

TRIALS TARGETING NUTSEDGE

2021 RESULTS AND 2022 UPDATE

SFNMC 2022 ADVISORY MEETING

NOVEMBER 2, 2022



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2021 TRIAL TARGETING NUTSEdge



\$45

October 2022

- Tested 3 rates of Vexis® (0.025% pyrimisulfan) mfg. by PBI-Gordon
- Developed in Japan for use in rice; approved by EPA in 2018 for use in turf, sod production, and non-cropland sites
- Currently in a granular formulation; sold in 15-lb bags and 2-lb shaker cans
- Vexis® label rate is 2 lb product/500 sq ft – use in spot treatments
- Vexis® targets yellow and purple nutsedge, green kylinga, henbit, dandelion, chickweed, buttonweed, dollarweed

2021 TRIAL TARGETING NUTSEDGE

- 2021 trial had three parts:
 1. Field trial at Georgia Forestry Commission Nursery
 2. Outplanting trial at AU campus testing site
 3. Greenhouse trial growing nutlets

Part I of 2021 Trial:

Field trial at Georgia Forestry Commission Nursery

4 treatments: 0 oz./ac., 1/2X rate/acre, 1X rate/acre, 2X rate/acre

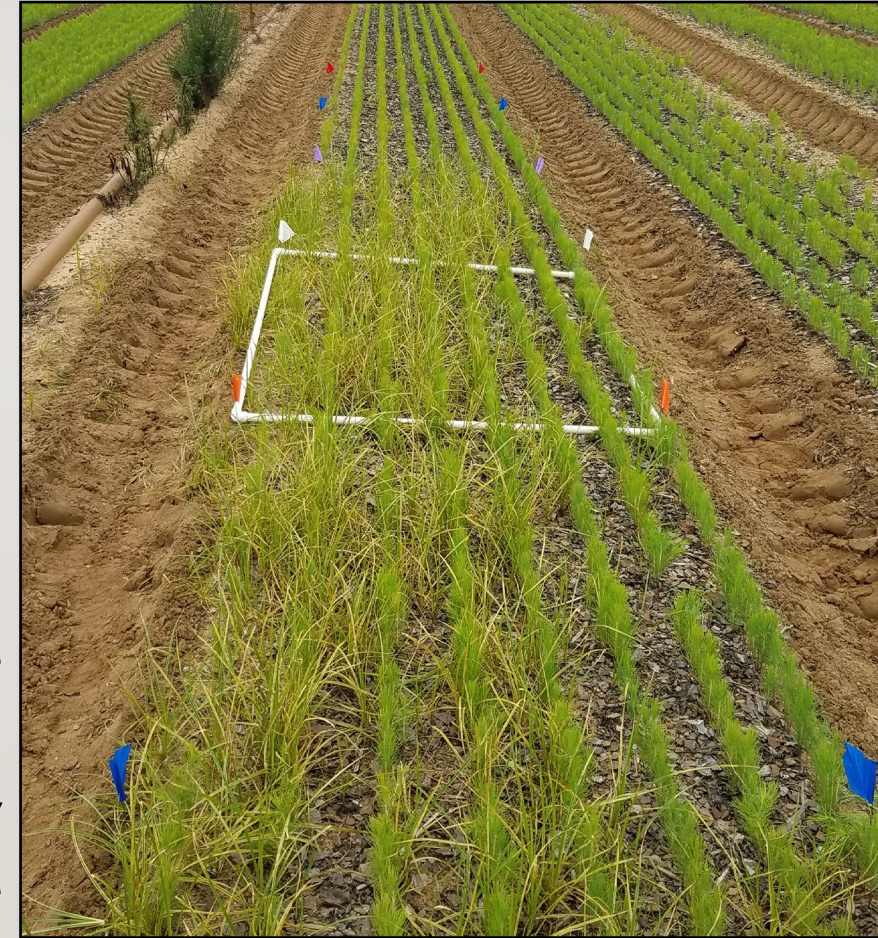
8.5 weeks post-sowing



Loblolly pine

No nutsedge

Test for seedling tolerance



Slash pine

High nutsedge population

Test for herbicidal activity
and seedling tolerance

control plot — no Vexis[®] applied



RESULTS:
Slash pine plots
August 19
44 days after treatment

1/2X rate of Vexis[®] applied

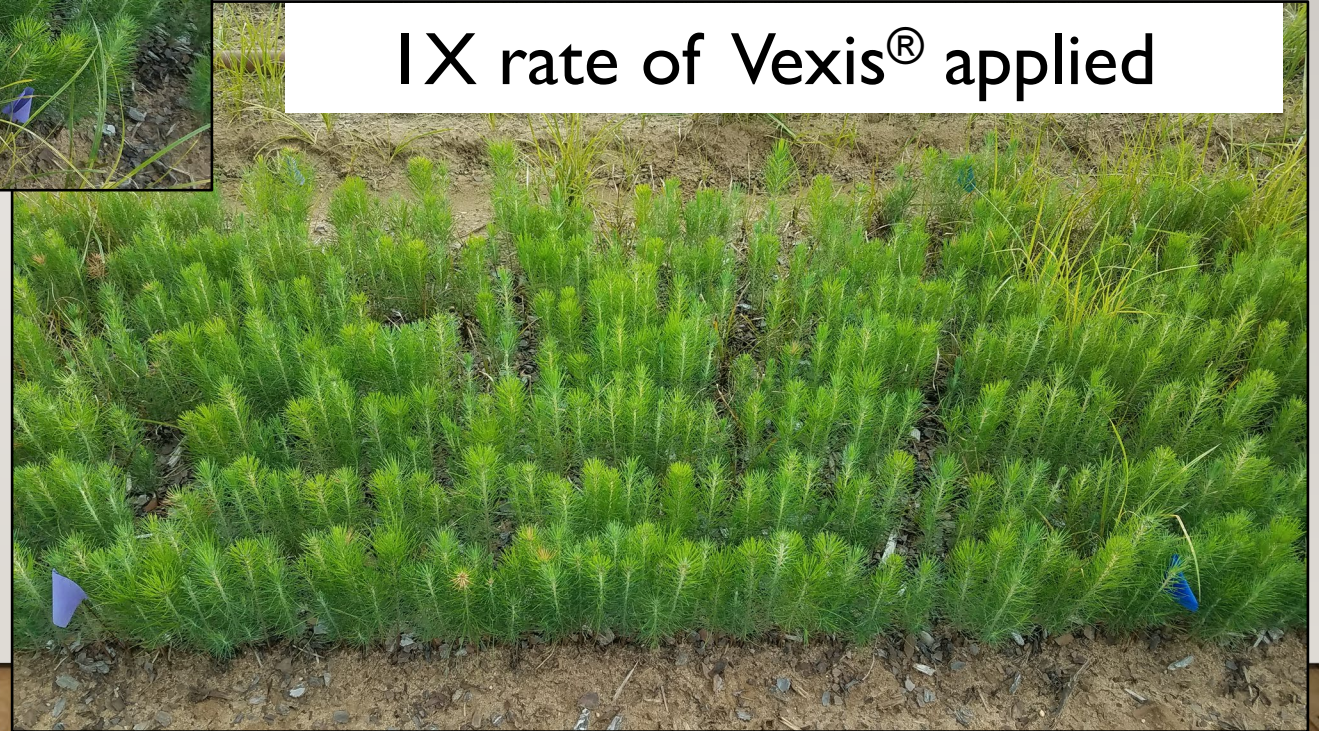


control plot – no Vexis[®] applied



RESULTS:
Slash pine plots
August 19
44 days after treatment

1X rate of Vexis[®] applied

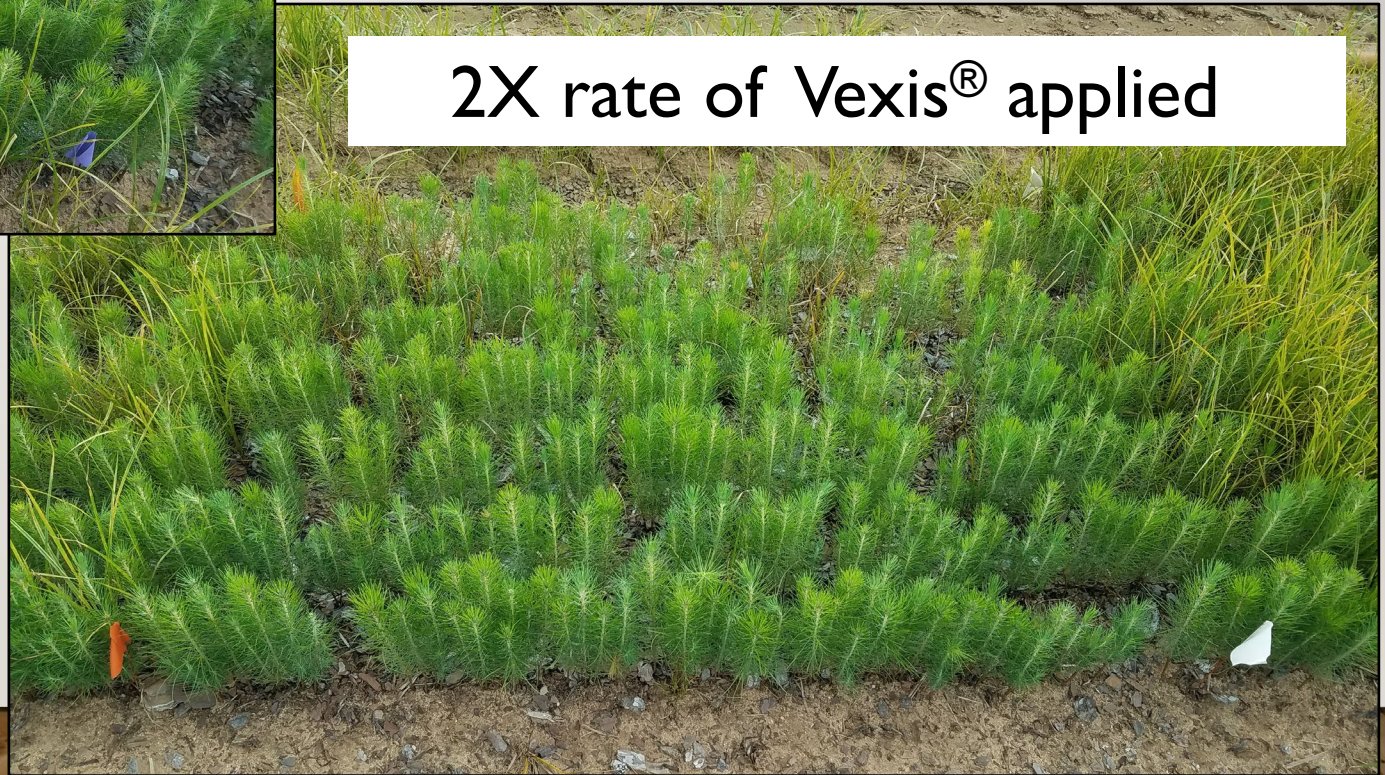


control plot – no Vexis[®] applied



RESULTS:
Slash pine plots
August 19
44 days after treatment

2X rate of Vexis[®] applied

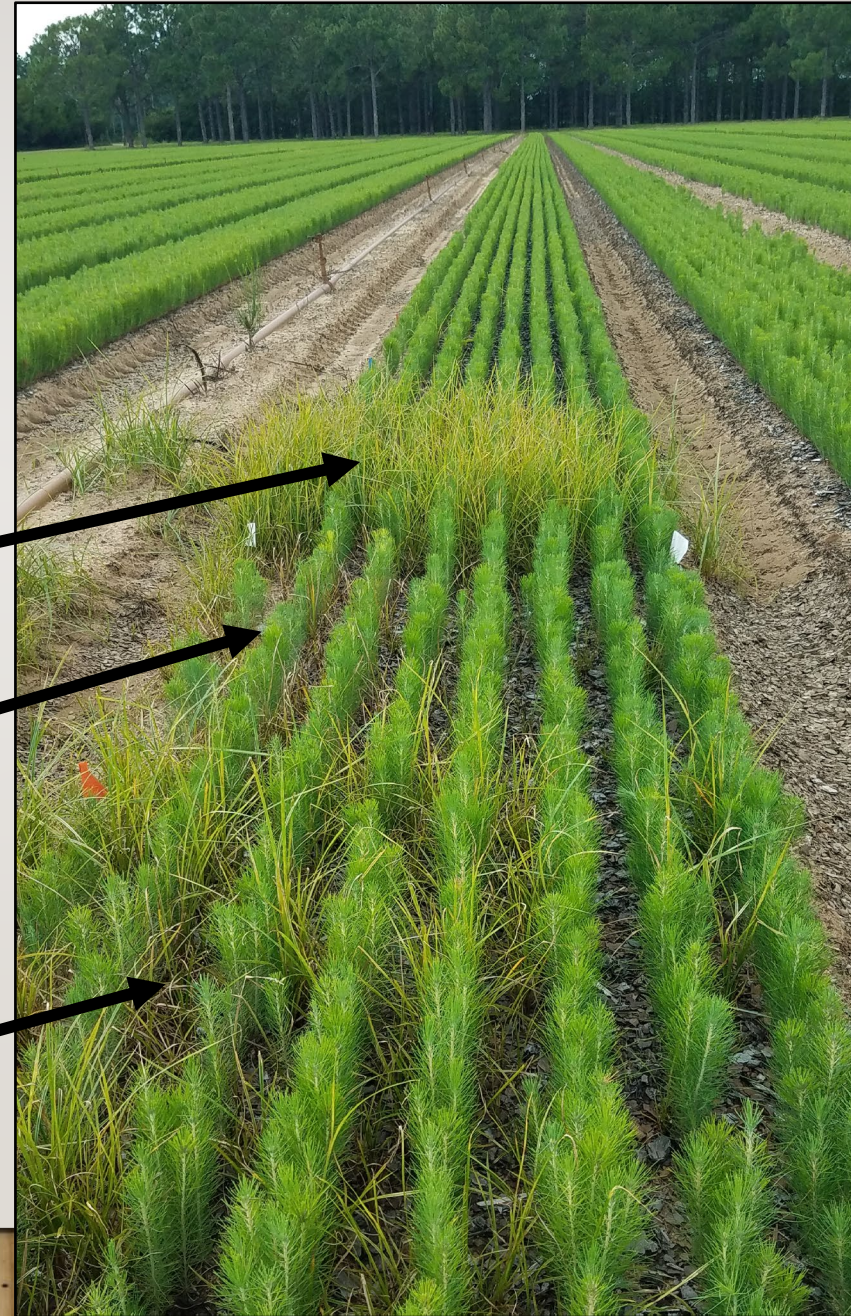


RESULTS:
Slash pine plots
August 19
44 days after treatment

control plot

2X treatment plot

1/2X treatment plot



Results of 2021 Field Trial

Bareroot loblolly pine seedling characteristics treated with pyrimisulfan (Vexis[®]) at 8.5 weeks post-sowing

Treatment	Rate (lbs./500 ft ²)	Density (seedlings/ft ²)	Shoot height (cm)	Root collar diameter (mm)	Shoot dry weight (g)	Root dry weight (g)
Control	0.0	24.3 ± 0.64	22.1 ± 0.56	4.59 ± 0.04	2.36 ± 0.09	0.82 ± 0.03
1/2X label rate	1.0	26.5 ± 1.35	22.2 ± 0.52	4.53 ± 0.04	2.34 ± 0.05	0.84 ± 0.02
1X label rate	2.0	25.8 ± 0.42	22.2 ± 0.54	4.57 ± 0.03	2.34 ± 0.03	0.91 ± 0.03
2X label rate	4.0	24.3 ± 3.20	20.9 ± 0.92	4.62 ± 0.14	2.36 ± 0.12	0.95 ± 0.10
<i>p>f</i>		0.793	0.342	0.877	0.993	0.406

No statistical differences between treatments in any characteristic measured

Results of 2021 Field Trial

Bareroot slash pine seedling characteristics treated with pyrimisulfan (Vexis[®]) at 8.5 weeks post-sowing

Treatment	Rate (lbs./500 ft ²)	Density (seedlings/ft ²)	Shoot height (cm)	Root collar diameter (mm)	Shoot dry weight (g)	Root dry weight (g)
Control	0.0	23.4 ± 0.78	24.1 ± 1.75	4.10 ± 0.07 b	2.36 ± 0.10 b	0.74 ± 0.04 c
1/2X label rate	1.0	21.7 ± 2.03	23.7 ± 2.04	4.45 ± 0.10 a	2.81 ± 0.06 a	0.83 ± 0.06 bc
1X label rate	2.0	20.4 ± 1.46	21.6 ± 1.17	4.61 ± 0.13 a	2.87 ± 0.13 a	0.93 ± 0.07 a
2X label rate	4.0	23.9 ± 1.13	23.2 ± 0.95	4.46 ± 0.95 a	2.69 ± 0.09 a	0.89 ± 0.01 ab
<i>p>f</i>		0.387	0.052	0.009	0.021	0.012

Bold means within a seedling characteristic indicates a significant difference between that rate and control.

Different letters within a seedling characteristic indicate significant differences in rates.

Part 2 of 2021 Trial: Outplanting trial at AU Campus testing site

- Collected seedlings from each 2021 field plot, outplanted in February 2022, monitored during growing season, collection scheduled for Nov. 7
- Will quantify any effects of Vexis[®] on treated seedlings after one growing season



February 2022



July 2022

Part 3 of 2021 Trial: Greenhouse trial growing nutlets

- Collected nutlets from each 2021 field plot; planted in pots of nursery soil at SFNMC greenhouse
- 5 nutlets per pot planted on February 11, 2022
- To quantify effect of Vexis[®] on nutlet germination and plant growth



from control plot nutlets
28 days after planting



1/2X rate



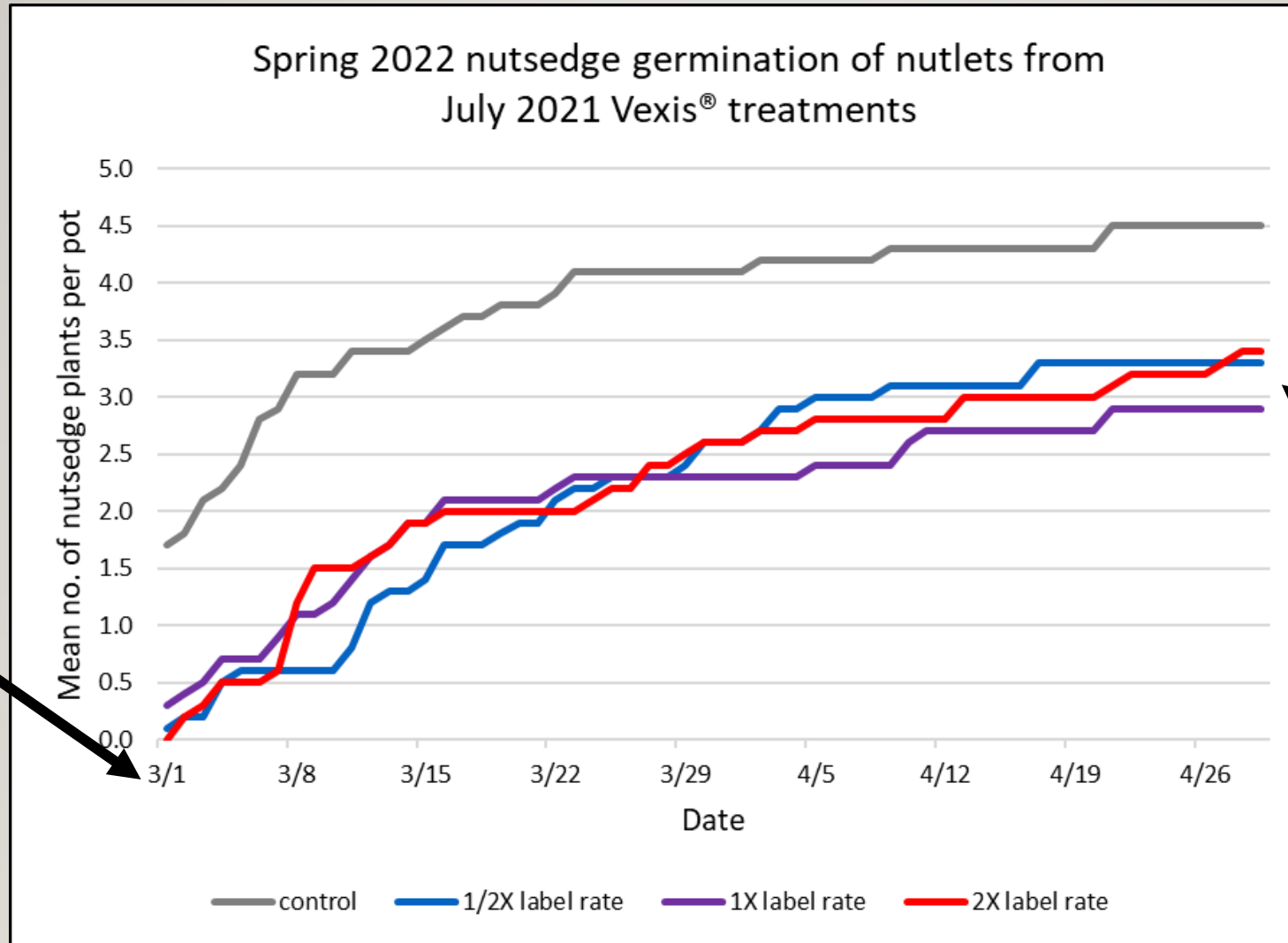
1X rate



2X rate

Germination over time of nutlets obtained from Vexis® 2021 field treatment plots

Vexis®
treated
nutlets had
delayed
germination



Vexis®
treated
nutlets had
fewer nutlets
germinate,
but still had
germination
(did not kill
them)
herbistatic



RESEARCH REPORT 22-03

THE EFFICACY OF PYRIMISULFAN ON NUTSEDGE CONTROL AND THE
TOLERANCE OF LOBLOLLY AND SLASH PINE IN BAREROOT SEEDLING BEDS

by
Nina Payne, Tom Stokes, Annakay Newell, Jeff Fields, and Russell Ayres

2022 TRIAL TARGETING NUTSEDGE

- 2022 trial has two parts:
 1. Four field trials: Georgia Forestry Commission Nursery
IFCO White City Nursery
Rayonier Nursery
IFCO Pine Hill Nursery
 2. Greenhouse trial treating purchased yellow nutsedge nuts

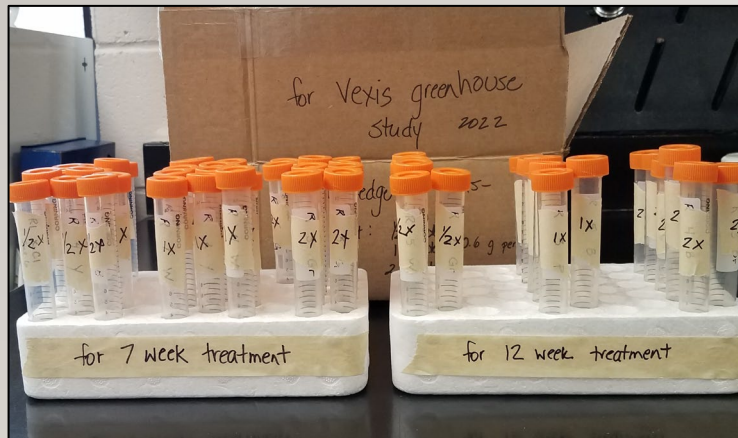
Part I of 2022 Trial: Four Field Trials (7 installations)



- At 4 nurseries
- In 2 species: loblolly and slash pine
- With 4 treatments : 0X rate, 1/2X rate, 1X rate, 2X rate
- At 2 timings : Single applications made at 7-weeks post-sow
Double applications made at 7- and 12-weeks post-sow
- Seedlings to be collected November - January
- Nutsedge populations to be evaluated at seedling collection

Part 2 of 2022 Trial: Greenhouse trial growing purchased nutlets

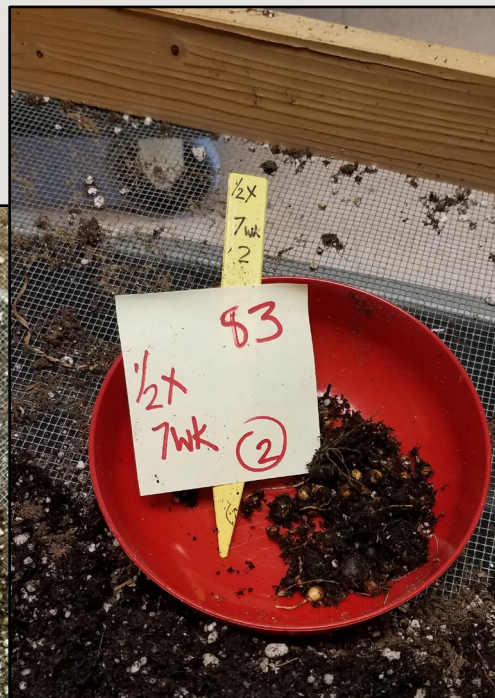
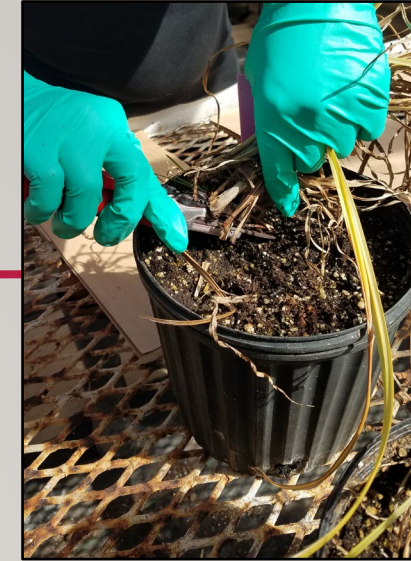
- Grew yellow nutsedge from purchased nutlets
 - Mimicked treatments from the 2022 field trials: 4 treatments : 0X rate, 1/2X rate, 1X rate, 2X rate
- 2 timings : Single applications made at 7-weeks post-sow



Double applications
made at 7- and
12-weeks post-sow

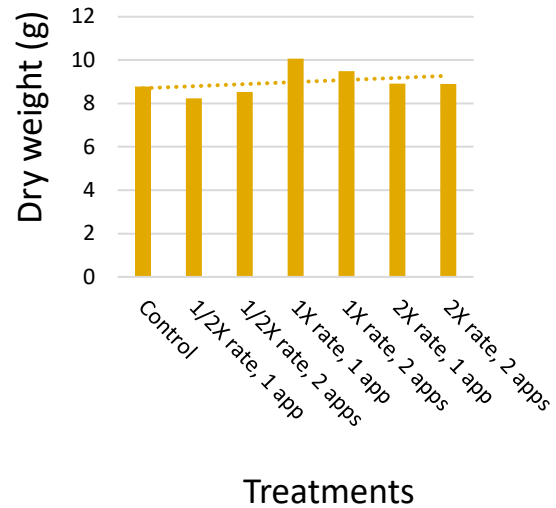
Part 2 of 2022 Trial: Greenhouse trial growing purchased nutlets

- Grew yellow nutsedge from purchased nutlets for 6 months
- Removed and dried tops; removed, counted, weighed nuts from each pot

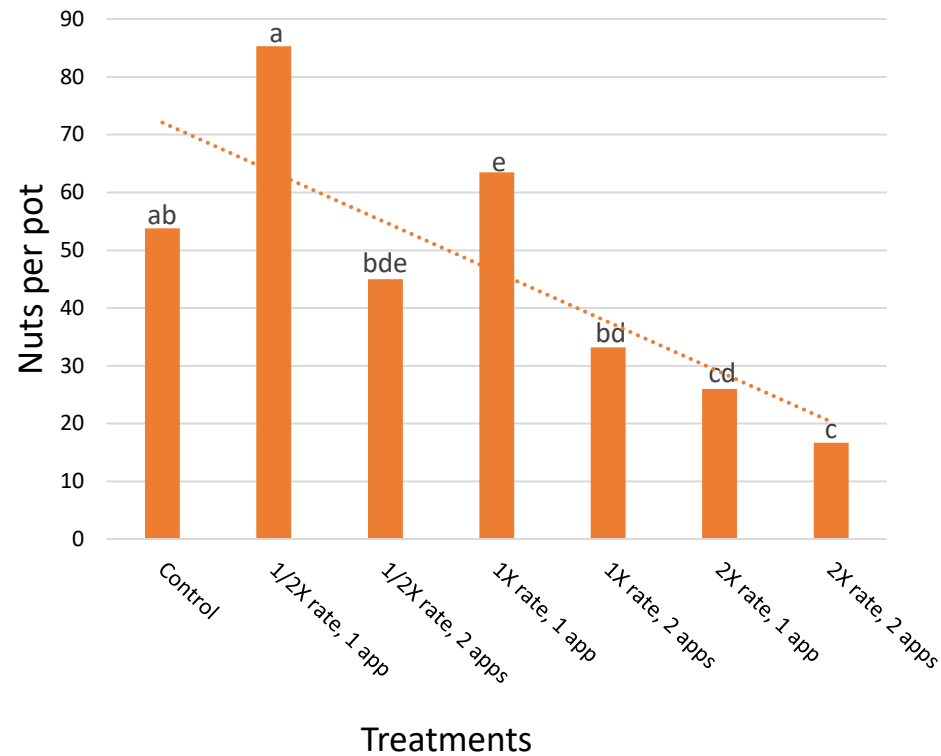


Part 2 of 2022 Trial: Greenhouse trial growing purchased nutlets

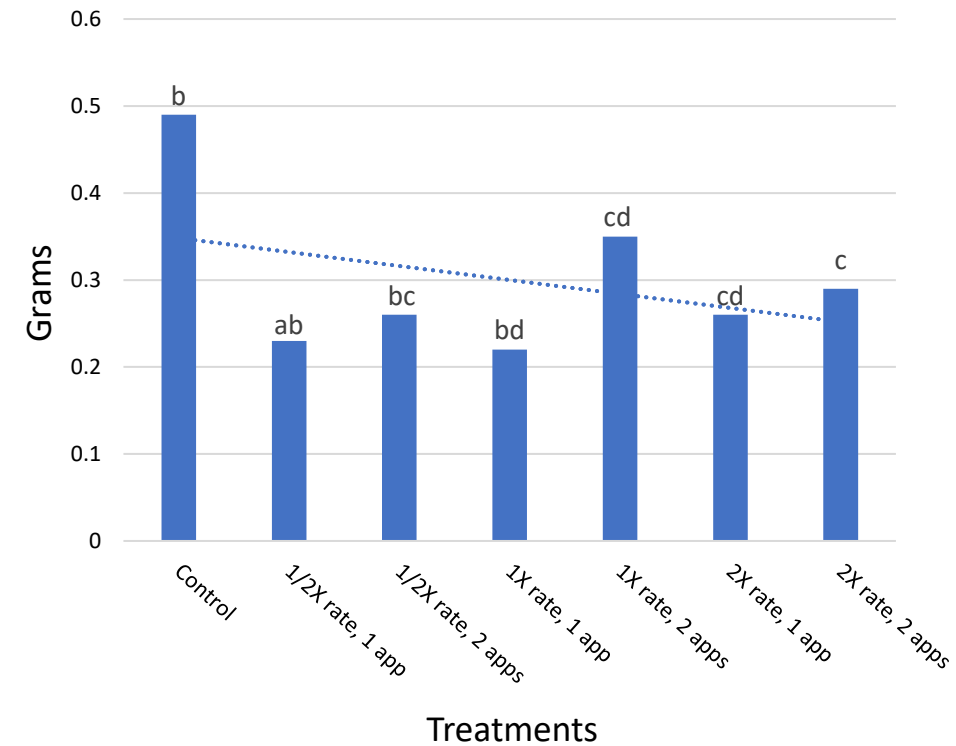
**2022 VEXIS® GREENHOUSE
STUDY
NUTSEDGE SHOOT DRY
WEIGHTS (g)**



**2022 GREENHOUSE VEXIS® STUDY
MEAN NO. NUTSEDGE NUTS PER POT**



**2022 GREENHOUSE VEXIS® STUDY
MEAN WEIGHT PER NUTSEDGE NUT (g)**



Future of Vexis[®] Use in Conifer Nurseries

- In continued communication with PBI Gordon scientists and sales groups
- The company is considering adding other crops to the Vexis[®] label
- The company has started their testing of a liquid formulation of Vexis[®]
- SFNMC 2021 greenhouse results are similar to PBI Gordon results
- PBI Gordon approved our 2022 research design
- PBI Gordon will continue internal discussions about adding conifer nurseries to the label

Future of Vexis® Use in Conifer Nurseries

- PBI Gordon asked for 2 things from our group:
 1. Data from 2022 trials and from at least one more year of testing in bareroot pine nurseries in different soil types
 2. Estimates of product cost that our nurseries are willing to pay; estimates of hand-weeding costs that this product could eliminate
- Possible future SFNMC/PBI Gordon collaboration (beyond 2023):
 - Testing granular product in hardwood nursery beds
 - Testing liquid formulation in conifer bareroot nursery beds

QUESTIONS?

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