Weed Management Practices for Nurseries

Haramrit Gill

Environmental Horticulture Advisor (Tulare, Fresno, Kings and Madera)

University of California Agricultural and Natural Resources

UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources

UNIVERSIDAD DE CALIFORNIA
Agricultura y Recursos Naturales

Little bit about myself……

- Originally form Punjab, India
- PhD Horticulture form Texas A&M University
- PhD research on flower color and fragrance in roses
- Now stationed in Tulare and working on my needs assessment
- Interested in native plants

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Major problems in nurseries

- Diseases and pests
- Water Quality
- **Weed management**
- High Labor Cost

What is a weed?

Any plant growing where its not wanted.

OR

A plant out of place.

Weed classification - Morphology

- **Monocotyledon** – one cotyledon or one embryonic leaf. Ex – Grasses, sedges, rushes
- **Dicotyledon** – two cotyledons. Ex – Broadleaf plants

Sedges have edges,
Rushes are round,
Grasses are hollow,
So, what have you found?

Weed classification – Life Cycle

- **Annuals** – Complete their life cycle from seed to seed in less than 12 months. Ex – Crabgrass, purslane, chickweed

- **Bienniels** - Completes life cycle in two years. Germinate and form rosette first year, remain vegetative and store food for winter and produce flower in second year. Ex- musk thistle, wild carrot, wild parsnip

- **Perennials** – Live for more than two years. Simple perennials (Ex – Dandelion) produce a taproot and spread by seed whereas creeping can reproduce by rhizomes, tubers, bulbs and seeds., (Ex-nutsedge, leafy spurge)

Where do they come from?

Most weeds in a container nursery come from

- Contaminated liners
- Equipment
- Irrigation water
- Movement of soil
- Plants growing between, in, or near pots
- Potting mix, if it is stored uncovered where weed seed can blow in
- Vehicles
- Windborne seeds

Common Weeds in Container-Production Nurseries

Bittercress
Cudweed
Common Groundsel
Prickly Lettuce
Liverwrot
Birdseye pearlwort
Annual sowthistle
Spotted spurge
Willowherbs
Creeping woodsorrel

Bittercress

Cudweed

Prickly Lettuce

https://ipm.ucanr.edu/agriculture/floriculture-and-ornamental-nurseries/weed-classifications/#gsc.tab=0

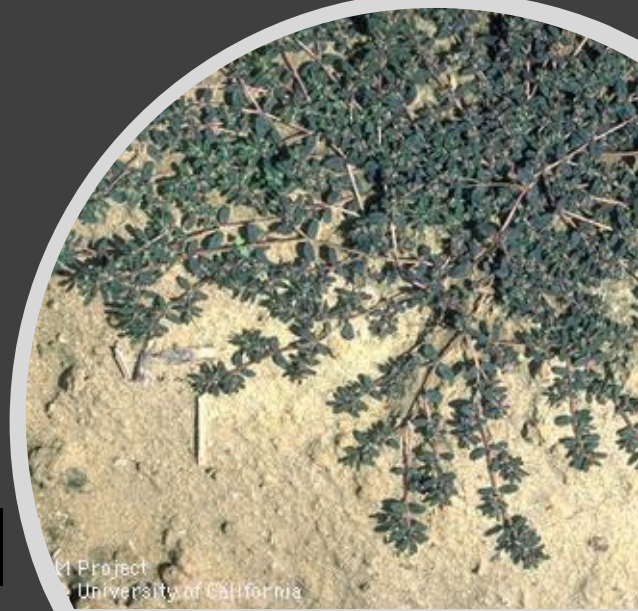
Birdseye pearlwort

Creeping woodsorrel

Liverwrot

Annual sowthistle

Common groundsel



Spotted spurge

Dynamics of weed seed in soil

Seed fall

Weeding, herbicides

Germination and emergence

Dormant

Non-dormant

Fumigants Steam

Death

https://ucnfanews.ucanr.edu/Articles/Feature_Stories/Steaming_And_Other_Management_Practices_For_Pre-Plant_Weed_Control_In_Nurseries/

Weed management program

Anyone growing or maintaining ornamental plants should have a weed control program. The program has three parts:

- Eliminate weeds in and around the growing area and kill seeds or vegetative parts prior to planting.
- Prevent weed growth in and around the growing area.
- Eliminate weeds as they appear.

General weed management methods

- **Cultivation**
- **Cover Crops** (Beans, sudangrass, perennial ryegrass)
- **Mowing**
- **Flaming** (More effective for broadleaves than for grasses)
- **Hand removal**
- **Mulches** (Bark, composted yardwaste, woodchips, dark plastic)
- **Soil Solarization**
- **Transplants** (establish more quickly and compete with weeds)
- **Herbicides**

Herbicides

- Economical option to control weeds
- Using herbicides before weeds emerge can reduce weed competition
- Classified according to when they are used in relation to crop and weed growth stage
  - ➢ Preplant herbicides
  - ➢ Preemergence herbicides
  - ➢ Postemergence herbicides

https://www.cartoonstock.com/cartoon?searchID=CS123774

Preplant Herbicides

- Herbicides that are applied before planting the crop
- Help protect crop yields and reduce the development of herbicide-resistant weeds.
- Reduce the need for soil disturbance and the amount of weed pressure in post-emergence applications.
- Some examples of preplant herbicides include Treflan, Sutan+, Fradicane Extra, flumioxazin, S-metolachlor, dimethenamid, acetochlor, and imazethapyr.

Pre-emergence herbicides

- Pre-emergence herbicides are used extensively in container-grown ornamentals
- Usually in conjunction with hand-weeding to control any weeds that escape the chemical treatment.

1) Selective herbicides: Target only specific weeds,
2) Non-selective herbicides: Kill everything they touch (weeds, plants, and grasses)

Commonly used preemergence herbicides

- Trifluralin
- Siduron
- Isoxaben
- Dithiopyr
- Benefin
- Pendimenthilin

Benefits of pre-emergence herbicides:

- Most often, the weed is removed permanently
- Decreasing the frequency of herbicide application in subsequent seasons, after the initial rounds of treatment

Post emergence herbicides

- Postemergence herbicides are applied after weeds have emerged.
- Selective postemergence herbicides include clethodim, fluazifop-p-butyl, and sethoxydim.
- Fluazifop-p-butyl and sethoxydim control most annual grasses, except annual bluegrass and fine fescue.
- Clethodim will control annual bluegrass as well as other grasses.
- Products containing phenoxy herbicides, such as 2,4-D, will selectively control broadleaf weeds in monocots but will injure a broadleaf crop.

Post emergence herbicides

- Nonselective herbicides are those containing diquat, glufosinate, glyphosate, pelargonic acid, and plant oils such as eugenol.
- Can be used around the field to keep weeds from seeding but must be kept away from the crop.
- Apply when weeds are in the seedling stage

Application of Herbicides

- Calibration of the equipment is essential for proper application whether sprayed or applied dry as granules.
- Granules and wettable powder formulations cause severe wear to the application equipment, so require frequent calibrations.
- Most liquid herbicides are applied at 20 to 60 gallons of solution per acre at pressures of 30 to 40 pounds per square inch (psi).
- Applying liquids with multiple nozzles on a boom gives more uniform distribution than single nozzle hand wand.

Other options

- Optimize the production cycle and minimize the duration in which container and field nursery stock remains in the nursery.
- Well-drained site for containers.
- Covering the nursery site with concrete, a geotextile (landscape fabric), or gravel helps control weeds under and between containers.
- Control perennial weeds before grading and installing irrigation equipment.

Thank you!