Improved Nutsedge Control on Bed Edges with Metam Potassium and Soil Surfactants

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Gulf Coast REC
Up to 200 shoots/ft$^2 \approx 2000/m^2$
How fast can nutsedge grow?

1 week

4 weeks

Purple nutsedge (*Cyperus rotundus*)
Metam Potassium

- It controls nutsedge but it has been erratic in the past.

- Drip applications are more consistent than sprayed or rototilled.
Metam Potassium

- Drip requires 2 or more tubes on bed top.

- Water volume: 1 acre-inch of water or more (1 acre-inch ≈ 100 m³).

- Concentration: 5000-6000 ppm in water.
Metam Potassium

Concentration + duration = efficacy
(Rate + water volume) + duration = efficacy

Control                                               6000 ppm
What about bed edges?
Soil Surfactants: Integrate™

- Designed to reduce water surface tension and improve lateral movement.
- Alkoxyalted polyols and glucoethers.

- Application:
  - Drip irrigation.
  - Conventional sprayer.

- Improved metam potassium activity?
Water only               Water + Integrate
5 minutes after application in sand
Control: One drip tape, 1h (31%)

Water + Integrate: One drip tape, 1h (52%)
Control: Two drip tapes, 1h (67%)

Water + Integrate: Two drip tapes, 1h (92%)
Control: Two drip tapes, 1h (28%)

Water + Integrate: Two drip tapes, 1h (74%)
Objective

Evaluate the performance of metam potassium against nutsedge when Integrate was applied to the soil.
Materials and Methods

- **Location and seasons:**
  - GCREC, IFAS, Univ. of Florida, Balm, Fla.
  - 3 studies:
    - No crop: Spring & summer 2012
    - Tomato and pepper: Fall 2012.
Materials and Methods

- **Metam potassium (K-Pam & Sectagon K54):**
  - 60 lb/acre & 5500 ppm.
  - Hydraulic injector (Dosatron).

- **Integrate:**
  - 1 gal/acre.
  - 1-2 days before metam potassium.
  - Hydraulic injector (Dosatron).
Materials and Methods

- **Spring, summer & fall 2012:**
  - One drip tape (0.45 gal/100 ft/acre).
  - 1 ft between emitters.
  - Nutsedge populations.
  - Plots: Between 30 and 60 ft long.
  - RCBD with 6 replications.
Spring 2012

**Nutsedge Population**

- **MK alone**
- **MK + Integrate**

Control: >350 nutsedge/60-ft row
Summer 2012

Nutsedge Population

Control: >350 nutsedge/30-ft row
Fall 2012

**Graph:**
- MK alone
- MK + Integ

**Equations:**
- \( y = 1.82x - 1.74 \)
- \( y = 2.52x + 1.08 \)

**Control:** >350 nutsedge/30-ft row

-30%
Summary

- Integrate improved nutsedge control when combined with metam potassium.
  - 25-30%.
  - Lateral movement of water carrying MK.

- Effects on early tomato yields?
  - Only one Sandea application in tomato?
Weed Science Research Program
At GCREC

- Improve fumigant efficacy
  - Bed shape and size
  - Alternative fumigants
- Herbicide evaluation
  - Pre-emergence herbicides under the plastic
  - Post emergence herbicides over the bed top
- Integrated weed management systems
Thanks!!

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