



UPDATE OF 2017 HERBICIDE TRIALS

FY 2018 SFNMC ADVISORY MEETING



Auburn, AL
November 8, 2017

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Studies installed in 2017

All studies designed to test seedling tolerance
and herbicidal effectiveness

1. Pendulum® AquaCap™ trial (container)
→ 1 nursery, 5 installations
2. Marengo® on cedar trial (bareroot)
→ 1 nursery, 1 installation
3. Pendulum® AquaCap™ High Rate trial (bareroot and container)
→ 5 nurseries/8 installations
4. 9 'new' post-emergent herbicides screening trial (bareroot)
→ 4 nurseries/ 5 installations
5. Ronstar®Flo trial (bareroot and container)
→ 5 nurseries/8 installations

1. Pendulum[®] AquaCap[™] container trial

- PAC = 38.7% pendimethalin (Prowl, Stealth, Pendant)
Group 3 herbicide (root and shoot inhibitor)
pre-emergent (weed) herbicide
apply to soil
targets are broadleaf weeds and annual grasses not sedges
our nurseries = APPLY AT SOWING
- Trial installed as third in a series to determine container seedling tolerance
- 2015 in container loblolly and slash only
negative results: lob - lower RCD at high rate
 slash - lower plug weights at both rates
- 2016 in container lob, longleaf, shortleaf and slash
negative results: lob - lower survival at high rate
 shortleaf - lower plug weights at high rate

Pendulum® AquaCap™ container trial continued

- Significant reductions of willow populations in trays sown during willow seed dispersal period (2015, 2016)
- Significant reductions of other weeds but no uniform effect (2015, 2016)
- Trays sprayed on day of sowing or +1 in lob, longleaf, shortleaf and slash (270 trays)
- Applications made 1X week for 6 weeks to coordinate sowing dates, species availability and willow seed dispersal



Status of Pendulum® AquaCap™ container trial

- Field counts of seedlings, willows and weeds, and seedling sample collections scheduled for December 2017



- Sample seedlings scheduled for processing in January 2018

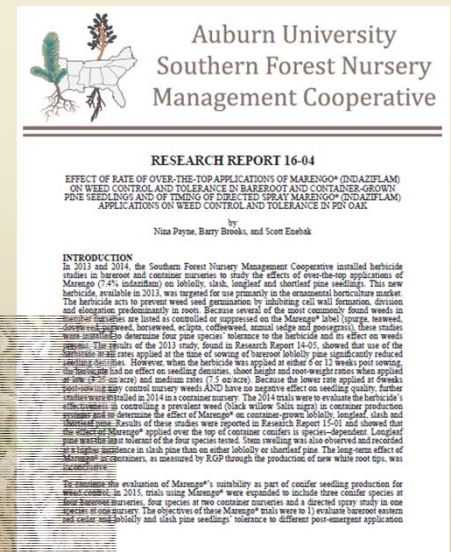


- Results published in 2018 research report

Questions or comments?

2. Marengo[®] on cedar trial

- Marengo[®] = 7.4% indaziflam (Specticle, Esplande, Alion)
Group 29 herbicide (inhibits cellulose synthesis)
pre-emergent (weed) herbicide
apply to soil, long-lasting
targets are broadleaf weeds, annual grasses, annual sedge,
not nutsedge
our bareroot nurseries = APPLY AT 6+ WEEKS POST-SOWING
- Trial installed as second in a series to determine cedar tolerance
- 2015 in eastern red cedar
no negative results: treated seedlings were
larger than untreated seedlings
- Bareroot trial installed in 1 nursery
(160 feet of bed space)



Status of Marengo® on cedar trial

- Seedling sample collections scheduled for November 2017
- Collected seedlings scheduled for processing in November 2017



- Results published in 2018 research report

Questions or comments?

3. Pendulum® AquaCap™ High Rate trial bareroot and container

- Trial initiated to identify additional tool for late season weed control vs. selective over-the-top post-emergent herbicide
- Trial designed to determine seedling tolerance to and weed control in highest allowable rate of PAC
- ≈ 60% of SFNMC member bareroot nurseries use PAC:
34 oz/ac (one-half of low rate on label)
or
68 oz/ac (low rate on label)

Pendulum[®] AquaCap[™] High Rate trial bareroot and container - continued

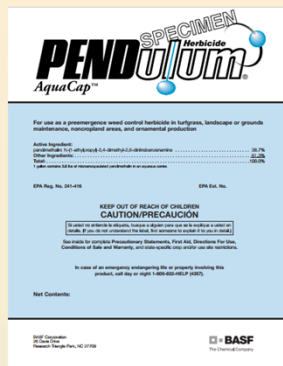


Table 3. Weed Control in All Nonturfgrass Sites*

For preemergence control of the weed species listed, apply **Pendulum AquaCap** at the specified rates:

Length of Control (months)	Pendulum AquaCap (qts/A)	Required to Treat 1000 sq ft
Short term (2 to 4)	2.1	67 oz/ac
Long term (6 to 8)	4.2	134 oz/ac

Sowing mid-April:
PAC effective until
early June – early August

Sowing mid-April:
PAC effective until
late September – late November

PAC label page 10

Pendulum[®] AquaCap[™] High Rate trial bareroot and container - continued

- Installed in 4 bareroot nurseries: 4 loblolly and 1 slash trial (each nursery provided 100 – 150 feet of bed space)



- Installed in 1 container nursery as part of PAC Container trial: loblolly, longleaf, shortleaf and slash (90 trays)



- PAC applied at 3 rates:
 - 1) 1/2 lowest labelled rate (currently used in SFNMC nurseries)
 - 2) lowest labelled rate (currently used in SFNMC nurseries)
 - 3) highest labelled rate
- All beds/trays sprayed on day of sowing or +1

Status of Pendulum® AquaCap™ High Rate trial bareroot and container

- Field counts of seedlings and weeds and seedling sample collections scheduled for October - December 2017



- Collected seedlings scheduled for processing from October 2017 - January 2018
- Results published in 2018 research report

Questions or comments?

4. 9 'new' herbicides trial

- Purpose of trial is identification of **safe, selective, post-emergent (seedlings and weeds)** herbicides to control sedges, grasses and broadleaf weeds later in the growing season
- Trial designed to determine seedling tolerance to 8 herbicides not currently labelled for conifer nursery use and 1 labelled for conifer nursery use (TapOut)
- Accepted the validity of labels concerning weeds listed as controlled or suppressed

Table 2. Weeds controlled or suppressed by Dismiss Turf Herbicide

BROADLEAVES	SCIENTIFIC NAMES
Bedstraw, catchweed	(<i>Galium aparine</i>)
Beggarweed, Florida	(<i>Desmodium tortuosum</i>)
Bittercress	(<i>Cardamine</i> spp.)
Black medic	(<i>Medicago lupulina</i>)
Buttercups	(<i>Ranunculus</i> spp.)
Carolina geranium	(<i>Geranium carolinianum</i>)
Carpetweed	(<i>Mollugo verticillata</i>)
Chickweed, common	(<i>Stellaria media</i>)
Chickweed, mouseear	(<i>Cerastium vulgatum</i>)
Cinquefoil	(<i>Potentilla</i> spp.)
Clover	(<i>Trifolium</i> spp.)
Copperleaf	(<i>Ascalypha</i> spp.)
Cudweed	(<i>Gnaphalium</i> spp.)
Dandelion	(<i>Taraxacum officinale</i>)
Dock, Curly	(<i>Rumex crispus</i>)
Dollarweed	(<i>Hydrocotyl umbellata</i>)
Eclipta	(<i>Eclipta prostrata</i>)
Evening primrose	(<i>Oenothera biennis</i>)
Fiddleneck	(<i>Amsinckia</i> spp.)
Filaree	(<i>Erodium</i> spp.)
Galinsoga	(<i>Galinsoga ciliata</i>)
Goldenrod	(<i>Solidago</i> spp.)
Ground ivy	(<i>Glechoma hederacea</i>)
Groundsel, common	(<i>Senecio vulgaris</i>)
Henbit	(<i>Lamium amplexicaule</i>)
Knawel	(<i>Scleranthus annuus</i>)
Knotweed, prostrate	(<i>Polygonum aviculare</i>)
Kochia	(<i>Kochia scoparia</i>)
Lambsquarters, common	(<i>Chenopodium album</i>)
Lawn burweed (spurweed)	(<i>Silva pterisperma</i>)
Lespedeza, common	(<i>Lespedeza striata</i>)
Mallow, common	(<i>Malva neglecta</i>)
Parsley piert	(<i>Alchemilla arvensis</i>)
Pigweed, Redroot	(<i>Amaranthus retroflexus</i>)
Pigweed, Smooth	(<i>Amaranthus hybridus</i>)
Pigweed, Tumble	(<i>Amaranthus albus</i>)
Pineapple weed	(<i>Matricaria matricarioides</i>)
Plantain, buckhorn	(<i>Plantago lanceolata</i>)
Puncture weed	(<i>Tribulus terrestris</i>)
Purslane, common	(<i>Portulaca oleracea</i>)
Pusley, Florida	(<i>Richardia scabra</i>)
Redweed	(<i>Melochia corchorifolia</i>)
Rocket, London	(<i>Sisymbrium ino</i>)
Shepherd's purse	(<i>Capsella bursa-pastoris</i>)
Smartweed, Pennsylvania	(<i>Polygonum pensylvanicum</i>)
Sorrel, Red	(<i>Rumex acetosella</i>)
Speedwell	(<i>Veronica</i> spp.)
Spurge, (annuals)	(<i>Euphorbia</i> spp.)

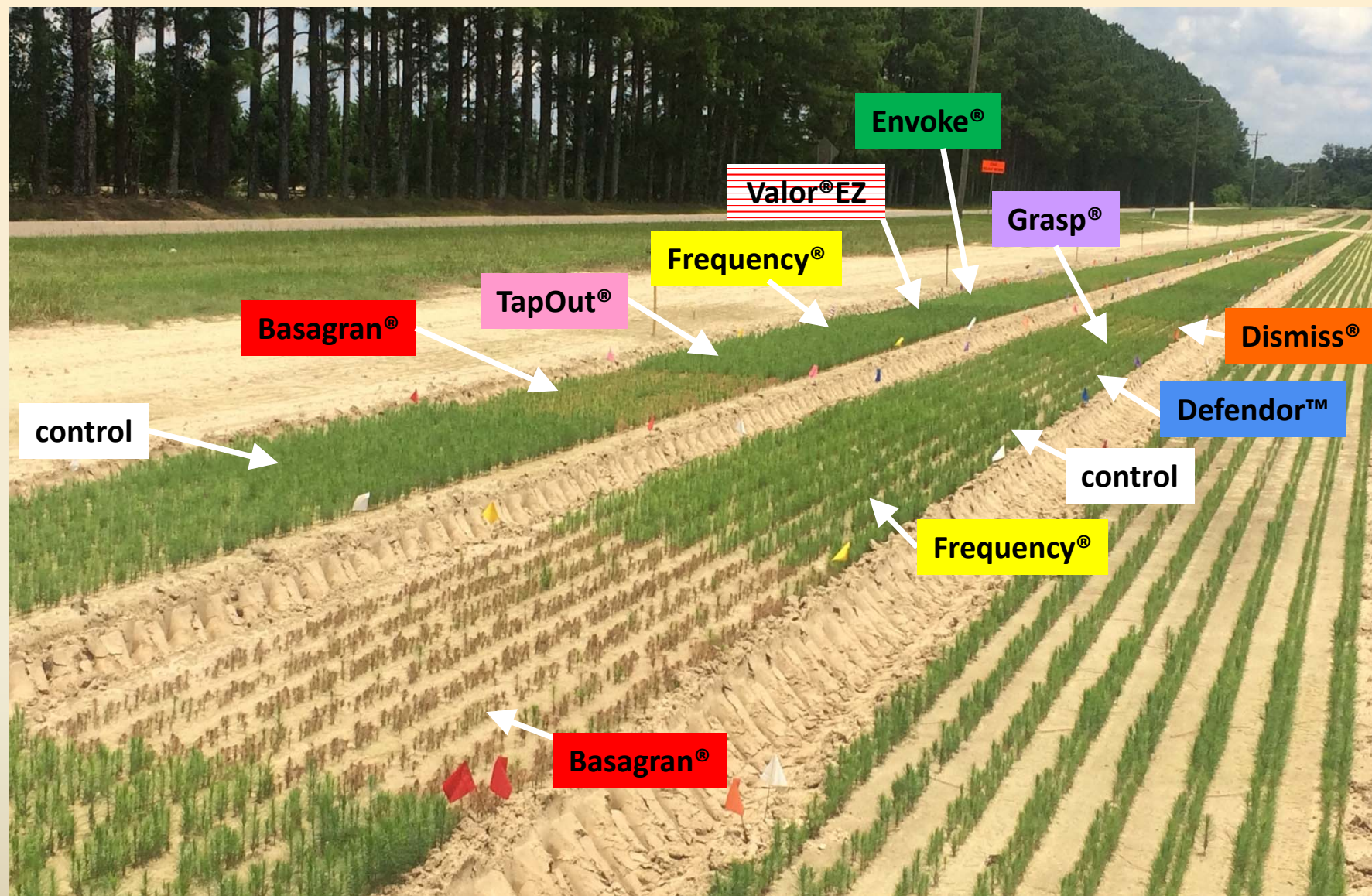
9 'new' herbicides trial continued

- Included 4 herbicides from 2016 study and 5 additional herbicides based on target weeds and Mode of Action
- Includes herbicides from MOA Groups 1, 2, 6, 14 and 27 (various modes of action, sites of action, target weeds and currently labelled crops)
- Applications of 9 selected herbicides made at 9 weeks post-sowing at 4 bareroot nurseries in lob and slash (each nursery provided 400 – 650 feet of bed space)

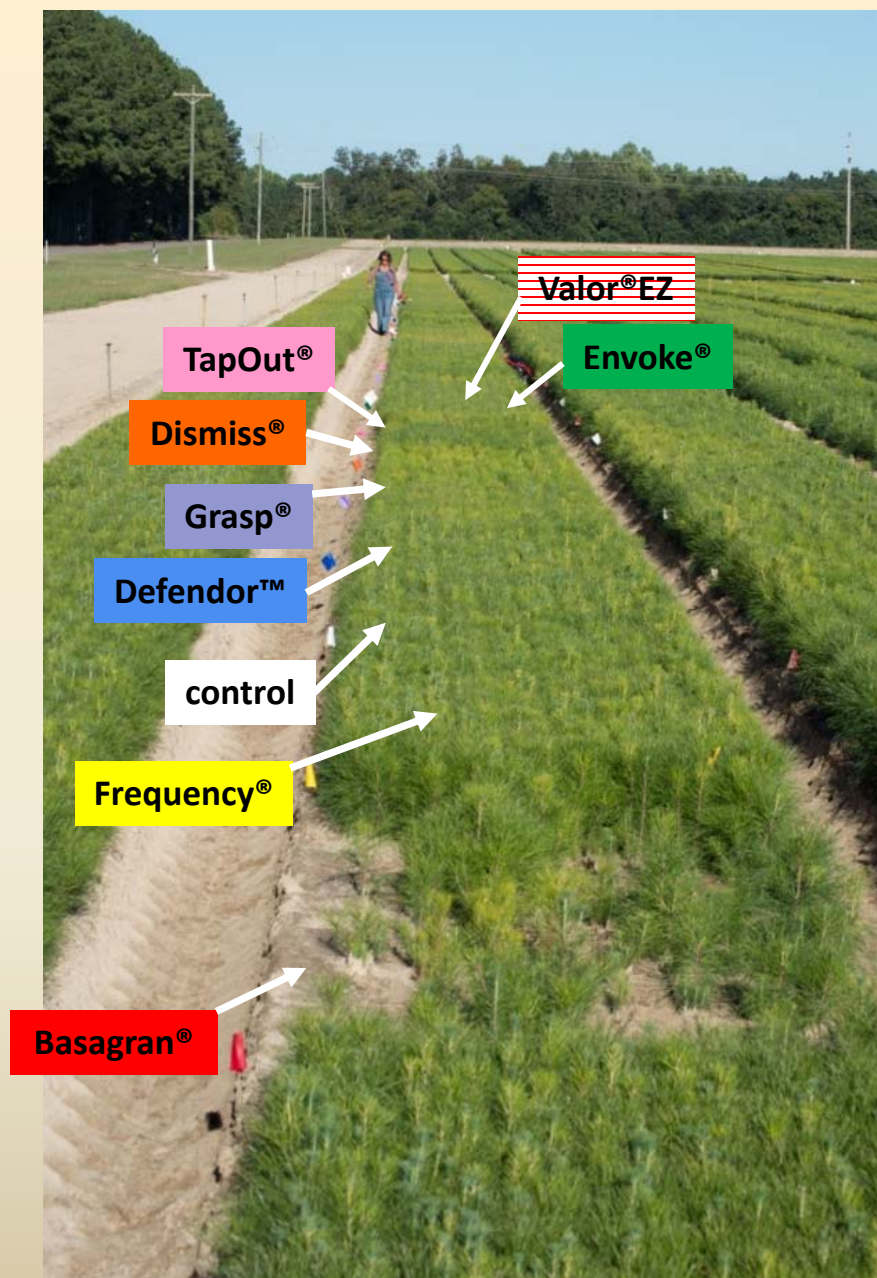


9 'new' herbicides trial - continued

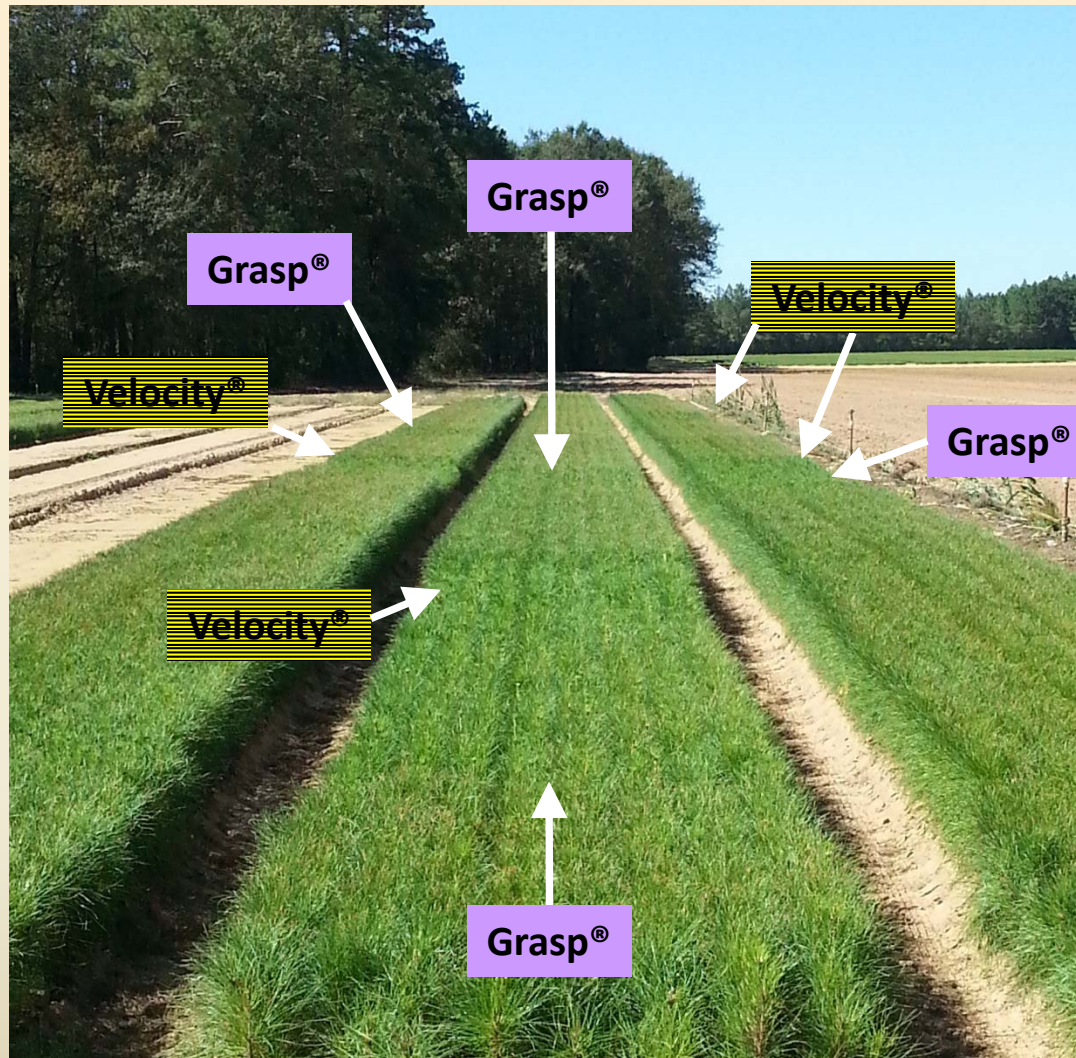
Trade Name	Common Name	Crops	Target Weeds	MOA Group #
Basagran®	<i>bentazon</i>	turf, ornamentals	annual sedge, yellow nutsedge, teaweed, ragweed, other broadleaf	6
Defendor™	<i>florasulam</i>	turf	catchweed, dandelion, groundsel, other broadleaf	2
Dismiss®	<i>sulfentrazone</i>	turf, ornamentals	beggarweed, eclipta, pigweed, red sorrel, spurge, purple & yellow nutsedge, globe sedge, green kylinga, goosegrass	14
Envoke®	<i>trifloxysulfuron</i>	cotton, sugarcane	beggarweed, Johnsongrass, maretail, morning glory, purple & yellow nutsedge, pigweed, sicklepod	2
Frequency®	<i>topramezone</i>	VM, conifer plantations (site prep and one year post planting)	Palmer amaranth, carpetweed, maretail, morning glory, pigweed, crabgrass, goosegrass	27
Grasp®	<i>penoxsulam</i>	rice	eclipta, rice flatsedge, pigweed, ragweed, morning glory, yellow nutsedge, redstem	2
TapOut®	<i>clethodim</i>	conifer trees, flax, cotton, food crops	grasses only	1
Valor®EZ	<i>flumioxazin</i>	cotton, corn, VM, soybeans, sugarcane, wheat	eclipta, maretail, pigweed, ragweed, morning glory, yellow nutsedge, redstem	14
Velocity®	<i>bispyribac</i>	turf	yellow nutsedge, clover, dandelion, henbit, other broadleaf	2



loblolly pine
photo taken June 29 (2 weeks after application)



loblolly pine
photo taken
October 24
(19 weeks after
application)



slash pine

photo taken October 17 (16 weeks after application)

Status of 9 'new' herbicides trial



- Seedling sample collections scheduled for October/November 2017



- Sample seedlings scheduled for processing in November/December 2017
- Results published in 2018 research report

Questions or comments?

5. Ronstar®Flo trial bareroot and container

- RonstarFlo® = 34.1% oxadiazon (Oxadiazon SC)
Group 14 herbicide (inhibits protox enzyme, affects chlorophyll and cell membrane)
pre-emergent (weed) herbicide
apply to soil
do not apply between crop bud break and 4 weeks after
targets are broadleaf weeds, annual grasses, annual sedge
labelled for conifer nurseries
- Trial installed as third in a series in bareroot nurseries and first in container nurseries to determine seedling tolerance
- 2012 and 2013 studies: loblolly is tolerant to *at-sowing* applications
- 2012 and 2013 studies: effective in providing annual sedge control at 40 oz/ac and 80 oz/ac

Ronstar®Flo trial bareroot and container - continued

- Installed in 4 bareroot nurseries in loblolly (each nursery provided 200 feet of bed space)



- Installed in 1 container nursery in loblolly, longleaf, shortleaf and slash (360 trays)



- Ronstar®Flo applied at 3 rates:
 - 1) 1/2 of lowest labelled rate (used in 2 previous trials)
 - 2) lowest labelled rate (used in 2 previous trials)
 - 3) highest labelled rate
- All beds/trays sprayed on day of sowing or +1

Status of Ronstar®Flo trial bareroot and container



- Seedling sample collections scheduled for October - December 2017



- Sample seedlings scheduled for processing in October 2017 – January 2018
- Results published in 2018 research report

Questions or comments?

Contact information

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Weed Control Projects/Trials Proposed 2018 Work Plan

1. Weed seed source scouting
2. Herbicide safeners in hardwood trial
3. Pendulum® AquaCap™ container trial *TBD*
4. Pendulum® AquaCap™ high rate trial (bareroot and container) *TBD*
5. Marengo® in cedar trial (bareroot) *TBD*
6. 'New' post-emergent herbicides screening trial (bareroot)
expand to include additional pine species and herbicides
7. Low rate glyphosate applications in hardwood trial
8. Ronstar®Flo pine trial (bareroot and container) *TBD*
9. Post-emergent herbicides screening trial for hardwoods
include Ronstar, Gemini, others