

Weed Management Training Module

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What is a Weed??



Pest that Decreases Yields



Why are weeds an annual problem?

- Seed dormancy
- Prolific seed producers
- Spread of seed
- Fast-growing vegetative structures
- Highly adaptable

Soil Seed Bank

- A plant's persistence is ensured by the seed bank
- Seeds are deposited, stored and later removed for use
- Not all seeds survive

Weed Classification

Life Cycle

Annuals

**Seed to seed in
one season**

Biannuals

**Seed (to rosette)
to seed in 1-2
seasons or
years**

Perennials

**Some part of the
lives for > 1
year**

**rhizomes, tubers,
stems**

Weed Classification

- Annuals - complete their life cycle in less than 1 year

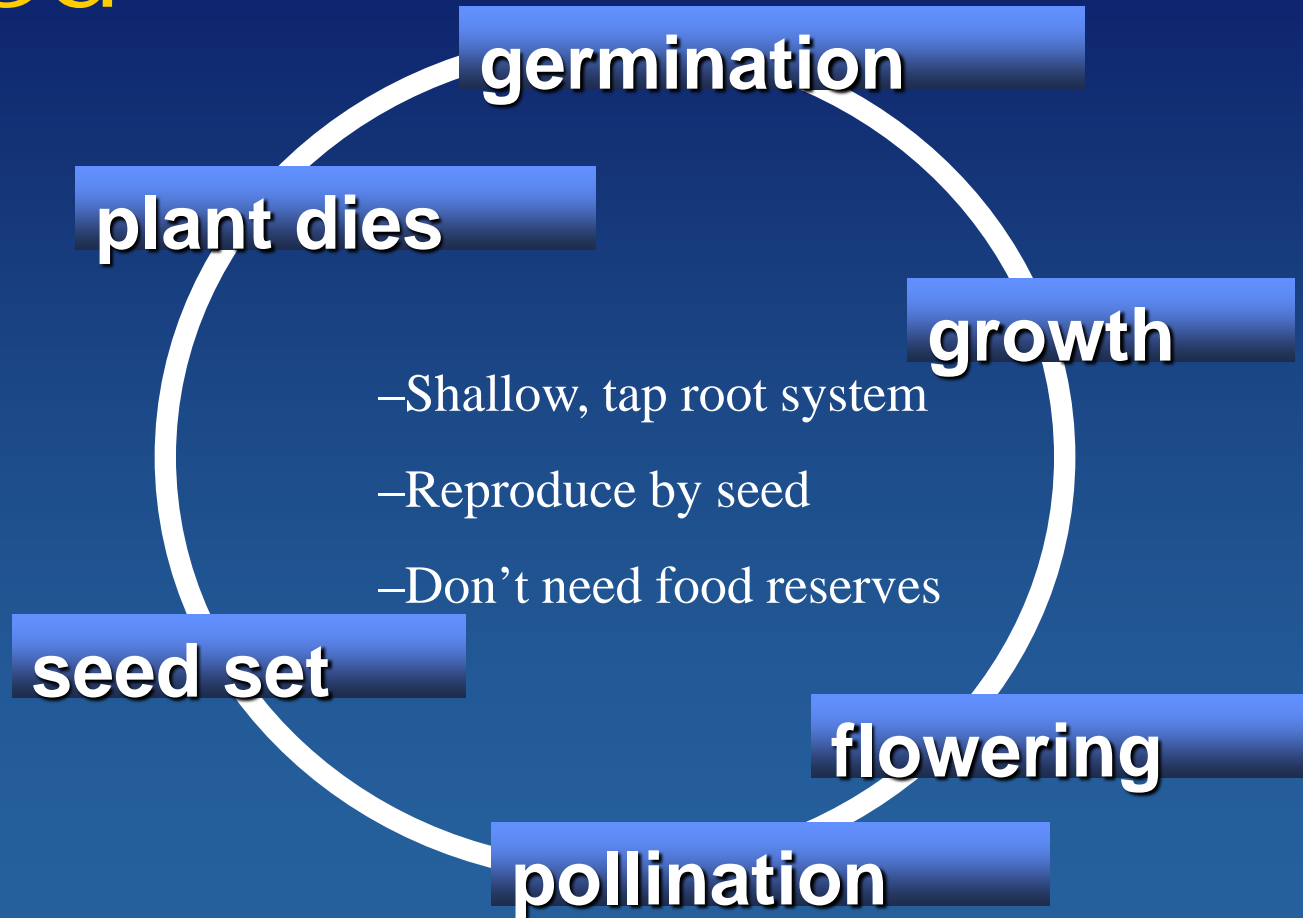
Summer Annuals:

- germinate in spring, grow during summer, mature and die in the fall

Winter Annuals:

- germinate in the fall and winter, mature and die in spring or early summer

Life Cycle of an Annual Weed



Weed Classification

- Biennials - live for more than 1 year but not over two years

Year 1. germinate from seed and produce cluster of leaves 1st season

Year 2. flowers, produces seed and dies 2nd season

Weed Classification

- Perennials - live for more than 2 years

Simple:

spread by seed (dandelion, plantain)

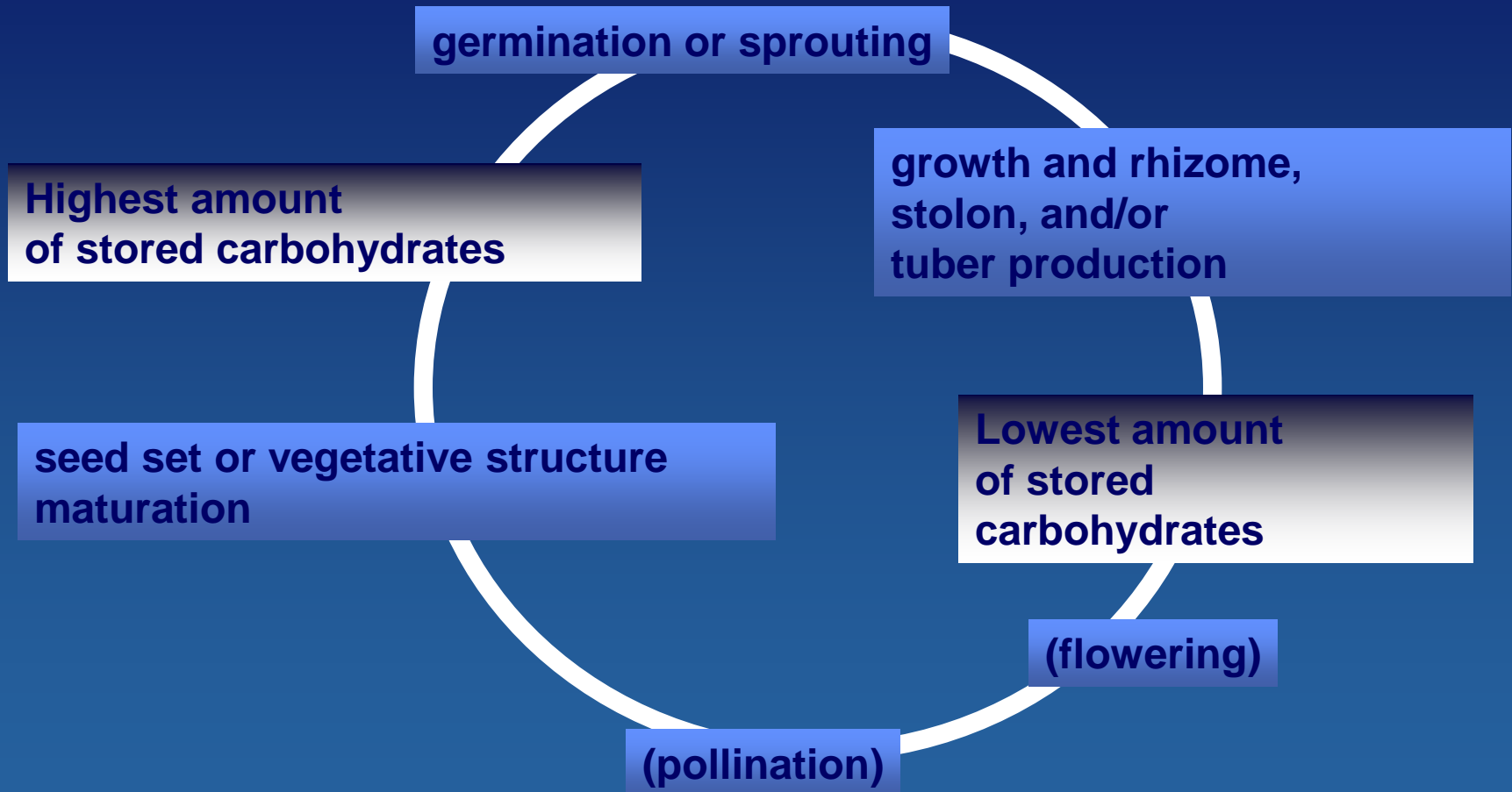
Creeping:

spread by creeping roots, above ground stems (stolons), below ground stems (rhizomes), and by seed (wild strawberry, ground ivy, bermudagrass)

Weed Type - Perennial

- Characteristics affecting timing:
 - Deep root system
 - Rhizomes, stolons, tubers
 - Reproduce primarily by the above
 - Need food reserves to sustain plant through dormancy

Life Cycle of a Perennial Weed



Nutsedge

Scientific Name: *Cyperus* spp.



Yellow nutsedge

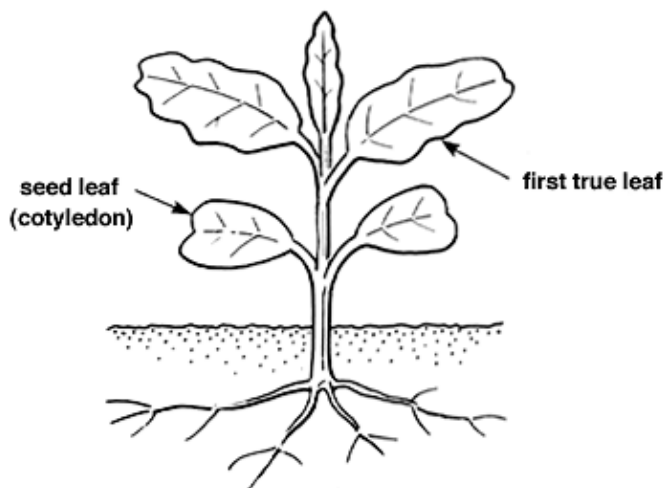
- *Cyperus esculentus*
- Tolerant of low mowing
- Rhizomatous
- Reproduces primarily by tubers
- Perennial



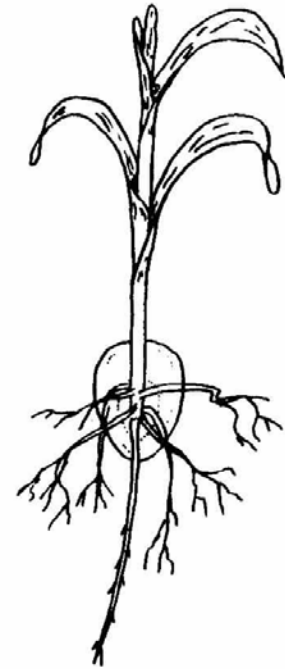
Weed Classification

Physical/Physiological

**Broadleaf
(dicots)
Veins in leaves
are netted
Herbaceous or
woody**



BROADLEAF SEEDLING



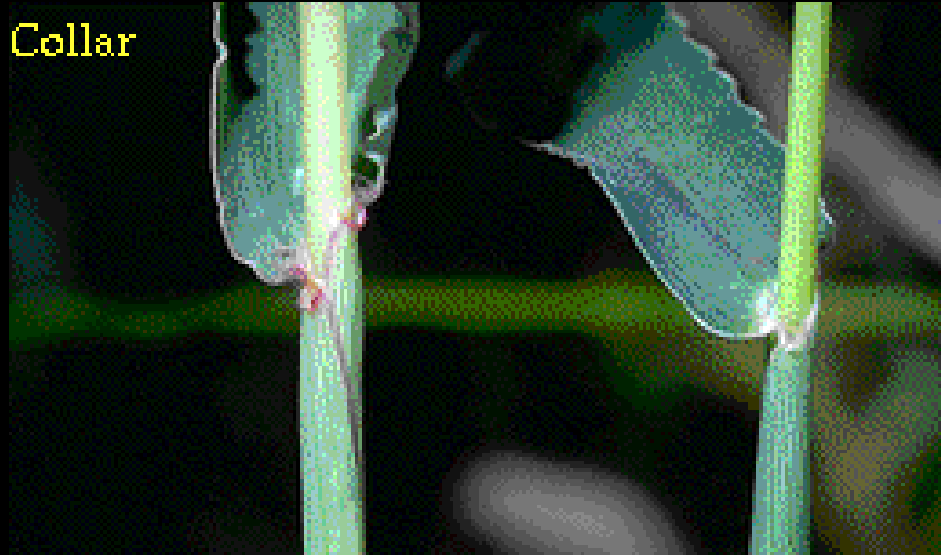
**Narrowleaf
(monocots)
Veins are parallel
Grasses
Sedges
Rushes**

Monocot

Large crabgrass:

Scientific Name: *Digitaria sanguinalis*

Collar



Flowering crabgrass



Seedling



Dicot:

Broadleaf plantain

Scientific Name: *Plantago major*



Weed Classification

Best Time for Growth

**Winter
(cool season)**

**Summer
(warm season)**

Winter

**Start growing in
late fall or early
winter.**

**Dies when high
temperatures start.**

Summer

**Starts growing in
late spring/early
summer.**

**Dies when
temperatures cool.**

Summer Annual



Southern crabgrass



Smooth crabgrass



Common Chickweed



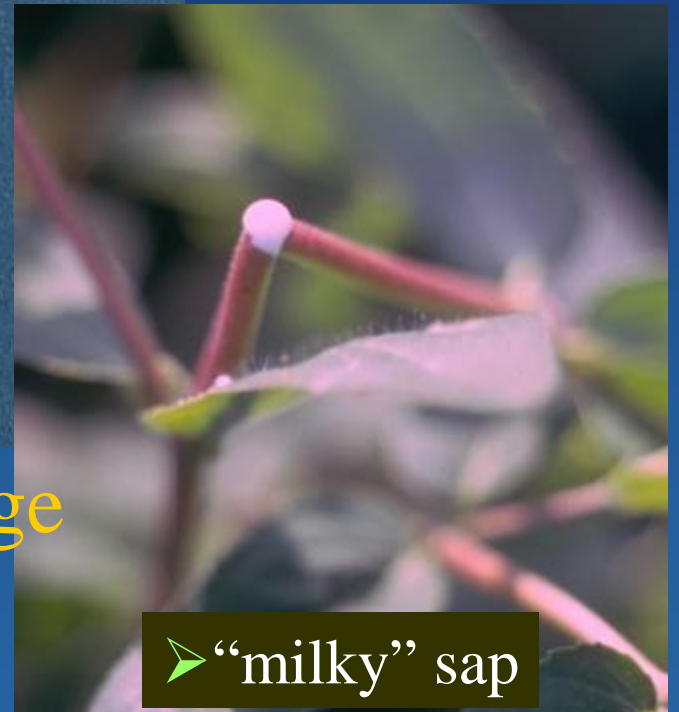
Winter Annual

Annual Bluegrass: Winter Annual



Boat shaped leaf tip

- Thrives in compacted soils
- Prolific seed producer
- Dies in late-April and May
- Germinates in late summer and early fall



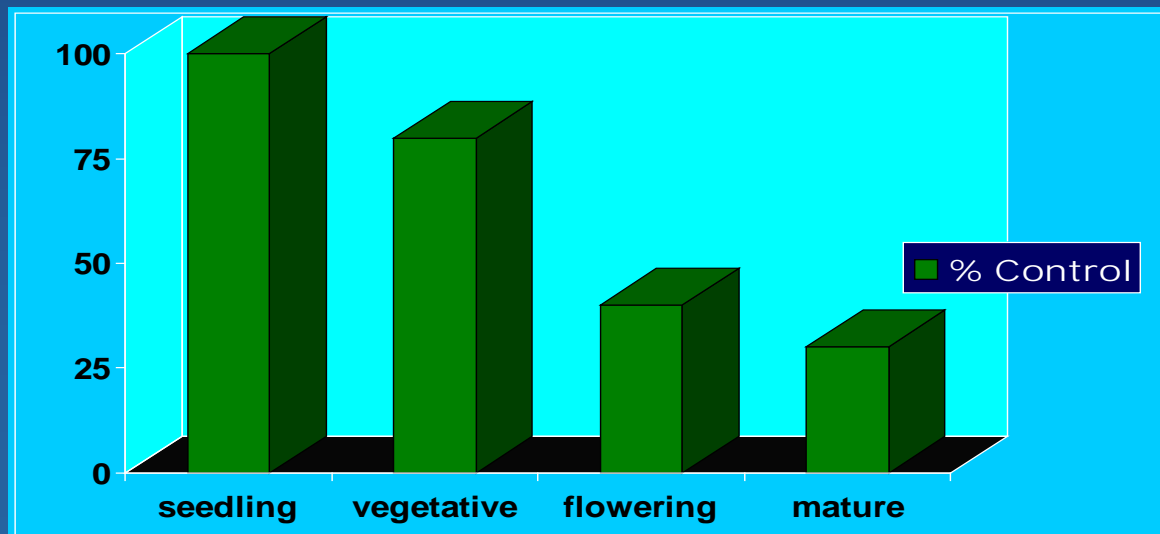
Summer Annual: Prostrate Spurge

➤ “milky” sap

Weed management

Managing Weeds

1. Maintain healthy orchard.
2. Prevent seed production.
3. Prevent seed germination.
4. Eliminate weed seedlings.
5. Target susceptible growth stages.



Plant Development Stages

● 1. Seedling

- Tender and vulnerable to stresses

● 2. Vegetative

- Great uptake of water and nutrients

● 3. Seed production

- Slow uptake of water and nutrients directed to flower, fruit, seed

● 4. Maturity

- Little uptake of water and nutrients
- Low energy production

Weed Management Strategy

- Identify weed, life cycle, habitat
- Integrate Control Methods
 - Preventive
 - Mechanical
 - Biological
 - Cultural
 - Chemical

Preventive Methods

- State and Federal laws
- Weed-free seed and plant material
- Weed-free topsoil
- Clean equipment
- Field borders, property edges
- Prevent weeds from going to seed

Mechanical Methods

- Mowing
- Hand removal
- Hoeing
- Tillage (roto-till, disk, etc.)
- Mulches
- Landscape fabrics



Mowing

- More effective on broadleaf weeds than grasses
- More effective on annual than perennial weeds
- Perennial weeds – will take several years of continuous mowing to see an effect



Mechanical Control

Tillage

- Controls many weeds that have emerged

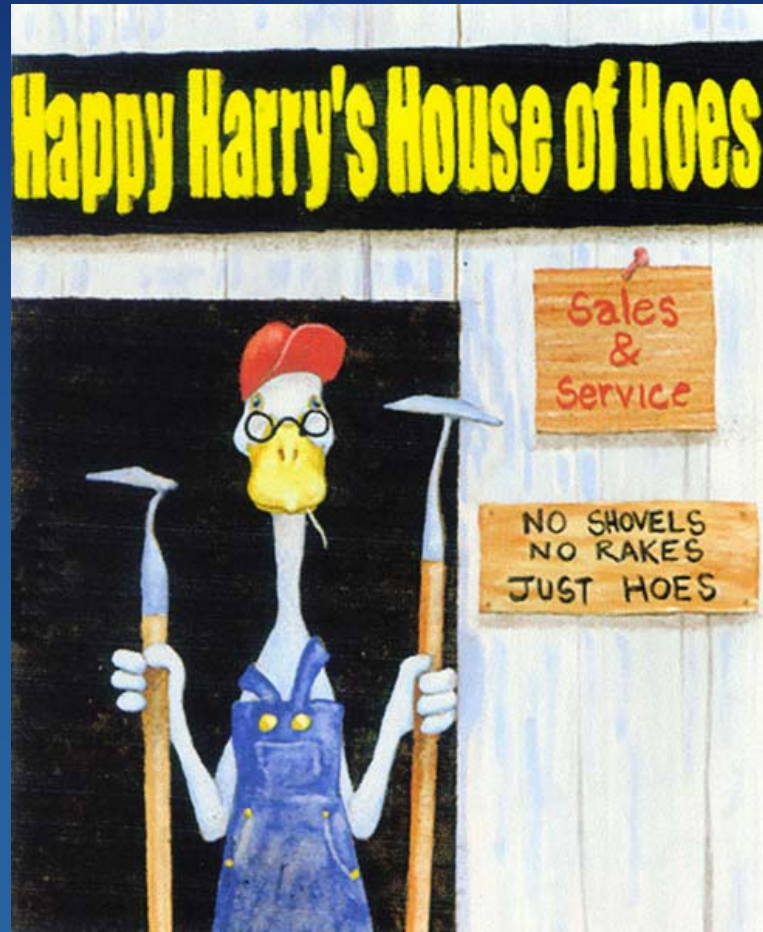


May damage
crop roots

Mechanical Methods

Hand Pulling and Hoeing

- Still used for weed control in high value crops
- Best control with small weeds



Mechanical Methods

Plastic or Fabric Mulches

- Thickness affects weed suppression.
- Black plastic prevents light penetration.
- Clear and colored plastics that allow light penetration produce high temperatures in the upper surface - solarization



Mechanical Methods

Organic Mulches

- Straw, wood chips, pine straw, sawdust, newsprint, and other organic materials effectively shade and physically hinder germinating weed seedlings.



Cultural Methods

Crop Management Practices: row crops

- Rapid, early plant development
- Fertility, planting dates, seed depth and density, close row spacing, cultivar vigor
- Most weeds do not grow well in shade. (trees)

Biological Methods

- Insects - very specific in their host range – puncture vine stem weevil
- Geese, ducks, chickens, swine, and goats
- Grass carp - privately owned ponds and lakes



Chemical Methods

Herbicide - chemical that is used to control, suppress or kill weeds by interrupting normal plant growth processes.



Herbicide Classification

Selective

- Kills some plant species, but does not damage others.
- Ex. Preen, Weed-B-Gon

Nonselective

- Generally kills all plant species.
- Ex. Roundup, Finale

Herbicide Classification

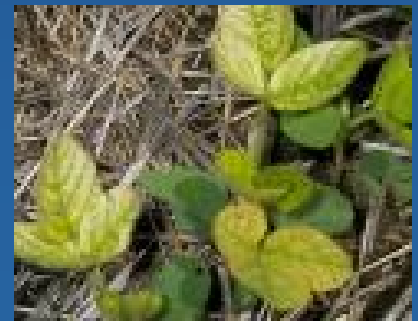
Contact

- Causes localized injury to plant tissue.
- Does not readily translocate.
- Ex. Diquat



Systemic

- Readily translocates in plant tissue.
- Ex. Roundup



Herbicide Classification

Preemergence - ex. Preen

- Applied before weed seed germination.
- Do not control emerged weeds.

Postemergence - ex. Roundup

- Applied after weed emergence.
- Do not control unemerged weeds.

Herbicide Selection Factors

1. Identify the problem species
2. Identify herbicides labeled for the site
3. Determine tolerance of desirable plants
4. Integrate management objectives
5. Obtain suitable safety and application equipment

Before You Use Herbicide

1. Identify desirable plant and weed.
2. Read and UNDERSTAND herbicide label .
3. Follow mixing, application, storage, disposal, etc. directions carefully.
4. Use only recommended amount.
5. Maintain and calibrate equipment.
6. Do not use on desirable plants not listed on label.

Identify the Weed Problem

- READ textbooks and periodicals
- Keep a diagnostic tool kit - hand lens, etc.
- Know the life cycle of the pest
- Is the weed the cause or effect of the problem?
- Confirm your diagnosis

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Weed Management Training Module QUIZ

What is a Weed??



Pest that Decreases Yields



Weed Classification

- Name Three Classification Methods
- Give examples

Weed Classification

- Life Cycle
- Physiology/Morphology
- Growth Period

Weed Classification

- Life Cycle
 - Annual
 - Biennial
 - Perennial
- Physiology/Morphology
 - Broadleaf Dicot
 - Narrowleaf Monocot
- Growth Period
 - Winter
 - Summer

Weed Management Strategy

- Name the five primary methods
 - Give one example of each

Weed Management Strategy

- Identify weed, life cycle, habitat
- Integrate Control Methods
 - Preventive
 - Mechanical
 - Biological
 - Cultural
 - Chemical

Weed Management Strategy

- Preventive
 - Clean your equipment
- Mechanical
 - Cultivate
- Biological
 - Insect predator
- Cultural
 - Drip irrigation
- Chemical
 - Herbicide

Name Six Herbicide Classifications

Name Herbicide Classifications

- Selective
- NonSelective
- Contact
- Systemic
- Preemergement
- Postemergement