



# Weed Management in Rice

**Calvin Odera**

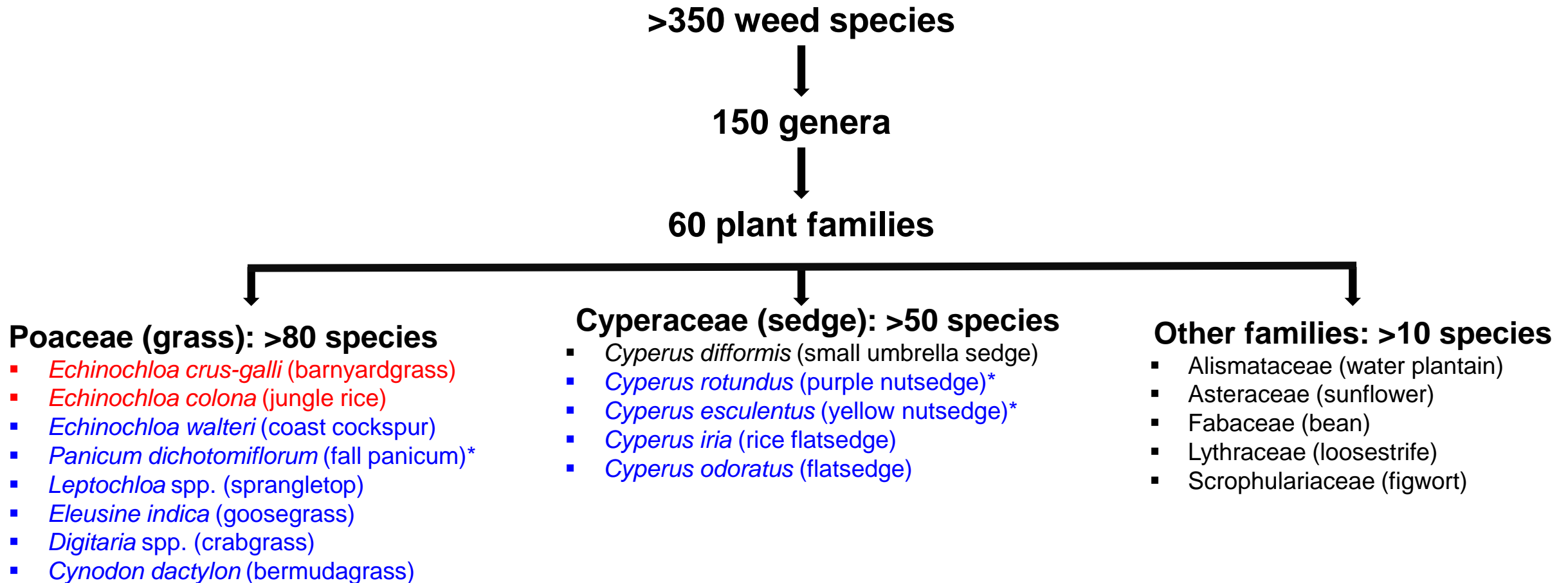
**Everglades Research & Education Center**

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# Outline

- Common weeds in rice
- Rice growth stages and timing of weed control
- Weed management
  - Weed biology
  - Prevention
  - Tillage and land levelling
  - Water management
  - Crop rotation
  - Chemical weed control

# Most problematic weeds in flooded paddy rice



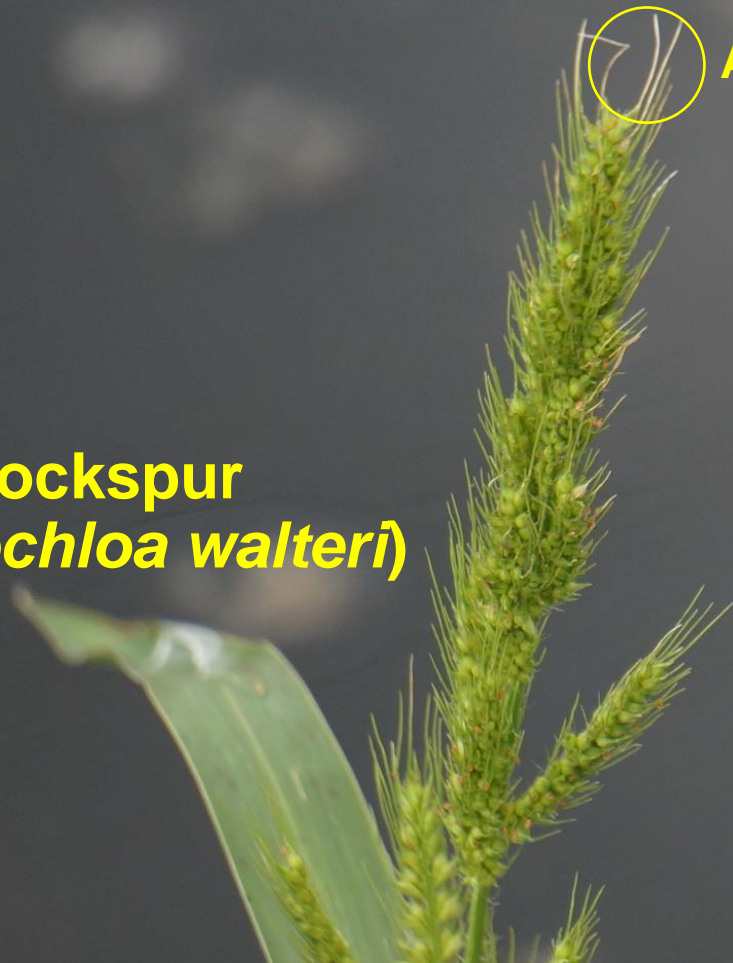


## Fall panicum (*Panicum dichotomiflorum*)

- **Seedling** leaves rolled in a bud, ligule hairy, leaf sheath hairy to hairless
- **Mature plant:** leaf blades smooth; stem has waxy appearance, bent on nodes (not rooting), branching; ligule a fringe of hairs
- Inflorescence large, freely branched, spreading panicle
- **Interference level:** major yield or quality losses



**Coast cockspur  
(*Echinochloa walteri*)**



**Awns**

**Jungle rice  
(*Echinochloa colona*)**





## Coast cockspur (*Echinochloa walteri*)

- **Seedling** leaves smooth, rolled in a bud, no ligule, sheath hairy
- **Mature plant:** Leaf blades rough, no ligule; erect stem, branching; hairy sheath
- Inflorescence large, erect bristle, awned
- **Interference level:** major yield or quality losses





## Bearded sprangletop (*Leptochloa fascicularis*)

- **Seedling** leaves rough, ligule membranous, sheath rough
- **Mature plant:** leaf blades rough, tightly rolled when dry, sheath rough, ligule membranous, erect stem
- Inflorescence a panicle
- **Interference level:** major yield or quality losses





## Amazon sprangletop (*Leptochloa panicoides*)

- **Seedling** leaves smooth or rough, ligule toothed membranous, sheath smooth
- **Mature plant:** leaf blades smooth or rough, green midrib, sheath smooth, ligule toothed membrane
- Inflorescence an erect spreading panicle
- **Interference level:** major yield or quality losses







**Bearded sprangletop**

**Amazon sprangletop**

# Yellow vs purple nutsedge

## • Yellow nutsedge

- Perennial
- Seedling small, inconspicuous
- Leaves gradually taper to a sharp point
- Flowers yellowish-brown
- Tubers smooth, round shaped, at ends of rhizomes, sweet almond flavor

## • Purple nutsedge

- Perennial
- Seedling small, inconspicuous
- Leaves abruptly taper to a sharp point
- Flowers purple to brown
- Tubers rough, irregular shaped, connected in chains, bitter flavor


**Interference level:** causes major yield or quality losses



**Purple nutsedge**

**Yellow nutsedge**

**Interference level:** major yield or quality losses



**Yellow nutsedge**

**Purple nutsedge**

The image shows three nutgrass plants (Cyperus rotundus) pulled from the ground and laid out on a light-colored concrete surface. The plants are arranged from left to right, increasing in size. Each plant has a central stem with several long, narrow, green leaves. The roots are visible at the base of each plant, showing a fibrous network. The largest plant on the right has a prominent, reddish-brown, bulbous root structure. The concrete surface is light gray with some small dark spots and a faint crack running vertically on the left side.

**Yellow nutsedge**

**Purple nutsedge**

# Other sedges

**Rice flatsedge**



Fibrous roots: yellowish-red

**Flat sedge**



Fibrous roots: brown



**Spiny amaranth**



**Texasweed**



**Spreading dayflower**



**Coffeeweed/hemp sesbania**



**Redstem**



**Longfruit primrose-willow**

**Interference level:** moderate yield or quality losses



**Common purslane**



**Alligatorweed**

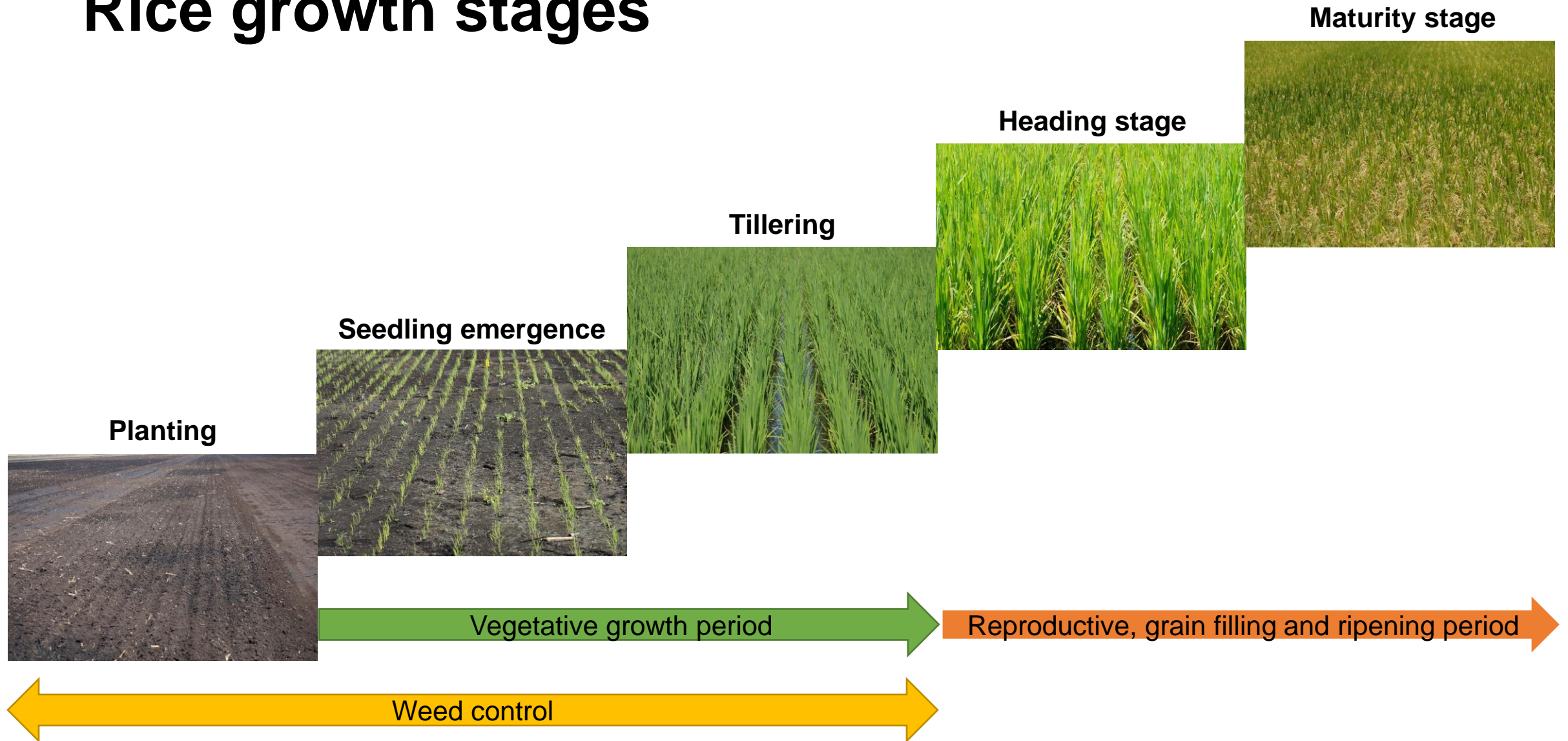


**Common lambsquarters**

**Interference level:** slight yield or quality losses



# Rice growth stages



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# Weed biology

- Understand seed germination dynamics
  - Soil temperature and water potential
  - Light, soil gaseous environment, soil pH
  - Tillage - stimulator of emergence and control in false seedbed technique
- Effects of environmental conditions on growth and development
- Determining weed economic thresholds

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# Prevention

- Use certified seed
  - 0% red rice
  - 0.01% barnyardgrass, sprangletop
- Clean farm equipment when moving from field to field
- Eliminate rice weeds growing along field edges, ditches, canals, and roadsides

# Tillage and land leveling

- Tillage
  - Destroys weeds that emerge before seedbed preparation
  - Rolling allows more precise planting depth
- Levelling
  - Eliminates unevenness within the field, improves weed control



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# Water management

- Important cultural factor for weed management
- Timing depends on growth rate of rice and degree of levelling
- Weed control (chemical) targeted between rice emergence and permanent flooding
- Chemical control effective only if the herbicides are used in conjunction with a carefully controlled water management plan
  - Applied pre-flooding
  - Flooded fields: require drainage for good coverage, rapid re-flooding to prevent new weed flush, ability to drain and flood quickly

# Crop rotation



**Grass weeds**

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# Chemical weed control

- Preemergence herbicides: not commonly used in Florida
  - Pendimethalin (Prowl H<sub>2</sub>O), clomazone (Command)
- Postemergence: few herbicides widely used

# Herbicides commonly used in the EAA

Common name	Trade name	MOA, WSSA Group	Target weeds
Clincher	Cyhalofop-butyl	ACCCase inhibitor (1)	Grasses
Londax	Bensulfuron	ALS inhibitor (2)	Sedges
Sandea, others	Halosulfuron	ALS inhibitor (2)	Sedges, some broadleaves
Basagran	Bentazon	Photosystem II (6)	Some broadleaves, sedges
Stam, others	Propanil	Photosystem II (7)	Some broadleaves, grasses
Aim	Carfentrazone-ethyl	Protox inhibitor (14)	Broadleaves
Sharpen	Saflufenacil	Protox inhibitor (14)	Broadleaves
<b>Others</b>			
Grasp	Penoxsulam	ALS inhibitor (2)	Broadleaves, sedges
Grasp Xtra	Penoxsulam Triclopyr	ALS inhibitor (2) Synthetic auxin (4)	Broadleaves, sedges, grasses
RebelEX	Penoxsulam Cyhalofop-butyl	ALS inhibitor (2) ACCCase inhibitor (1)	Broadleaves, sedges, grasses
Loyant	Florpyrauxifen-benzyl	Synthetic auxin (4)	Broadleaves, sedges, grasses

Use herbicides safely. Read and follow directions on the manufacturer's label.





**Sharpen injury 5 days after treatment**

**5 days after treatment**



**21 days after treatment**



**42 days after treatment**



**Sharpen transient injury**





**Fall panicum control**  
• Clincher (13.5 fl oz/A)



**No fall panicum control**  
• No herbicide applied



**Fall panicum control**  
• Clincher (13.5 fl oz/A)



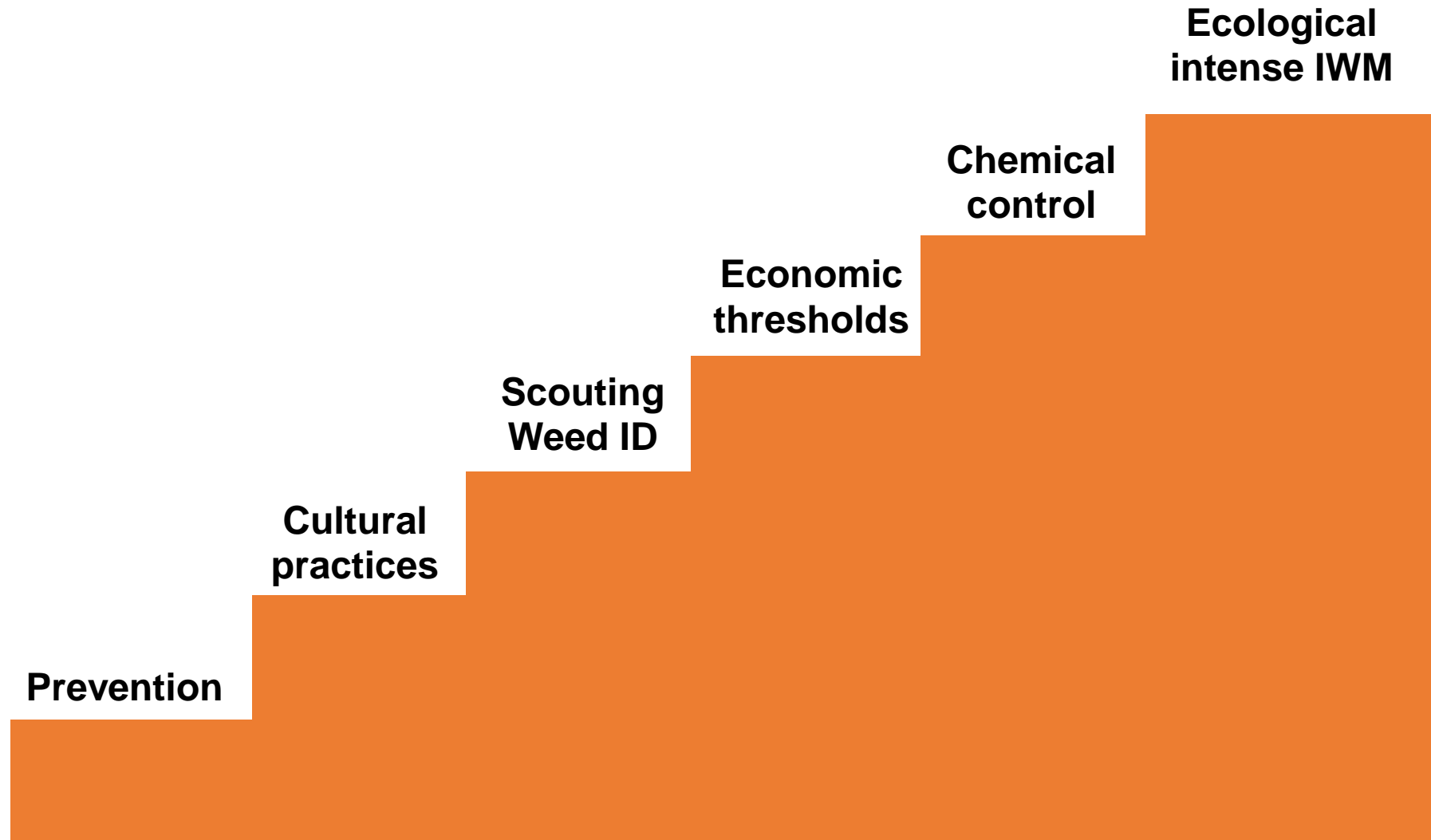
**No fall panicum control**  
• No herbicide applied

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# For herbicide use

- Scout field, identify weed species
- Select appropriate herbicide(s) – effective
  - Mixtures and sequential treatments
  - Compatibility
  - Proper adjuvants
  - Varietal tolerance
- Application equipment
  - Proper calibration
- Environmental conditions
- Interactions with water management

# Integrated weed management in rice





**Weedy hosts of  
rice stink bugs**





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