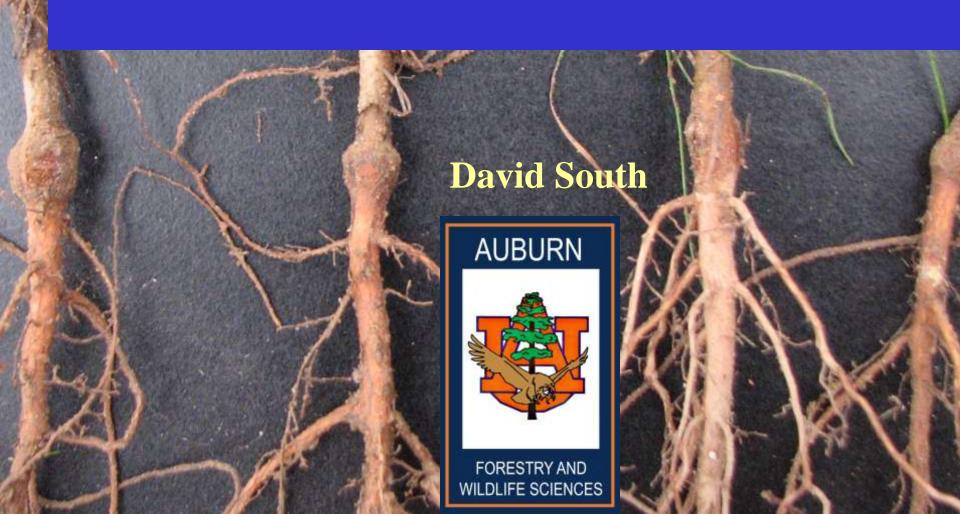
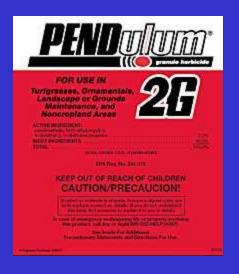
Herbicide galls on pine seedlings



NOT ALL prodiamine herbicides are the same

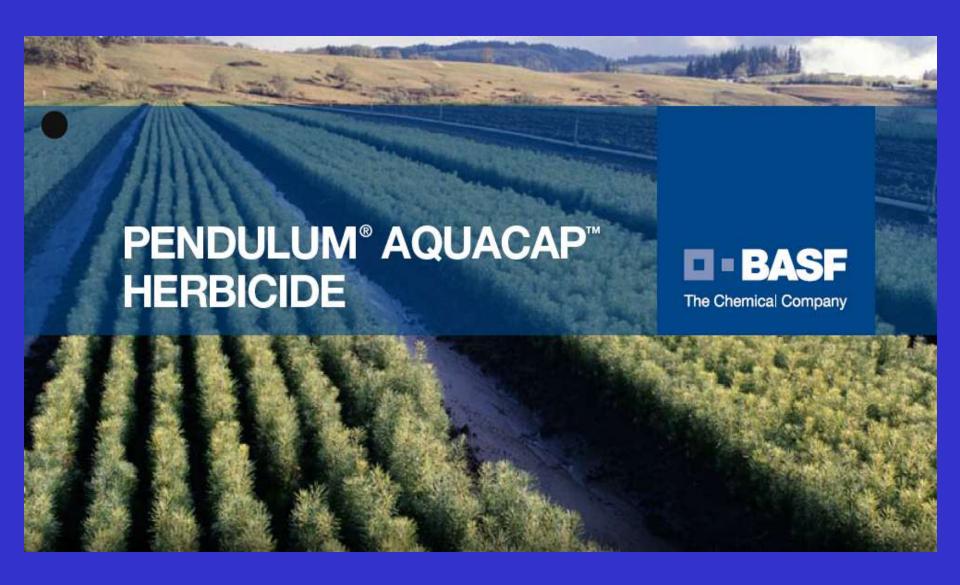














For Use as a Preemergent Weed Control Herbicide in Turfgrasses, Landscape or Grounds Maintenance, Noncropiand Areas and Ornamental Production

ACTIVE INGREDIENT
perdinethalin, N-[1-sthylpropy]-3,4-dinothyl-2,6-dinboberconamine 98.7%.
NERT INGREDIENTS: 51.3%.
TOTAL
[1 gallon contains 3.8 bs. of microencapsulated pendinothalin in an aqueous carrier]

EPA Reg. No. 241-416

EPA Est. No.

Signal Word: CAUTION

REI: 24 hours

PPE: Long-sleeved shirt and long pants; chemical-resistant gloves; shoes and socks

Established Container, or Field-Grown Nursery Stock^{2, 3}

- DO NOT apply during bud swell, bud break or at time of first flush of new growth.
- Apply as a directed or over-the-top spray.
- 3 If newly budded or graphed rootstock, make an application using a shielded sprayer.
- Care must be taken to ensure there are no cracks in the soil where PENDULUM AquaCap could come into contact with the roots.



How It Works



Pendulum AquaCap encapsulates a water-based formulation of the industry's leading preemergent active ingredient — BASF pendimethalin — in an ultra-thin microcapsule.



Capsules are primarily broken by drying and wetting of the capsule walls, but can also be ruptured by other factors (impact, friction, biological action, etc.) to release the active ingredient.



When the microcapsule is broken, it releases the pendimethalin,



30 gallons

2 quarts/acre = \$25



2.5 gallons

2 quarts/acre = \$35



Control Pendulum



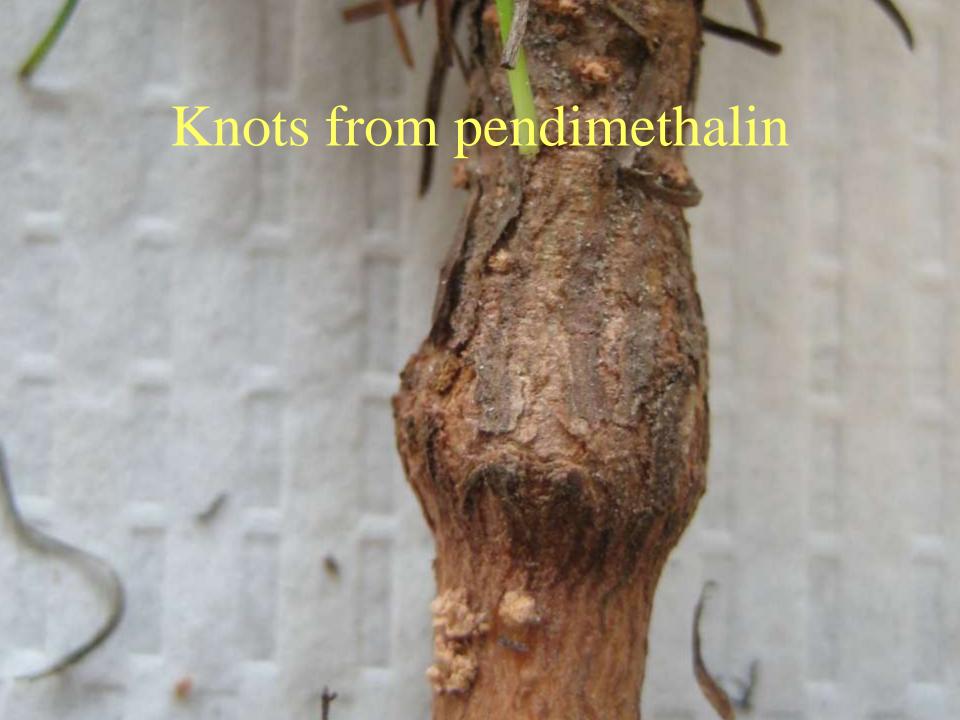


Single postemergence (68 oz)

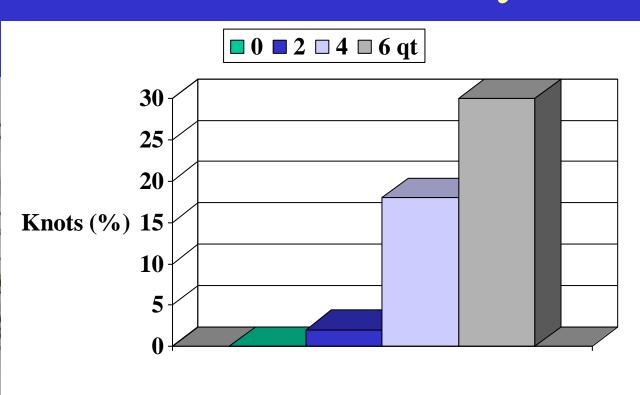
Nursery	Density	RCD	Height
Pine Hill			
Elberta			0.03 -
Jesup			0.056 +
Trenton		0.0001 +	

Two postemergence (68 + 68 oz)

Nursery	Density	RCD	Height
Pine Hill		0.006 +	0.05 +
Elberta			
Jesup			<u> </u>
Trenton		0.0001 +	



Knots – May 19



Rate (Quarts/acre)

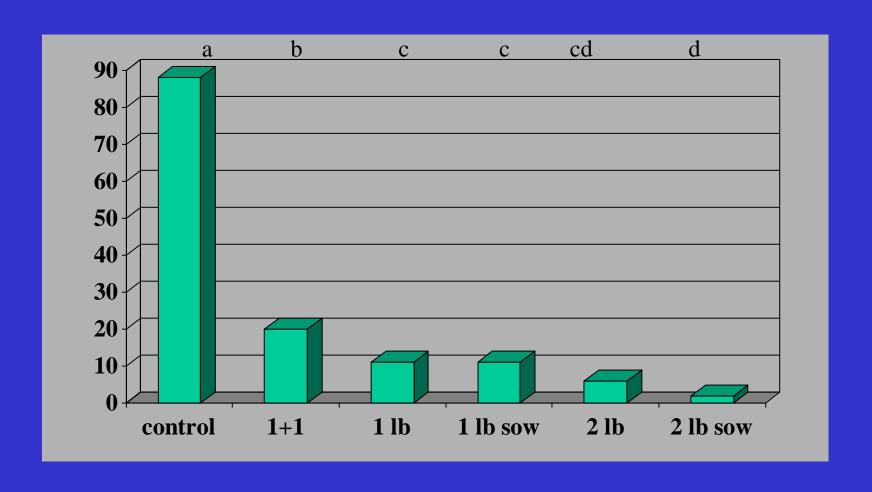




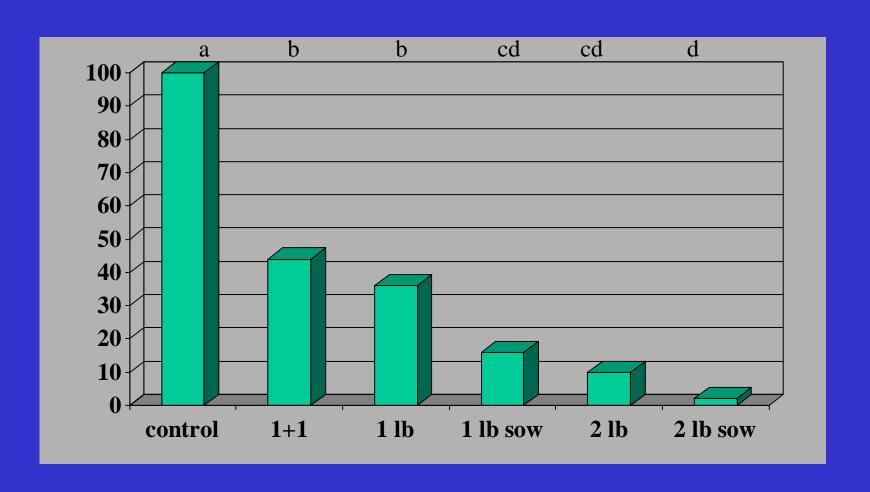




% Spurge cover in June



% Spurge cover in September



Gall Formation (%)

Treatment	Camden	Elberta	Trenton	Jessup
Control	0	0	0	0
1 lb pre	0	4	0	0
2 lb post	0	6	0.8	0
1 lb post	0	16	0	0
2 lb post	0	34	5.6	4.8
1.s.d.		30	2.4	3.5



Camden Nursery – loblolly pine

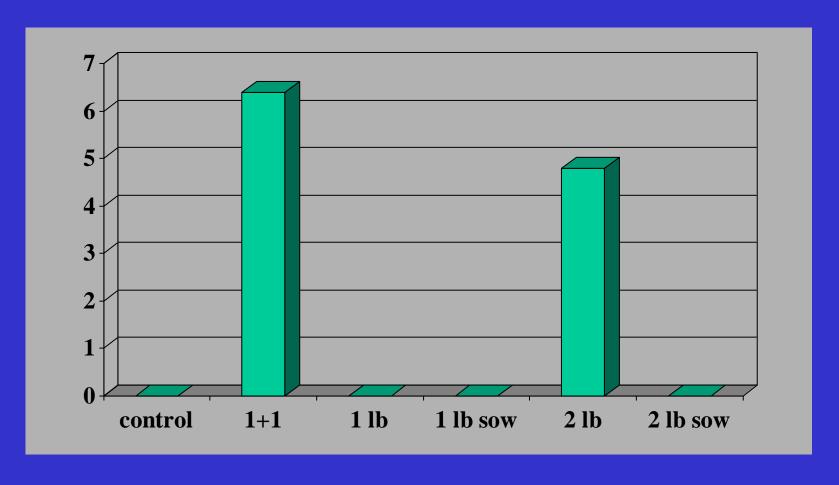
Treatment	Density	RCD	Height
Control	64 b	3.1 d	19.6 с
Sowing 1 lb	73 a	3.7 bc	26.4 ab
Sowing 2 lb	72 ab	4.0 a	28.0 a
May 1 lb	67 ab	3.6 c	25.1 b
May 2 lb	74 a	3.9 ab	27.7 a
1.s.d.	7.4	0.29	2.0



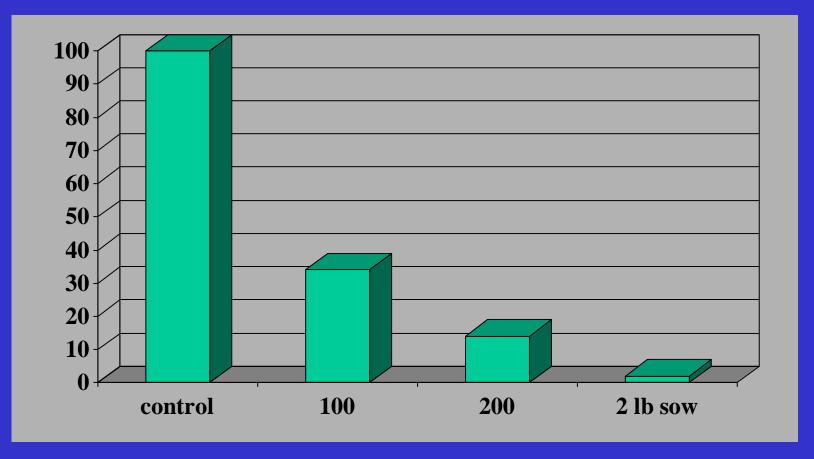
Jesup Nursery – slash pine

Treatment	Density	RCD	Height
Control	75 a	4.8 a	29.1 a
Sowing 1 lb	78 a	4.8 a	29.5 a
Sowing 2 lb	77 a	4.9 a	29.5 a
May 1 lb	79 a	4.8 a	29.5 a
May 2 lb	82 a	5.0 a	29.5 a
1.s.d.	6.9	0.22	0.7

% herbicide galls – slash pine at Jesup

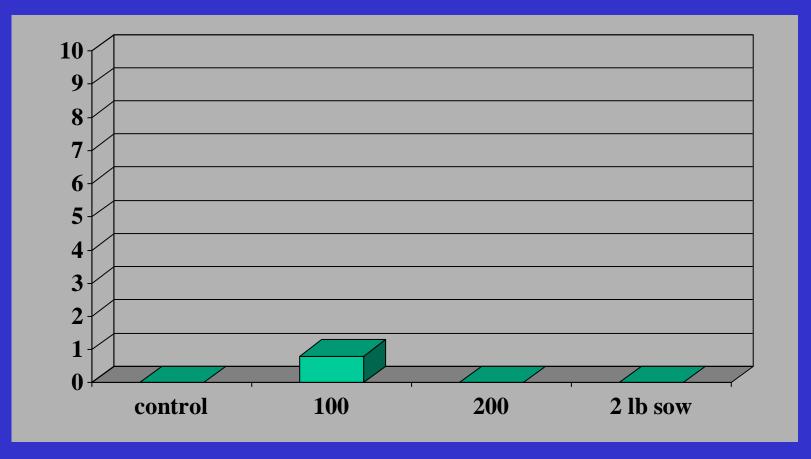


% Spurge cover in September



Freehand

% herbicide galls Slash - Jesup



Freehand

Conclusions

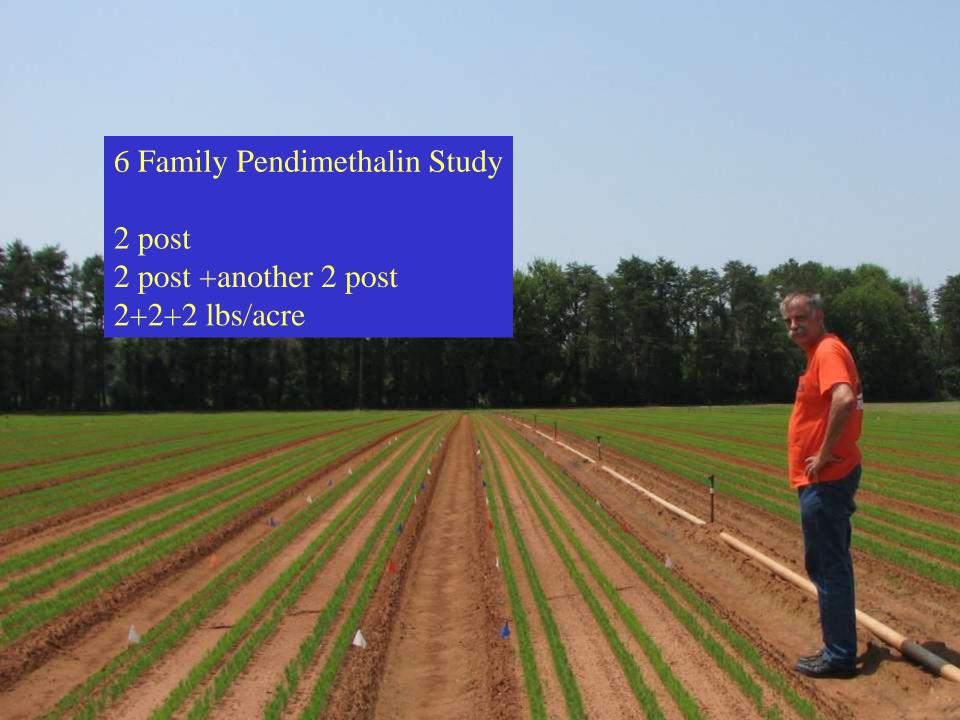
 No stunting or loss of seedlings from Pendulum AquaCap. Knots can occur at some nurseries at 2 lb ai/acre rate and frequency is rate dependent.
 Spurge control good with preemercence application.

• Freehand (which contains dimethenamid-p) can cause some seedling injury since uniformity of granules is not as good as with spray.

maximum % herbicide galls



2 lb ai/acre pendimethalin







Conclusions

Managers who intend to apply pendimethalin operationally to pines or hardwoods should consider treating small lots first to determine if the genotypes they sow will form galls when exposed to this herbicide.

Conclusions

Preliminary results suggest that the best time to apply Pendulum Aquacap is at sowing for pines. Chance of gall formation is lower and timing for spurge control is better.

Do trees with galls have good survival when outplanted?



Survival and growth of loblolly seedlings with or without prodiamine caused basal galls did not differ after one year in the field. Bill Carey

Outplanted Jan 21, 1999

Table 1. First year growth and survival among outplanted seedlings.

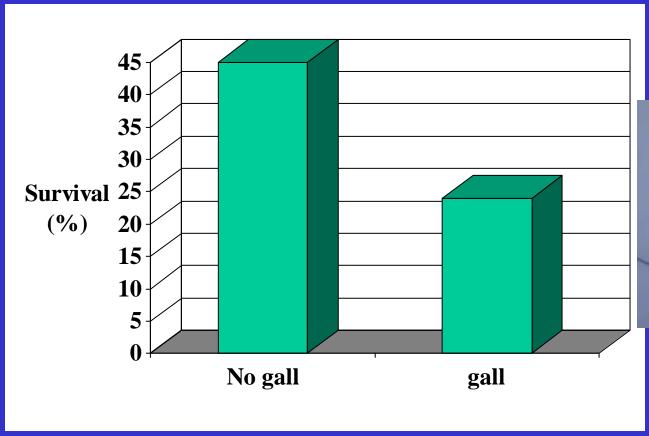
Galls	Survival	Initial Ht	Initial RCD	Ht growth*	RCD growth*
Yes	98 %	18.7 cm	5.4 mm	29.1 cm	6.2 mm
No	95 %	19.1 cm	5.3 mm	30.6 cm	6.5 mm
lsd	5%	1.1 cm	0.2 mm	3.0 cm	0,7 mm

^{*} Growth is final minus initial measurements 13 months after outplanting on an Alabama site.





Survival of herbicide galled seedlings (p>F= 0.0334)





Freehand® 1.75G Herbicide



PREEMERGENCE HERBICIDE PERFORMANCE

	FreeHand
Crabgrass	G
Goosegrass	G
Bittercress	G
Eclipta	G
N. Willowherb	G
Chickweed spp.	G
Spurge spp.	G
Doveweed	G
Sedges**	G

Will a more expensive granular formulation cause knots?



1 lb pendimethalin

0.75 lb dimethenamid-p

\$165 per 100 lbs/acre

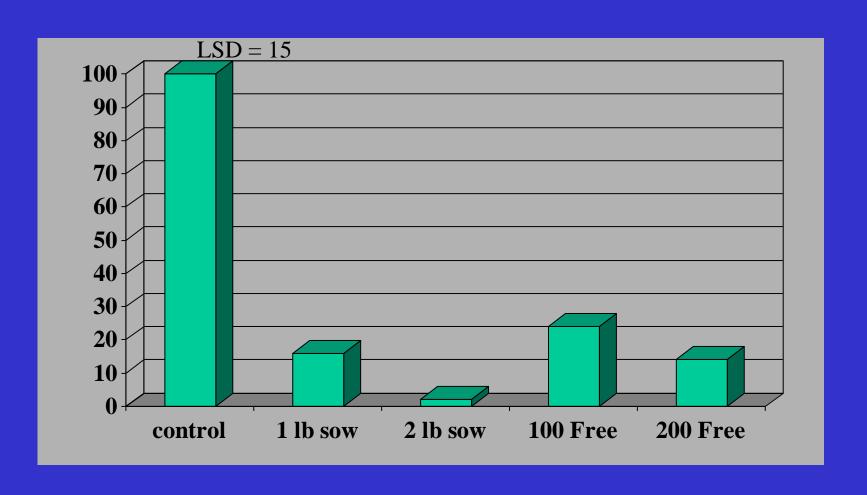
\$330 per 200 lbs/acre



Gall Formation (%)

Treatment	Formulation	Elberta	Trenton	Jessup
Control	0	0	0	0
1 lb post	Aquacap	16	0	0
2 lb post	Aquacap	34	5.6	4.8
100 lbs	Freehand	4	0	0.8
200 lbs	Freehand	4	0	0
LSD 5%		30	2.4	3.5

% Spurge cover in September



Question: if you decide to not fumigate with methyl bromide, how will you control spurge?

