Fumigants for Weed and *Macrophomina* Control in Strawberry

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Desirable Properties

EDN Fumigas

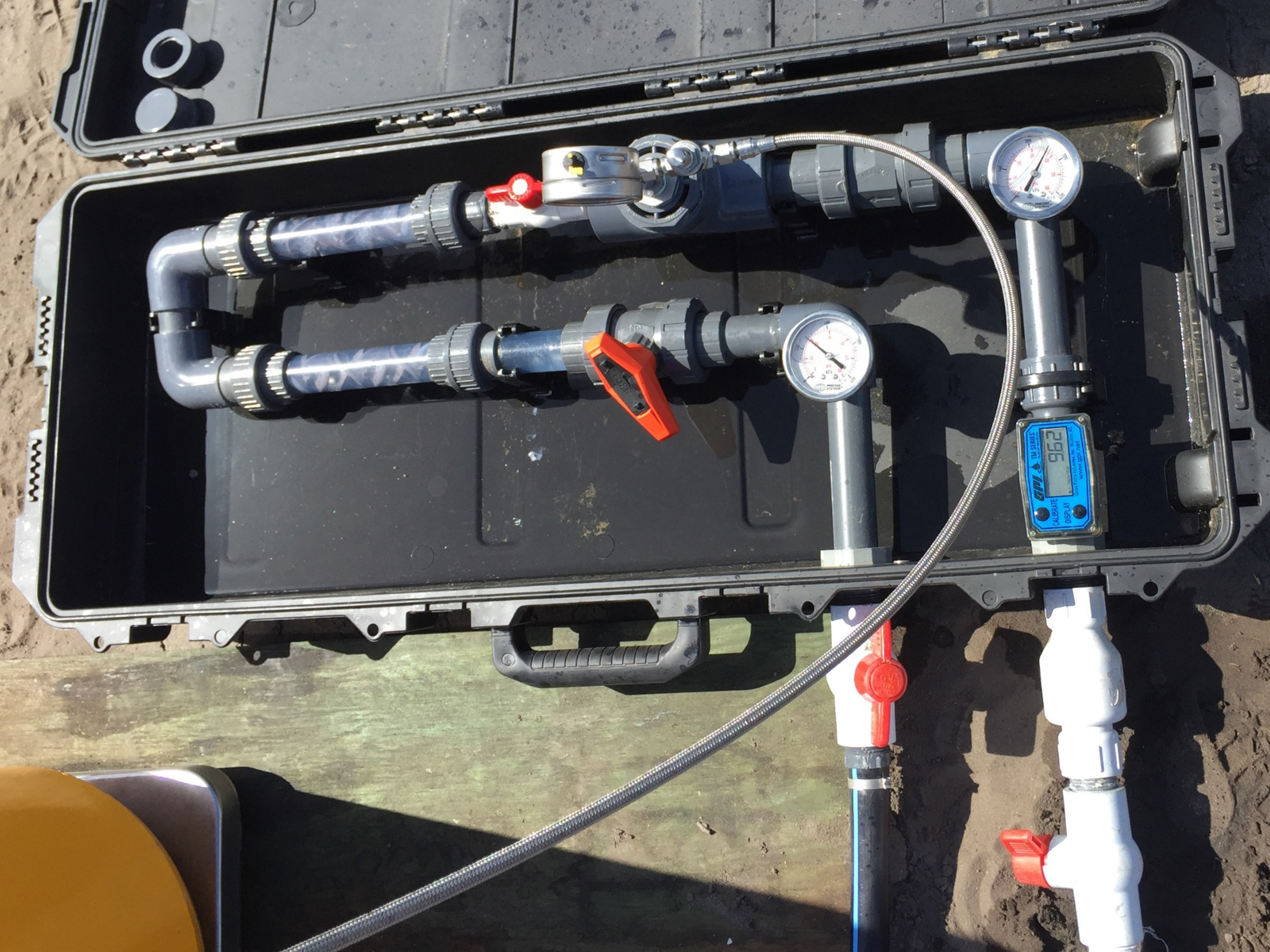
- Boiling point: -21 C
- Vapor pressure: 515 kPa

Methyl Bromide

- Boiling point: 3.6 C
- Vapor pressure: 214 kPa

Objectives

- Evaluate efficacy of drip applications of EDN at multiple rates
- Compare drip injections of EDN with Pic-Clor 60 EC and Paladin Pic-21 EC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Methods - Strawberry

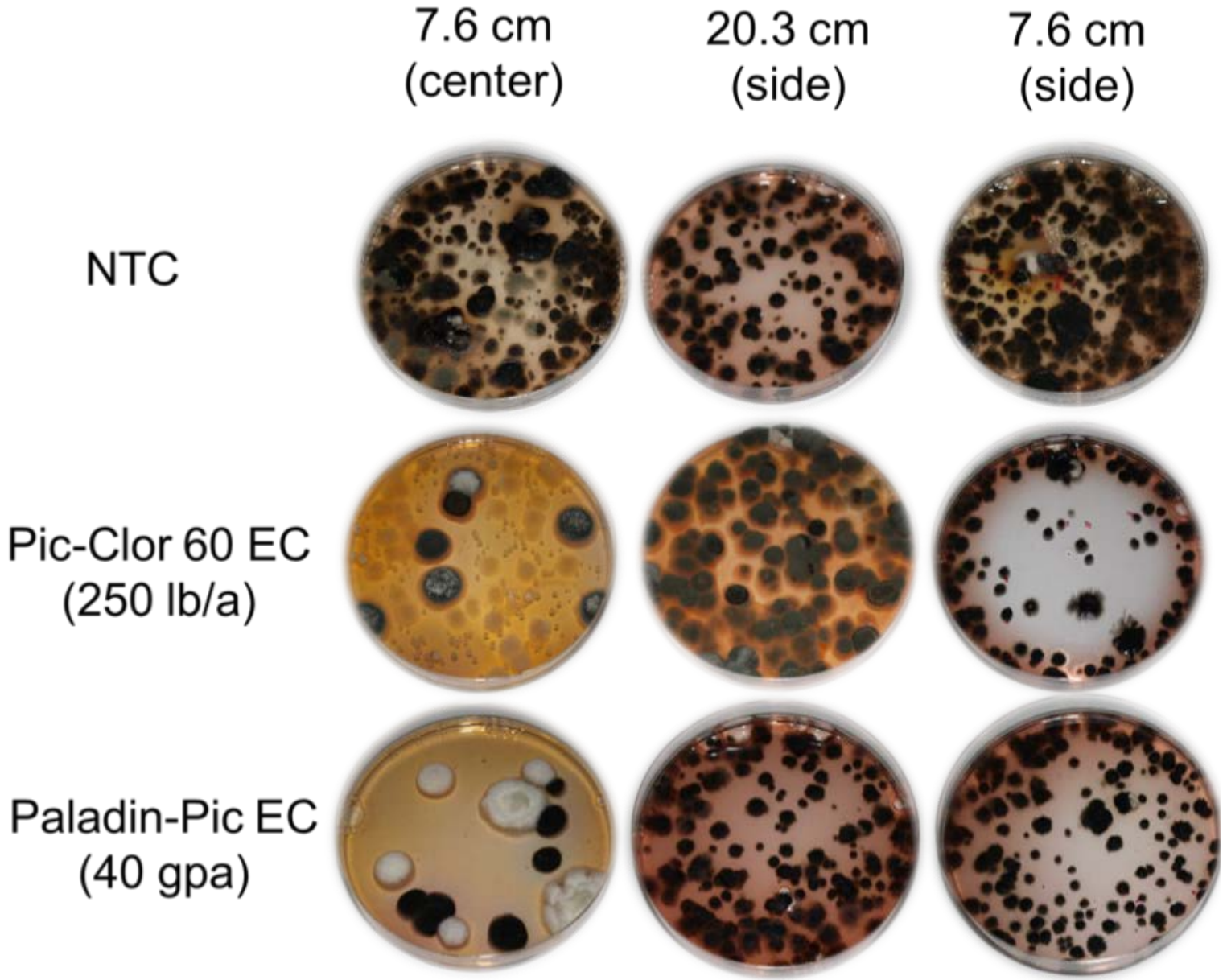
- Fumigated August 22-23 at GCREC and Dover
- Berry TIF
- Single drip tape per plot at 0.22 GPM
- Transplanted 50 strawberry plants per plot on October 10
- Drip Injected Treatments
  - Non-fumigated
  - 300 lb/acre EDN
  - 400 lb/acre EDN
  - 500 lb/acre EDN
  - 250 lb/acre PicClor60 EC
  - 40 gal/acre Paladin Pic-21 EC
- 150 ft plots and 4 blocks

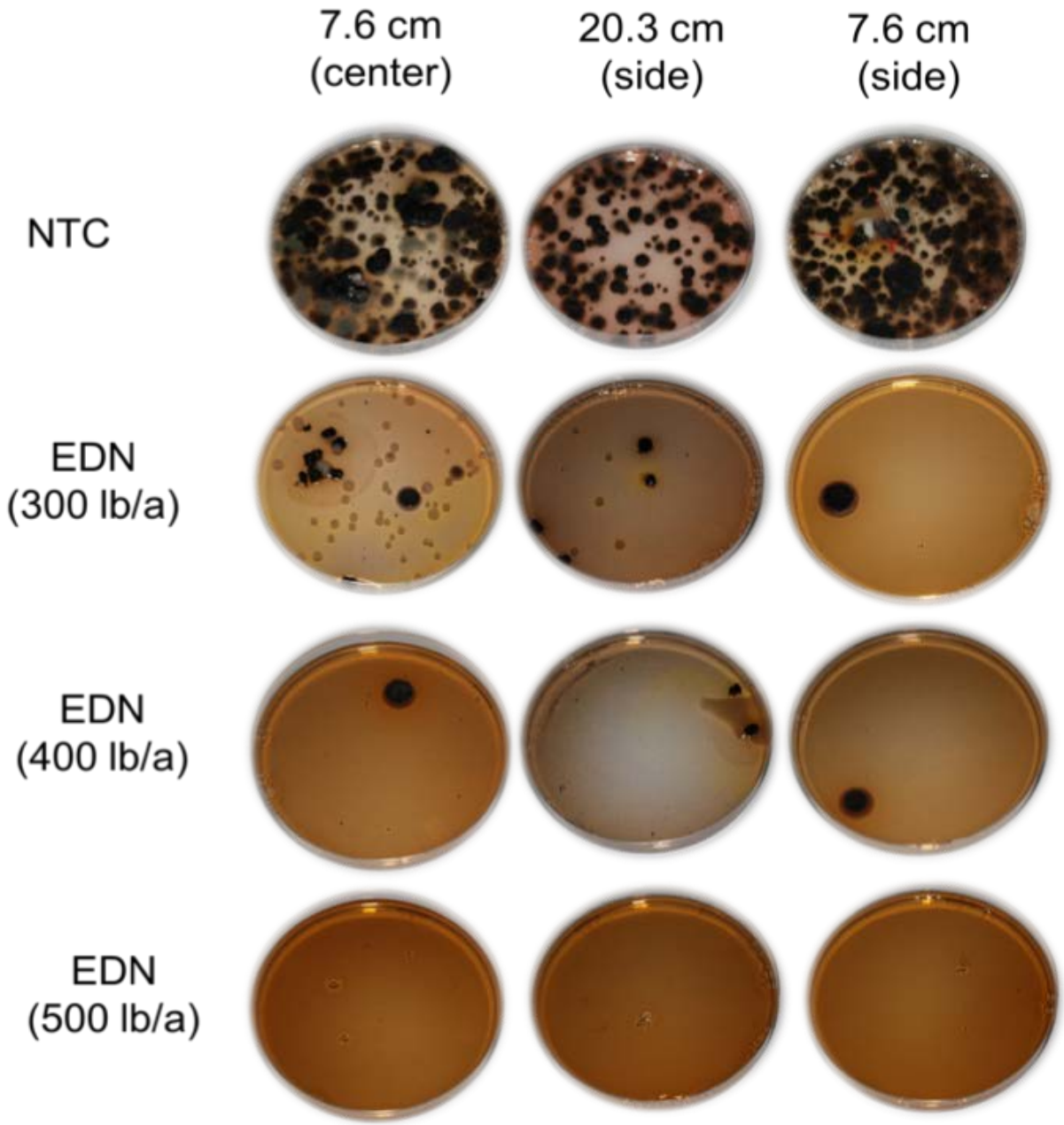
Methods - Strawberry

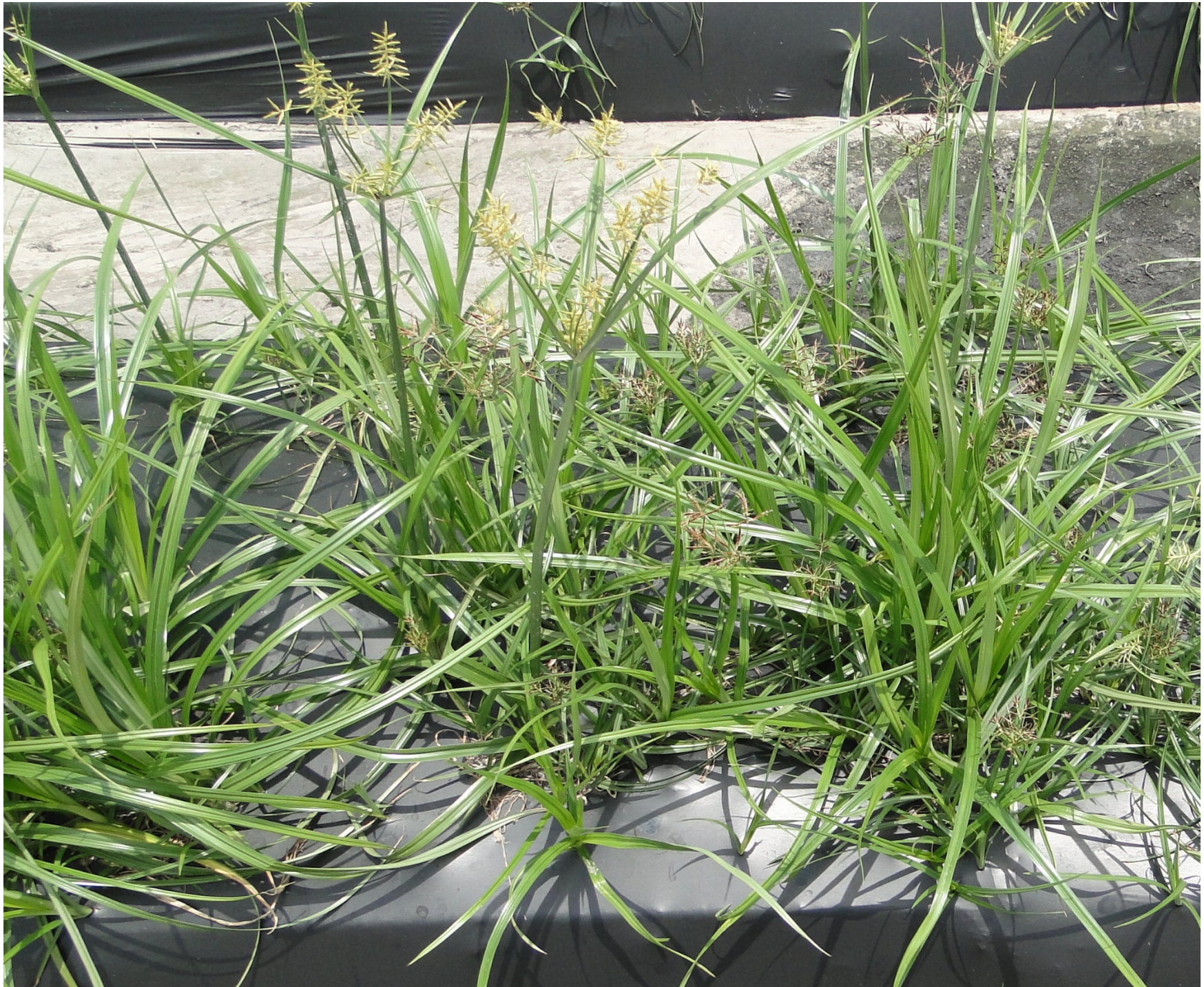
- *Macrophomina phaseolina* inoculum was prepared in the laboratory
- Strawberry crowns artificially inoculated in the greenhouse were also bagged and buried in the sides of the beds
- 14 days after fumigation, bags were retrieved, processed, and plated on semi-selective medium
- *M. phaseolina* populations were estimated as colony forming units per gram of crown (CFU/g) or per bag (CFU/bag).

Fumigant efficacy on inoculum of *M.* phaseolina when applied to soil in a strawberry field at GCREC in Balm, FL in 2017 at different locations in the bed.

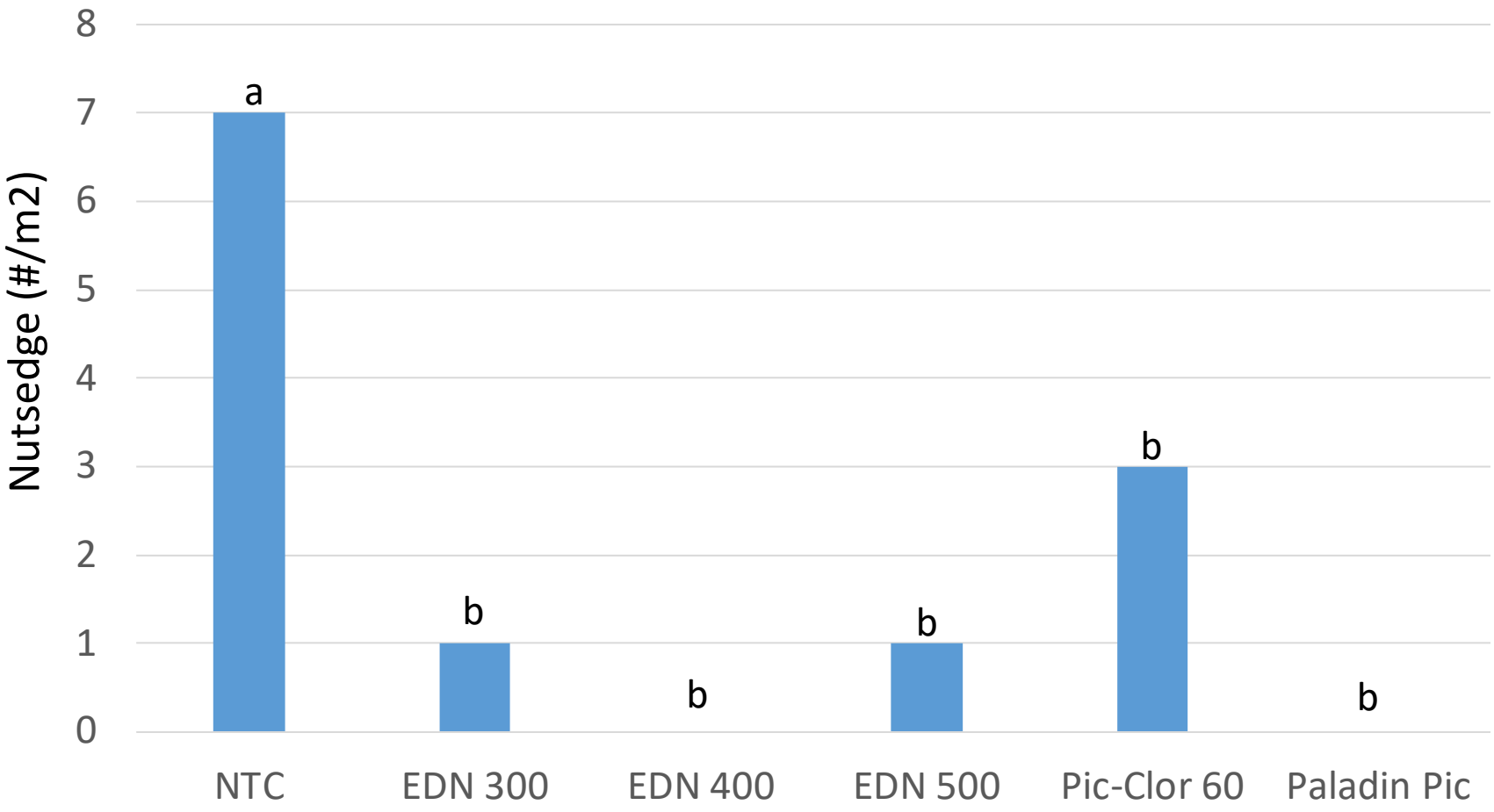
Treatments	Rate	M. Phaseolina (CFU bag^{-1})			M. phaseolina (CFU g^{-1} crown)
		7.6 cm center	20.3 cm center	7.6 cm side	7.6 cm side
NTC	-	1176.2a	1143.8a	840.5ab	415.0
Pic-Clor 60 EC	250 lb/a	5.0b	199.7b	676.0b	2.6
Paladin-Pic EC	40 gpa	27.5b	1642.5a	1846.2a	31.5
EDN	300 lb/a	1b	0.5c	17.2c	668.9
EDN	400 lb/a	0.3b	0.3c	1.3c	975.9
EDN	500 lb/a	0.2b	0.2c	0.2c	15.0
P-value		<0.0001	<0.0001	<0.0001	0.5724


7.6 cm
(center)
20.3 cm
(side)
7.6 cm
(side)
NTC
Pic-Clor 60 EC
(250 lb/a)
Paladin-Pic EC
(40 gpa)


7.6 cm
(center)
20.3 cm
(side)
7.6 cm
(side)
NTC
EDN
(300 lb/a)
EDN
(400 lb/a)
EDN
(500 lb/a)



Nutsedge Counts



Nontreated

300 lbs EDN

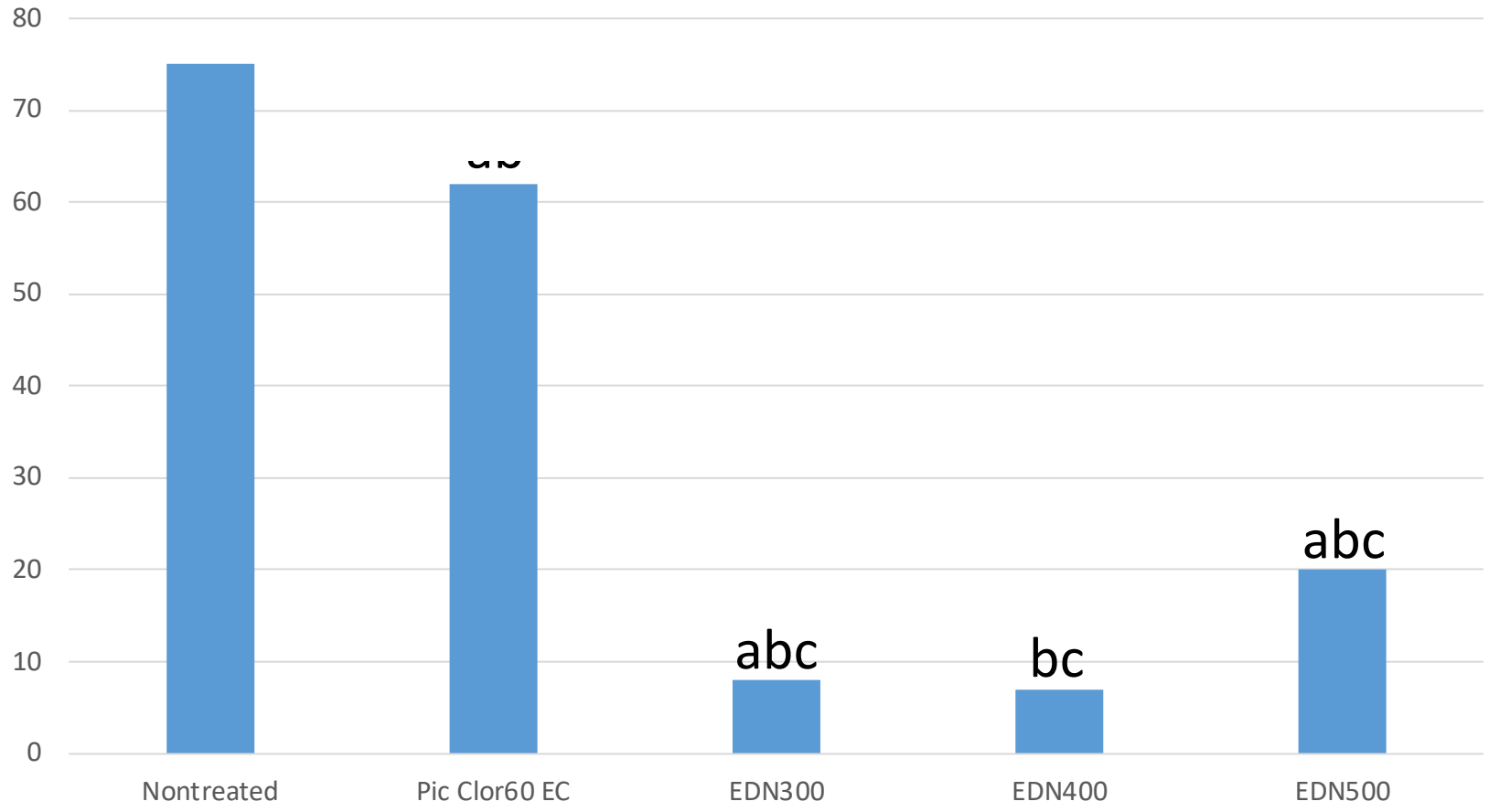
400 lbs EDN

Nontreated

Pic-Clor 60

Paladin Pic-21

Weed Biomass at Season End Averaged Across Sites



Nontreated Control

Pic Clor60 EC

Paladin Pic-21 EC

GCREC

Nontreated Control

EDN 300

EDN 400

GCREC

Nontreated Control

Pic Clor60 EC

EDN200

Dover

Nontreated Control

Pic Clor60 EC

EDN400

Dover

Results and Conclusions

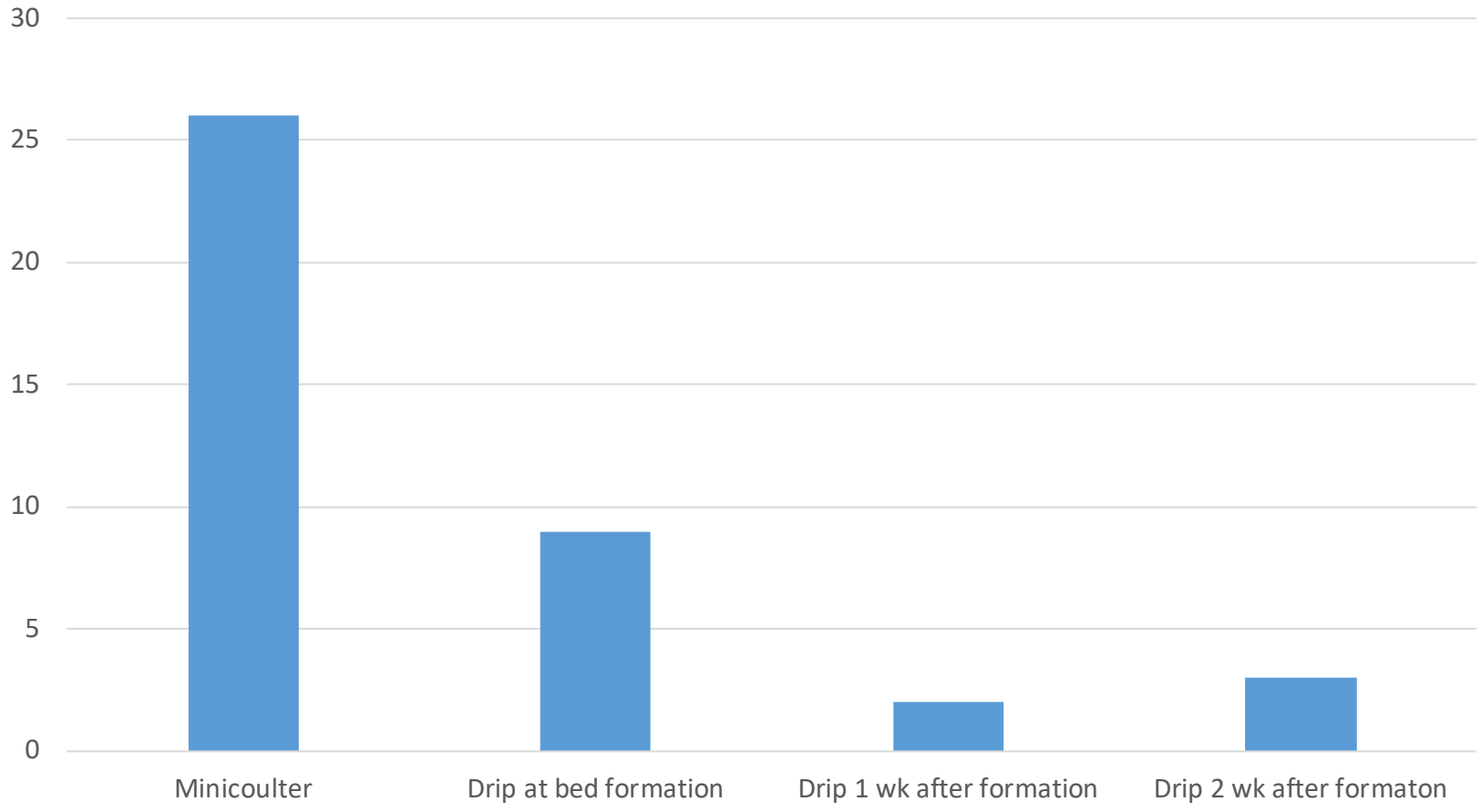
- In the center of the bed all fumigants controlled *Macrophomina* equally well.
- EDN was more effective at greater depths and on the edges of the bed than Pic-Clor 60 or Paladin
- 400 lbs/acre are needed to adequately control *Macrophomina*
- All fumigants controlled nutsedge equally well at both sites but Pic-Clor 60 tended to be less consistent

Results and Conclusions

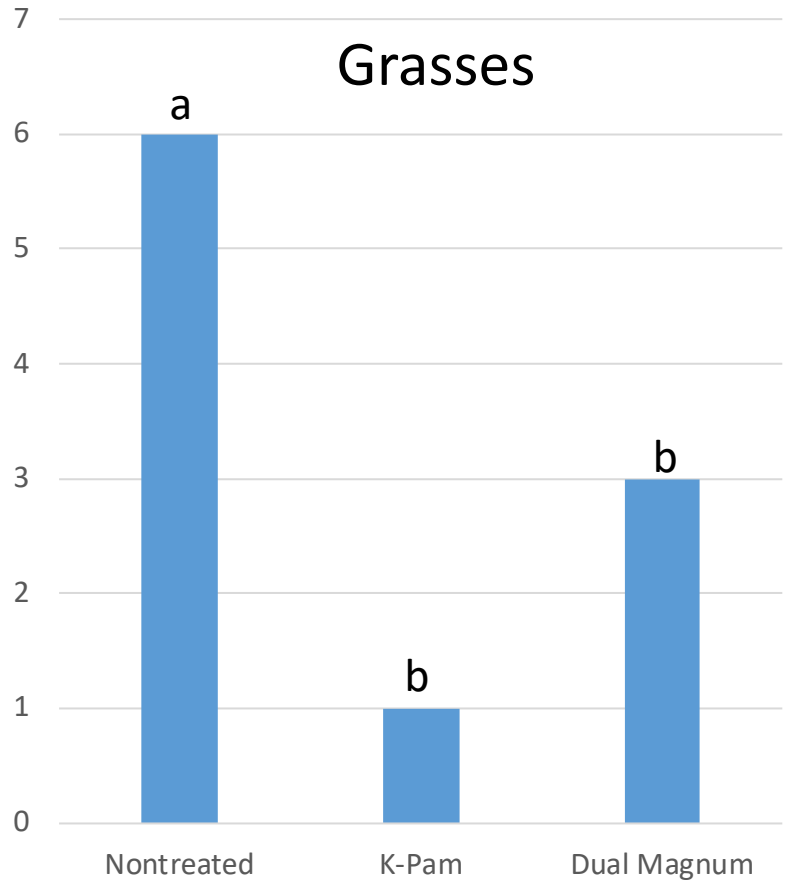
- Preliminary observations suggest EDN controls nematodes.
- Broadleaf weed control was inconsistent with all fumigants.

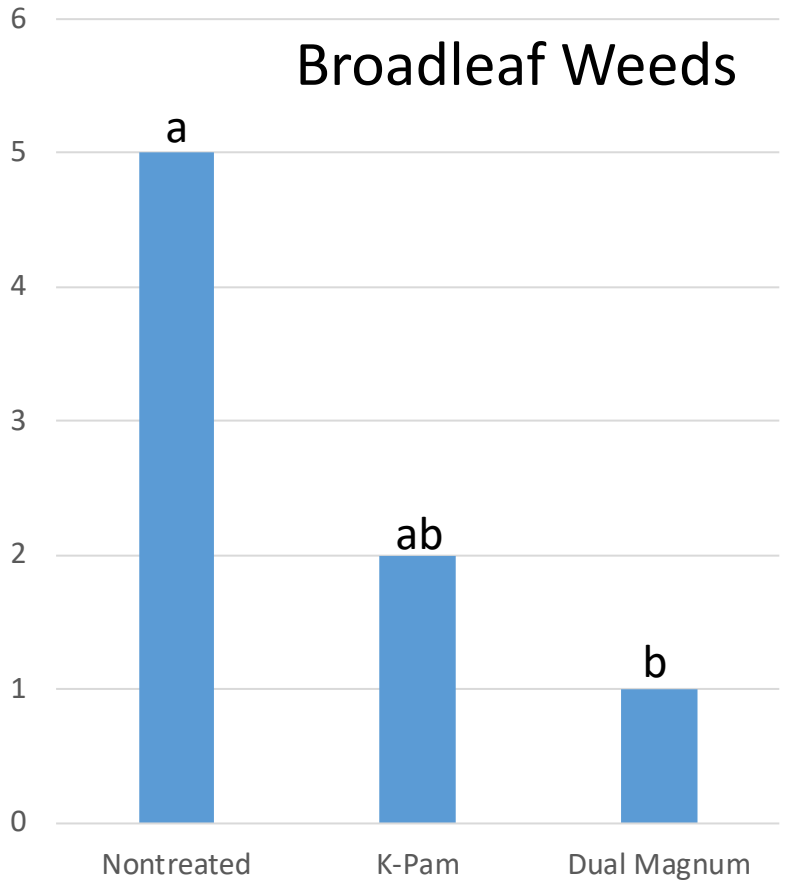
INCONSISTENT

Nutsedge Density following K-Pam Applications in Strawberry



Broadleaf and Grass Weed Control with Supplemental K-Pam





Results and Conclusions

- Delayed K-Pam application following bed formation enhance nutsedge control
- Shallow K-Pam applications are comparable to preemergence herbicides in terms of grass and broadleaf weed control.

ACKNOWLEDGMENTS

- The amazing staff at GCREC
- My research team

MBr Transition

Draslovka