A good garden may have some weeds.

~Thomas Fuller

Even the richest soil, if left uncultivated will produce the rankest weeds.

~Leonardo da Vinci

I learn more about God
From weeds than from roses;
Resilience springing
Through the smallest chink of hope
In the absolute of concrete....

~Phillip Pulfrey, "Weeds," *Perspectives*, www.originals.net

Weed Identification and Biology

Weed Identification


You can't completely control weeds
!
Regents of the University

C060-02


Spotted Spurge
Dandelion
until you know what they are!
Blessed Milk Thistle
Common Groundsel
Annual Bluegrass


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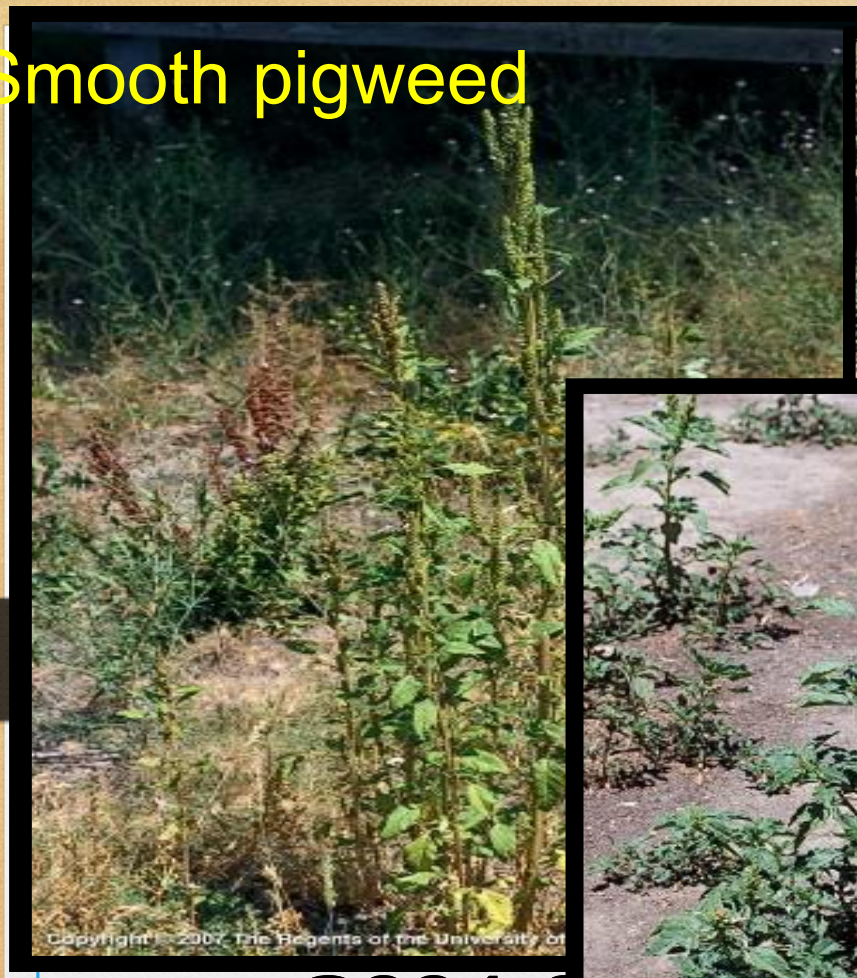
C004-13

Smooth pigweed



C004-0

Low amaranth

C003-09

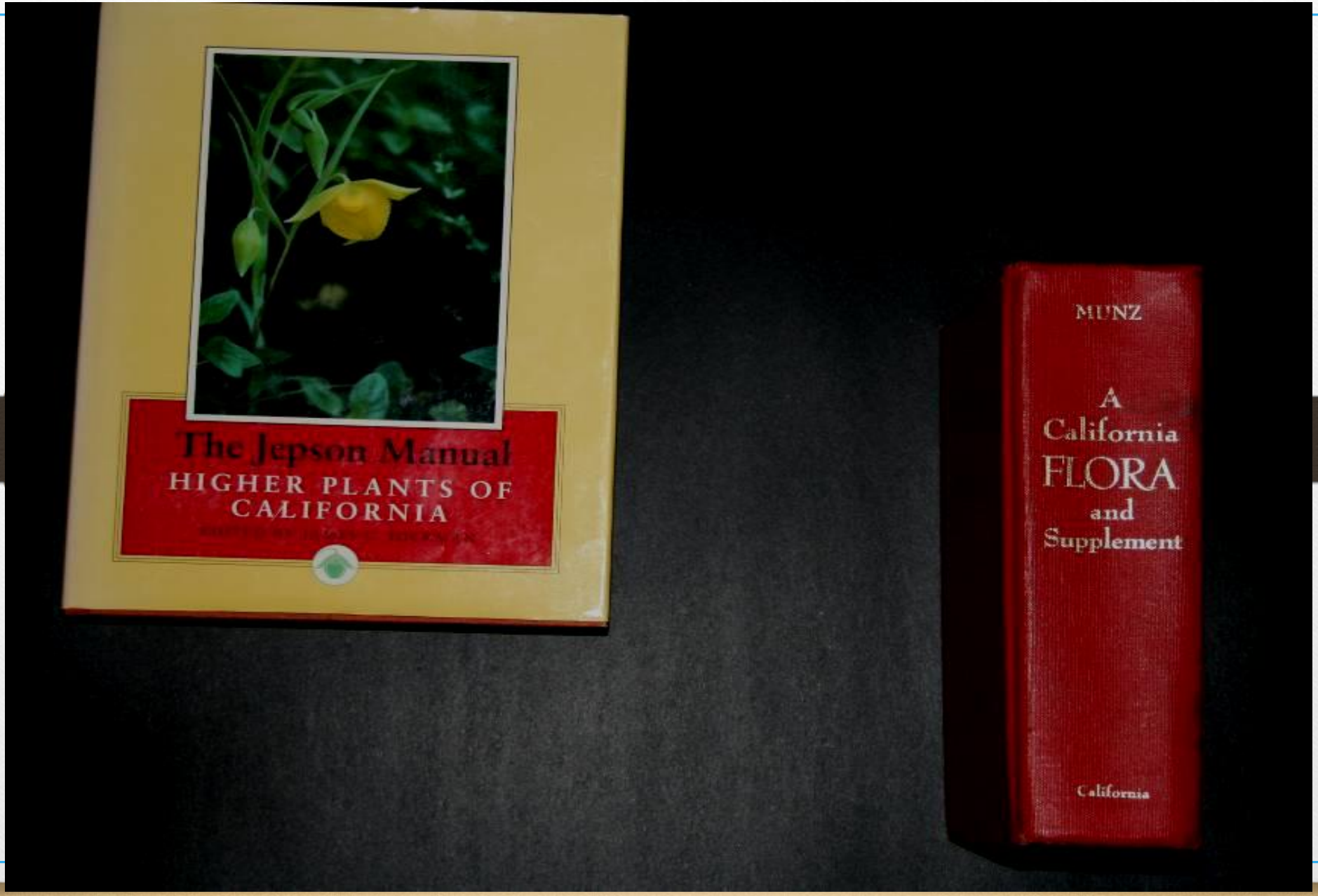
Redroot pigweed

C004-09

How to Identify Weeds

How to Identify Weeds

- Use Keys-


The Jepson Manual
HIGHER PLANTS OF CALIFORNIA
MUNZ
A California FLORA and Supplement
California

16* Basal lvs merely lobed; fl-st more leafy, branched; infl not much elongated in fr ... *S. oregana*
17. Calyx (and gen infl stalk) densely stellate-canescent with minute hairs; dense part of infl gen ± 7 cm; 1° peduncles >> fr cluster; NCoR ... ssp. *hydrophila*
18. Lower st < 5 mm wide, gen not stellate, with bristly hairs ± 2 mm; infl in fl gen 1.5–2.5 cm ... ssp. *hydrophila*
18* Lower st gen > 5 mm wide, with both minute stellate hairs and 1–1.5 mm bristly hairs; infl gen 2–5 cm in fl ... ssp. *valida*
17* Calyx (and gen infl stalk) with some bristly hairs 0.5–1.5 mm; dense part of infl gen > 3 cm; 1° peduncles gen ± = fr cluster; rest NCoRI, s NCoRR
19. Calyx enlarged in fr to gen 8–13 mm; calyx with 1–2 mm bristly hairs; NW (Trinity, Humboldt cos.) ... ssp. *exilis*
19* Calyx little enlarged in fr to gen 3.5–7 mm; calyx with small stellate hairs and sometimes bristly hairs as well; more widespread ... ssp. *spicata*
13* Infl gen not densely head- or spike-like, sometimes 1-sided; calyces in fl gen not overlapping; if infl ± congested, petals gen > 15 mm and fr segments wrinkled
20. Fr segment narrowly wing-margined, glabrous; petals 15–35 mm; infl gen > 30 cm; s CaRF & n SNF (Butte Co.) ... *S. ribesia*
20* Fr segment rounded or angled, not winged, often hairy; petals and infl gen shorter; more widespread
21. Infl 1-sided, loosely 3–15-fld, axis delicate, curved between fls; pl very glaucous, sparsely and minutely stellate (bristles 0); lf 1° lobes gen 5, entire on upper lvs; sts many from woody taproot, ascending; rhizome 0; CaRH, nIlc SNH ... *S. glaucescens*
21* Pl differing in 1 or more features from 21, widespread
22. Infl gen < 2 cm wide (incl petals), not 1-sided, fls > 10; fr segment glabrous or minutely glandular, back smooth, sides sometimes slightly wrinkled; petals 5–15(20) mm; rhizome 0; basal lvs not narrowly dissected
23. Roots fibrous, branched, not fleshy; lvs not very fleshy; infl gen ± dense; various habitats; NW, CaR, MP ... *S. oregana* ssp. *oregana*
23* Roots fleshy, simple or clustered; lvs gen fleshy; infl rather open; alkaline meadows, seeps; SW, SNE ... *S. covillei*
24. Calyx minutely stellate; fr segment back slightly net-veined; SNE ... *S. neomexicana*
24* Calyx with minute stellate and longer bristly hairs; fr segment back smooth; SW ... *S. reptans*
22* Infl gen > 2 cm wide, sometimes 1-sided; fr segment obviously wrinkled, net-veined, or pitted, sometimes hairy; petals gen > 15 mm; rhizome often present; basal lvs sometimes narrowly dissected
25. Rhizome long, creeping; hairs of lower st 2–3 mm, simple; lowest lvs gen unlobed, long-petioled; fr segment back deeply pitted, stellate; SN, esp c SNH ... *S. multifida*
25* Pl differing in 1 or more features from 25 (if rhizome present, hairs shorter and fr segment not stellate; lvs often lobed or short-petioled; widespread)
26. Lvs (esp upper) deeply and narrowly ± 7-lobed, lobes again divided; infl loosely 3–9-fld; pl glaucous, minutely stellate only; cA-s SNH, SNE ... *S. multifida*
26* Pl differing in 1 or more features from 26 (at least lowest lvs not so highly lobed; bristly hairs often present; widespread) ... *S. multiflora*
27. Lvs gen crowded at st base (pl ± scapose); infl gen 30–45 cm in fr; mid-st lvs deeply lobed, unlike basal; rhizome gen 0; s SNF, SW ... ssp. *sparsifolia*
27* Lvs ± evenly distributed on st; infl gen 4–15 cm in fr; mid-st lvs gen like basal; rhizome sometimes present; more widespread
28. Lvs (exc lowest) nearly compound, lobes serrately divided into linear segments; st base decumbent, rooting — s NCoR, CW ... ssp. *laciniata*
28* Lvs (esp mid-st lvs) unlobed or at least lobes not serrately divided into linear segments; st base rooting or not
29. Calyx uniformly stellate with gen dense, minute hairs; rhizome 0 or weak; pl sometimes glaucous; lobe tips of upper lvs gen 3-toothed; infl open, sometimes 1-sided; fr segment sometimes stellate; inland, NW, CaR, SN ... ssp. *asprella*
29* Calyx gen both stellate and bristly (if bristles 0, stellate hairs larger); rhizome gen obvious; pl not glaucous; lf tips variable; infl open or dense, not 1-sided; fr segment gen glabrous, not stellate; gen more coastal; NCo, CW, SW
30. Fr segment lightly net-wrinkled; calyx sparsely fine-stellate and bristly; infl gen open; st base hairs simple, soft, gen ± 2 mm; SnBr ... ssp. *diffusa*
30* Fr segment obviously net-wrinkled; calyx hairs variable, gen denser; infl open or dense; st base hairy variable, gen more coarse; not SnBr
31. Basal lf blade gen < 2 cm; calyx and stipules gen purple; pedicel hair-like — s NCo ... ssp. *purpurea*
31* Basal lf blade often > 2 cm; calyx and stipules not purple; pedicel stouter
32. Pl stellate-canescent, hairs soft, felt-like, ± 1 mm; calyx densely stellate; petals gen 25–35 mm — WTR, s SCoRO ... ssp. *californica*
32* Pl not canescent, hairs gen few, gen coarse, spreading bristles; calyx gen sparsely hairy; petals often < 20 mm
33. Infl sts very dense, fls spreading; pl gen 3–6 dm; rhizomes short; s NCo, SnFrB, CCo, SCo, n Chl ... ssp. *multiflora*
33* Infl dense, fls gen stiffly erect; pl often 5–9 dm; rhizomes long-trailing; s NCo ... ssp. *patula*

How to Identify Weeds

- Use Keys-plus pictures- good if you know 'family' characteristics

New!

Weeds of California
and Other Western States

This encyclopedic yet easy-to-use guide covers 262 individual entries, including a full description of 451 species and another 361 plants compared as similar species, representing 63 plant families.

13 Shortcut Identification Tables for groups that share similar, unusual, or relatively uncommon characteristics

2 grass identification keys - a key to all characteristics including inflorescences and reproductive parts and a key to vegetative characteristics only

67 tables comparing important characteristics of difficult-to-distinguish weedy species

Color photos of over 700 weeds including seeds, seedlings, flowers, and mature plants

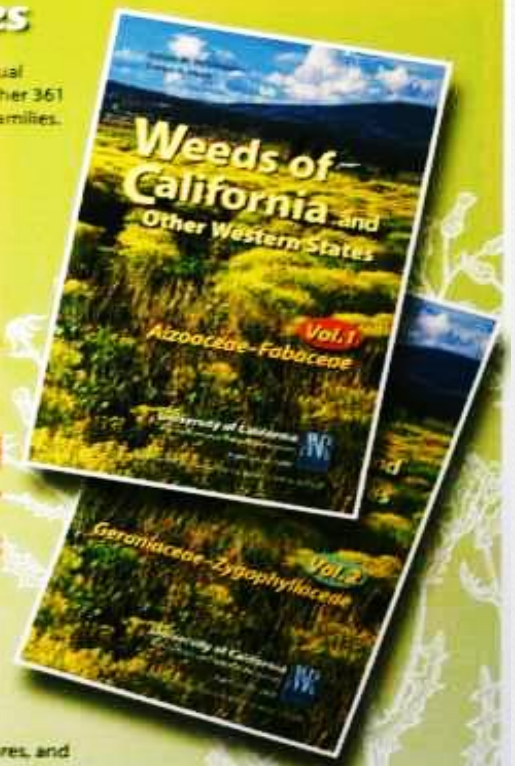
CD of all of the photographs from the book suitable for use in PowerPoint presentations – over 3000 images!

Appendix of non-native plants rarely or occasionally naturalized in California

Glossary of botanical terms

Bibliography of some of the most pertinent publications

Index to common names, scientific names, and synonyms



Each entry describes the plant category, family name, common name, and synonyms, along with a summary of the important aspects of the plant's life cycle, size, growth form, impact, method of introduction, and toxicity. You'll also find a description of the seedling, mature plant, roots and underground structures, flowers, fruits and seeds, spikelets and florets, spore-bearing structures, and post senescence characteristics for each entry. Also includes a description of the habitat where each is typically found, distribution in California, other states, and worldwide, along with maximum elevation at which the species is found.

Rounding out each entry is a description of the methods of reproduction, seed dispersal, germination requirements and conditions, seed survival and longevity, early establishment characteristics and requirements, cultural practices and management options that have proven effective or ineffective in controlling infestations, and a notation of inclusion on federal or state noxious weed lists. 2007. 2 volumes. 848 pp. 912 pp.

3488 ISBN 978-1-879906-69-31 $100.00

Call: **1-800-994-8849** or **510-642-2431** Click: **http://anrcatalog.ucdavis.edu**

Or visit your local UC Cooperative Extension office

ANR

How to Identify Weeds

- Use on-line ‘Expert’ system

wric.ucdavis.edu

UC Weed Research & Information Center

Weed Research & Information Center

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About WRIC

Weed Educ

Weed Info

Weed Sci Prog

Useful Links

This page was updated on Friday November 21 2008

Weed Information

Choose an item from the drop-down menus below:

Links marked with an * will take you to a site away from UC WeedRIC.

- **Weed identification tool**
- **Weed photos and information**

Sending samples for identification

- **UC Pest Notes**

University of California's official guidelines for pest monitoring techniques, pesticides, and nonpesticide alternatives for managing pests in homes and landscapes

Choose a plant

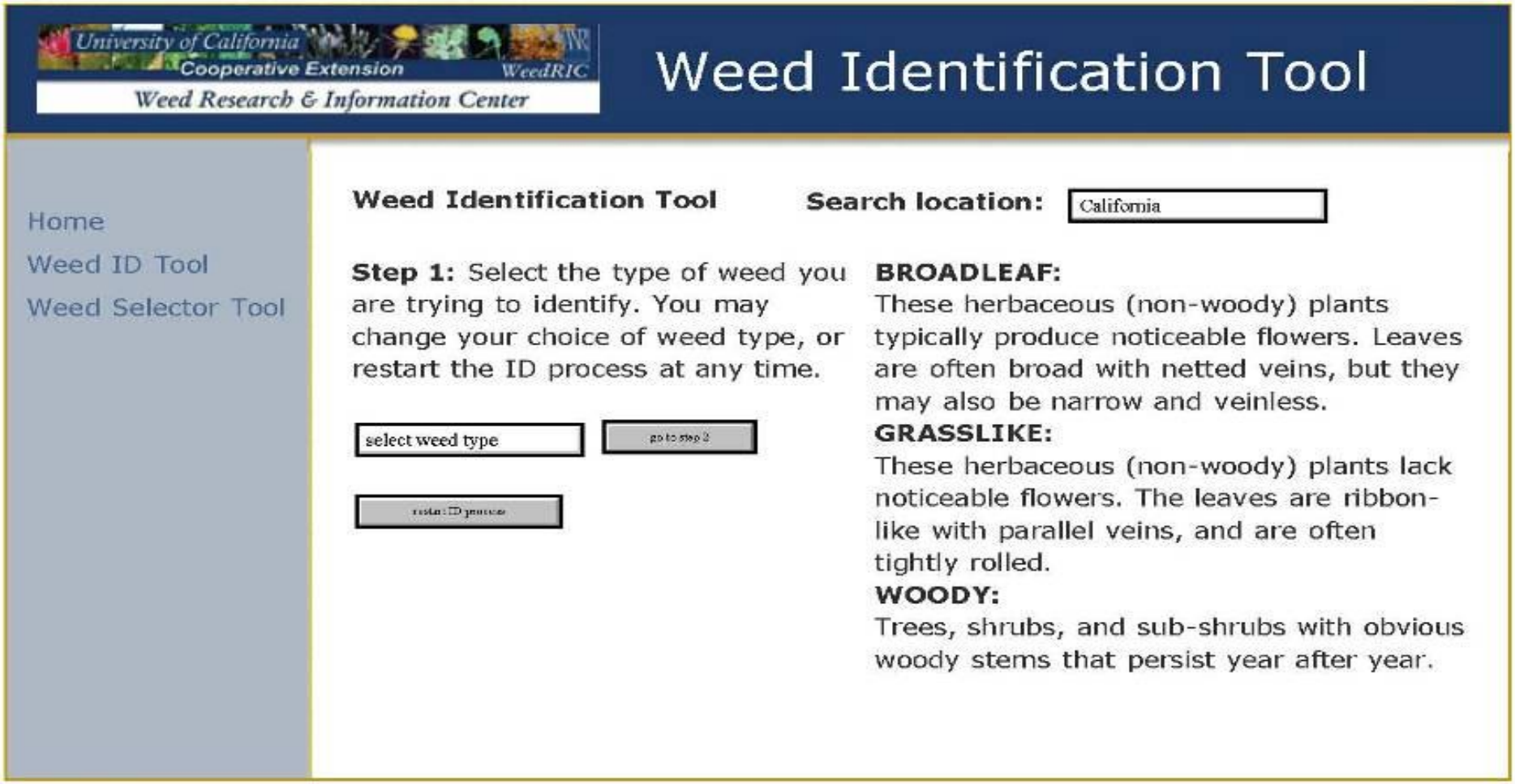
- **Weed control and herbicide information**

Choose a topic

- **Poisonous plants**

Choose a topic

UNIVERSITY OF CALIFORNIA–DAVIS CAMPUS PEOPLE



Weed Identification Tool

Home
Weed ID Tool
Weed Selector Tool

Weed Identification Tool **Search location:** California

Step 1: Select the type of weed you are trying to identify. You may change your choice of weed type, or restart the ID process at any time.

broadleaf go to step 2

restart ID process

BROADLEAF:
These herbaceous (non-woody) plants typically produce noticeable flowers. Leaves are often broad with netted veins, but they may also be narrow and veinless.

GRASSLIKE:
These herbaceous (non-woody) plants lack noticeable flowers. The leaves are ribbon-like with parallel veins, and are often tightly rolled.

WOODY:
Trees, shrubs, and sub-shrubs with obvious woody stems that persist year after year.

Where was the weed found?

Agriculture field: no selection

natural and grazed areas (non-crop): no selection

Urban: no selection

General characteristics

Growth Form: no selection

Life Cycle: no selection

Tendrils: no selection

Produces milky sap: no selection

Leaf characteristics

Leaf arrangment: no selection

If leaf is simple: no selection

If leaf is compound: no selection

Leaf margin: no selection

Petioles: no selection

Leaf hairs: no selection

Spines/thorns/prickles: no selection

Leaf veination: no selection

Stem characteristics

Stems square: no selection

Leaves on flowering stems: no selection

Spines/thorns/prickles: no selection

Floral characteristics

Flower color: no selection

Flower symmetry: no selection

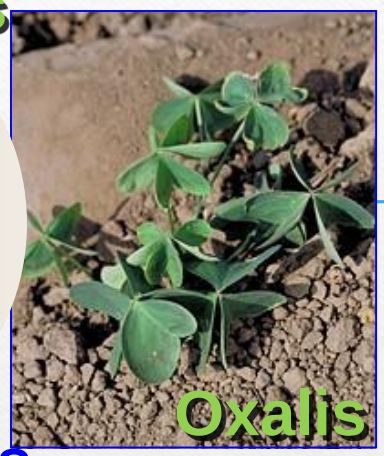
Spines/thorns/prickles: no selection

How do you identify weeds?

Broadleaves

Wide leaves

Branching veins



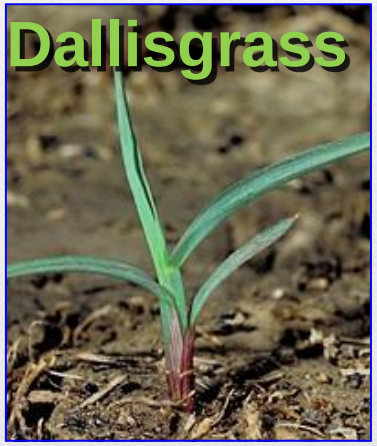
Oxalis

Sedges

Leaves in sets of 3

Triangular stems

Yellow nutsedge



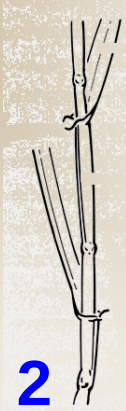
Dallisgrass

Large crabgrass

Grasses

Narrow leaves

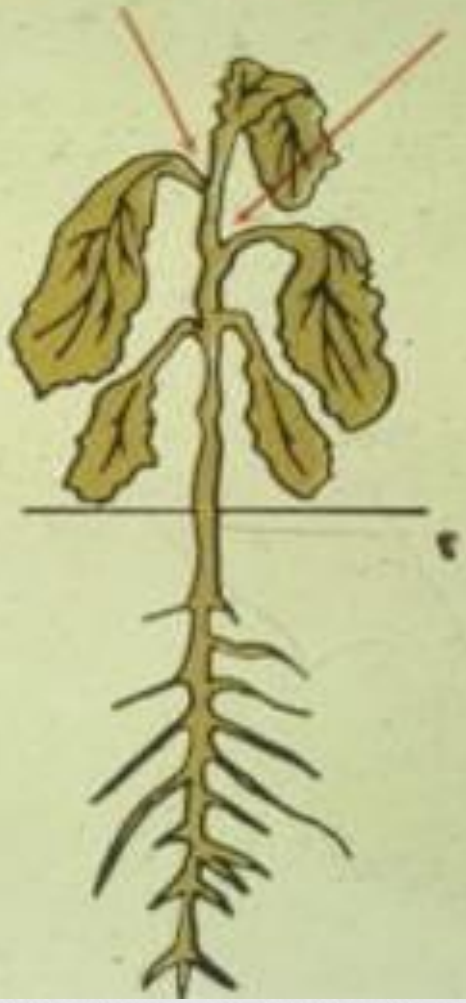
Arranged in sets of 2



Parallel veins

Round or flat stems

Growing Point



Broadleaf Weed Identification

Some weeds are easy to control when they are small

Still pretty easy…

Even here, still pretty easy…

C103-09

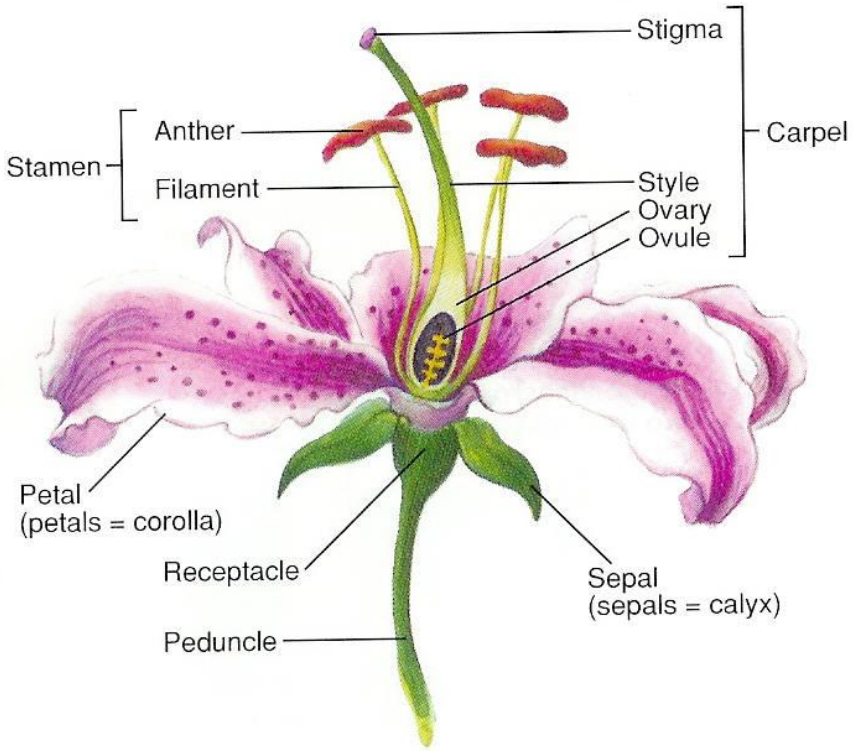
Here?, not so easy…

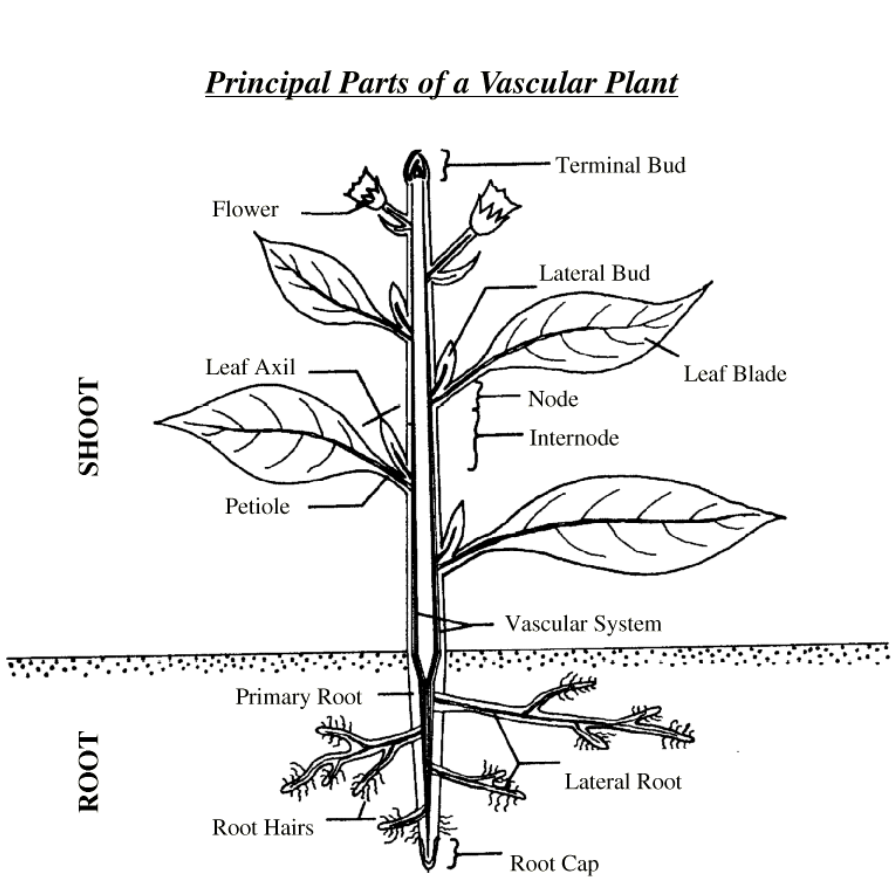
Now? Too late

Worlds Fastest Weed-

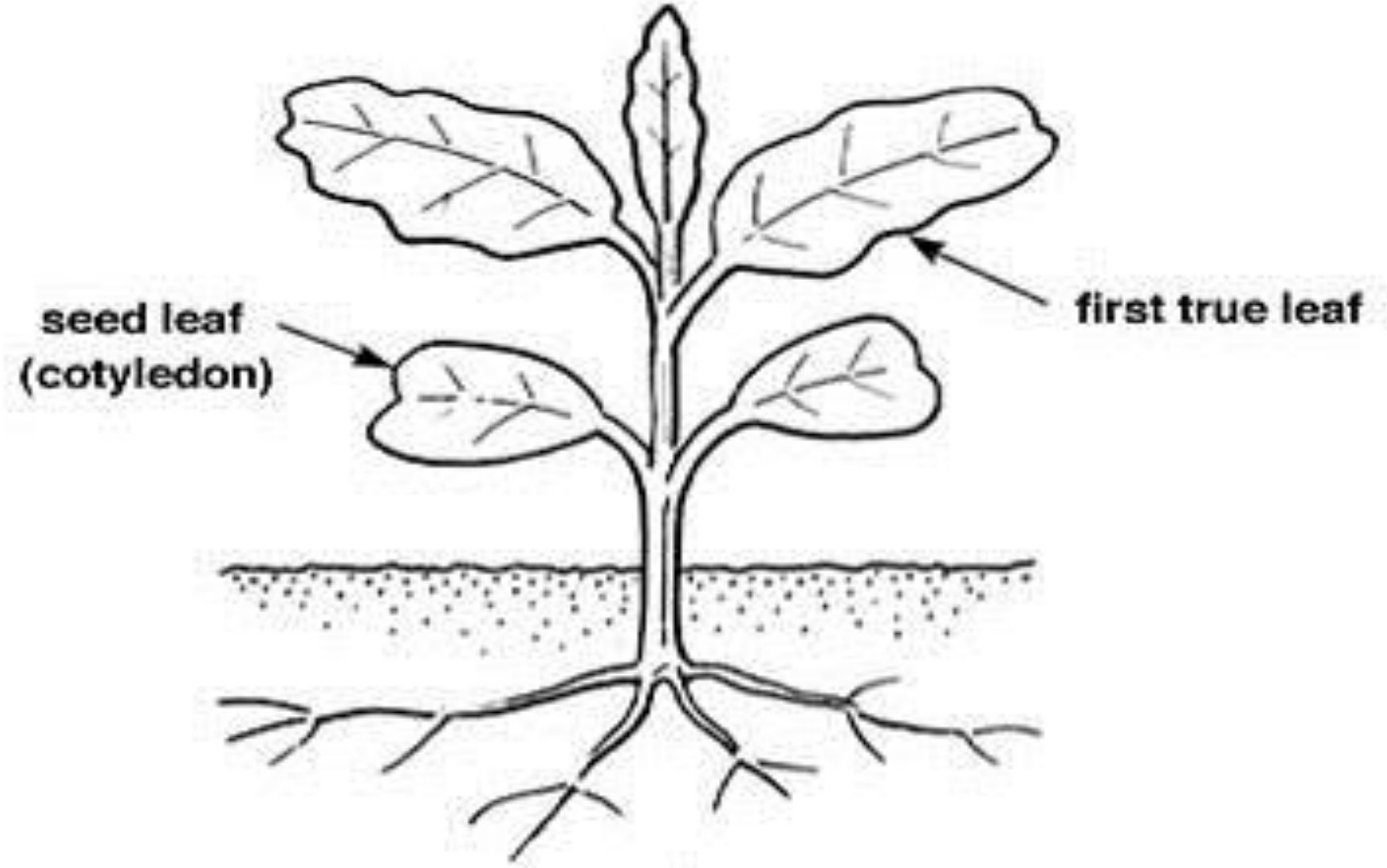
Clocked at over 60 miles per hour!!!

What a taxonomist uses to ID plants

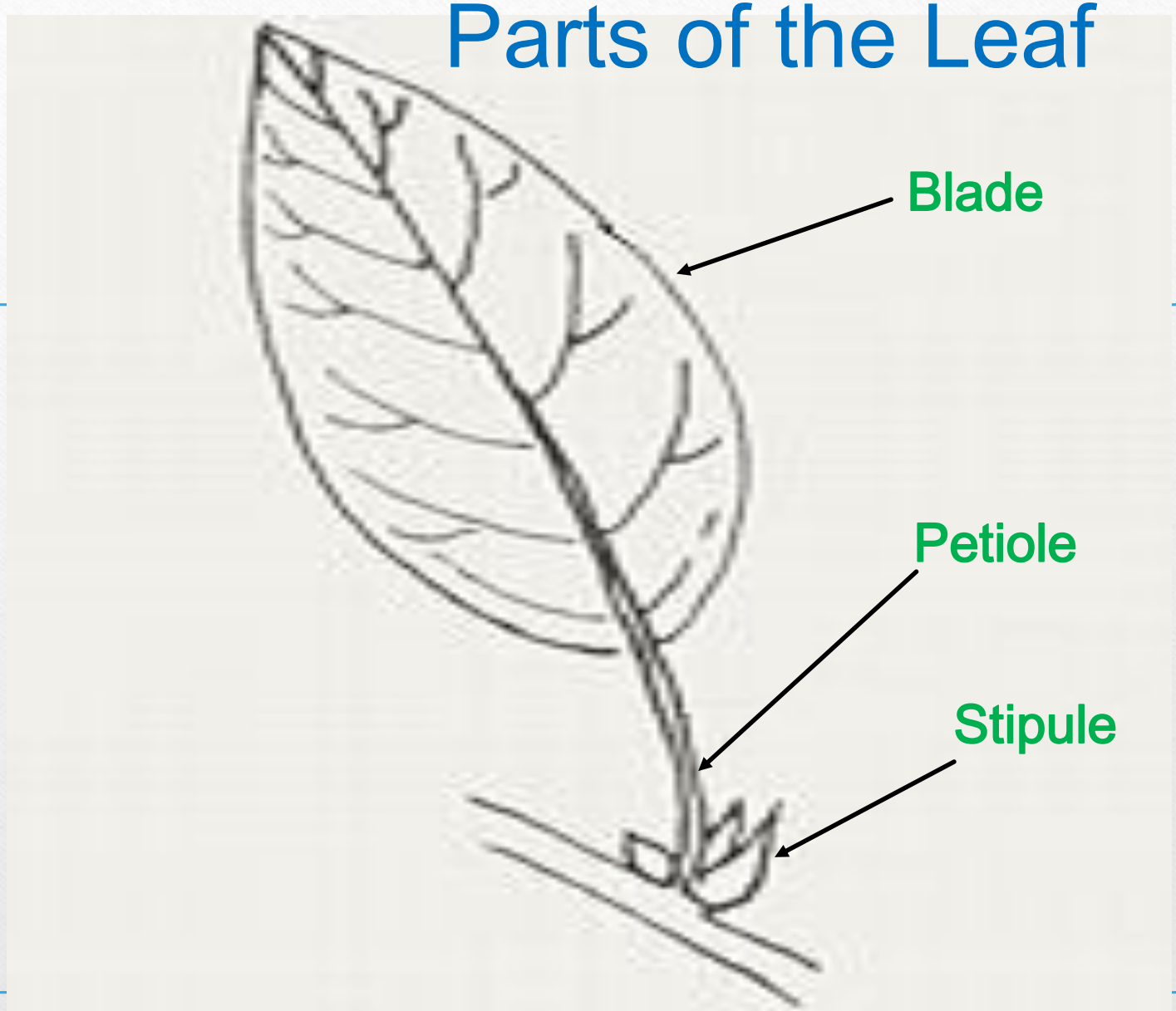




What a Weed Scientist uses to ID a Plant



Parts of the Leaf



Leaf type

Simple

Compound

Compound leaf

- Trifoliate

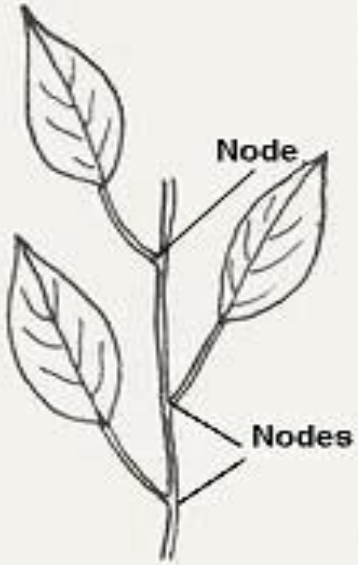
C136-17

- Pinnate leaves

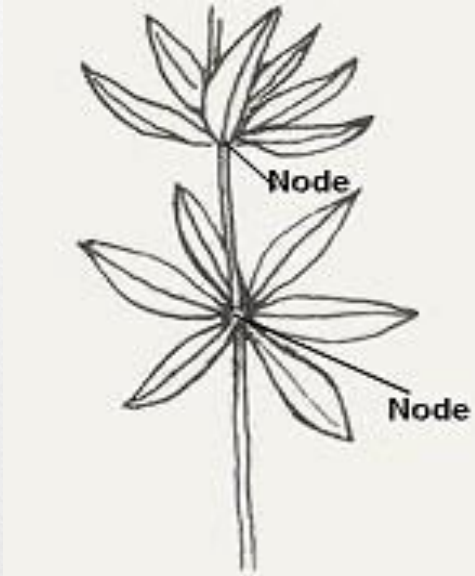
C022-13

- Palmate leaves

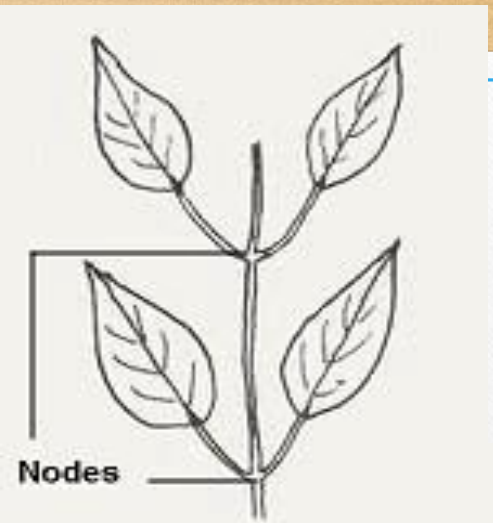
Leaf arrangement



Alternate



Whorled



Opposite

Basal Rosette

True leaves may be arranged as **Alternate** or **Opposite** along the stem

Bedstraw-whorled

C232-15

Dandelion-basal rosette

C065-03

Chickweed-Leaves Opposite

C092-13

Square stem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Leaf shapes

Dissected

Cordate
(heart-shaped)

Elliptic

Orbicular

Hastate
(arrowhead-shaped)

Reniform
(kidney-shaped)

Cuneate
(wedge-shaped)

Lanceolate

Linear

Oblong

Obovate

Ovate

Mustards Cotyledon leaves-Kidney shaped

Mallow family cotyledons are heart shaped

Why is it called 'Cheeseweed?'

C155-13


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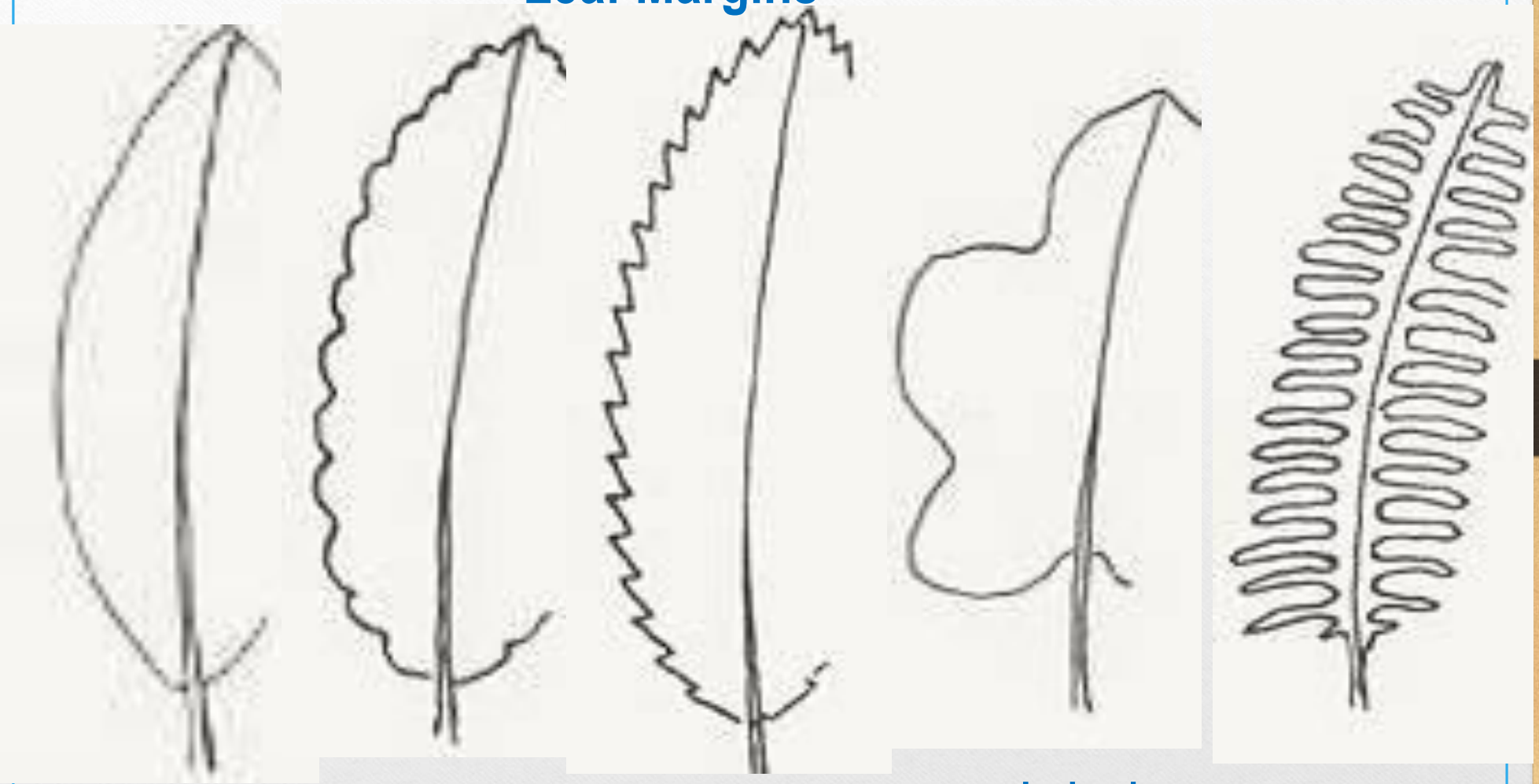
C155-13

Velvetleaf (Abutilon theophrasti) flower with immature fruit.

C154-03

Leaf Margins



Entire

Crenate (rounded)

Serrate (toothed)

Lobed

Pinnatifid (feathered)

Common groundsel (Senecio vulgaris) plant.

C058-05

Prickly lettuce (Lactuca serriola)

Deeply Lobed Leaves

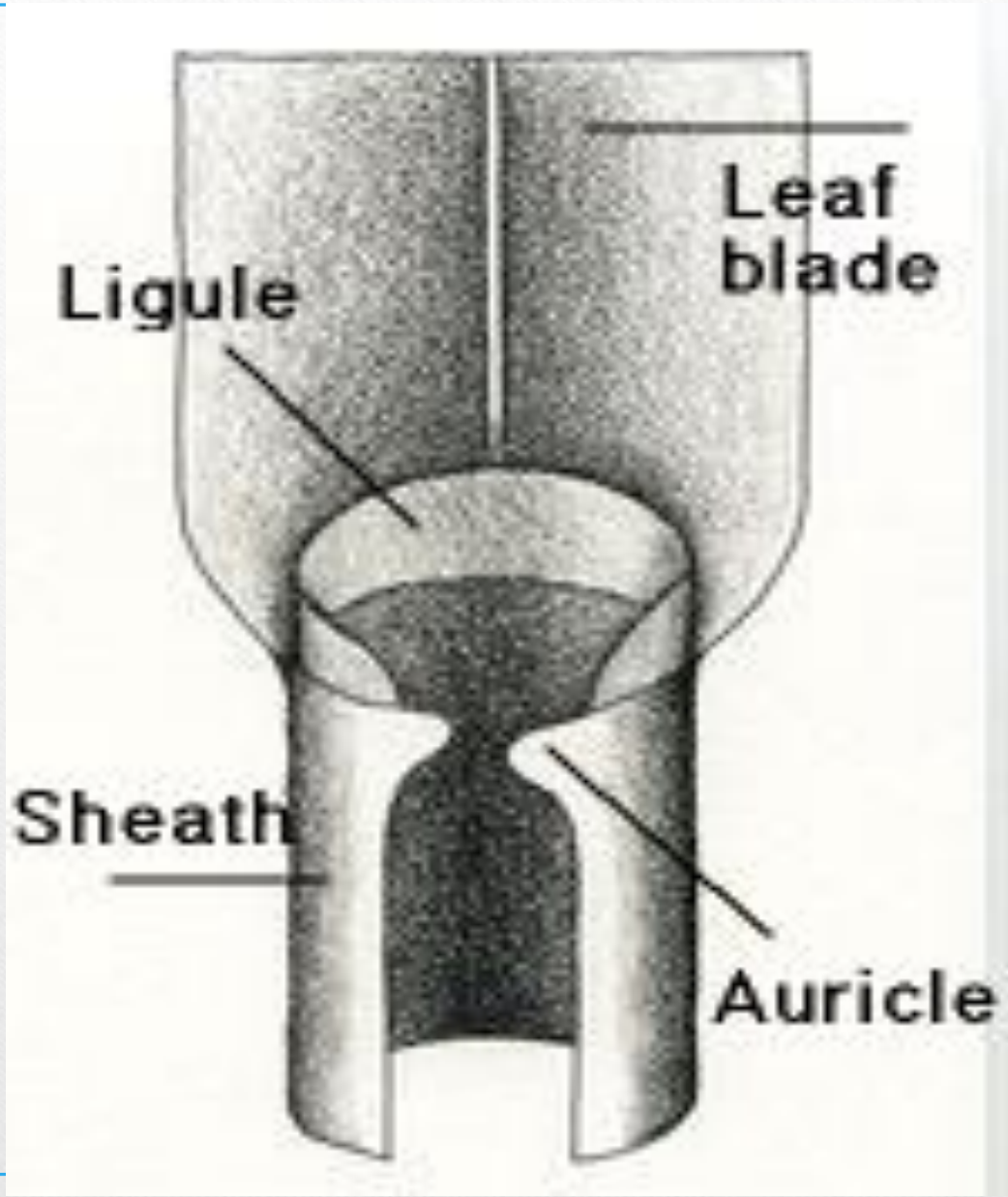
C054-08

Not Deeply Lobed Leaves

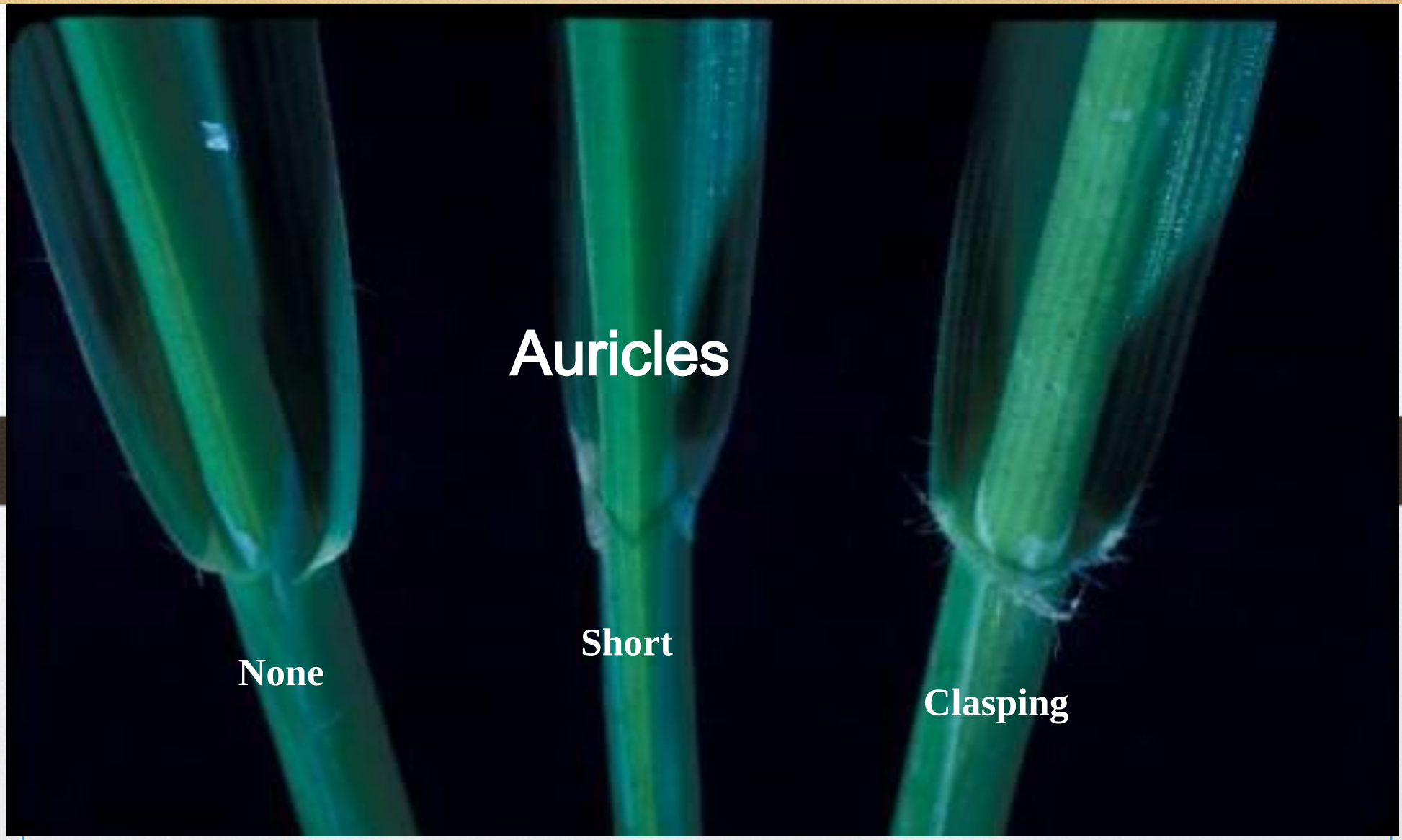
C054-10

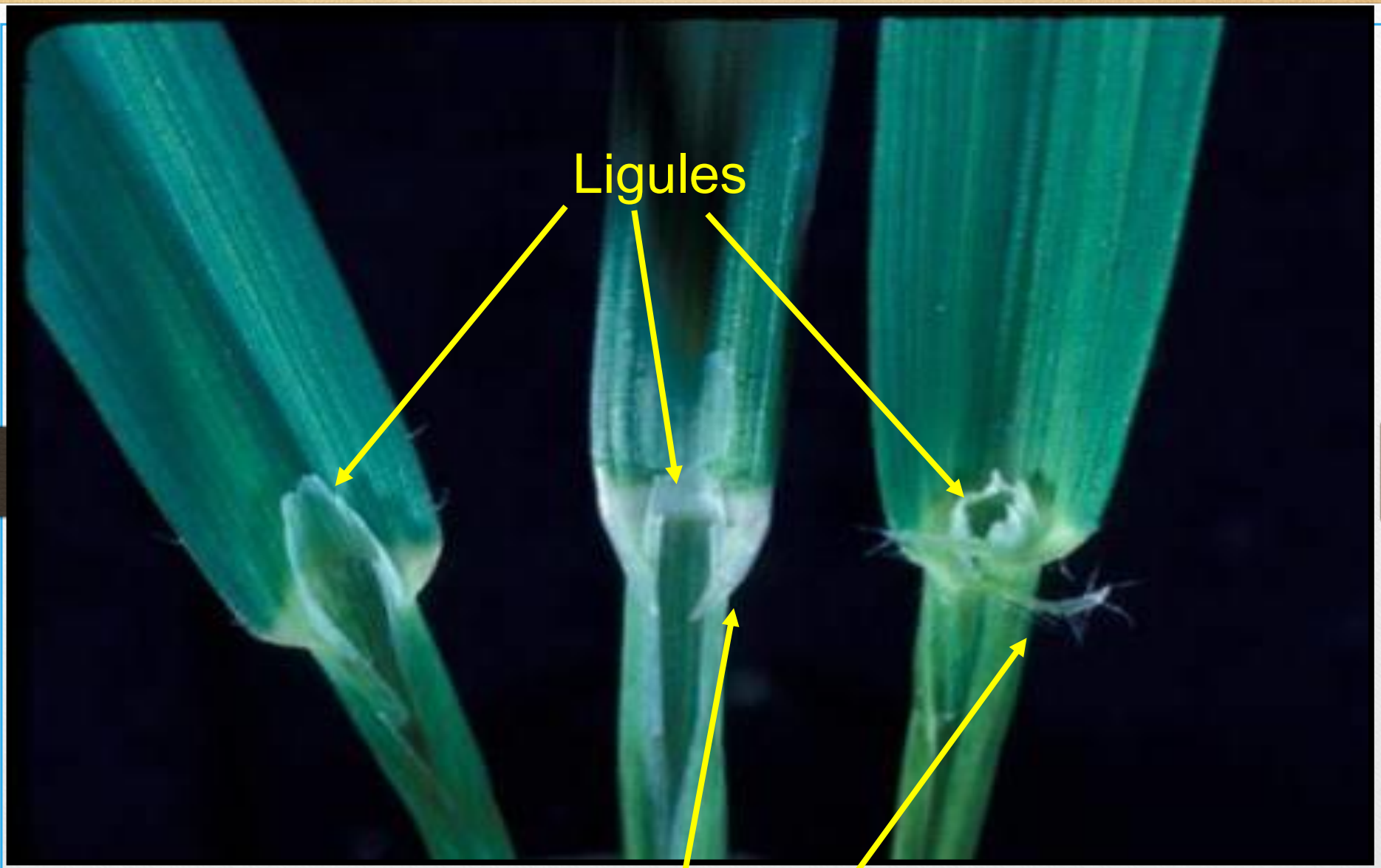
Grass Identification

- The **leaf** is composed of the **sheath and blade**. The **sheath** encloses the **stem** and is connected to the blade at the junction found by the **collar.** The **collar** is located on the outer side of the leaf and the **ligule** is located on the inner side of the leaf. **Auricles** are the appendages projecting around the stem from both sides of the collar. **Joints** in the stem are called **nodes.** The part between any two nodes is called the **internode**


Leaf
blade
Ligule
Sheath
Auricle

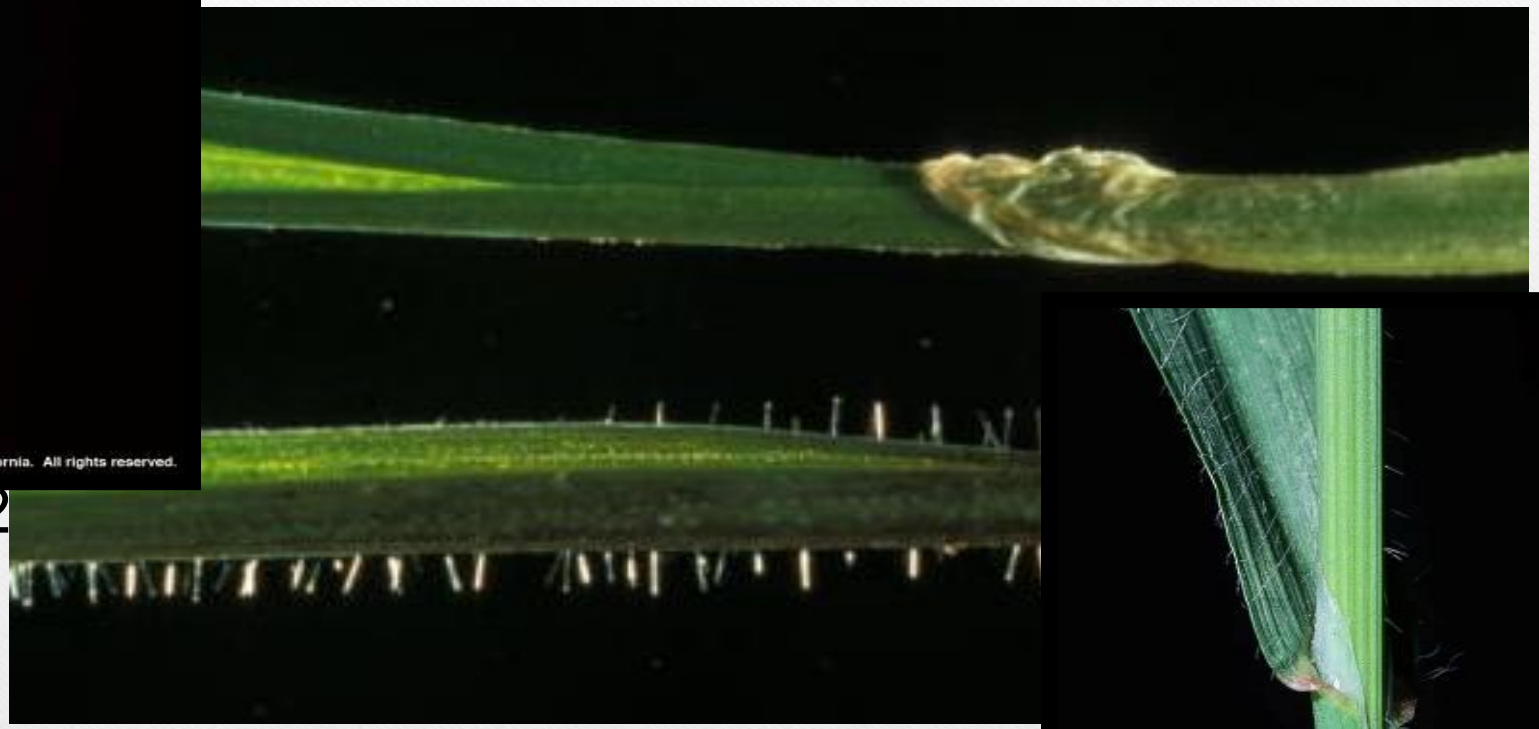

Auricle


Auricles
None
Short
Clasping
Oats
Wheat
Barley

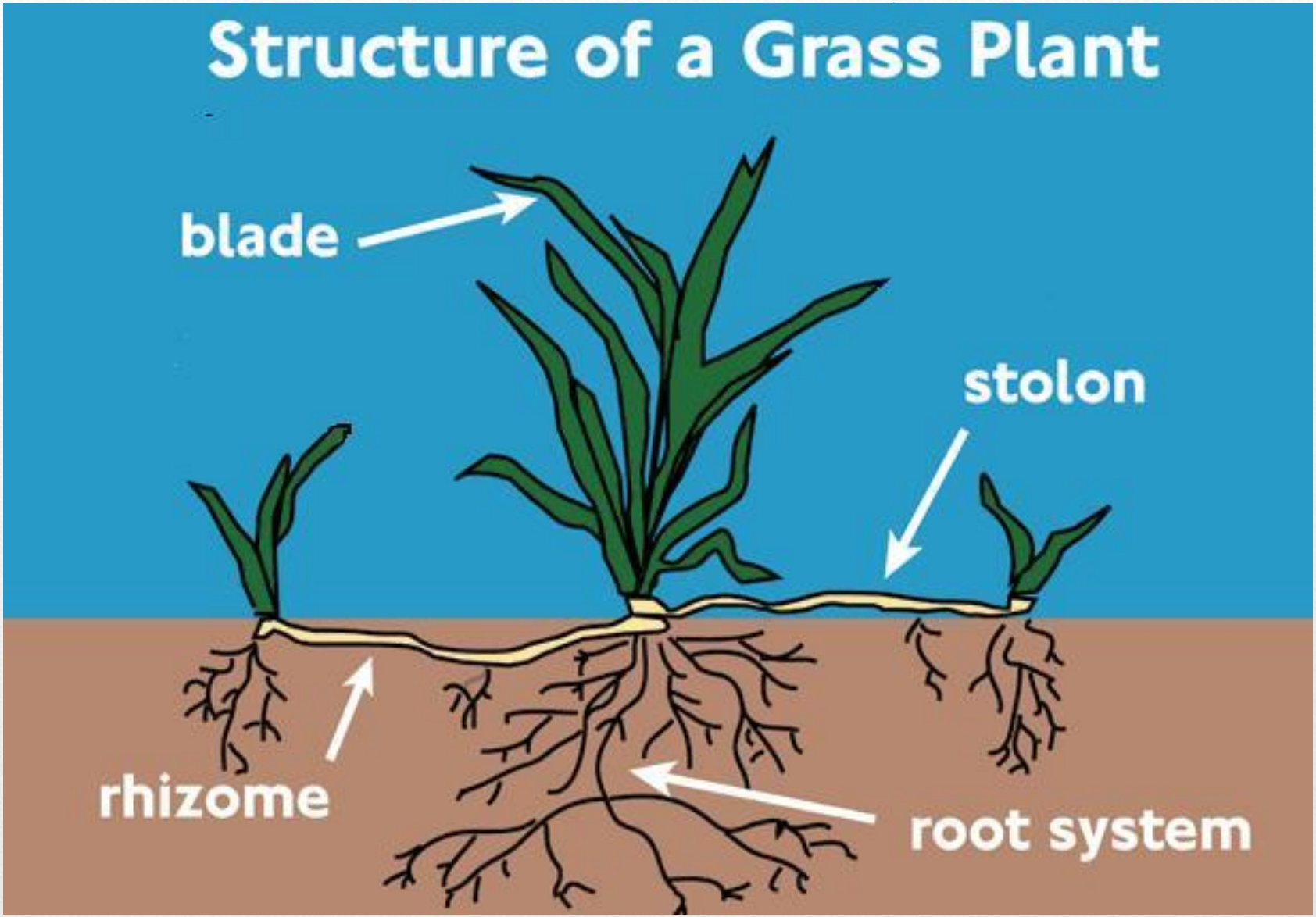

Ligules
Auricles

Oats

C176-12



Ripgut brome



Johnsongrass (Sorghum halepense) rhizomes.

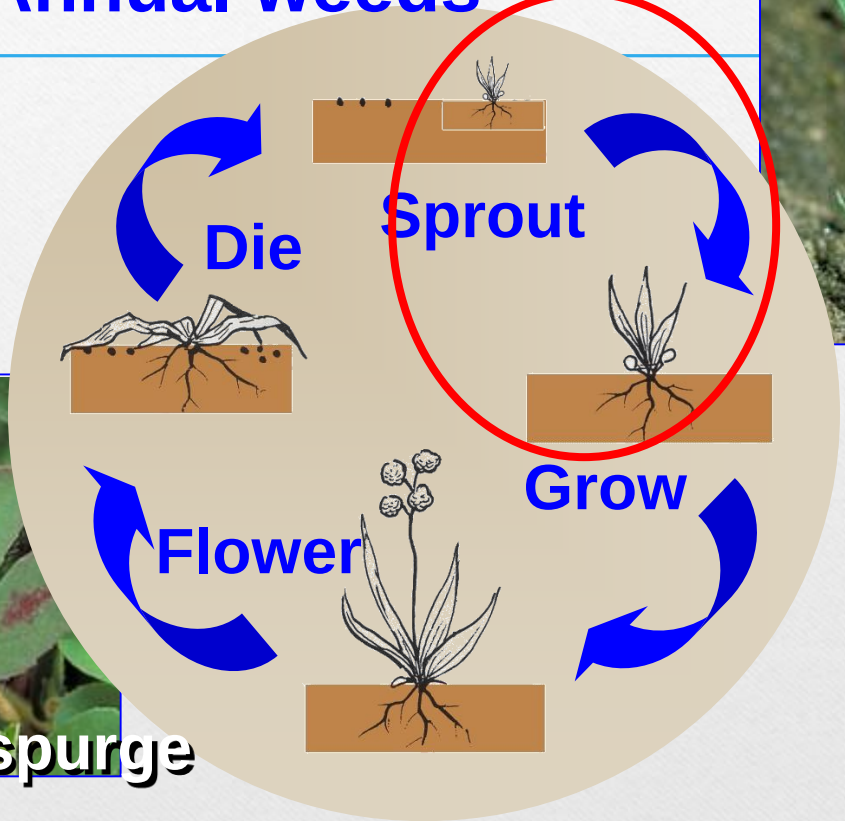
C212-09

Weed Biology

Know the life cycle of your weed

Control weeds before they spread

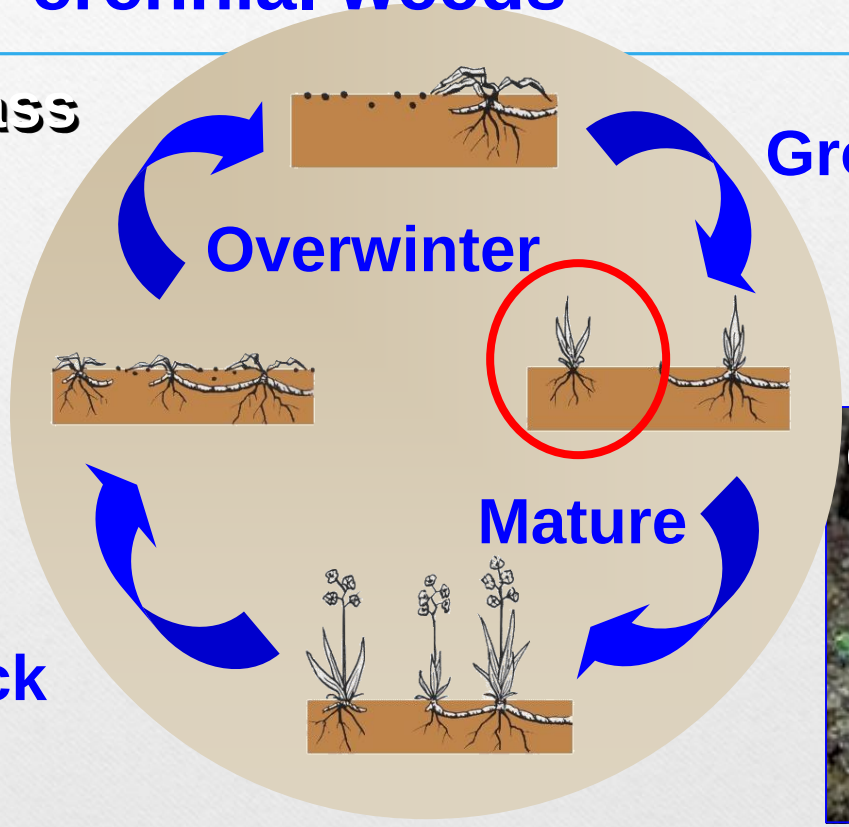
Annual weeds



Know the life cycle of your weed

Control before vegetative parts or seeds form

Perennial weeds



Simple perennial weeds

- Reproduce primarily from seed
- Generally do not reproduce from roots
- However, can reproduce from root segments if root is cut up or broken off.

Broadleaf plantain

Buckhorn plantain

Creeping perennial weeds

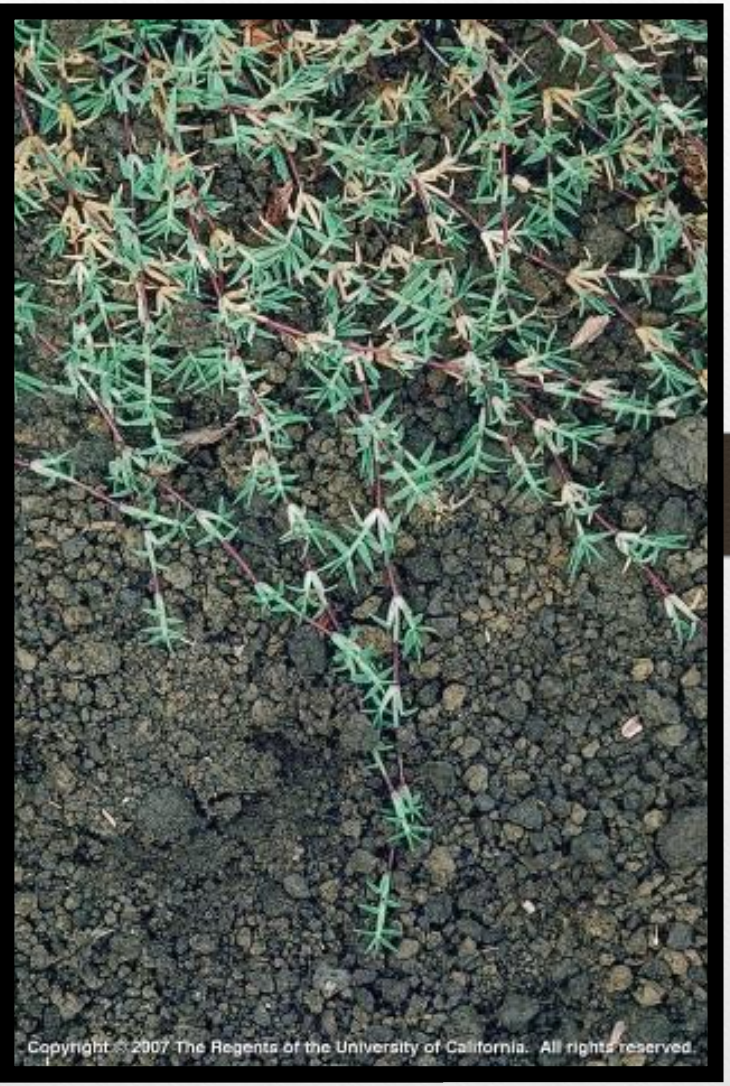
- Are the worst weeds!

- Can spread by seed or by creeping roots, rhizomes, stolons or tubers.

- There are sedges, grasses and broadleaf creeping perennials.

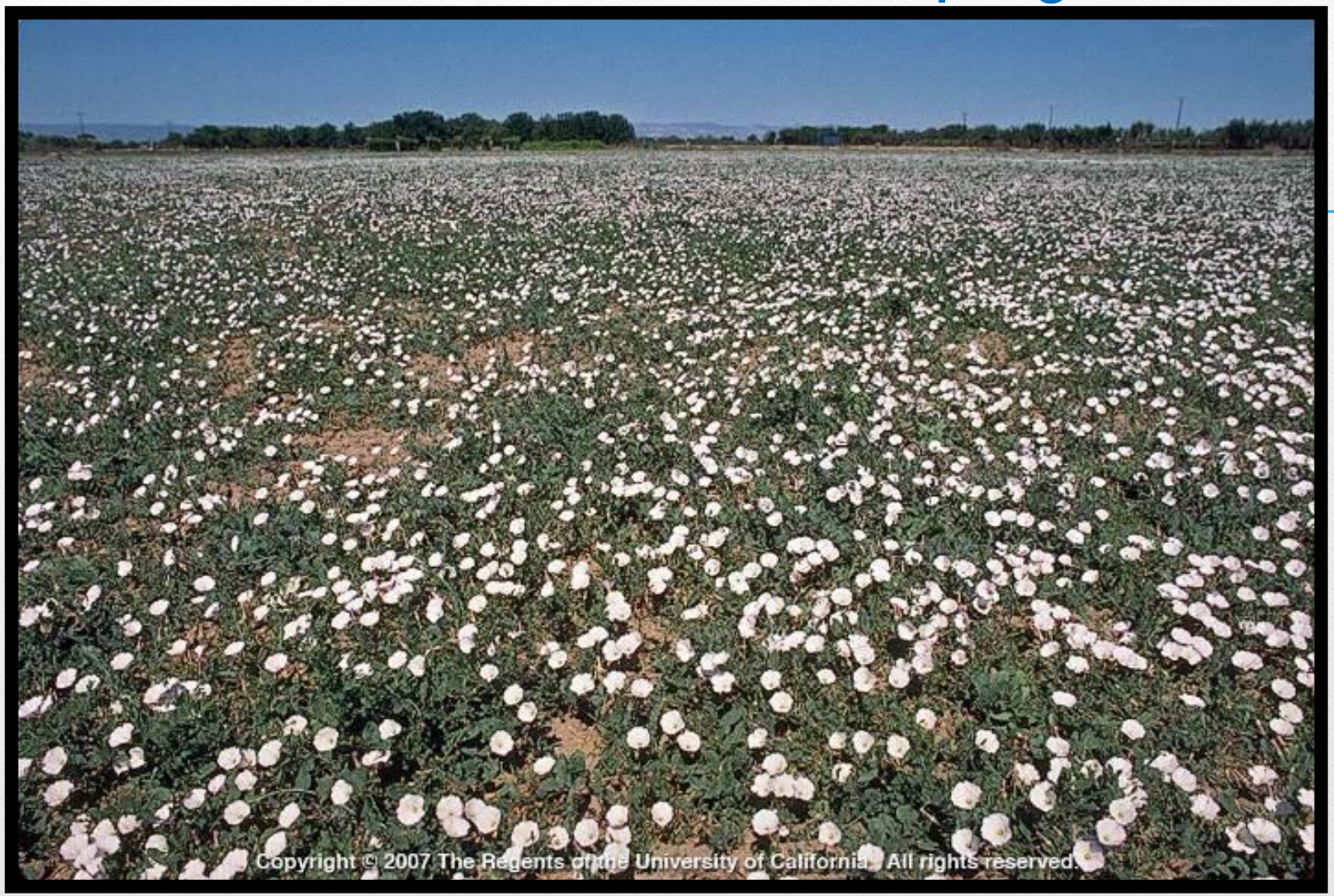
Johnsongrass and Bermudagrass - creeping

C212-09



C185-03

Field bindweed – creeping



Nutsedge - creeping

C111-03

-04

C111-02

WEED MANAGEMENT IN LANDSCAPES

Integrated Pest Management for Landscape Professio

COMMON GROUNI

Integrated Pest Management for Home Gardeners and La

Common groundsel or old-man-of-the-spring (*Senecio vulgaris*) is found nearly everywhere in California (Fig. 1). It is most prolific during the cooler times of the year, but can be found year-round near the coast or in shady areas. Although common groundsel grows best in moist fertile soil, it can grow in more trying environments such as along roadsides and other disturbed sites. It is also one of the major weeds in nurseries. It is a competitive plant in landscaped areas and gardens, but it is generally not a problem in lawns. In addition to the general weediness of this plant, it also can cause chronic liver poisoning to horses, cattle, and swine, even if only a small amount is eaten over a few weeks time.

The success of common groundsel as a weed lies in its seeds. It starts developing seeds very early in its life cycle and can produce 25,000 or more seeds per plant under optimal conditions, although about 1,700 seeds per plant are more likely. These seeds are easily spread by wind. Additionally, there can be three or more generations per year. Even when the plant is pulled from the ground or cut down, seeds from open flowers can still mature and germinate. This weed was also one of the first to have populations develop resistance to some common agricultural herbicides.

IDENTIFICATION AND LIFE CYCLE

Common groundsel is in the Asteraceae family, which also includes sunflower, dandelion, and thistles. It is classified as a winter annual since the seeds germinate in late fall through early spring. The plant matures throughout spring and early summer and usually dies in the summer heat.

The first true leaves of seedlings have shallow teeth, may be purple on the underside, and are attached to the stem with a short petiole. Later developing leaves are more deeply lobed and are attached directly to the stem. Leaves alternate on the stem and are mostly hairless. In full sun, groundsel grows up to 2 feet tall with a shallow taproot and a secondary fibrous root system and is often branched. Under shaded conditions the mature plant will have

Figure 1. Common groundsel or old-man-of-the-spring. A. receptacle showing a single flower; B. achene

PEST NOTES Publication 74130

University of California
Agriculture and Natural Resources

May 2006

ANNUAL BLUEGRASS

Integrated Pest Management for Home Gardeners and Landscape Professionals

Annual bluegrass, *Poa annua* (Fig. 1) is one of the most common weeds of turf, ornamental plantings, and gardens in the United States. It is native to Europe but is distributed worldwide. Commonly referred to as "Poa," it is a particular problem in golf course greens and fairways throughout the world. It also can be a weed in vegetable crops and agronomic crops. Though present in tree and vine crops in California, it is usually not a significant problem. The genus *Poa* consists of about 280 species worldwide. Their typical "boat-shaped" leaf tips (Fig. 2), which curve up like the bow of a boat, are a distinguishing characteristic of the genus.

Three members of the genus *Poa* are commonly found in turf: Kentucky bluegrass (*Poa pratensis*) is a common cool-season turf species that is well adapted to cool, well-watered sites such as coastal and intermountain areas. Rough bluegrass (*Poa trivialis*) is a less desirable turf/weed species that does well in moist, shaded areas, but lacks heat and drought tolerance. Annual bluegrass is a weed species that, unlike Kentucky and rough bluegrass, is able to survive low mowing heights (less than 1 inch) and still mature. A fourth species, bulbous bluegrass (*Poa bulbosa*) is sometimes found as a weed in northern California turfgrass.

IDENTIFICATION AND LIFE CYCLE

Annual bluegrass is a misnomer because there are two plant types of annual bluegrass: a true annual (*P. annua* var. *annua*) and a perennial type (*P. annua* var. *reptans*). While the two types are not easy to distinguish from each other, the annual type is more upright in its growth habit and produces more seed than the lower-growing perennial type. The annual type also tends to produce a higher percentage of dormant seed. The perennial type produces seed that germinate readily under optimum conditions. Depending on the site there may be a predominance of one type or a mixture of both. The perennial type is common in such sites as golf course greens, while the annual type may be more common in lawns and parkways (although both types can be found in either of these situations).

Annual bluegrass starts germinating in late summer or fall as soil temperatures fall below 70°F. It continues to germinate throughout winter, allowing several flushes of germination at any one site throughout winter. Annual bluegrass grows to a height of 6 to 8 inches when left unmowed. It has light green, flattened stems that are bent at the base and often rooted at the lower stem joint. Leaf blades are often crinkled part way down and vary from 1 to 3 inches in length with typical Poa, boat-shaped leaf tips. The inflorescence (flowering structure) is a terminal panicle that varies from 1 to 4 inches in length. Seed head initiation can start as soon as plants are 6 weeks old in early fall and continue until early summer, but most seed heads are formed in spring.

The annual form of annual bluegrass is a rapid and prolific seeder. Each small plant can produce about 100 seeds in as few as 6 weeks. Viable seed can be produced just a few days after pollination, which allows the plant to mature even in

Figure 1. Annual bluegrass.

Figure 2. Annual bluegrass leaf tip.

frequently mowed turf. The seed is amber colored and about ½ inch long.

Annual bluegrass has a fairly weak and shallow root system and needs adequate moisture from rainfall or frequent irrigation to survive. It grows well in moist areas in full sun. However, it can also do well in semi-shaded conditions. Annual bluegrass also can grow in compacted soil conditions. In coastal regions or in moderate temperature areas where turf is frequently irrigated, annual bluegrass may persist all year. In warmer areas, it usually dies in summer.

IMPACT

Annual bluegrass can be a major weed problem for turf and landscape managers. In turf it forms a weak sod that provides poor footing for athletic fields and golf courses. In addition, unsightly seed heads of annual bluegrass reduce the aesthetic quality of the turf. Because of its winter growth habit, it is more competitive than warm-season turf cultivars (common bermudagrass, zoy-

PEST NOTES Publication 7464

University of California
Agriculture and Natural Resources

Revised April 2003

DANDELIONS

ted Pest Management for Home Gardeners and Landscape Professionals

IDENTIFICATION AND LIFE CYCLE

Dandelion is a perennial that grows best in moist areas in full sun; how-

CREEPING WOODSORREL AND BERMUDA BUTTERCUP

Integrated Pest Management for Home Gardeners and Landscape Professionals

eeping woodsorrel, Oxalis
rniculata, is a cosmopolitan weed
pecies that occurs throughout the
orld. It is most commonly found in
alifornia growing below the 2,500 foot
levation level. It is widely distributed
n lawns, flower beds, nurseries, gar-
ens, and greenhouses. A related spe-
es, Bermuda buttercup (*O. pes-caprae*),
s from South Africa and is found in
ainful gardens and fields and inland
nulicaporl areas. Bermuda buttercup
as been cultivated as an ornamental,
nd though it is sometimes found in
wns, it usually is only a problem in
ardens or shrub areas.

DENTIFICATION AND
IFE CYCLE

reeping Woodsorrel. Creeping woodsorrel grows in both full sun and hade in areas that receive adequate oisture. It is a perennial plant (lives or several seasons) that grows in a rostrate manner (low and creeping) nd forms roots along its stems where odes contact the soil (Fig. 1). The aves of creeping woodsorrel are comosed of three heart-shaped leaflets hat are attached to the tip of a long em (petiole). Leaves can range in olor from green to purple. The leaves often close and droop at night or under ense light. If creeping woodsorrel lants are stressed from drought or full unlight, the leaves sometimes turn eddish and wilt.

lowers of creeping woodsorrel can be ound almost anytime during the year nd have five small yellow petals (⅛ to ¼ inch long) that occur in clusters of one to five at the ends of slender flower stalks. Seed pods are erect, hairy, cylindrical (resembling okra), and ½ to 1 inch long. Creeping woodsorrel seed is rough, reddish, and about ⅛ inch in length. There are about 10 to 30 seeds per pod, with more than 5,000 seeds per plant. Plants can produce seed even when kept mowed to ½ inch. When seed pods mature, they burst open and forcefully expel the seeds, which may land 10 feet or more from the plant. Because seeds are rough, they adhere to surfaces of machinery or clothing.

Light is required for germination. Optimum seed germination occurs at temperatures between 68° to 80°F, though some germination occurs at lower temperatures. Seed can germinate anytime of year, but most plant establishment takes place in fall. It is not known how long seed remains viable in the soil. Germination is inhibited when seeds are exposed to moist, warm conditions (4 hours of moist heat at 97°F decreased germination of creeping woodsorrel by 90%, and 8 hours stopped it altogether).

The seedling has two round cotyledons (seed leaves), and the first true leaves are a replica of the mature, three heart-shaped leaflets. Creeping woodsorrel grows rapidly from a seedling, forming a fleshy taproot and an extensive rootstock that expands outward. Though flowering seems to occur almost all year, spring is a time of heavy flower-

Figure 1. Creeping woodsorrel.

ing and seed formation. Extremely cold or hot temperatures reduce growth, but the plants do not die. If the plant is pulled out, the rootstock often breaks off and remains in the soil, allowing the plant to regrow.

Bermuda Buttercup. Bermuda buttercup is a perennial that grows in full sun in cool coastal areas, but colonizes it grows primarily in shaded areas. It grows from bulbs in fall and flowers in late winter or early spring. The plant forms a single, short, vertical stem that is mostly underground. The leaves, which are larger and more fleshy than those of creeping woodsorrel and are often spotted with purple, form a rosette on the soil surface. Small, whitish bulblets develop on the stem at the base of the rosette of leaves, and new bulbs form underground. The flowers are bright yellow and from ⅜ inch to 1½ inches in diameter, and the seed pods resemble the bulbs. Bermuda

PEST NOTES Publication 7444

University of California
Agriculture and Natural Resources

Revised January 2002

PestNotes are a great resource for biology

Some Troublesome Lawn and Garden Weeds

Annual Bluegrass

- Cool-season Annual, Biennial, or Perennial
- One of the most abundant weeds
- Annuals die and perennial types go dormant under hot dry conditions.
- Seeds have been reported to survive 30 years under field conditions and some can survive ingestion by cattle!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C206-01

C206-06

C206-02

Dandelion

- Perennial-in this area will grow almost year round
- Each Plant can produce thousands of seeds-
- Seeds can germinate all year around
- Control plants when small-roots can resprout

  if not completely removed

Common Groundsel

- Winter annual-germinates early in fall and begins to produce seeds in mid winter
- Can produce up to 25,000 seeds per plant!
- Seeds usually only last one year
- Can be easily controlled with mulch or if pulled before seed production

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Oxalis

- Two species of Oxalis- both perennial
- One spreads by seed- Creeping Woodsorrel
- One spreads by bulbs- Bermuda Buttercup

Creeping Woodsorrel

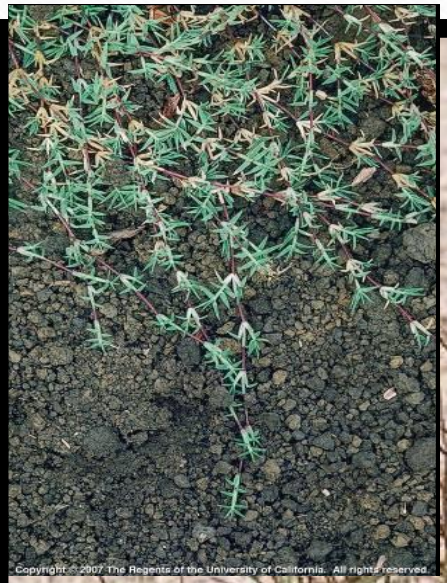
- Perennial- in colder area acts like an annual
- Spreads by seed-up to 5000 per plant that can be expelled up to eight feet from parent plant!
- Light is required for germination
- Whole plant must be pulled- severed stems can develop into new plants
- Control before seeds are produced- seedlings flower in as little as 4 weeks- nearly year round

Bermuda Buttercup

- Bulbs germinate in fall after first rain. Foliage dies and bulbs become dormant as temperatures rise in late spring and summer
- Plants in California very rarely produce seeds
- Forms a single, short underground vertical stem
- Small, whitish bulblets develop on the stems at the base of the rosette of leaves and new bulbs form underground.
- Repeated cultivation before bulbs are developed may reduce infestation

Bermudagrass

- Perennial Grass-
  - Spreads by Stolon, Rhizome and Seeds!
- Growth is reduced by shade
- Will go dormant in winter
- Must use geotextile mat under mulch
- Can be controlled by drying out in summer… not easily-



Creeping and Spotted Spurge

- Seedlings germinate when temperature warms in the spring and can produce seeds within 2 weeks!
- Light burial can dramatically reduce germination
- Creeping spurge can spread by rooting at nodes
- Ants have been know to spread seeds
- Major method of control- prevent invasion

Creeping Spurge

Spotted Spurge

Yellow Nutsedge

- Does not move by seed
- Nutlets- tubers will form after 2-3 weeks
- Infestation is by soil movement
- Repeated pulling- every 2-3 weeks will eventually reduce population
- Often confused with Tall flatsedge- grows in wet areas- does not produce nutlets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C111-03

Tall flatsedge- similar to Yellow Nutsedge

Other weeds


Panicle willowherb
Epilobium brachycarpum C. Presl
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February 28


Roundup on willowherb

Horseweed *(Conyza canadensis)*

- AKA mare's tail
- Annual weed
- Prolific seed producer
- Wind-blown seed
- Early colonizer
- Doesn't tolerate disturbance
- 6-fold resistance (whole plant)
- 4-8 fold resistance (in vivo)
- Suspected translocation mutation






Ryegrass

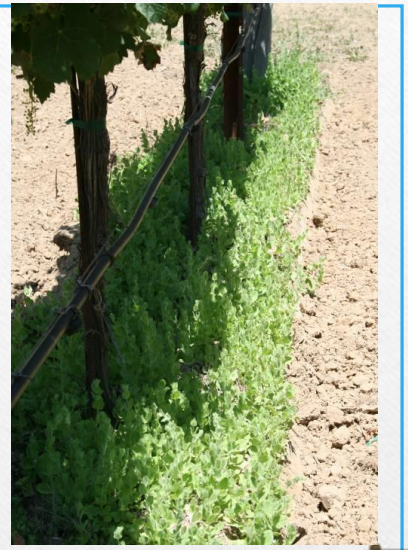
- Species Lolium perenne L. – perennial ryegrass
  - Subspecies - multiflorum (Lam.) Husnot – Italian ryegrass
  - Subspecies - perenne – perennial ryegrass
- Species Lolium rigidum Gaudin – Wimmera ryegrass



Stinkwort (Dittrichia graveolens)

- Native to Mediterranean region
- Erect, fall flowering, aromatic annual about 2 feet tall.
- First reposted in Alameda County in 1995
- Unpalatable to livestock
- Resembles Russian thistle, but is more similar to tarweed
- Causes dermatitis
- Germinate February-? Flowers in November

Sharp-point Fluvellin (Kickxia elatine(L.)Dumort)



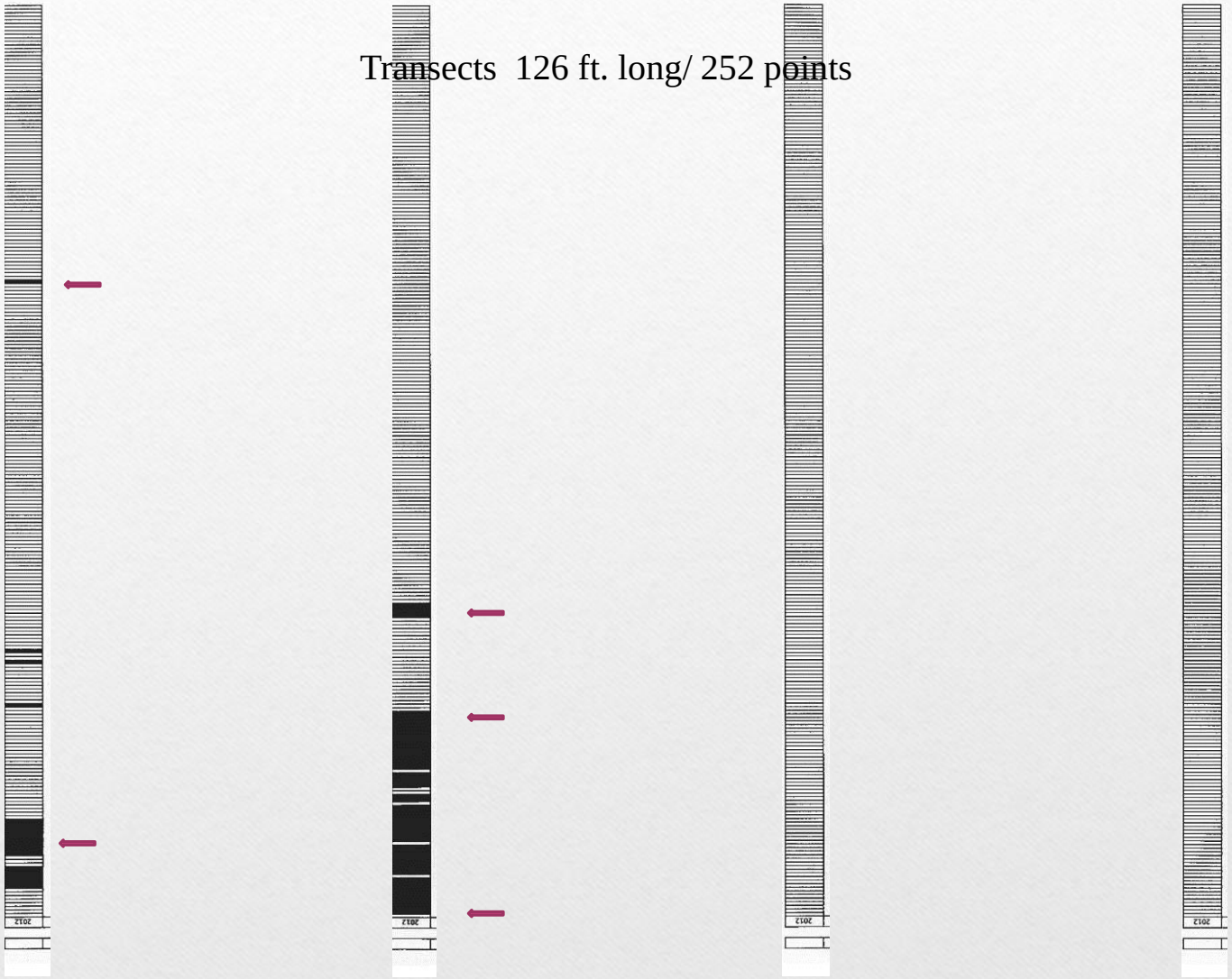
- Reproduces by seeds
- Most seeds germinate in spring or summer
- Will germinate thru fall if moisture is present.
- Seeds can last up to 20 years!

Sharp-point Fluvellin

Fluvellin competing with newly planted grapes

Fall ‘variation’ of fluvellin

Transects 126 ft. long/ 252 points



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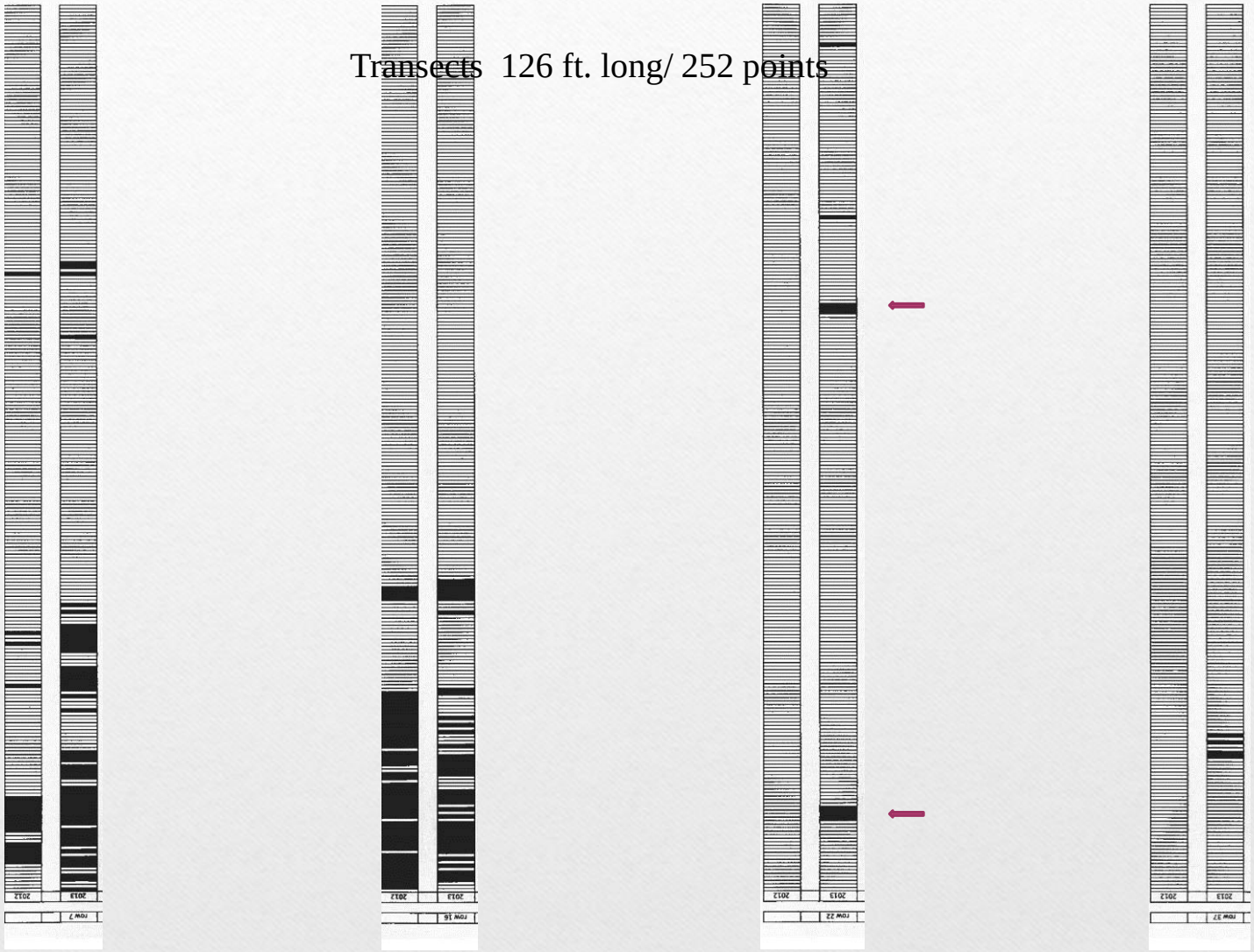

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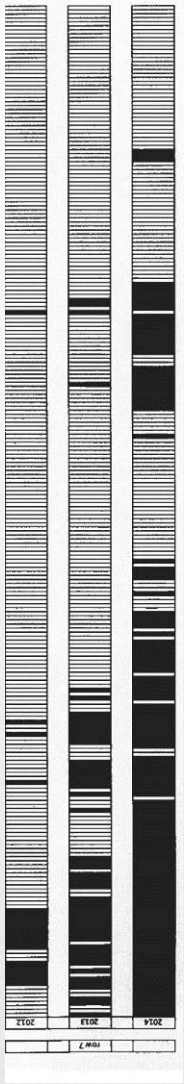

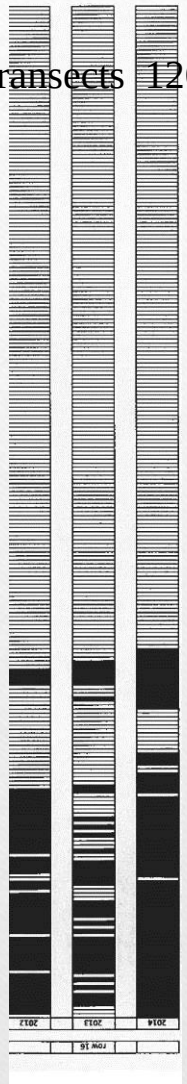

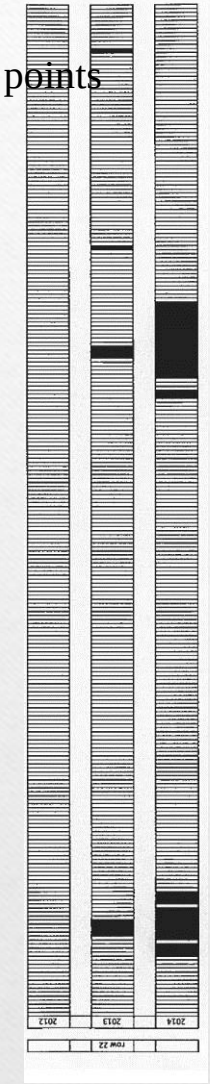

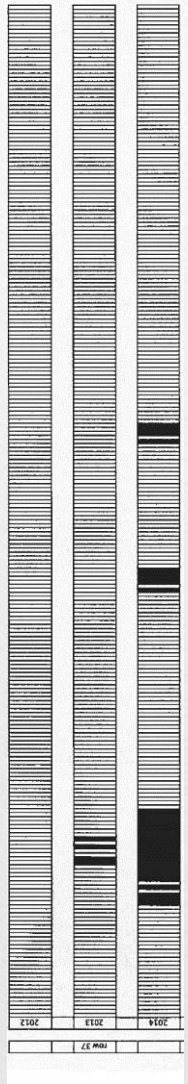


Sharp-point Fluvellin

Questions?

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