Total weed management program

Effective weed control

Sanitation
- Weed seed
- Weeds in non-cropland areas

Herbicide management
- Maintain chemical barrier
- Chemical barrier
- Media
Sanitation

- Bark, peat, and pumice start weed-free
- No seed bank!!!
- Prevent introduction of weed seed
- How do weed seeds infiltrate the container nursery?
Sanitation

- Wind dispersal
- Self propulsion
- Liners
Sanitation

• Self projection
  – Bittercress
  – Creeping woodsorrel
  – Liverwort
Bittercress seedlings

Silique – 2-sided, dry, dehiscent fruit.
Sanitation

- Many weeds come in infested liners

- Weed control in propagation houses is difficult
  - No herbicides for indoor use

- Many weed infestations come from liners!!!!
  - Pearlwort
  - Creeping woodsorrel
Sanitation

- No seed bank in containers

- Containers laced on gravel
  - Complete vegetation suppression
  - No erosion concerns

- We can prevent the occurrence of weed seeds in containers
Preemergence herbicides

- Apply to weed-free soil surface
- Do NOT apply in covered houses
- Apply herbicides uniformly
Herbicide chemical barrier

Herbicides move very little in containers. They remain in the top 1 inch of media.

Weeds in containers are small seeded, and generally germinate in the top ½ inch.

Irrigate ½ inch immediately after preemergence herbicide application.
• Maintain the chemical barrier
  – Avoid practices that disrupt the barrier
    • Poking fingers through it
    • Spilling containers
    • Walking through treated bands in fields
    • Dragging objects treated bands in fields
Disruption of the herbicide chemical barrier
Herbicide timing - #1 RULE

• You must apply herbicides before weed seeds germinate.

• Preemergence herbicides will not control existing weeds.
Uniformity of application

• Mostly a problem with granular applications

• Research shows that even under ideal conditions, amount applied can be from $\frac{1}{2}$ to 2 times the intended rate.

• Take steps to improve uniformity
Uniformity of application

• Apply a single application in multiple passes.

• Takes more time, but dramatically improves uniformity.
Container weed management

- Sanitation

- 100% weed suppression surrounding containers

- Apply preemergence herbicides to clean, weed-free containers
Weed control in field production

Dr. James Altland
Nursery weed management

• Field production
  – Seeds in soil
  – Each crop planted back is same soil
  – Weed control should be preventative
  – Several postemergence options

• Container production
  – Bark is weed-free
  – Each new crop planted in fresh bark
  – Weed control must be preventative
  – No postemergence herbicides.
Redroot pigweed

- Seed survive for more than 30 years
  - Soil surface or buried

- Seed can be wind dispersed
  - Small size

- Plants produce up to 100,000 seed
  - 13,860 with no fertilizer
  - Over 34,600 when fertilized
Field bindweed

- *Convolvulus arvensis*
- Seeds persist in soil for 60 years
- Roots grow to a depth of 30 feet.
Field weed control

1. Field preparation

2. Prevent weed establishment
   - Most important step
   - Sanitation
   - Cultural practices
   - Preemergence herbicides

3. Control (kill) escape weeds
Perennial weeds

• Tillage can be used to eradicate perennial weeds

• Probably will take at least 2 years
  – Tilling every 3 weeks
Weed prevention

- Sanitation
  - Clean tillage equipment
  - Control non-crop area weeds
  - Physical barriers

- Cultural practices
  - Tillage
  - Fertilization
  - Irrigation

- Preemergence herbicides
Sanitation

• Clean tillage equipment
  – Prevent spread of perennial weeds
Sanitation

- Control weeds in non-crop areas
Preemergence herbicides

- Herbicide selection
- Application timing
- Maintain the chemical barrier
Plant uptake

- Most seed germinate in the top 1 inch of soil.
- Herbicide placement should occur where seeds will germinate and begin growing.
- Application of herbicide followed by incorporation with water is necessary for proper placement.
Weed species controlled (pre-em)

- Broadleaf-active herbicides
  - Goal
  - SureGuard
  - Princep
  - Gallery

- These herbicides provide poor control of grasses, especially at lower rates.
Weed species controlled (pre-em)

- Grass-active herbicides
  - Surflan, Pendulum, Treflan, Factor
  - Ronstar
  - Pennant
- These products provide effective control of grasses and some “small-seeded” broadleaves
Weed species controlled (pre-em)

• Broad-spectrum control
• Tank mix a grass-active herbicide with a broadleaf-active herbicide
  – Gallery + Pendulum
  – Goal + Factor
  – Princep + Surflan
Preemergence herbicides

- **Will not** kill weeds present at time of application
  - Exception is spray-applied Goal and SureGuard

- Even small weeds have roots large enough to escape effect of pre herbicides.
Preemergence herbicides

• Do not prevent seed from germinating

• Do not kill dormant seeds
Maintain the chemical barrier

- Incorporate the herbicide
- Reduce unnecessary traffic
- Reduce excessive irrigation
Incorporate the herbicide

- Most abused aspect of weed control
- Incorporate immediately after application
  - Herbicides degrade on soil surface
- Incorporate with irrigation if possible
- Do NOT incorporate with drip irrigation!!!
Using rain to incorporate

• Ideal for incorporating herbicides
  – A single precipitation event soon after herbicide application (approximately ½ inch).

• Not ideal
  – No rain for several weeks after herbicide app.
  – Intermittent light rain for several weeks
Summary

• Field preparation

• Weed prevention
  – Sanitation
  – Cultural practices
  – Herbicides

• Weed eradication
  – Control escape weeds
Website

• http://oregonstate.edu/dept/nursery-weeds/