Weed Free?

It's Possible!!

Maggie Courtis

Master Gardener

Fresno County

- Intro to Weeds and Weed Control
- How we classify weeds
- Control of weeds
  - Cultural
  - Mechanical
  - Biological
  - Chemical
    - Pre Emergent
    - Post Emergent
- Weed Management in Specific Sites
  - Unplanted
  - Turf
  - Landscaped Areas
  - Vegetables
- Environment issues
  - IPM
  - Invasive Plants
- Pop Quiz
- Q & A

What am I going to learn today?

What is a weed?

What is a weed?

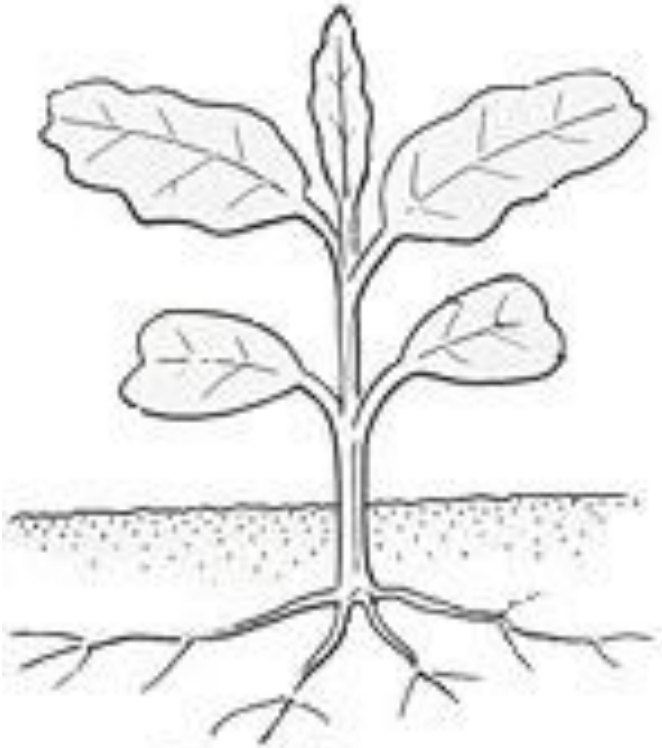
A weed is any plant that is growing where it isn't wanted

How do you control the problem?

- Remove unwanted plants
- Prevent new ones from growing
- Prevent seed production
- Deplete seed reservoirs
- Destroy underground vegetation & reproductive organs

SEED PRODUCTION & VIABILITY OF SELECTED WEEDS

weed	seeds produced in one year	viability of seeds
Saltcedar	500,000	Unknown
Mullein	240,000	Up to 100 years 48% viable after 38 years
Redroot Pigweed	117,400	
Lambsquarter	72,450	7% viable after 38 years
Johnson Grass	80,000	
Purslane	52,300	
Curly Dock	29,500	1% viable after 38 years
Canadian Thistle	5,000	Over 20 years
Puncture vine	5,000	4 to 5 years



Dicotolydons

Monocotolydons

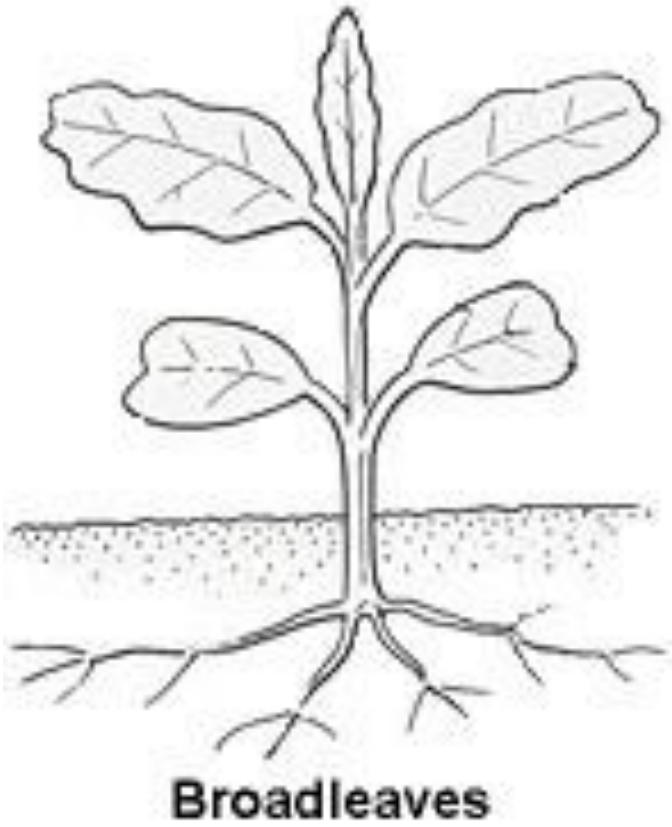
Sedges

Stems

- shape
- number

Grasses

Monocotolydons



Broadleaves

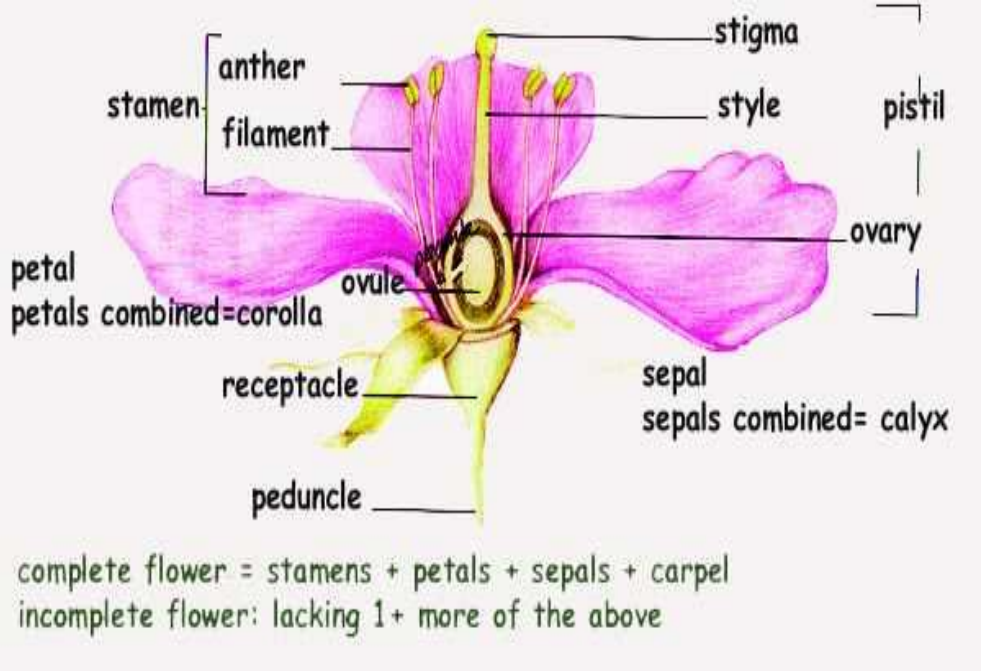
Dicotolydons

1. *Leaf Shape*
2. *Veins*
3. *Cotolydons*

4. Flower parts

Dicots

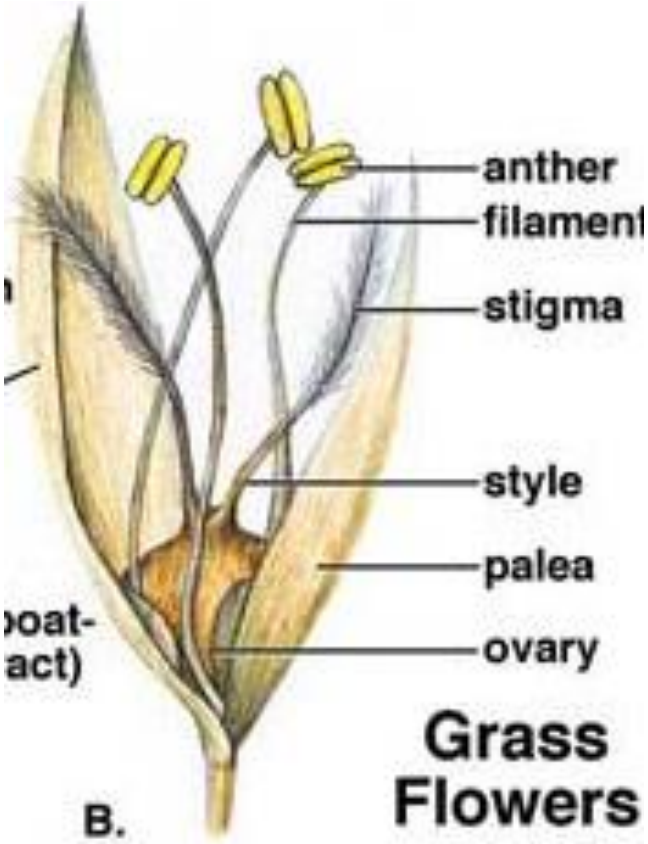
Broadleaf 4's & 5's



complete flower = stamens + petals + sepals + carpel
incomplete flower: lacking 1+ more of the above

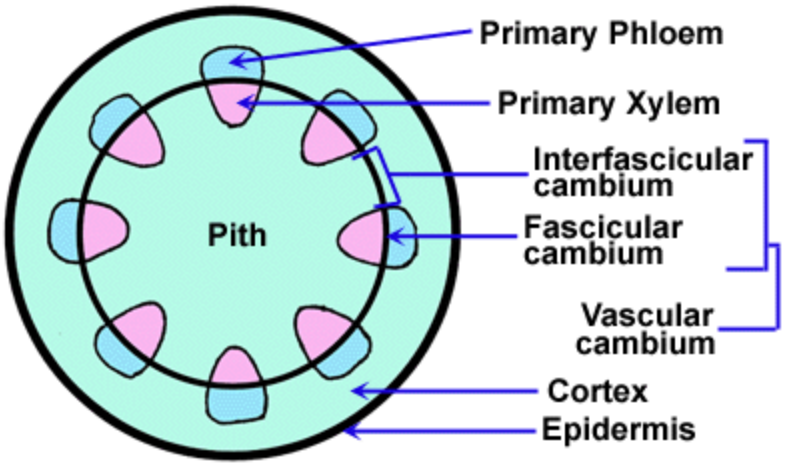
Monocots

Grasses 3's

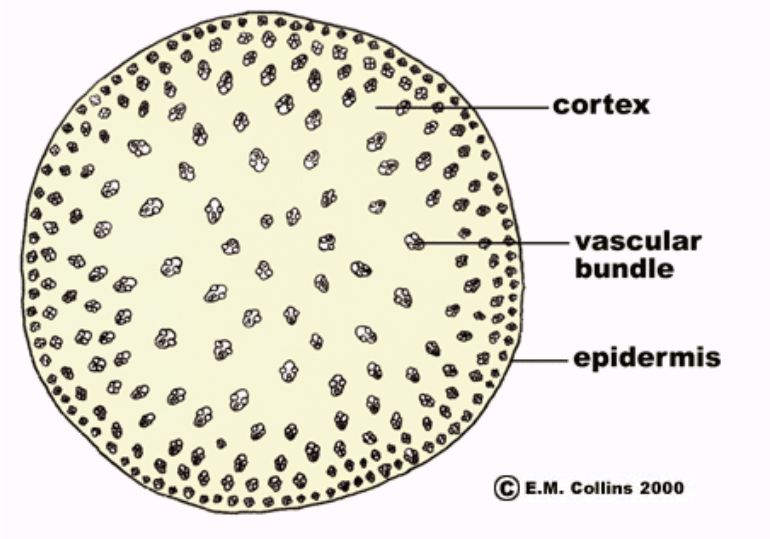


5. Vascular systems

Dicot Stem



Monocot Stem



some plants
with narrow leaves
are not grasses

Life Cycle Classifications

- Annual
- Biennial
- Perennial
- Annual Grass
- Perennial Grass
- Annual Broadleaf
- Perennial Broadleaf
- Sedges

Weed

Control

Management

- ✓Cultural
- ✓Mechanical
- ✓Biological
- ✓Chemical

Cultural Controls

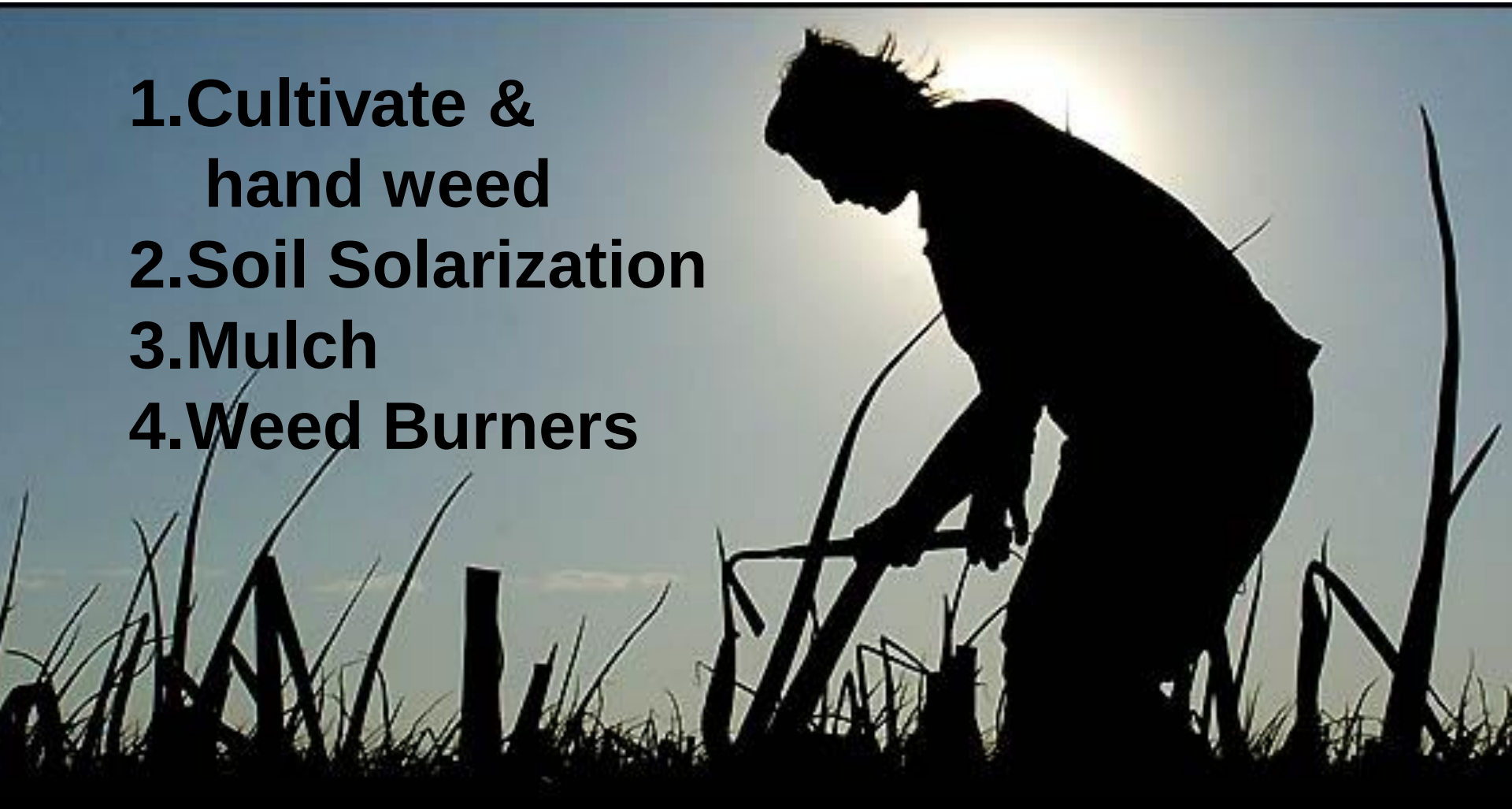
A. Keep turf and ornamental plants competitive – good garden maintenance

Cultural Controls

A. Keep turf and ornamental plants competitive – good garden maintenance

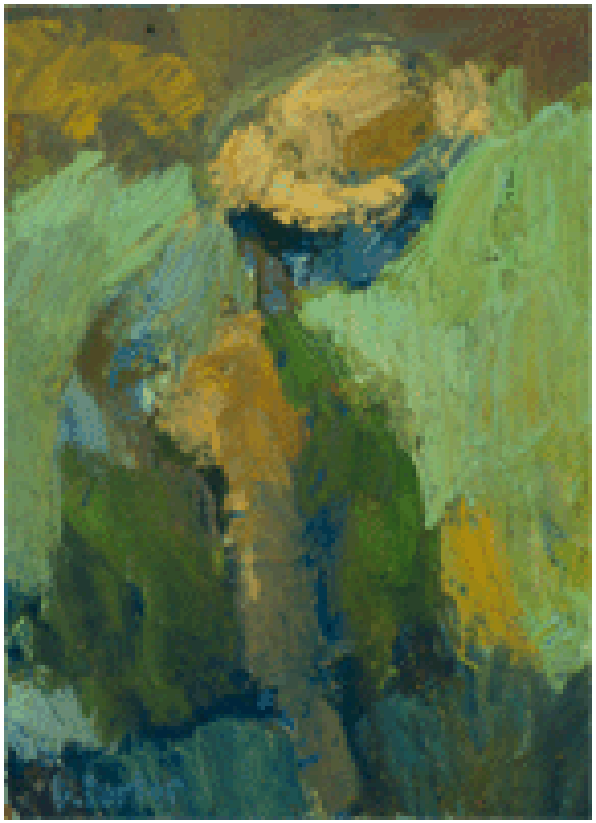
B. Prevention
   1) Clean lawnmower
   2) Watch what you bring in
   3) Watch what sticks to your clothing

Mechanical Controls



1. Cultivate & hand weed
2. Soil Solarization
3. Mulch
4. Weed Burners

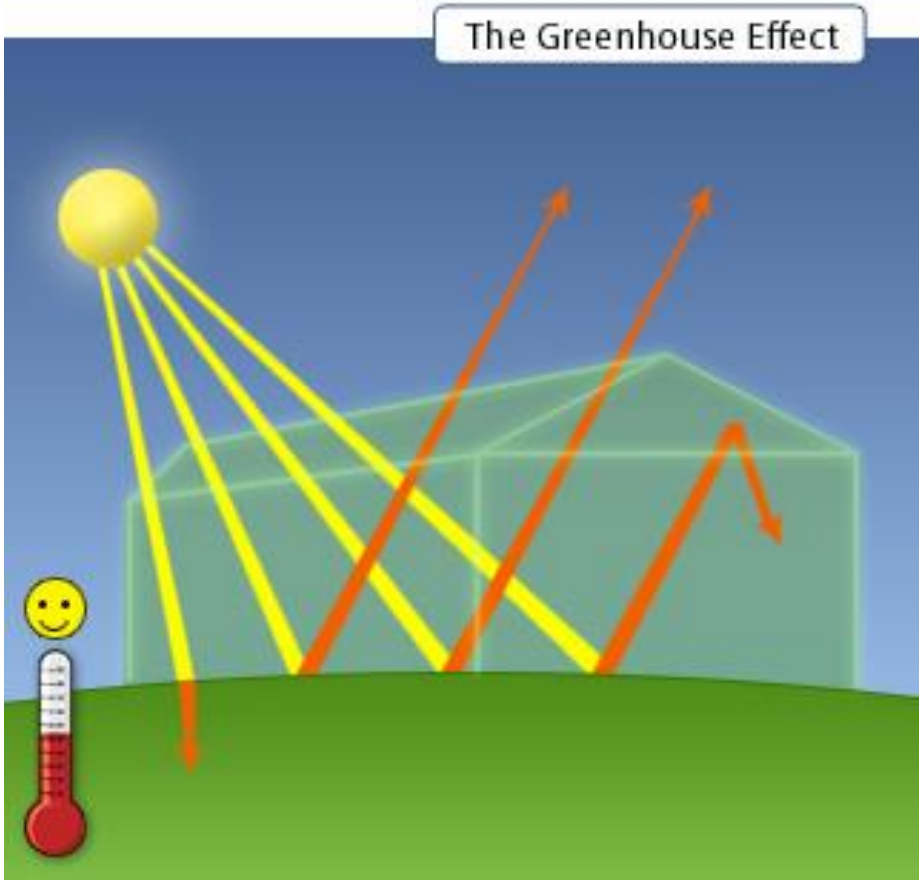
Cultivate and Hand Weed



- Annuals
  - Cut Below the Crown of the Plant
- Perennials
  - Carbohydrate Starvation
  - Sprinkle, Sprout & Spade

Soil Solarization

Soil Solarization



How does it work?

Greenhouse effect raises temperature

- "Cooks" weed seeds
- Affects many pathogens and insect eggs
- Controls some soil borne diseases
  - » Verticillium wilt
  - » Nematodes

Soil Solarization

- ✓ Clear ground of weeds & debris
- ✓ Level surface
- ✓ Water
- ✓ Clear polyethylene plastic with a UV inhibitor
  - 1-4 mm thick
  - Plastic as close to soil as possible
- ✓ Weight down the edges
- ✓ 2 layers of plastic with air space (adds 2-10 degrees)
- ✓ Takes 6-8 weeks in mid summer

MULCH

MULCH

What is mulch?

A layer of opaque material over the soil surface

MULCH

What is mulch?

A layer of opaque material over the soil surface

- Excludes light
- Keeps the soil cooler
- Reduces water use significantly

Organic Mulches

- Disadvantages
  - Can harbor invertebrate pests
  - Decompose, move, & settle

    Need to be replenished

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- Disadvantages
  - Can harbor invertebrate pests
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    Need to be replenished

- Advantages
  - Provide organic matter for soil
  - Conserve moisture
  - Do not restrict air and water movement

Inorganic Mulches

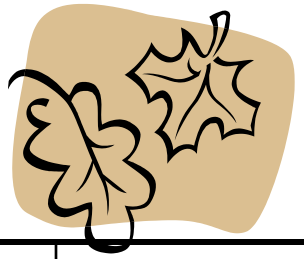
- Disadvantages
  - Can sink into the soil
  - Can restrict air and water movement

Inorganic Mulches

- Disadvantages
  - Can sink into the soil
  - Can restrict air and water movement

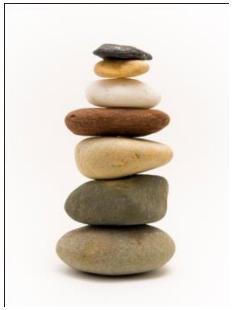
- Advantages
  - Conserve moisture in the soil
  - Decompose more slowly than organic, or not at all

Organic Mulches



Material	Cost	Advantages	Disadvantages
Compost	Free-high	Appearance, soil quality	Breaks down rapidly, weed seeds, crown disease if places wrong
Wood chips, bark	High	Attractive, decomposes into soil	Need to weed still, nitrogen in decomposing - which can be fast
Grass clippings	Free	Readily available	Can mat & inhibit water penetration, weed seeds, pesticide residue
Sawdust	Free	Readily available	Can mat & inhibit water penetration
Leaves	Free	Readily available	Can harbor pathogens and invertebrate pests
Coconut bark	High	Attractive	Breaks down rapidly
Peat moss	High	Few weed seeds, adds acidity to soil	Non-renewable resource, may blow off, resists wetting when dry
Newspaper	Free	Effective under other mulch materials	Can interfere with water penetration

Inorganic Mulches



Material	*cost*	*Advantages*	*disadvantages*
Sand			
Gravel, Pebbles	High	Lasts forever, doesn't blow away	Heat to roots, hard to clean, can get to lawn mowers
Landscape Fabric	Very high	Long lasting, air and water penetration, effective weed control	Complicated installation, organic material used over becomes a problem with time
Black Plastic	Cheap	Cheap	Not permeable to air and water, black widows

Weed Burners & Weed Flamers

- *attach to common propane gas tanks*
- *hold flame just above each weed*
- *Less than a second per weed*

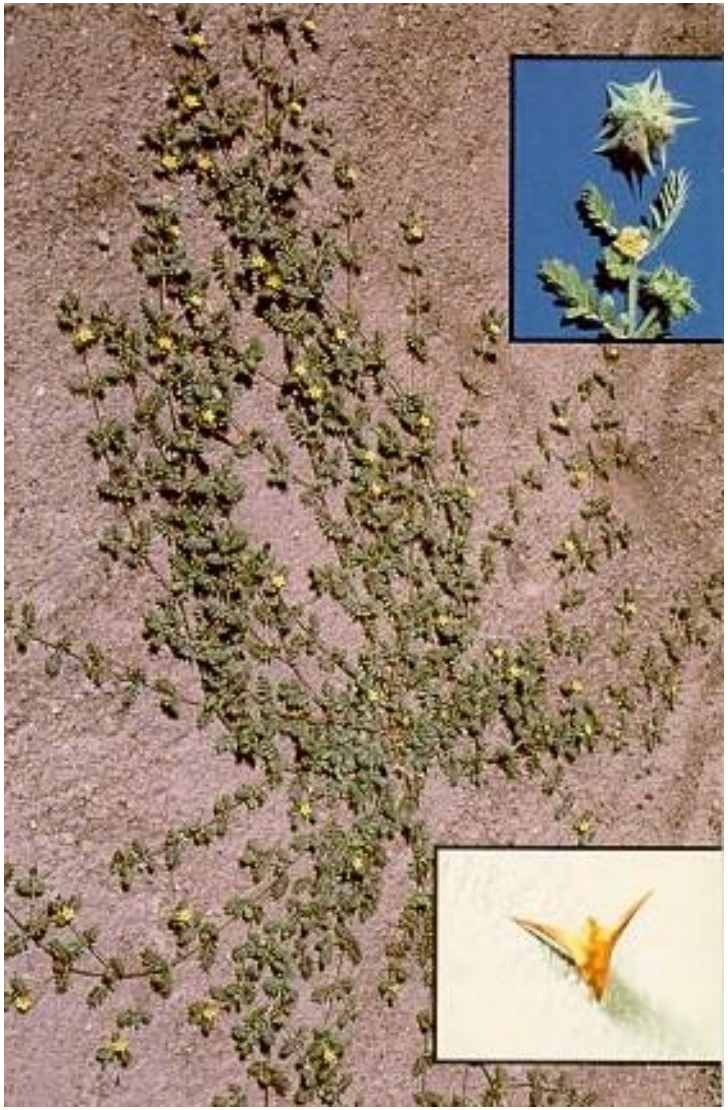
Biological Controls

Minimal effectiveness for weeds

Few plants have beneficial insects control

Biological Controls

Adult seed weevil, *Microlarinus lareynii,* feed on an immature puncturevine seed capsule.



Chemical Controls

The last resort

Chemical Controls

The last resort

1. *How they work*
2. *How they are classified*
3. *How they are applied*
4. *Two general categories*
5. *How to be successful when using them*
6. *Tips for effective use of chemicals*
7. *Other concerns*

1. How Do Chemicals Work?

- Mimic Plant Hormones -

  Cause a period of abnormal uncontrolled growth then vascular system collapses

- Amino Acid Inhibitors -

  Interrupt Photosynthesis

2. How are herbicides classified?

- The form
- The formulation
- Common name, trade name
- Mode of action
- Selective or nonselective
- Environmental risks

3. How Are Chemicals Applied?

They must enter the plant

Foliar – *through the leaves*

Soil – *through the roots*

4. Which plant will show a better response to herbicides?

4. Which plant will show a better response to herbicides?

MOST EFFECTIVE	*MINIMAL EFFECTIVENESS*
Healthy plant	Stressed plant
Warm weather	Cool weather
Humid conditions	Dry conditions
Moist soil	Dry soil

5. What are the two general categories of chemicals?

- Pre-emergents

  Inhibit the germination of weed weeds

- Post-emergents

  Kill established weeds

6(a). How can you be successful with pre-emergent chemical controls?

- Timing
  - *Three weeks before weeds sprout*
  - *Super Bowl Sunday, Mothers' Day, Labor Day*
- Selection of Chemical
- Incorporation of Herbicide
  - *Usually require watering after application*
- Application
  - *Even, thorough application with proper equipment calibration*

6(b). How can you be successful with post-emergent chemical controls?

- Timing
  - *Environmental factors*
  - *Stress level & life cycle of plant*
- Proper Weed Identification
  - *Identify the category: Broadleaf – Grass - Sedge*
  - *Identify the specific weed by name of plant species*
- Selection of Chemical
  - *Nonselective herbicides – affect physiological processes common to all plants*
  - *Selective herbicides - more toxic to some plants than to others*
    - *Can be specific to a plant category (broadleaf, grass, sedge)*
    - *Can be specific to a named plant species*
- Use of a surfactant
  - *Add a drop of liquid dishwashing detergent to the water/chemicals*
- Application
  - *Even, thorough application with proper equipment calibration*

Proper Calibration of Equipment

1. Measure plain water into a sprayer

2. Spray a 10’ by 10’ section of driveway

3. Calculate how much water was used

4. Mix the amount of chemical to cover 100 square feet with that amount of water

7. What are some tips for effective use of chemicals?

- Use chemicals in combination
- Apply several times, a few weeks apart
- Alternate herbicides choosing different modes of action

8. Other things to think about -

- How long will the herbicide last on the soil surface before it breaks down?
- How long does the herbicide last in the soil?
- What environmental & plant conditions contribute to success?
- What about health and safety concerns?

Where do you Find All That?

- Read the Label
- Call the Manufacturer's Help Line
- Call the Local Master Gardener Help Line

Great Resources

http://www.missouribotanicalgarden.org/Portals/0/Shaw%20Nature%20Reserve/PDFs/horticulture/NLM%20Ch3.pdf

Thorough information on use of chemicals in weed management. Easy reading.

http://www.ipm.ucdavis.edu/

Everything anyone would want to know about horticultural issues – home and commercial. The first place master gardeners go to answer most questions.

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Pests of homes and structures

- Household—pests of homes, structures, people and pets
  - Pests that sting, bite, or injure
  - Wood-destroying, food, fabric, and nuisance pests
  - Verbebrate pests birds, mammals, and reptiles

Pests in gardens and landscapes

Choose a plant to find the most likely source of your pest problem

- Flowers
- Fruit trees, nuts, berries, and grapevines
- Lawns and turf—including comprehensive lawn guide
- Trees and shrubs—including roses and other ornamentals
- Vegetables and melons

Some common pests and methods

- Birds, mammals, and reptiles—vertebrate pests
- Insects, mites, mollusks, and nematodes—invertebrate pests
- Plant diseases
- Weeds
- Management methods, including pesticides and biological control

Pesticide information

- Hiring a pest control company
- Pesticides: safe and effective use / En español
- Pesticides and water quality
- Active ingredients database
- Other pesticide resources

More information

- Biological control resources
- UC IPM Kiosks
- UC Statewide Master Gardener Program—find your local Master Gardener Program
- Home and landscape publications
- Resources for landscape professionals

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How to Manage Pests

Pests in Gardens and Landscapes—Weeds

Search home and garden: Go

Note: Click on the QT icon next to a pest name for a brief overview of how to manage a pest.

Weeds and other unwanted plants

See also Weed photo gallery | Key to identifying weeds |

Multiple Weeds

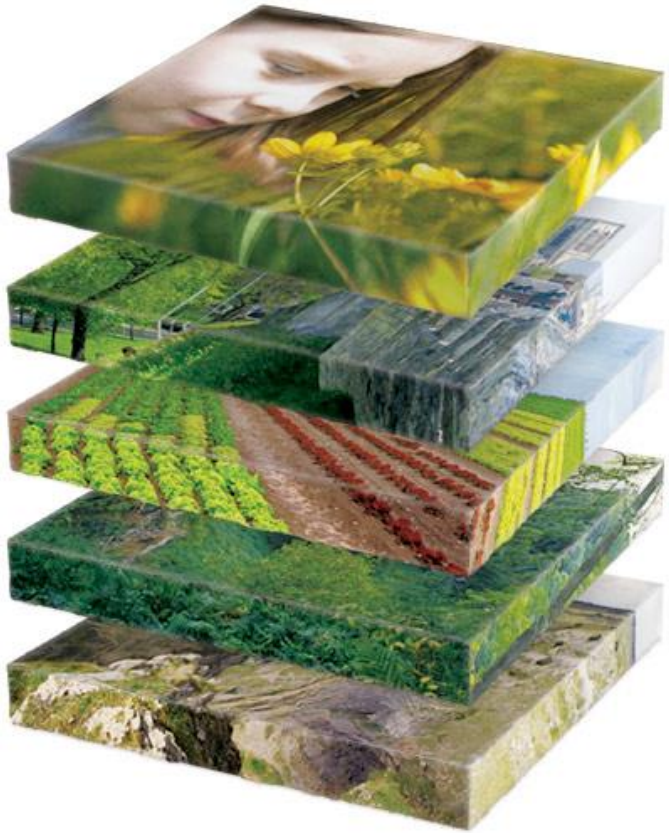
- Invasive Plants
- Weed Management in Landscapes | QT
- Weed Management in Lawns | QT
- Woody Weed Invaders

Individual Weeds

- Annual Bluegrass
- Bermudagrass
- Brooms
- Burning & Stinging Nettles
- Catchweed Bedstraw
- Chickweeds
- Clovers
- Common Groundsel
- Common Knotweed
- Common Purslane
- Crabgrass
- Creeping Woodsorrel
- Bermuda Buttercup
- Dallisgrass
- Dandelions
- Dodder
- Field Bindweed
- Green Kyllinga (REVISED)
- Kikuyugrass
- Mallows
- Mistletoe
- Nutsedge
- Perennial Pepperweed
- Plantains
- Poison Oak
- Puncturevine
- Russian Thistle
- Spotted Spurge and Other Spurges
- Wild Blackberries
- Yellow Starthistle

*** Cultural Control of weeds *** specific areas

- ✓ Site that hasn’t been planted
- ✓ Turf
- ✓ Ornamental beds
- ✓ Vegetables



Site that hasn’t been planted -

Sprinkle, sprout,

and spade

Or

Water, wait,

then cultivate

Turf -

- Keep turf vigorous by watering deeply and infrequently
- Dethatch as needed
- Fertilize with recommended amounts at proper time
- Remove up to 1/3 of the leaf blade when mowing

Ornamental beds -

- Use mulches
- Select plants that
  - Fill in quickly
  - Are adapted to the region

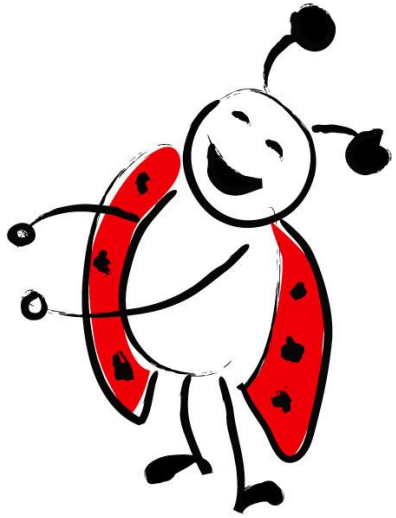
Vegetables -

Do not use herbicides.

Use physical, cultural, and mechanical controls.

What is IPM?

Integrated
Pest
Management

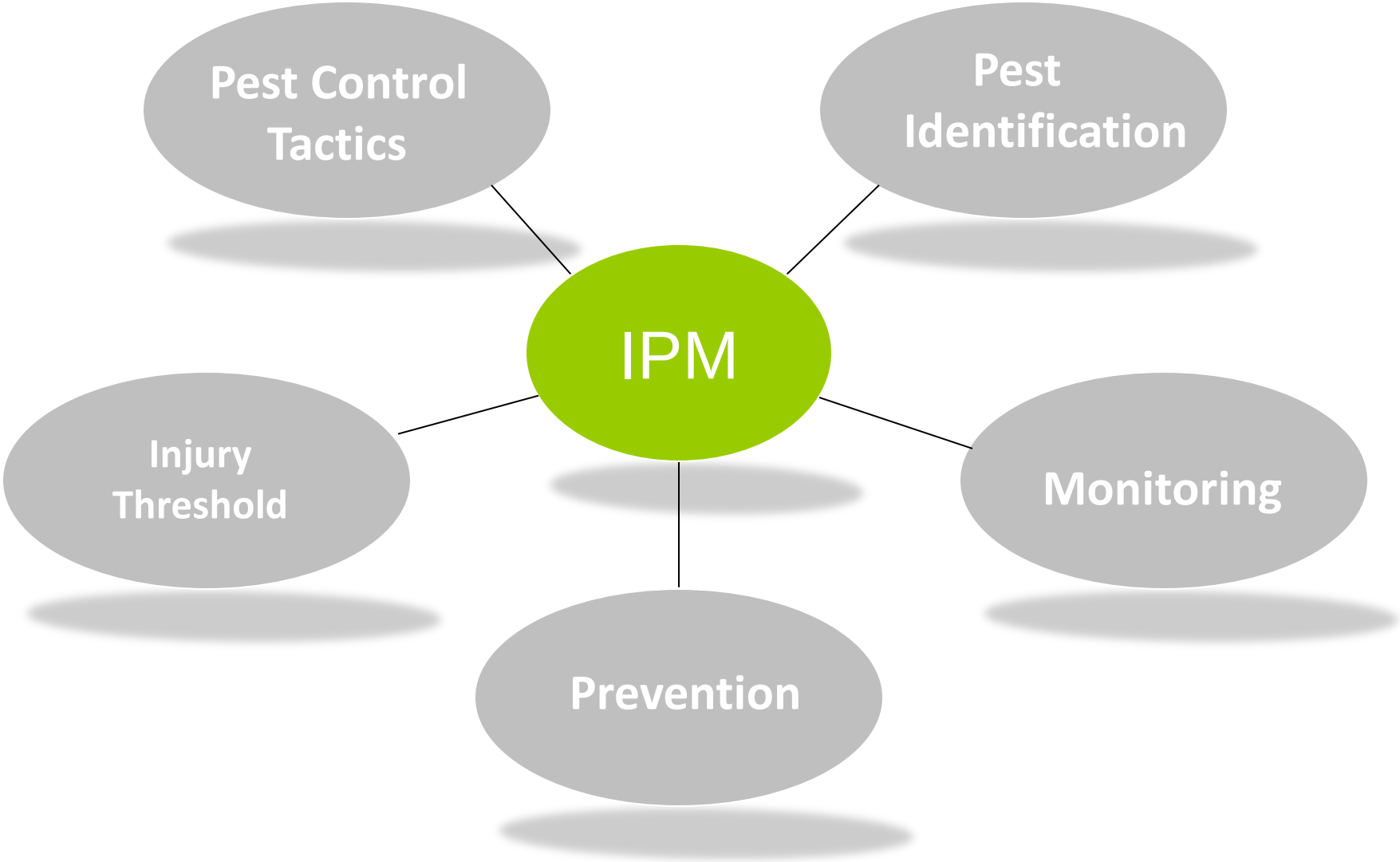


- Combining science based methods of management
- Focusing on long term prevention
- Pesticides are used – but only as a last resort
- IPM is environmentally friendly

A Smart Gardener Practices Responsible Pest Control By:

1. Using IPM
2. Encouraging beneficial insects
3. If you use a product, choose, use, store and dispose of it properly

Components of an IPM Program



What are Invasive Plants?

What's The problem?

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A plant species from a region of the world that gets moved to another region and crowds out the native vegetation

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What are Invasive Plants?

A plant species from a region of the world that gets moved to another region and crowds out the native vegetation

What's The problem?

Competitive advantage

Ecosystem unbalanced

No natural predators

Spread out of control rapidly

Invasive Plants

Chinese
Tallow Tree

Broom

Scarlet Wisteria

Bamboo – Running Varieties

Common Olive

Privet

Edible Fig

Sweet Fennel

my volunteer privet patch

Chinese pistache (Pistacia chinensis)

Italian arum (Arum italicum)

Silktree/Mimosa (Albizia julibrissin)

Osage orange (Maclura pomifera)

White mulberry (Morus alba)

Silver wattle (Acacia dealbata)

Firethorn (Pyracantha)

Eucalyptus (some)

Black Locust

Russian Olive

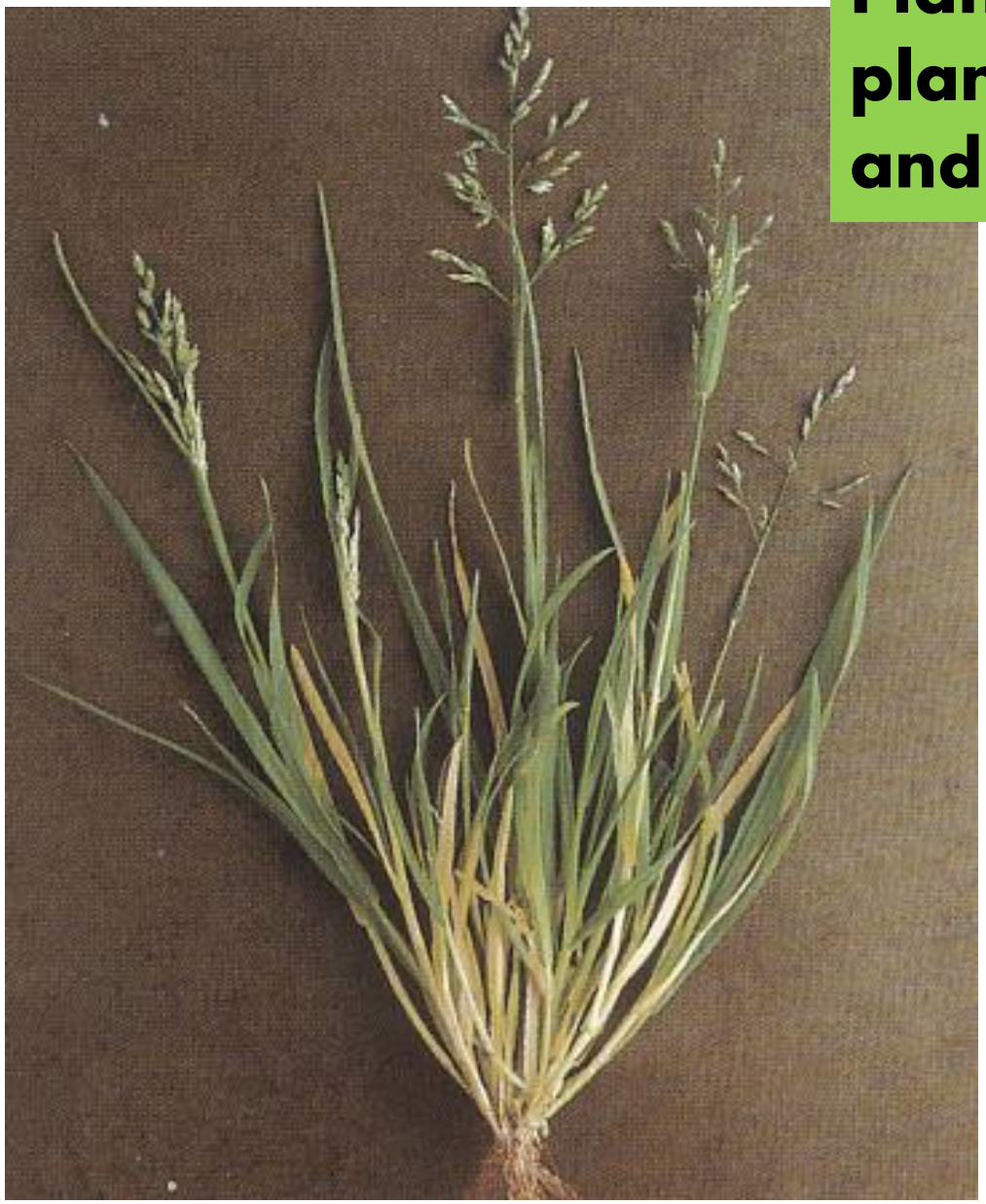
Saltcedar

Tree of Heaven

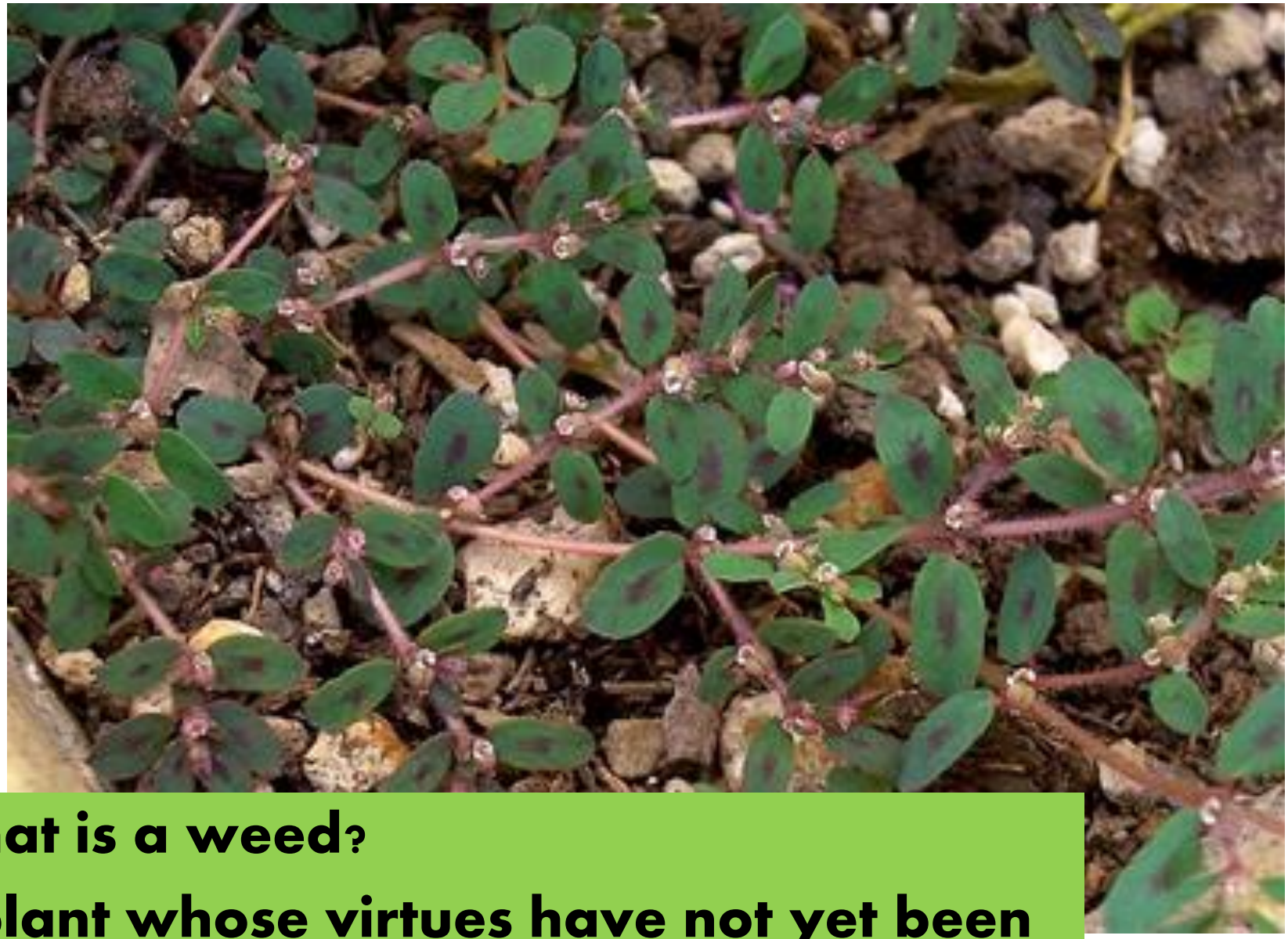
Ravennagrass (Saccharum ravennae or Erianthus ravennae)

Quiz *plus* Words of Wisdom


If I wanted an easy care garden, I would have planted weeds.



Plant and your spouse plants with you; weed and you weed alone.



What is a weed?

A plant whose virtues have not yet been discovered.

Go often to the house of thy friend, for weeds soon choke up the unused path

Scandinavian Proverb