Weed Management in Cucurbits

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The Importance of Weed Management

• Weed/plant competition can severely reduce yields
• Weeds can limit air movement
• Increase the incidence of some plant diseases
• Weeds can harbor insects
• Reduce/interfere with spray coverage of pesticide applications

Problematic Weeds in Cucurbits

• Amaranthus spp.
  • Waterhemp, pigweeds, palmer amaranth
• Morningglories
• Hophornbeam Copperleaf
• Common/giant ragweed
• Crabgrass
• Foxtail spp.
• Volunteer small grains

Common Management Methods

• Herbicides
• Cover Crops/No-Till
• Tillage/Cultivation
• Hand weeding/hoeing
• Spot/directed herbicide applications

Common Herbicides

• Gramoxone SL
• Roundup PowerMax
• **Reflex** (NEW) Pumpkin only
• Dual Magnum
• Strategy
• Command
• Curbit
• Sandea
• SelectMax/Poast
• Aim

Herbicide Resistant Weeds

• Herbicide resistance is a becoming challenge to our weed management strategies
  • Waterhemp
  • Marestail (Horseweed)
  • Ragweed spp.
  • Pay attention to the herbicide site of action
    (Listed in parentheses)
Considerations When Using Herbicides

- Identify problematic weeds!
- May have a potential for crop injury
  - Make sure to follow labeled guidelines
  - Understand the risks of injury associated with the individual herbicide; each is different
- Potential carryover to future crops
- Preemergence herbicides need rainfall to “activate” or incorporation (tillage)
- Generic Herbicides
  - CHECK LABEL for different rates or adjuvant needs!

**Burndown**

**Gramoxone SL (22)**
- Contact and works better on smaller weeds
- Very good on BL; struggles with grasses
- Limited activity on perennial weeds

**Roundup PowerMax (9)**
- Systemic activity and works* on larger weeds
- Herbicide resistant weeds
- Marestail, Waterhemp…
- Good on perennial weeds

**Reflex** (14)

- Active Ingredient: fomesafen
- Residual (some foliar activity)
- Application Timing(s):
  - Preemergence – PUMPKIN ONLY
- Notes:
  - Newly labeled product in Illinois. Indemnified 24(C) Label REQUIRED*
  - Excellent control of many small seeded broadleaves (waterhemp/pigweeds, purslane). Good control of common ragweed, nightshades and horse nettle

**Reflex** (14)

- This is an indemnified 24(C) Label requiring a waiver.
  - To get the label and waiver go to: www.farmassist.com
- Trials and field observations have shown good crop safety especially to most Jack O’Lantern varieties and to transplants.
- Some specialty varieties, especially when direct-seeded, may be at a greater risk of some crop injury.

Crop Tolerance to Reflex

- Trial in 2014 (Carbondale, IL)
  - ‘Howden’ & ‘Blue Jarradale’
  - Direct-seeded in tilled soil
  - Reflex 0.5, 1, & 2 pt/A
- No visual injury or reduction in stand.
  - Note that seed placement, rainfall, and soil conditions can have a great influence on crop injury!

Labeled Use of Reflex

- Reflex Herbicide (or any other fomesafen containing herbicide) may only be applied in ALTERNATE years in Illinois
  - Fomesafen is also found in the soybean herbicides Flexstar, Prefix, and equivalent generics.
- Rate: 0.5 – 1 pt/A
  - Preemergence broadcast application after direct seeding pumpkin, but before crop emergence
  - OR
  - Pre-transplant non-incorporated broadcast application up to 7 days prior to transplanting pumpkins.
Making Use of Reflex

- Reflex is not necessarily a good stand alone preemergence product but it can help enhance control of some of our problematic broadleaf weeds
- Partner it with some other PRE herbicides:
  - Dual Magnum
  - Sandea
  - Strategy
- Other cucurbits in the future???

Dual Magnum or Dual II Magnum (15)

- Active Ingredient: s-metolachlor
- Residual only (no foliar activity)
- Application Timing(s):
  - Preemergence
- Notes:
  - Pumpkin only
  - Good on grasses, small seeded broadleaves (waterhemp) and nutsedge
  - Good crop safety

Strategy (13 & 3)

- Active Ingredient: clomazone + ethalfluralin
- Residual only
- Application Timing(s):
  - Preemergence
- Notes:
  - Good on grasses and select broadleaves
  - Components Command (13) and Curbit (3) are also labeled separately
    - (Command not for Jack O’Lanterns)

Sandea (2)

- Active Ingredient: halosulfuron
- Foliar and residual; systemic
- Application Timing(s):
  - Preemergence
  - Postemergence
  - Either can cause crop injury especially POST
- Notes:
  - Good on broadleaves and excellent on nutsedge
  - Some weed resistance to this Site of Action especially POST
  - Waterhemp, Marestail

SelectMax/Poast (1)

- Active Ingredient: clethodim/sethoxydim
- Selective, systemic; no residual
- Application Timing(s):
  - Postemergence
- Notes:
  - Good on all grasses only. Best results when grasses are small (4 inches or less).
  - Make sure to note any adjuvant recommendations, especially on generics
  - Select is generally better on perennial grasses than Poast

Cover Crops

- Small Grains
  - Wheat
  - Cereal Rye (allelopathy)
  - Others: Triticale, Barley...
  - Residue is very good at suppressing weeds
  - Residue can last season long
- Legumes
  - Very good as a nitrogen producer but do not provide as much weed suppression
  - Small Grain/Legume Mix
Conventional Till vs No-Till

- Both systems exist and have their pros and cons...

Conventional Tillage

**Advantages**
- Effective (if maintained)
- Easy to eliminate weeds for which we do not have good herbicides for control (especially broadleaves) through tillage

**Disadvantages**
- Tillage can bring up new flushes of weeds
- Labor intensive with multiple passes through the field
- Fruit are setting directly on tilled soil = dirty fruit
- Higher potential for soil erosion

A little tillage can go a long ways...

No-Till Planted

**Advantages**
- Effective (if maintained)
- No tillage used to bring up new flushes of weeds
- Cover crop residue provides added weed control
- Less erosion potential
- Fruit are setting on residue not soil = cleaner fruit

**Disadvantages**
- Relies heavily on herbicides and we currently have limited herbicides labeled.
- Rodent feeding on direct planted seeds

Stale Seed Bed

- Prepare the seedbed several weeks in advance
- Burn off the flushes of newly germinating weeds
- Plant with minimal soil disturbance
- Use residual herbicides at planting
- This is a good “hybrid” approach

A System in Action...

**Pre-Plant/Preemergence**
- Till vs. No-till, Stale Seed Bed, Cover Crops

**Burdown/Residual**
- Foliar: Gramoxone or Roundup
- Residual: Dual Magnum, Sandea, Strategy... (Reflex?)

**POST**
- SelectMax/Poast, Sandea
- Handweed/directed spray
  - Gramoxone, Aim
  - (Cultivate if necessary*)
Summary

• Weed control is an essential component to attain the best yields and quality possible.
• START CLEAN!
• Diversify your management tactics!
  • Herbicides, hand weeding, cover crops, etc.
• The smaller the weed; the easier it is to kill.
• Kill weeds before you can see them (residual herbicides).
• Good weed management in pumpkins is not “simple” no matter how you grow them, but it can be done successfully!!

2016 Pumpkin Field Day

• Wednesday, August 31, 2016 - 10:00 AM
• U of I Ewing Demonstration Center, Ewing, IL
  • Located about 15 minutes south of Mt. Vernon; 4 miles east of I-57
• Pumpkins Variety Trials, and Demonstration Plots on Cover Crops, No-till Production, Pest Management, and more!
• More details to come!!
  • Watch the IL Fruit/Veg Newsletter
    • http://web.extension.illinois.edu/smallfarm/

Questions?

Thank You!

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