

# New Products

IR-4 Industry Technology Session  
July 21, 2022

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# Aster – Soil Disinfectant

## Experimental Product Profile

<b>Active Ingredients</b>	Thyme, Clove, Garlic, and Cinnamon Oils
<b>Mode of Action</b>	FRAC BM01 (previously F7): Cell membrane disruption
<b>Crops</b>	All crops, indoor and outdoor
<b>Target Pests</b>	Broad spectrum fungal and bacterial soil borne plant pathogens, weed seed, and nematodes
<b>Application Rate</b>	2-6 gal/100 gal (2%-6%)
<b>Number of Applications</b>	1-2 applications
<b>Spray Interval</b>	Pre-plant, post-harvest
<b>FIFRA 25(b)</b>	0-hour REI, 0-day PHI



# Soil Assays

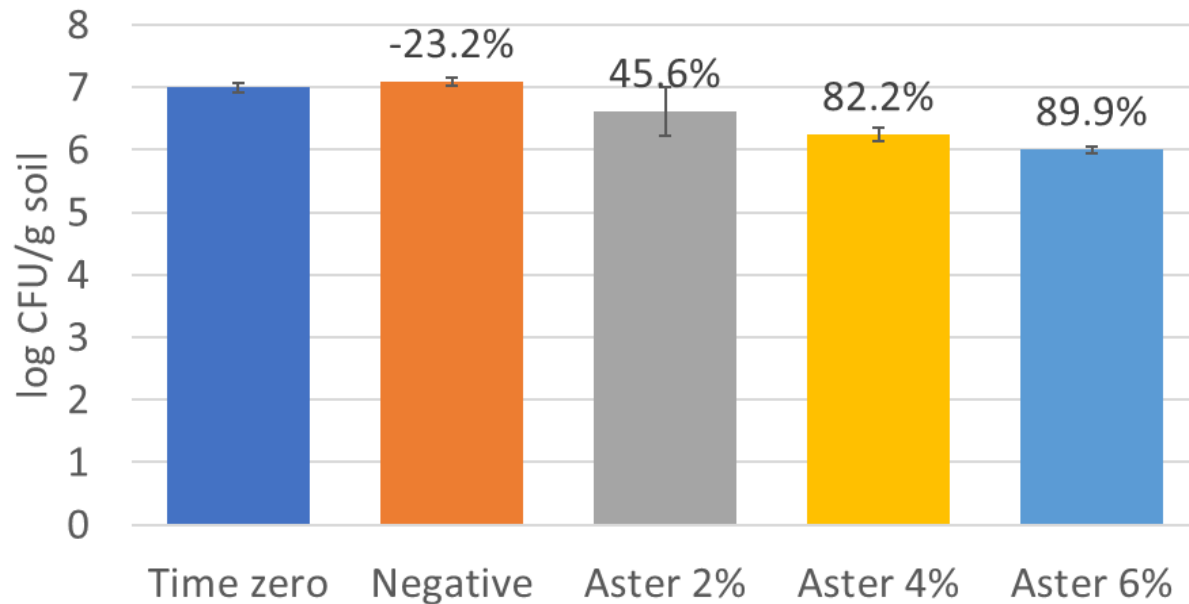
## Design:

- Iowa farm soil tested for microbial load
  - Pathogen presence on selective media
    - *Fusarium* and *Pythium* species
  - Time zero total counts for aerobic species and yeast and mold species (3M petri-film screening)
- Treatment with 2%, 4%, and 6% Aster, or water (negative control)
  - 15 g soil, 2.5 mL treatment, 25 °C for 48 hours
  - 10-fold dilutions plated on petrifilms and selective media

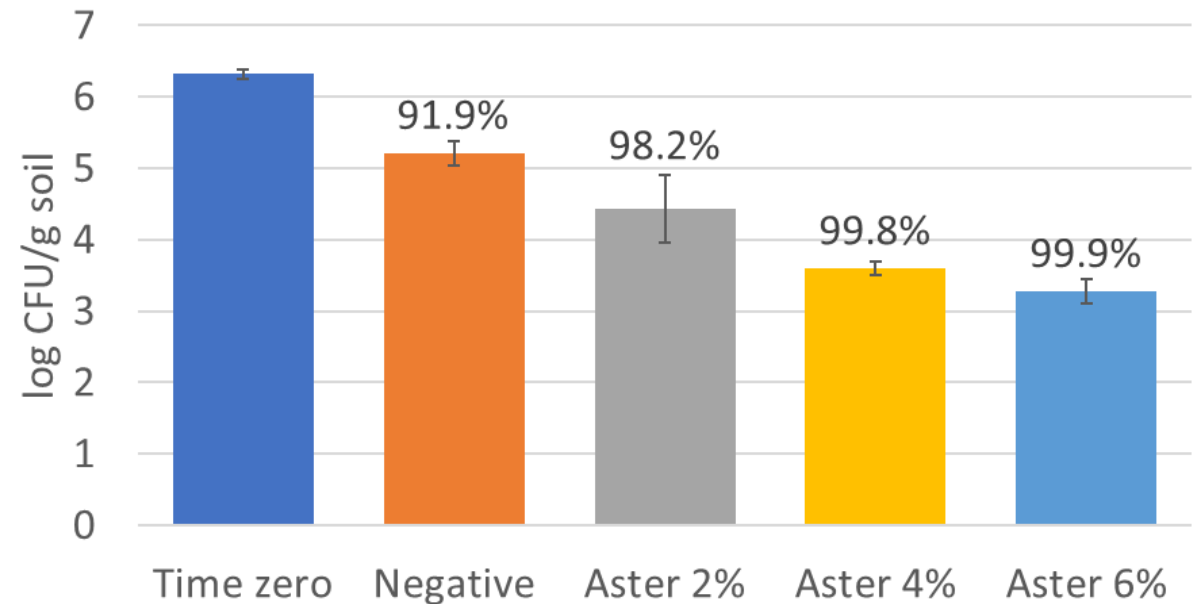


# Soil Assays - Results

Aerobic count



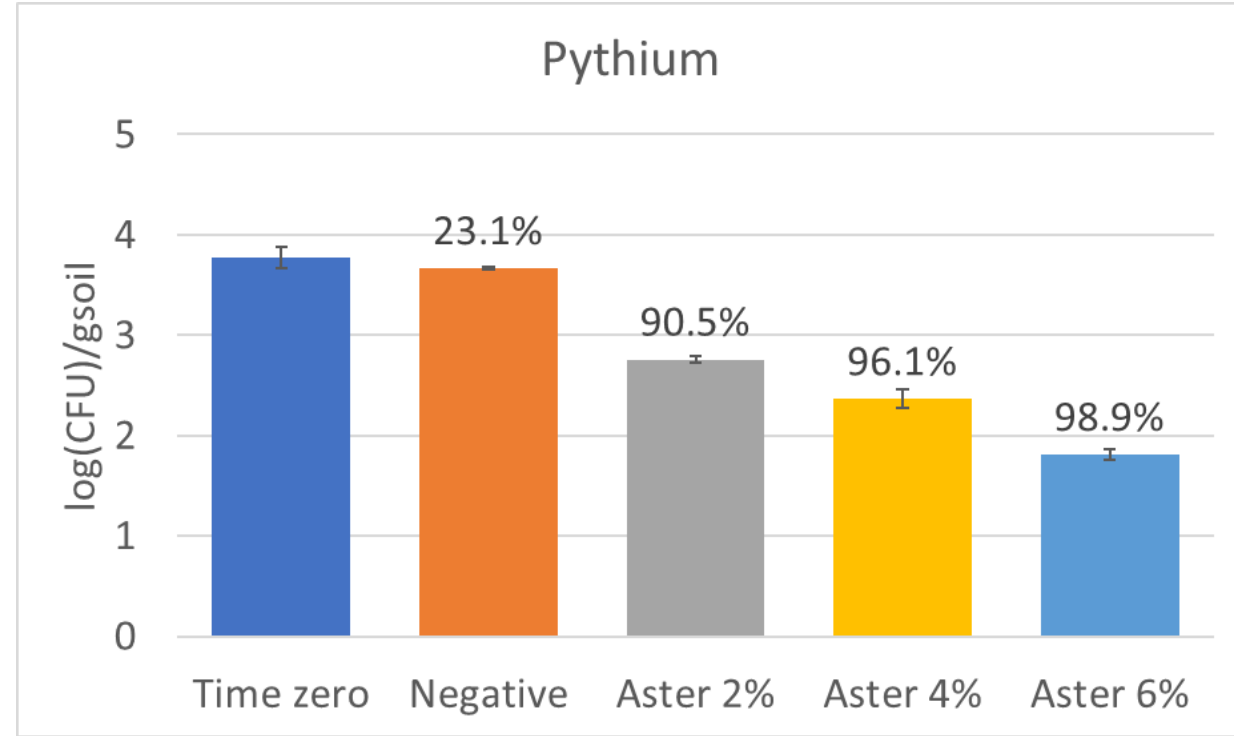
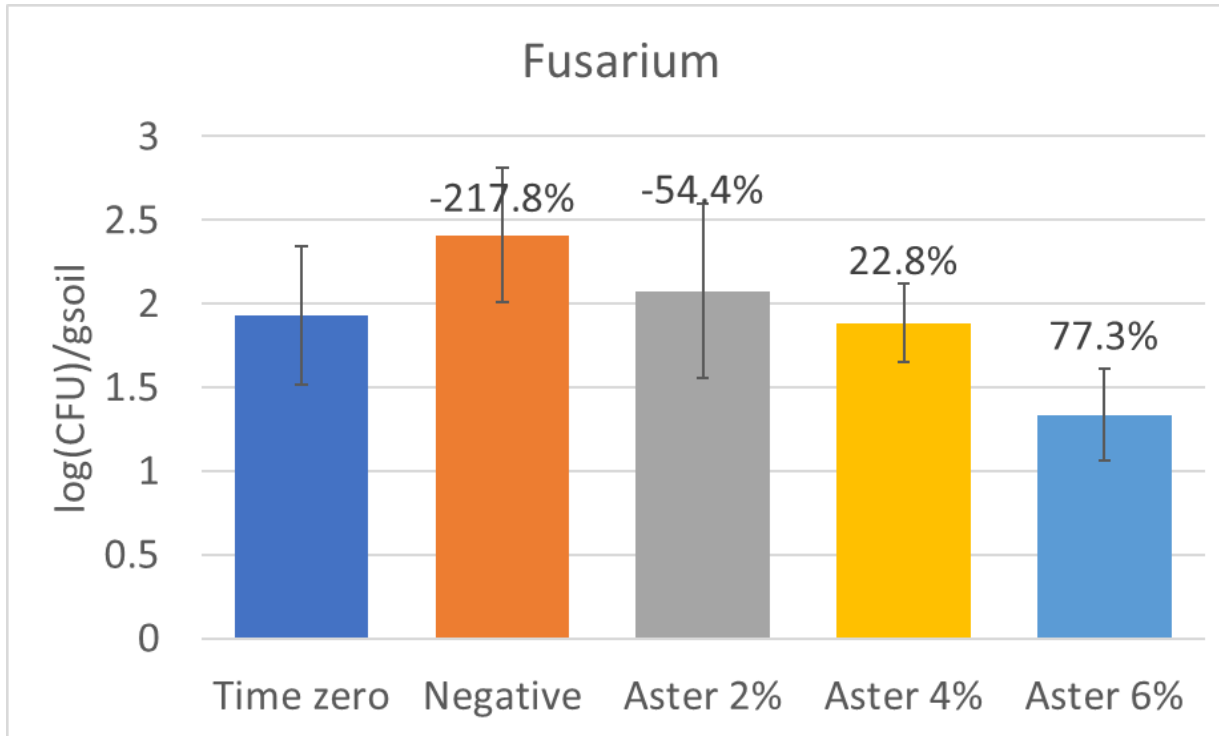
Fungal count



- 1- to 3-log knockdown by Aster at the highest tested rate



# Soil Assays - Results



- Treatment with Aster was effective against 2 fungal pathogens



# Soil Assay

Treatment	Bacterial Control		Fungal Control	
	Compared to T0	Compared to NC	Compared to T0	Compared to NC
Aster 2%	45.6%	55.8%	98.2%	77.6%
Aster 4%	82.2%	85.5%	99.8%	97.6%
Aster 6%	89.9%	91.8%	99.9%	98.8%

Treatment	Fusarium Control		Pythium Control	
	Compared to T0	Compared to NC	Compared to T0	Compared to NC
Aster 2%	-54.4%	51.4%	90.5%	87.6%
Aster 4%	22.8%	75.7%	96.1%	95.0%
Aster 6%	77.3%	92.9%	98.9%	98.6%

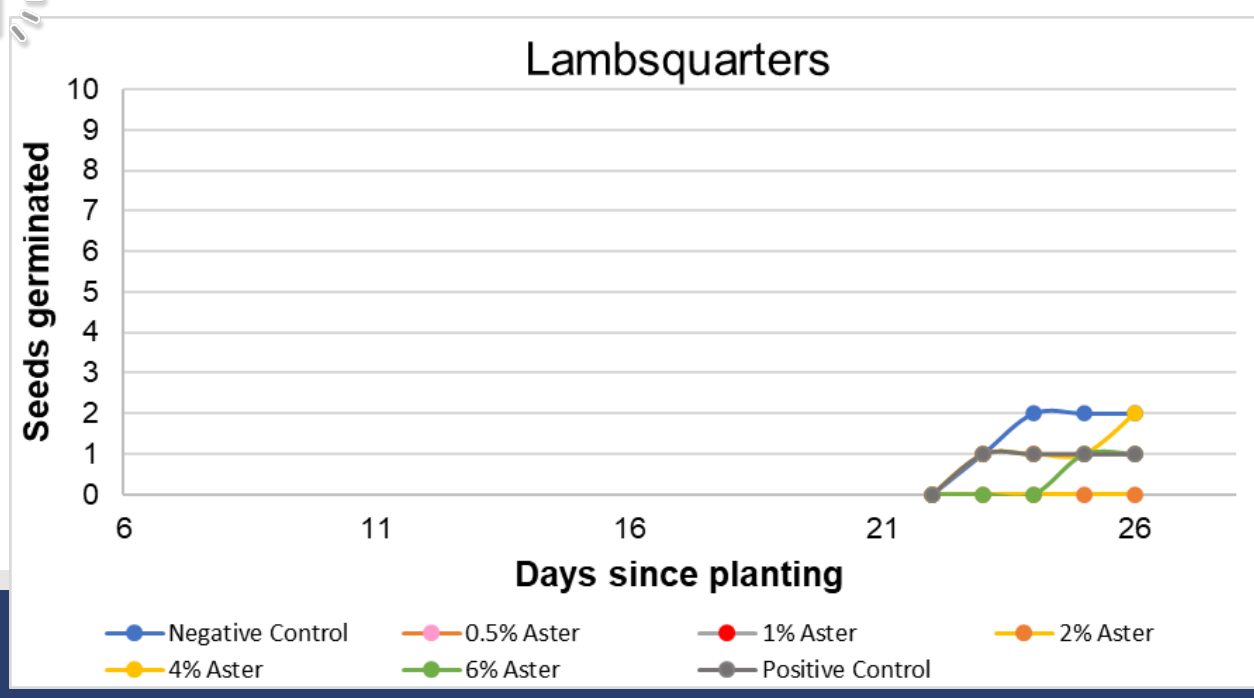
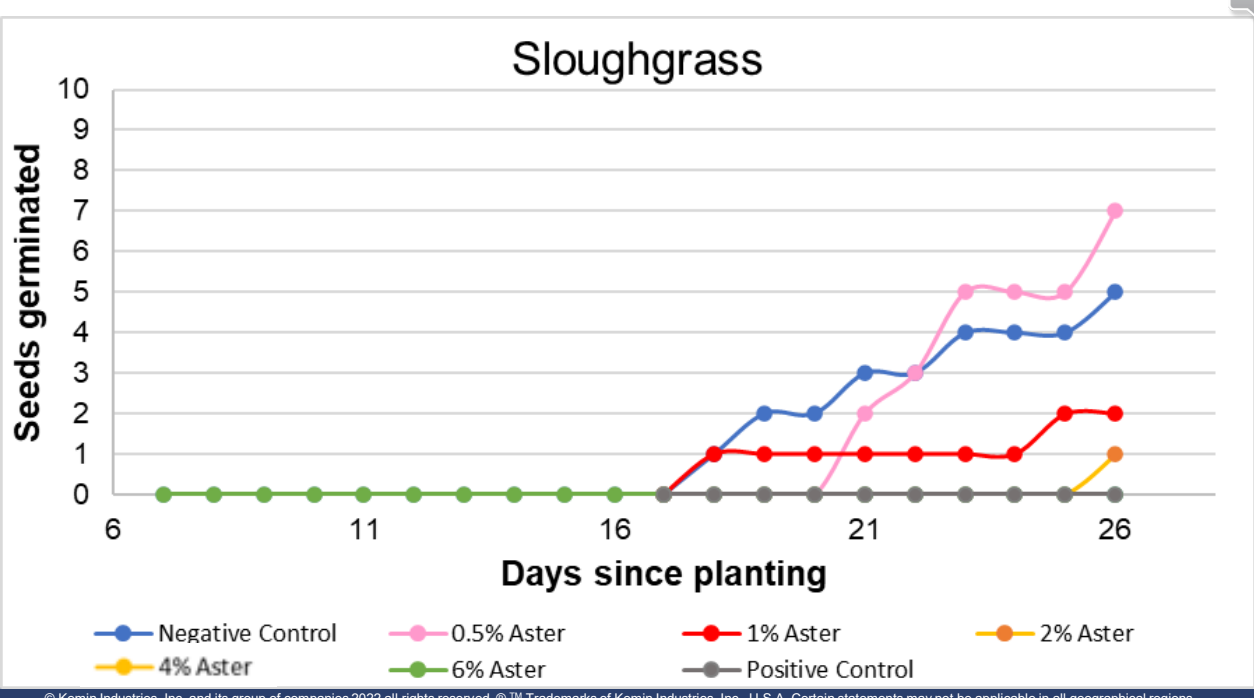
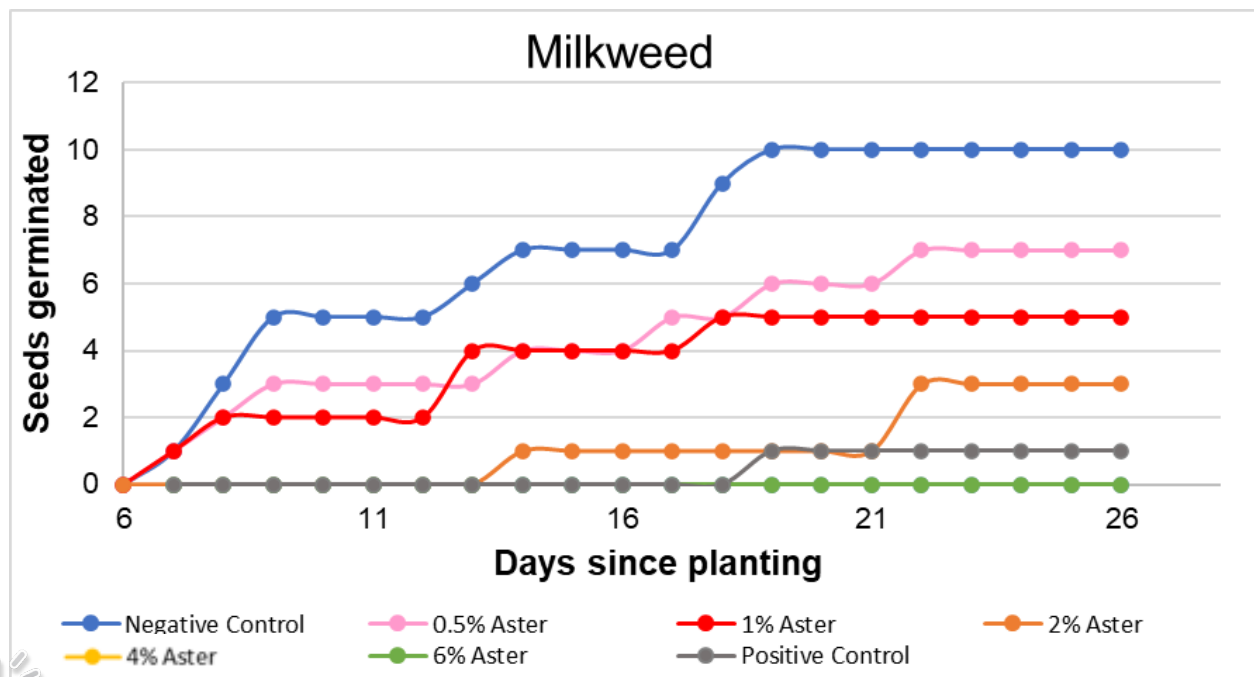
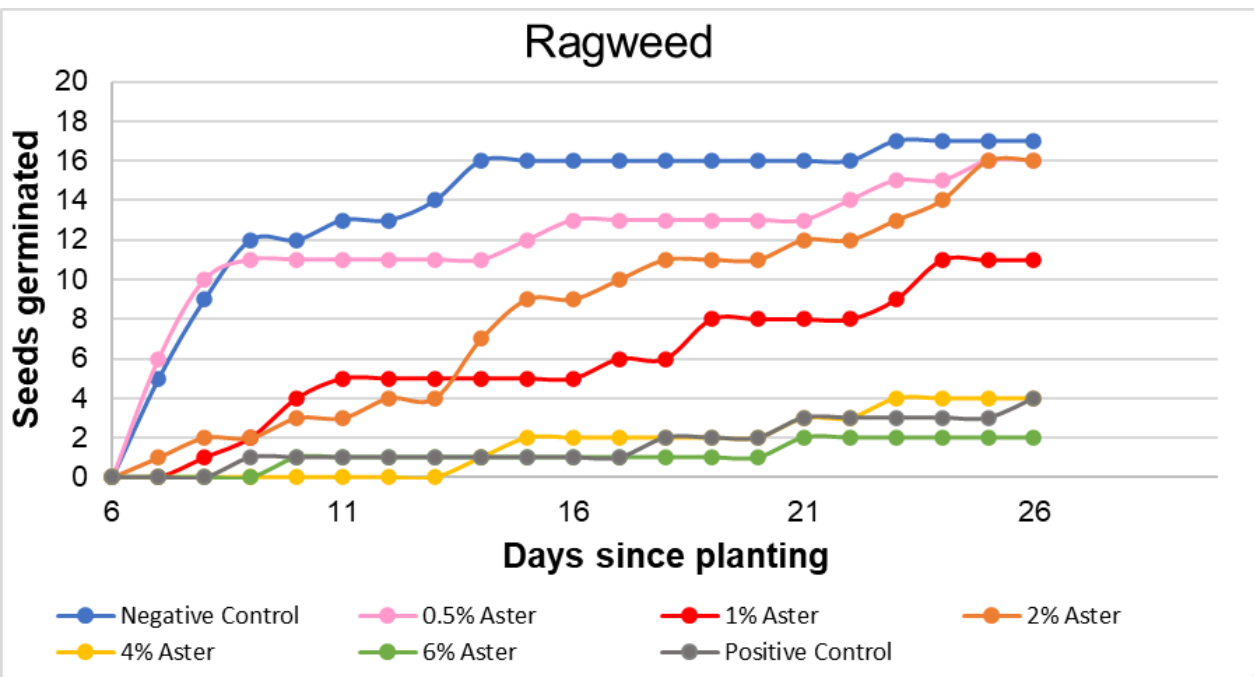


# Weed Seed Trial

## Design:

- Greenhouse trial, 488 tray cut into 3x2 cell mini-trays
  - 6 x 6 mini-tray replicates per treatment
  - Randomized complete block design
- Weeds tested: lambsquarters, milkweed, ragweed, sloughgrass
- Treatments:
  - Negative Control - water
  - Aster 0.5%, 1%, 2%, 4%, or 6%
  - Positive Control - 18% Glyphosate, 1.6% Imazapic, and 0.73% Diquat at 6 fl oz/gal
- Treatments applied once post-plant to pre-emergent weed seeds
  - Watered 2x daily to saturation







# Weed Seed Trial - Results

- For milkweed, ragweed, and sloughgrass, 4% Aster had better or equivalent percent control than the Positive Control (Glyphosate, Imazapic, and Diquat)
- For all seeds, 6% Aster controlled germination better or equivalent to the Positive Control

## Percent control of seed germination compared to water over 26

Treatment	Lambsquarters	Milkweed	Ragweed	Sloughgrass	Overall
Negative Control	0	0	0	0	A
0.5% Aster	100	30	6	-40	AB
1% Aster	50	50	35	60	BC
2% Aster	100	70	6	80	C
4% Aster	0	100	76	100	D
6% Aster	50	100	88	100	D
Positive Control	50	90	77	100	D



# Aster – Soil Disinfectant

## IR-4 Request

### Application Information:

- Apply 5-7 days prior to planting
- Drench soil to get sufficient penetration of soil to desired depth
  - Drip tape irrigation under plastic mulch
  - Spray irrigation
- Rates:
  - 2 gal/100 gal (mild pressure, maintenance)
  - 4 gal/100 gal (known pressure, maintenance)
  - 6 gal/100 gal (known pressure, concerns)

### Testing Needs:

- Field **efficacy trials** on all soil borne plant pathogens, weed seeds, and nematodes in crops



# Thank you!



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