmleaf morningglory (I. wrightii).

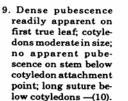


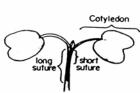
- Main stem very pubescent between attachment of cotyledons and first true leaf — (6).
- Main stem with few or no hairs between attachment of cotyledons and first true leaf — (7).
- Petiole of first true leaf moderately pubescent and greenish in color; second true leaf also heart-shaped — Cotton morningglory (I. trichocarpa var. torreyana).
- Petiole of first true leaf has only sparse pubescence and is purplish in color; second true leaf may have 2 sharp-pointed lobes — Sharppod morningglory (I. trichocarpa var. trichocarpa).

- Almost no pubescence on stem and petiole Pitted morningglory-purple flowered form (I. lacunosa f. purpurata).
- Occasional pubescence on stem and petiole Pitted morningglory-white flowered form (I. lacunosa f. lacunosa).
- Cotyledons moderately deeply lobed with a narrow angle (< 90°) between lobes — (9).









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- First true leaf heart-shaped, margin entire Entireleaf morningglory (I. hederacea var. integriuscula).
- First true leaf 3-lobed, much like an ivyleaf in appearance; angles between lobes recessed, rounded — Ivyleaf morningglory (I. hederacea var. hederacea).
- 11. Cotyledons extremely shallowly lobed; cotyledons heart-shaped and small, < 1 cm any dimension; first true leaf with distinct marginal hairs Small flower morning glory (Jacquemontia tamnifolia).



- Cotyledons less shallowly lobed and not heart-shaped; no distinct marginal hairs on first leaf; tooth-like projections around margin of first true leaf present or absent, but distinct if present — (12).
- 12. Cotyledons and leaves extremely large and cotyledon blades identical in appearance; leaves heart-shaped with entire margin; distinct purplish coloration of petioles of cotyledons and first leaf; stem very large with large projections appearing on stems later — Purple moonflower (I. muricata).
- 12. Cotyledons and leaves moderate to small; first true leaf has no appearance of pubescence and is relatively flat and smooth; second leaf also has no appearance of pubescence; stem slender with no large projections — Red morningglory (I. coccinea).

Morningglory Identification

CYPRESSVINE MORNINGGLORY

(Ipomoea quamoclit)

LIFE CYCLE: Annual

COTYLEDONS: Butterfly

Long and narrow Lobes pointed

Long angle between points.

much greater than 90°

LEAVES: Alternate

Glabrous

Deeply dissected into linear lobes Petioles grooved on upper surface

OTHER:

Hypocotyl smooth and become

viny after 5 leaf stage

ENTIRELEAF MORNINGGLORY

(Ipomoea hederacea var. integriuscia Gray)

LIFE CYCLE: Annual

COTYLEDONS: Butterfly

Moderate to deeply indented

Lobes rounded Glabrous

LEAVES: Alternate

Heart-shaped

Hairy

OTHER: Creeping vine

> Smaller than Tall Morningglory Hypocotyl densely hairy, hairs

stick out, may be red



RED MORNINGGLORY (Ipomoea coccinea)

LIFE CYCLE: Annual

COTYLEDONS: Butterfly

Often maroon-tinged Not deeply lobed with

lobes rounded

LEAVES: Alternate

Glabrous Heart-shaped

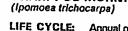
Leaves with basal points

Long-petiole Entire margins

OTHER:

Green to maroon hypocotyl

Hypocotyl smooth Creeping vine



LIFE CYCLE: Annual or weak Perennial

SHARPPOD MORNINGGLORY

COTYLEDONS: Butterfly

Deeply indented

Lobes pointed

LEAVES: Alternate

Glabrous

First 2 leaves heart-shaped

Later true leaves deeply 3 to 5

OTHER: Hypocotyl slightly hairy

Often confused with Cotton

Morningglory





(Jacquemontia tamnifolia)

LIFE CYCLE: Annual

COTYLEDONS: Butterfly

Slightly indented Lobes rounded

Not Morningglory-like

LEAVES: Alternate

Ovate-shape Broad at base Pinnate venation Hairy on margins

Occasionally sparsely hairy

on surface

OTHER: Creeping vine

Hypocotyl hairy







Morningglory Identification

IVYLEAF MORNINGGLORY

(Ipomoea hederacea)

LIFE CYCLE: Annual

COTYLEDONS: Butterfly

Moderately deep indents Lobes rounded

Prominent veins Glabrous

LEAVES: Alternate

> Ivy shaped-lobes Entire margin

Hairy

OTHER:

Creeping vine Hypocotyl hairy PALMLEAF MORNINGGLORY WILLOWLEAF MORNINGGLORY

(Ipomoea wrigntii)

LIFE CYCLE: Annual

COTYLEDONS: Butterfly

Deeply indented Lobes pointed

Glabrous

LEAVES:

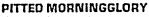
Alternate Glabrous

Palmately 3-7 lobed, but simple as

the fingers on a hand

OTHER:

Creeping vine Hypocotyl smooth



(Ipomoea lacunosa)

LIFE CYCLE: Annual

COTYLEDONS: Butterfly

Deeply indented Lobes pointed Lobes along point Glabrous

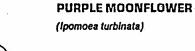
LEAVES: Alternate Glabrous

Heart shaped to basal lobed

Purple margin on leaves

OTHER: Hypocotyl smooth, green or

purple Creeping vine



COTYLEDONS: Butterfly, large

PURPLE MORNINGGLORY

Slightly indented Lobes slightly pointed

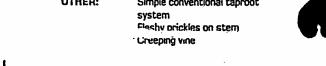
Glabrous

LEAVES: Alternate

Glabrous Heart-shaped

OTHER: Simple conventional taproot







SMOOTH PIGWEED (Amaranthus hybridus)

TALL WATERHEMP (Amaranthus tuberculatus)

LIFE CYCLE: Annual

COTYLEDONS: Linear to oblong

Often reddish violet beneath

Glabrous

LEAVES:

Alternate Oval to ovate

Apex of first few leaves indented

Entire margins

Sometimes sparsely hairy

OTHER:

Hypocotyl often reddish violet

Stem without hair

Almost impossible to distinguish between Smooth Pigweed and Tall Waterhemp in seedling stage. Tall Waterhemp has male and female flowers on separate plants.

COMMON PURSLANE (Portulaca oleracea)

LIFE CYCLE: Annual

COTYLEDONS: Oblong

Glabrous

Thick and short

LEAVES:

Opposite Glabrous Ovate Thick and juicy

Smooth and flush-like without

leaf petioles

Green on upper suface, maroon

tinged on lower surface

OTHER:

Stems spread flat on the ground Stem is maroon and succulent Often confused with Prostrate

Pigweed

CARPETWEED (Mollugo verticillata)

LIFE CYCLE:

COTYLEDONS: Linear to oblong

Glabrous

Lacking evident veins

LEAVES:

Alternate

Basal margins edged with a

few marginal hairs

Dull throughout, pale beneath

OTHER:

Leaves form a rosette

Rank dusty odor when crushed

No stem apparent Decumbent growth habit

COMMON COCKLEBUR (Xanthium strumarium)

LIFE CYCLE: Annual

COTYLEDONS: Lanceolate

Large, thick

Glabrous

LEAVES:

First two opposite, later alternate Rough surface

Ovate shaped

Margins may be toothed Three main veins Palmate venation

OTHER:

Hypocotyl purple

Stem with scattered purple

to black spots

COMMON RAGWEED (Ambrosia artemisiifolia)

LIFE CYCLE: Annual

COTYLEDONS: Spatulate

Glabrous

LEAVES:

Opposite

Pinnately lobed

Hairy

OTHER:

Hypocotyl often purple

GIANT RAGWEED (Ambrosia trifida)

LIFE CYCLE: Annual

COTYLEDONS: Spatulate

Glabrous Opposite

LEAVES:

Palmately lobed, 3 lobes later

(occasionally 5 lobes) Margins may be toothed

Hairy Rough



PRICKLY SIDA (often called Teaweed)

(Sida spinosa)

LIFE CYCLE: Annual COTYLEDONS: Round

> Apex indented Glabrous

LEAVES:

Alternate

Round to ovate shaped Toothed margins Sparsely hairy

OTHER:

Often confused with Velvetleaf and Hophombeam Copperleaf

PROSTRATE SPURGE (Euphorbia humistrata)

LIFE CYCLE: Annual

COTYLEDONS: Oval

Glabrous

Green on the upper surface Maroon on the lower surface Exudes white latex when

crushed

LEAVES: Opposite

Ovalish

Maroon blotch on the upper

surface

Maroon with greyish powdery coating on lower surface Pinnate venation Hairy with serrated margins Hypocotyl pink-smooth

OTHER:

Bitter tasting

Leaves and stems have milky juice

Stem-pinkish-densely Decumbent growth habits

SPOTTED SPURGE (Euphorbia maculata)

LIFE CYCLE: Annual **COTYLEDONS:** Oval

Hairy

Green upper surface Maroon lower surface Margins slightly indented

LEAVES:

Opposite Hairv Oval to ovate

Reddish in coloration in veins

Pinnate venation

Grayish powdery coating on lower

surface

Margins slightly serrated

OTHER:

Stems exude milky sap when broken Hypocotyl narrow throughout,

sparse soft hair

Prostrate Spurge similar but forms mat on soil surface

SHOWY CROTALARIA (Crotalaria spectabilis)

LIFE CYCLE: Annual

COTYLEDONS: Oblong

Thick Glabrous

on lower surface Midvein evident

LEAVES: Alternate

Green on upper surface, gray

on lower surface Upper surface glabrous Pinnate venation Margin slightly hairy

OTHER:

Leaf petioles short

PENNSYLVANIA SMARTWEED

(Polygonum pensylvanicum)

LADYSTHUMB

(Polygonum persicaria)

LIFE CYCLE: Annual

COTYLEDONS: Lanceolate to oblong

Glabrous

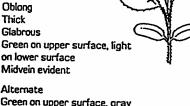
Often reddish violet beneath

LEAVES: Alternate

Lanceolate shaped Entire margins Pinnate venation

OTHER:

Hypocotyl often reddish violet Ocrea (hairy on Ladysthumb)



HOPHORNBEAM COPPERLEAF

(Acalypha ostrylilolia)

LIFE CYCLE: Annual

COTYLEDONS: Round

Glabrous

LEAVES:

Opposite Glabrous Dark green Pinnate venation

OTHER:

Stem smooth

Often confused with Prickly Sida

HORSENETTLE (Solanum carolinense)

LIFE CYCLE: Perennial

COTYLEDONS: Ovate, narrow

Glossy green above Smooth on both surfaces Hairy along margins

Deep green above and pale beneath Covered on both surfaces with

stiff hairs to prickles

LEAVES: Alternate

> Oblong to oval Marginally undulate

OTHER: Potato odor when crushed

Hypocotyl tough, often purple tinged, densely covered with short

stiff hair

SICKLEPOD (Cassia obtusifolia)

LIFE CYCLE: Annual

COTYLEDONS: Round Glabrous

3 to 5 distinct veins in the upper surface joining the

midvein

LEAVES:

Alternate Glabrous

Light green 3 to 5 leaflets, rounded at tip SILVERLEAF NIGHTSHADE

(Solanum elaeagnifolium)

LIFE CYCLE: Perennial

COTYLEDONS: Lanceolate

Hairy

Green on upper surface, light green on lower surface

Covered with hair

LEAVES: Alternate

Linear to oblong Green above and silvery

green beneath

Margin entire to lightly serrated

OTHER: Hypocotyl - densely covered with

short coarse hairs Often purple tinged

CUTLEAF GROUNDCHERRY (Physalia angulata)

LIFE CYCLE: Annual COTYLEDONS: Ovate

Glabrous

LEAVES:

Alternate Glabrous

Pinnate venation Emerging leaves cupped at base of emergence

Serrated leaf margins

OTHER: Often confused with Nightshade

species Stem hairy Tap root present

ECLIPTA (Eclipta prostrata)

LIFE CYCLE: Annual

COTYLEDONS: Spatulate

Glabrous, midvein evident

on lower surface only

Opposite **LEAVES:**

Pinnate venation

Midvein evident on both surfaces

as a slight ridge Lower surface hairy Leaf margin slightly serrated

toward leaf apex







HEMP SESBANIA (Sesbania exaltata)

LIFE CYCLE: Annual

COTYLEDONS: Oblong

Glabrous

LEAVES:

Alternate First leaf simple

Second leaf pinnately compound

Glabrous



LIFE CYCLE: Perennial

COTYLEDONS: Kidney Hairy on margin

LEAVES:

Opposite Pinnate venation Slightly hairy

Coarsely toothed Leaflets green on the upper

surface and light green on

the lower surface

OTHER:

Stem with purple tinges



LIFE CYCLE: Annual

COTYLEDONS: Round

LEAVES:

Glabrous Pinnate Venation

Entire

OTHER:

Stems densely hairy



VELVETLEAF (Abutilon theophrasti)

LIFE CYCLE: Annual

COTYLEDONS: Round

Sparsely hairy

LEAVES:

Alternate

Round with pointed apex

Toothed Margins

Velvety hairs

OTHER:

Stem hairy

WILD POINSETTIA (Euphorbia heterophylla)

LIFE CYCLE: Annual

COTYLEDONS: Lanceolate

LEAVES:

Alternate

Smooth leaf margins Pinnate venation

OTHER: Stem exudes milky juice

when crushed



Redweed (Melochia corchorifolia)

Synonyms: chocolate weed, English teaweed

Reddish stem

Flowers in a head with a pubescent appearance

Flowers are small and pink to lavender

Branches elongate quickly with congested new growth at axils and ends

Various shaped leaves

Double dentated serations on leaf edges

Texasweed (Caperonia palustris)

Synonyms: Mexicanweed

Stout annual with small spines

Leaves elongated with prominent veins

Leaves have single serations along edges

Smellmelon (Cucumis melo)

Stout annual vine

Similar in appearance and smell to cucumbers

Stem covered with small spines

Tendrils present

Flowers small and yellow

Fruit is small, ecliptical melon with dark green stripes

Balloonvine (Cardiospermum halicacabum)

Vining plant with tendrils

Leaves are compound with 3 to 5 deeply indented leaflets

Fruit similar to groundcherry (chinese lantern)

Scourningrush (*Equisetum hymale*)

Synonyms: equisetum, poppingweed, dragonweed, dragontail

A primitive plant common on ditchbanks

Very deep rhizomes

No leaves

Looks like asparagus

Alligatorweed (*Alteranthera philoxeroides*)

Stem very fleshy

Leaves opposing and also fleshy

Prominent midvein

Leaves wider at base and wrap around the stem

Small inconspicuous flowers

An aquatic with a hollow stem

Sterile seed produced