

Chemical Management of Giant Salvinia

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Chemical Control Technology Team



Chemical Control of Giant Salvinia

1940's	Emulsifiable oils + pentachlorophenol
1960-70's	Monuron, anhydrous ammonia, formalin, nicosomide, thiram
1977	Paraquat, diquat, nitrophen, dalapon
1979	Diuron
	2,4-D
	Diclorprop
	} + surfactant + kerosene
1986	Fluridone



USEPA-Registered Aquatic Herbicides

Contact: Copper
Diquat
Endothall

Systemic: Fluridone
Glyphosate
2,4-D
Triclopyr

Imazapyr (EUP Label)



Plant Characteristics

- Small size
- Protected growing point
- Forms dense mats
- Presence of trichomes



Research Objectives

1999-2000 **Screen selected herbicides, herbicide combinations**
Identify effective products

2000-2001 **Compare surfactant additions**
Determine effective application rates

2001-2002 **Determine the effects of spray volume**



Herbicide Evaluations



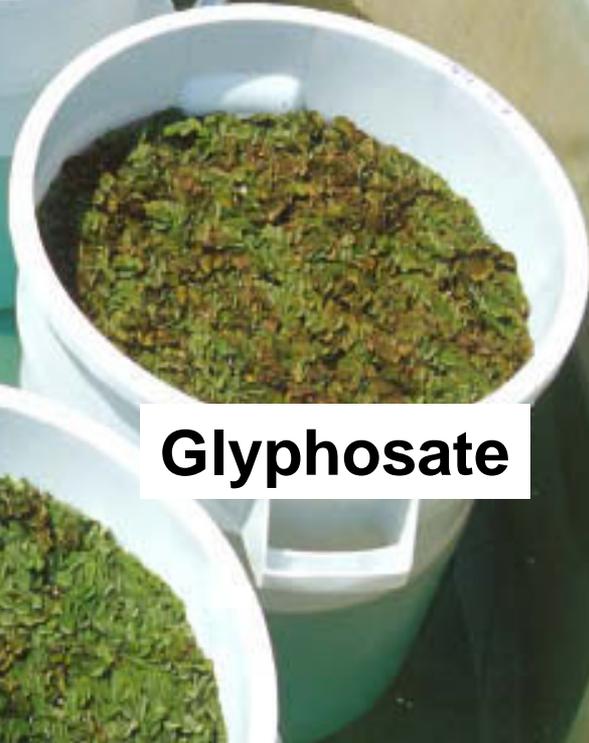
3 DAT



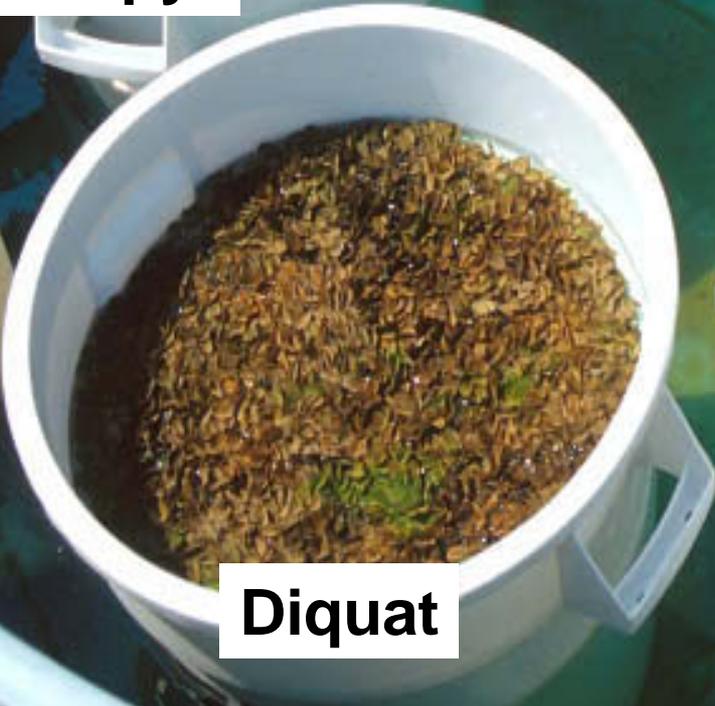
Diquat



Imazapyr



Glyphosate



Diquat



Control

Percent Control of Giant Salvinia

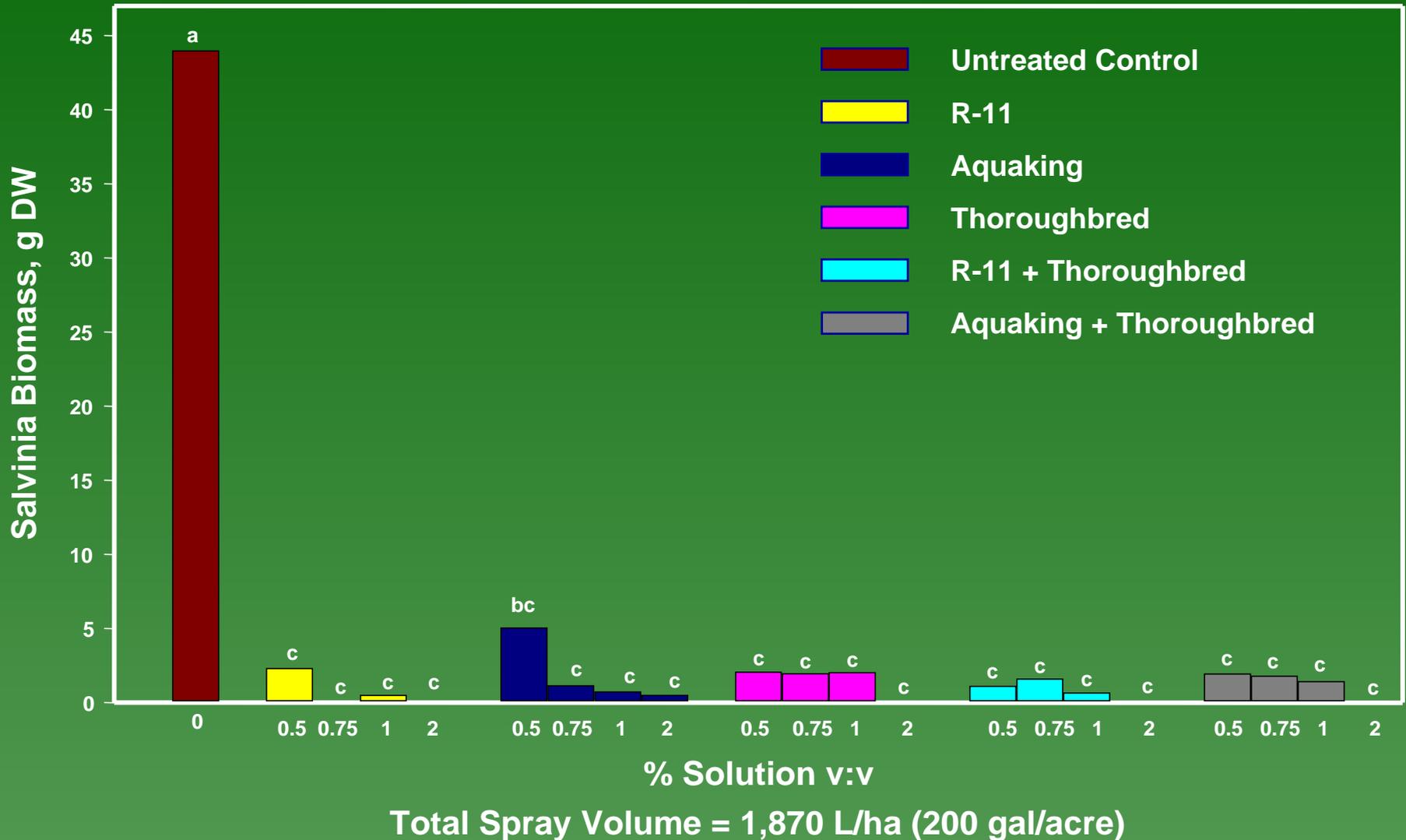
Treatment	Rate (gal/A)	3 DAT	14 DAT	21 DAT	42 DAT
Imazapyr	0.75	0	0	2	13
Endothall – K	1.5	18	80	83	65
Endothall – A	1.0	72	78	80	57
Copper	5.0	95	89	87	81
Diquat	0.5	68	82	92	100
	1.0	83	97	100	100
Glyphosate	2.0	50	77	78	99
	1.0	32	71	78	100

Additional Glyphosate Studies

- Glyphosate rates: 0.5, 0.75, 1, and 2 % solution
- Surfactant additions: 0.5% v:v
 1. Non-ionic: R-11, Aquaking
 2. Organosilicone: Thoroughbred
 3. Non-ionic + Organosilicone



Glyphosate + 0.5% v:v Surfactant



1% Glyphosate 14 DAT



Control



R11



Aquaking



Thoroughbred



R11 + Thoroughbred



Aquaking + Thoroughbred

1% Glyphosate 42 DAT



Control



R11



Aquaking



Thoroughbred

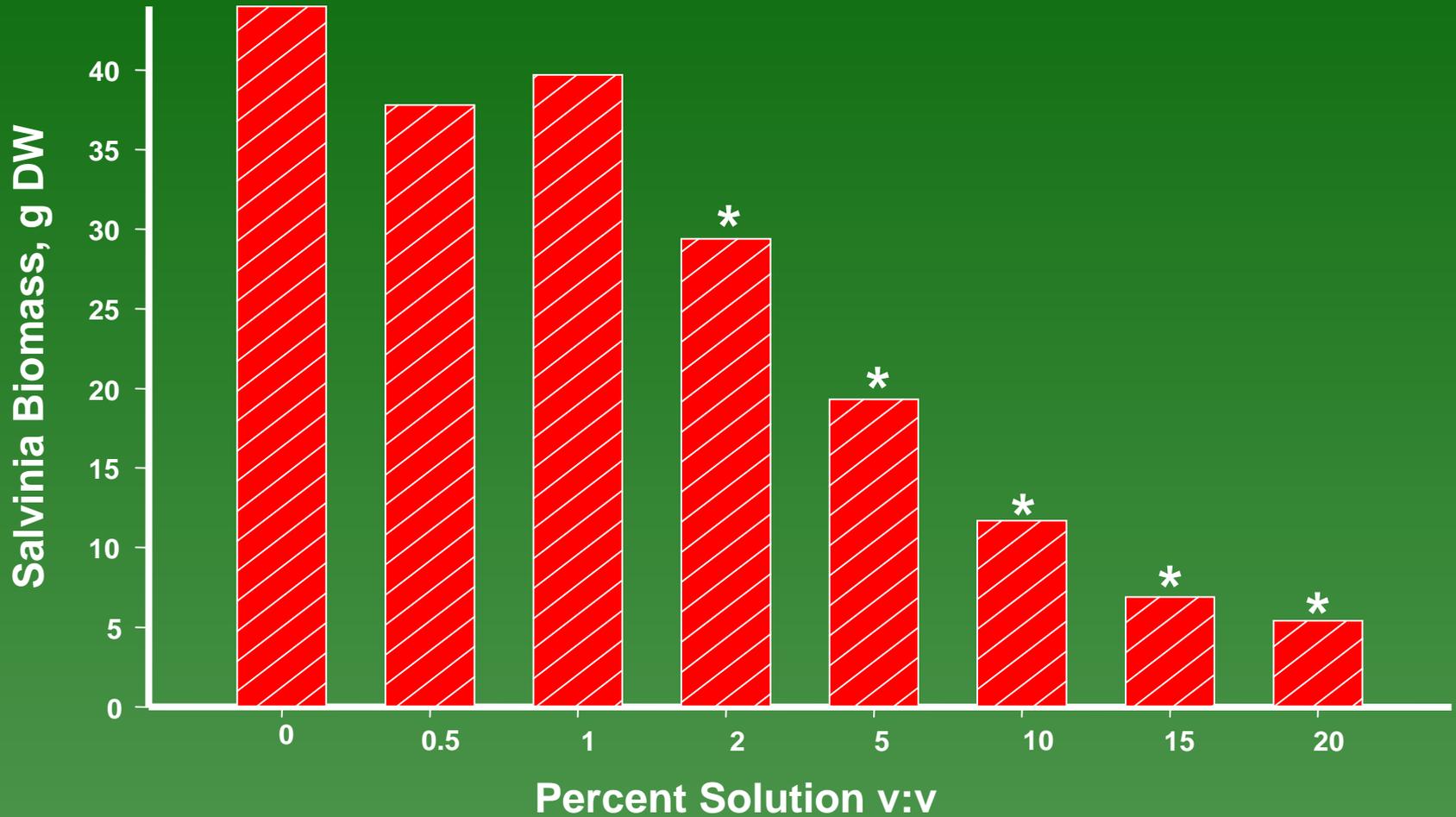


R11 + Thoroughbred



Aquaking + Thoroughbred

Copper (Clearigate) - 6 WAT

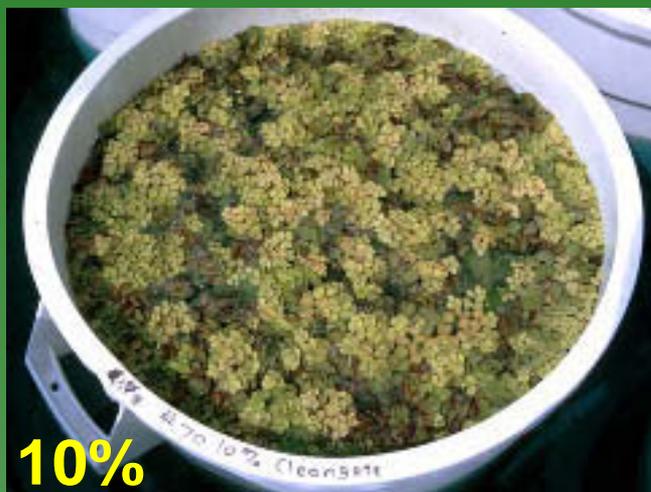


Total Spray Volume = 1,870 L/ha (200 gal/acre)

Copper (Clearigate) 3 DAT



Copper (Clearigate) 21 DAT



What we know now.....

- **Giant salvinia can be effectively controlled using herbicides**
 - Glyphosate: 0.5 to 1.0 gal/A; >95% control 28 DAT
 - Diquat 0.5 to 1.0 gal/A; >95% control 21 DAT
 - Copper as Clearigate; 15 to 20 gal/A; 80-85% control 21 DAT
as Komeen; 5 gal/A; 80% control 21 DAT
- Re-growth with copper, endothall
- Imazapyr is not effective
- Type of surfactant did not affect glyphosate efficacy
- Diquat effective with and w/out surfactant



Selecting the right product....

- Identify management goals
- Water use restrictions; state restrictions
- Non-target effects
- Condition of the plants; abundance
- Site Characteristics
- Cost



Future Efforts

- Continue product and formulation evaluation
- Application techniques
- Operational field evaluations
- Integrated management strategies

