



**OREGON STATE  
UNIVERSITY**

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# Container Weed Management



Dr. James Altland

# Container vs. field production

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- Containers
  - No seed bank
  - Bark substrates are free of weeds **initially**
  - Isolated substrate volume
  - Irrigated daily
  - No postemergence herbicides
  - No cultivation
- Field crops
  - Abundant seed bank
  - Abundant weed seeds and perennial propagules
  - Soil is continuous
  - Irrigated weekly or less
  - Many postemergence herbicides (directed apps.)
  - Cultivation equipment is common and efficient

# Challenges

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- Weed control must be preventative
  - No postemergence herbicides
  - No mechanized cultivation devices
- Irrigation is difficult
  - Rates are high
  - Uniformity and precise application rates are difficult
- High rates of fertility favors weed growth

# Opportunities

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- Substrates are initially weed free
- Substrates are low in nitrogen
- Unique container environment only allows for a few select weed species



# Container weeds

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- Seed have some sort of active dispersal mechanism
  - Wind-blown
  - Explosive dehiscence
  - Splashed with water
- Germinate in low light levels
- Germinate in moist environments
- Short life cycles
- Prolific seed producers

# Container weed management

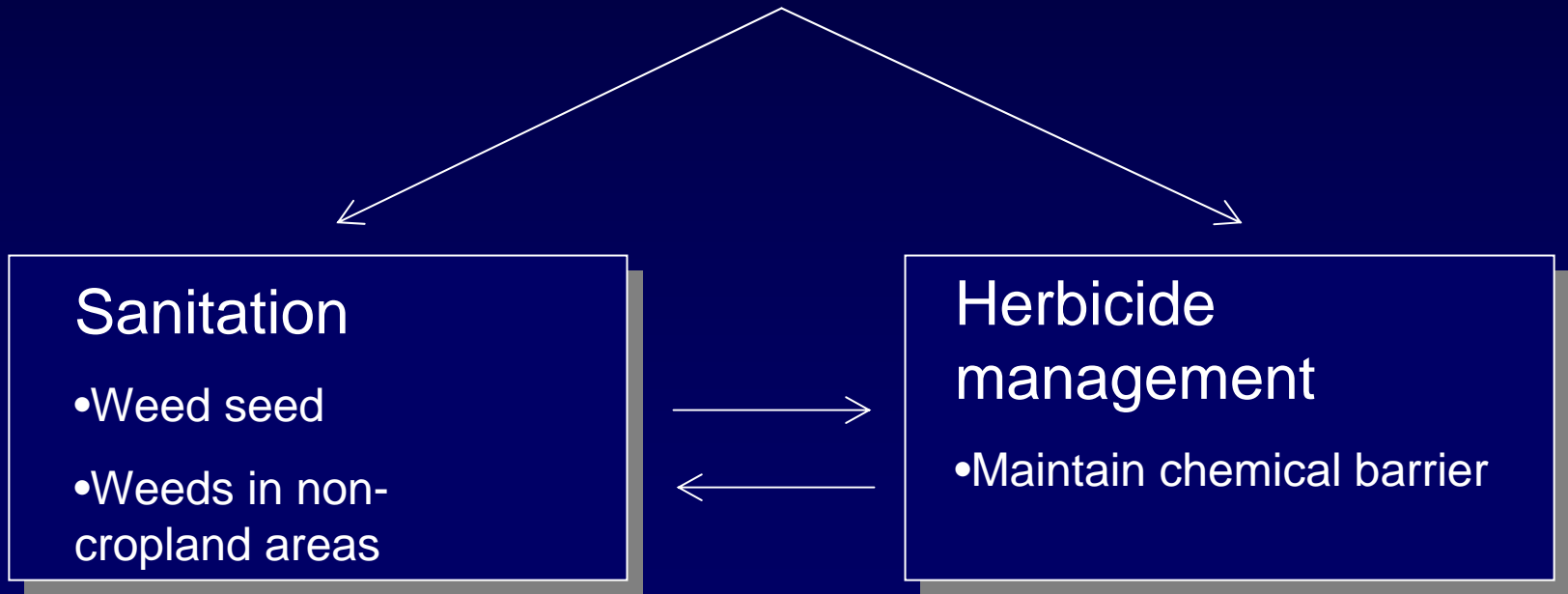
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- Understand weed biology
- Understand how weeds propagate and spread
- Use unique aspects of the container environment to disrupt weed establishment

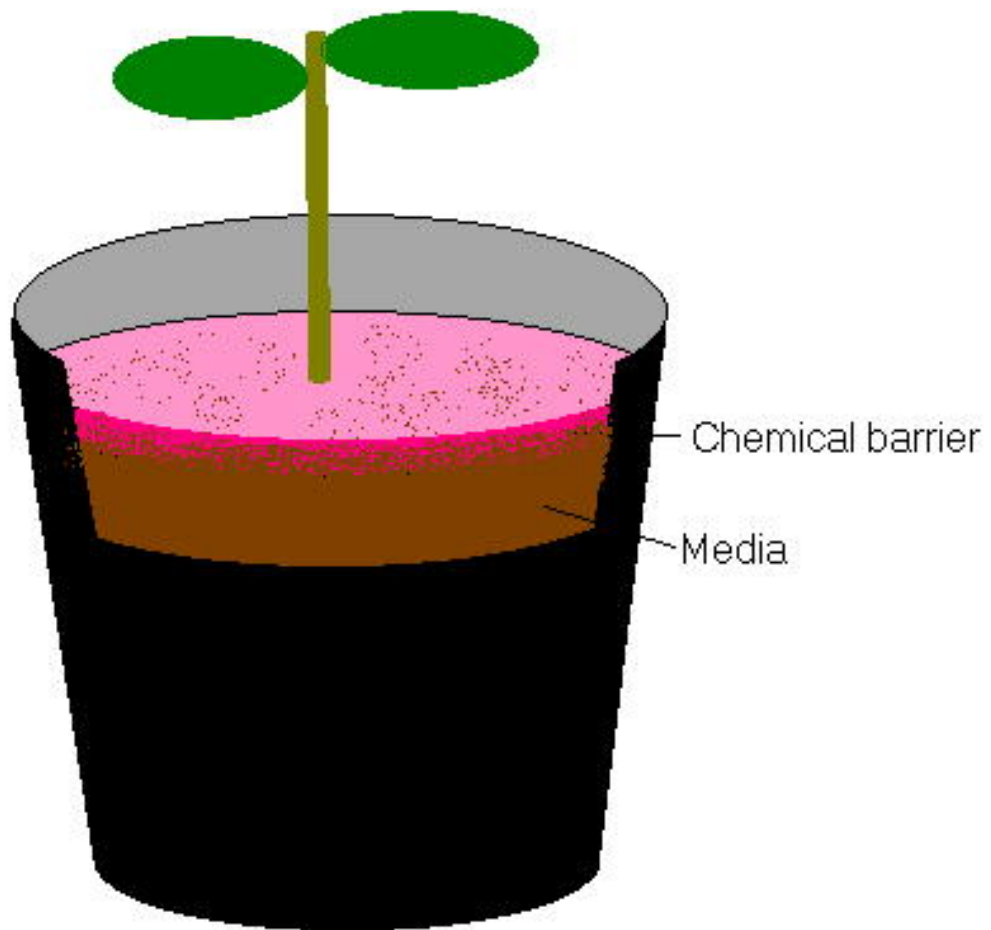


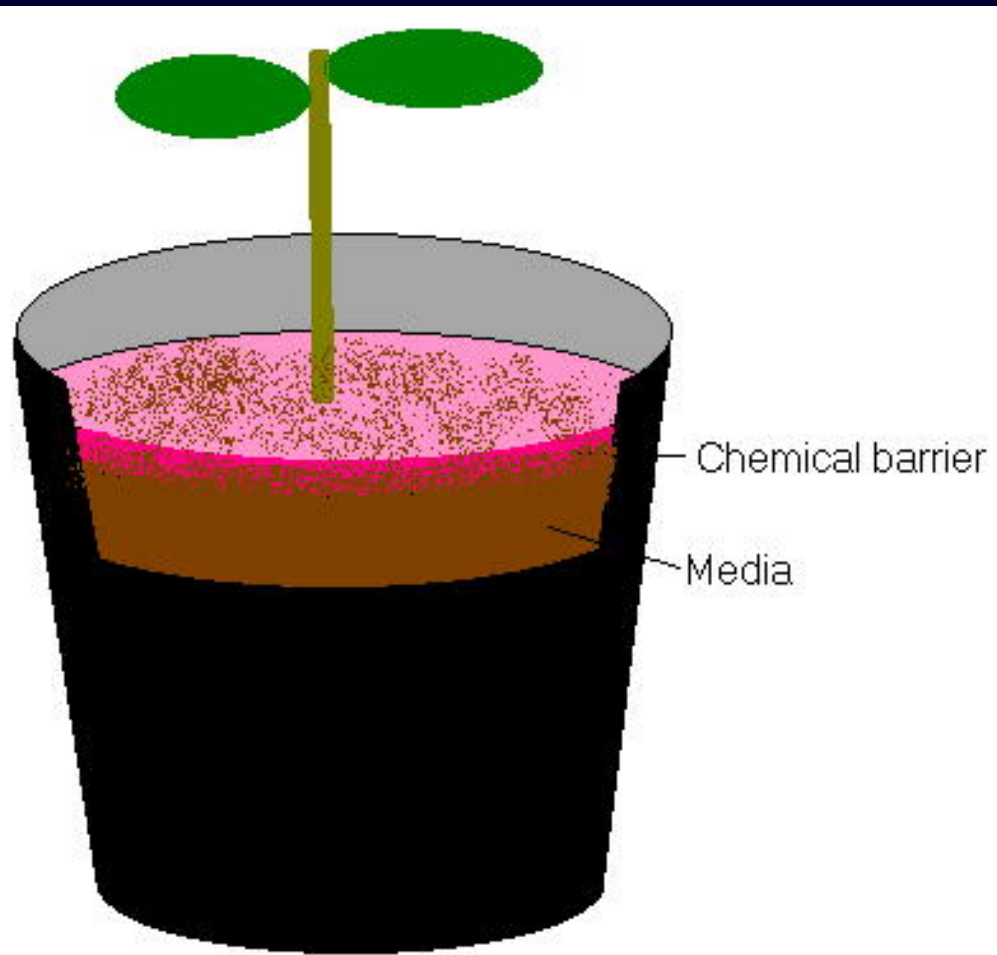
# Total weed management program

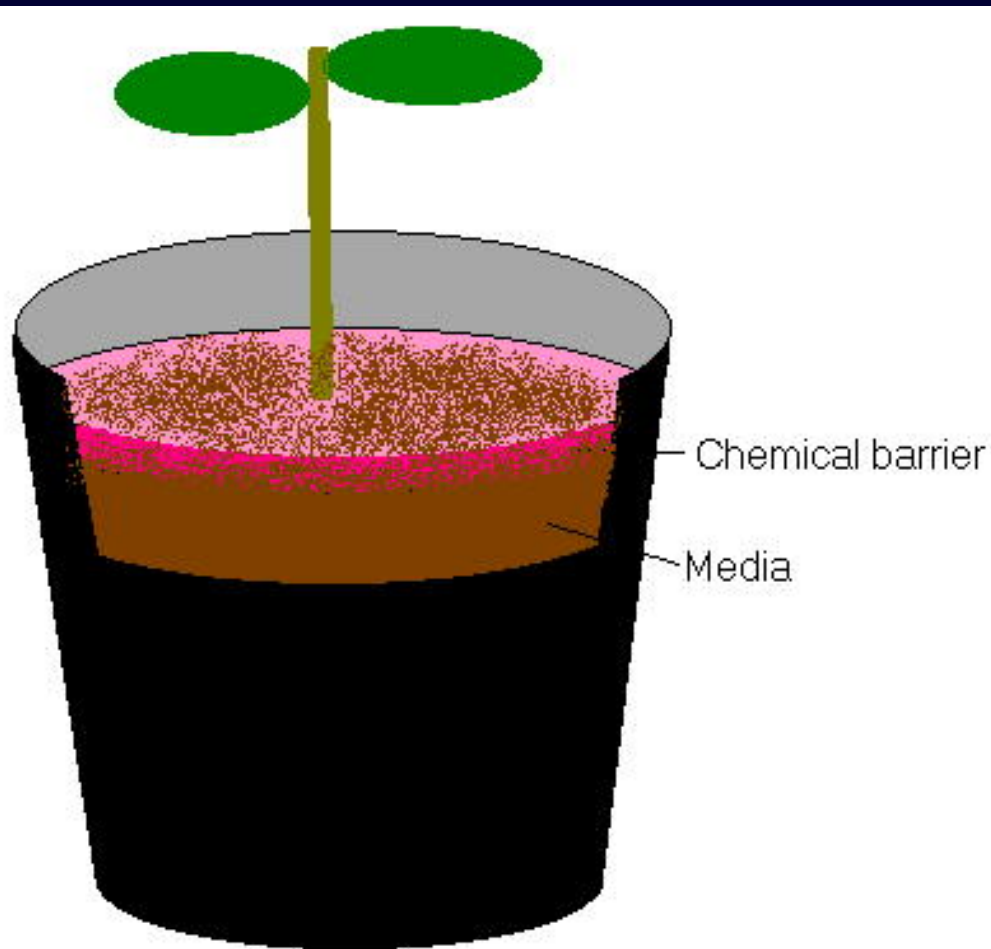
Effective weed control













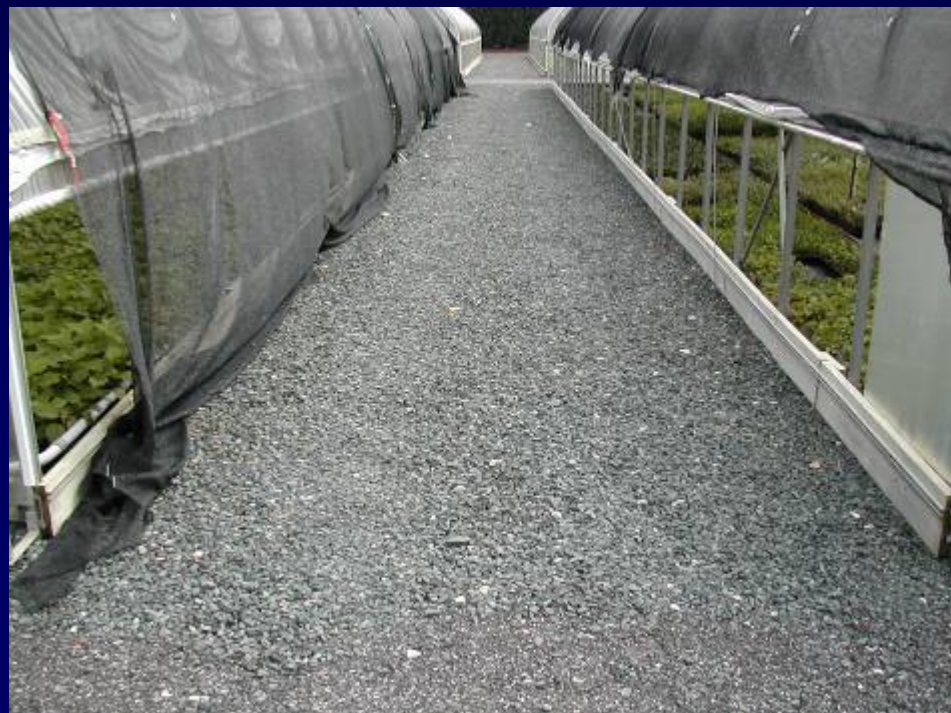




# Sanitation

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- No seed bank in containers
- Containers placed on gravel
  - Complete vegetation suppression
  - No erosion concerns
- We can prevent the occurrence of weed seeds in containers





# Sanitation

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- Many weeds come in infested liners
- Weed control in propagation houses is difficult
- Many weed infestations come from liners!!!!
  - Pearlwort
  - Creeping woodsorrel





# Cultural practices

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- Fertilization
- Irrigation
- Substrate selection

# Cultural practices - fertilization

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- Seed of container weeds are small.
- Seeds must germinate close to the container surface.
- Seed require available nitrogen (N), phosphorus (P), and potassium (K).

# Cultural practices - fertilization

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- Seed deprived of N, P, or K will fail to germinate, or germinate poorly.



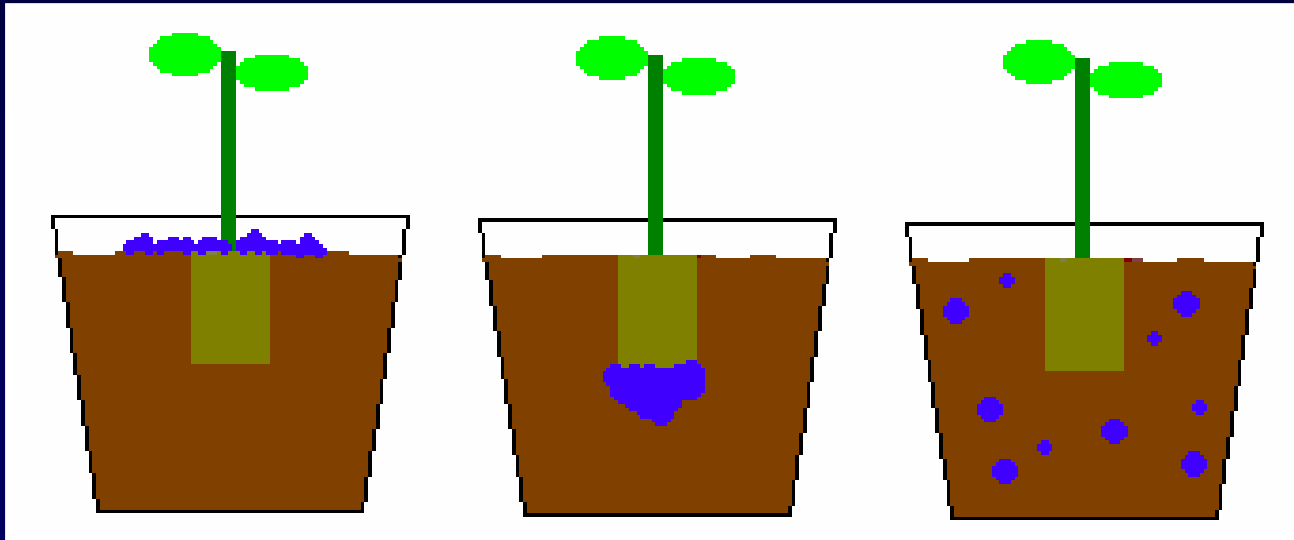






# Fertilizer placement

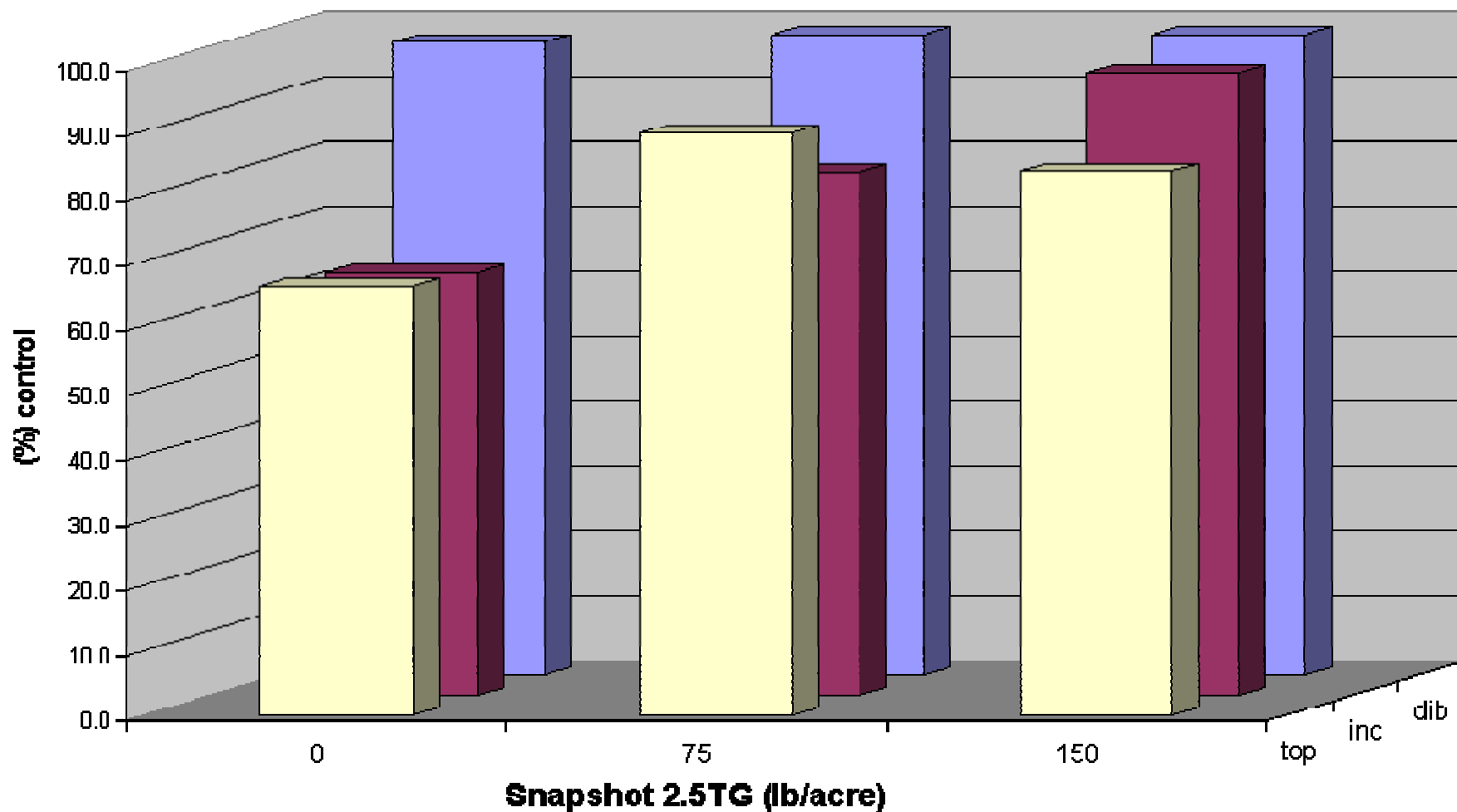
- Container growers use 1 of 3 fertilizer placements for CRFs



- Topdress, dibble, incorporated

# Fertilizer placement

**Weed control in containers as a result of herbicide rate and fertilizer placement**





# Guidelines for dibbling

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- Trial on each crop first
- Use only homogenous blends of CRFs
- Use only CRFs with release of 8-9 month or longer
- Only use when potting in spring or early summer
  - Do not use when potting in fall.

# Cultural practices - Irrigation

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- Over-watering crops decreases weed control.
  - Increased moisture increases chances of seed germination and survival.
  - Excess water increases microbial activity, and microbes degrade herbicides.





# Efficient irrigation

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- Requires
  - Precise application rates
    - How much water should you apply?
    - When do you apply it?
  - Uniform irrigation
    - This is a major limiting factor to efficient irrigation







# Uniform irrigation

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- Easy with pressure compensating micro-emitters
  - Large containers
- Difficult with overhead irrigation
- Without uniformity, efficient overhead irrigation is unlikely



# Substrate selection

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- Select a media that will dry quickly on the container surface.
- When container surface dries quickly:
  - Weeds grow poorly.
  - Liverwort suffers.
  - Herbicides persist longer.

# Pearlwort

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- Substrate particle size
  - Seed are very small.
  - When coarse substrate is used, seeds fall too deep in pores, cannot germinate.



# Mulch products

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- Disks
  - Plastic weed lid
  - Coco disk
  - Geotextile disk
- Loose fill
  - Sawdust
  - Biotop
  - Bark chips

# Coco disk

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- Made from coconut husks
- Similar to other disks
- More forgiving to plants without single stems
- Excellent weed control
- \$0.09 / #1 container







# Sawdust

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- Cheap
- Readily available
- Provides control for several months
- Easy to apply
- Removes N from container surface
- Starves weeds on container surface
- Less than \$0.01 / #1 container





# Container mulch characteristics

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- Coarse
  - Hold little water
  - Dries quickly after irrigation
- Little or no available N
  - Avoid compost
- Resist decomposition
- Locally available and cheap

# Summary

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- Herbicides alone will only be marginally effective
- Sanitation is your most powerful tool
- Understand weed biology (there aren't many)
- Use sanitation and cultural practices to limit success of weed spread and growth

# Website

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- <http://oregonstate.edu/dept/nursery-weeds/>