

Are you spending too much for container weed management?

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Preemergent Herbicides are NOT Plug and Play

Pendulum

OH2_{OXYFLUORFEN/PENDIMETHALIN}

Dimension

Freehand

DIMETHENAMID-P/PENDIMETHALINE

Ronstar

Rout_{ORYZALIN/OXYFLUORFEN}

Barricade

Snapshot_{ISOXABEN/TRIFLURALIN}

Broadstar

Showcase

ISOXABEN/OXYFLUORFEN/TRIFLURALIN

Gallery

PrePair_{Napropamide/oxadiazon}

Economics of Weed Control

- Cost of product/unit area
- Handweeding??? \$\$\$
- Formulation options with differing costs

<u>Herbicide</u>	<u>Unit Cost</u>	<u>\$/A</u>	<u>~ 1/2 life (days)</u>	<u>\$/A/day of control*</u>
Rout	\$160/50 lb	\$320	35	\$9.14
Snapshot	\$119/50 lb	\$357	45	\$7.93
Ronstar 2G	\$84/50 lb	\$252	60	\$4.20
OH2	\$159/50 lb	\$318	35	\$9.09
Freehand	\$143/37.5 lb	\$456	100	\$4.56
Broadstar	\$118/50 lb	\$354	20	\$17.70
Surflan	\$340/2.5 gal	\$102	60	\$1.70
Gallery	\$192/1 lb	\$192	60	\$3.20

*Just a ballpark



The “ACTIONS”

Sanitation

Application

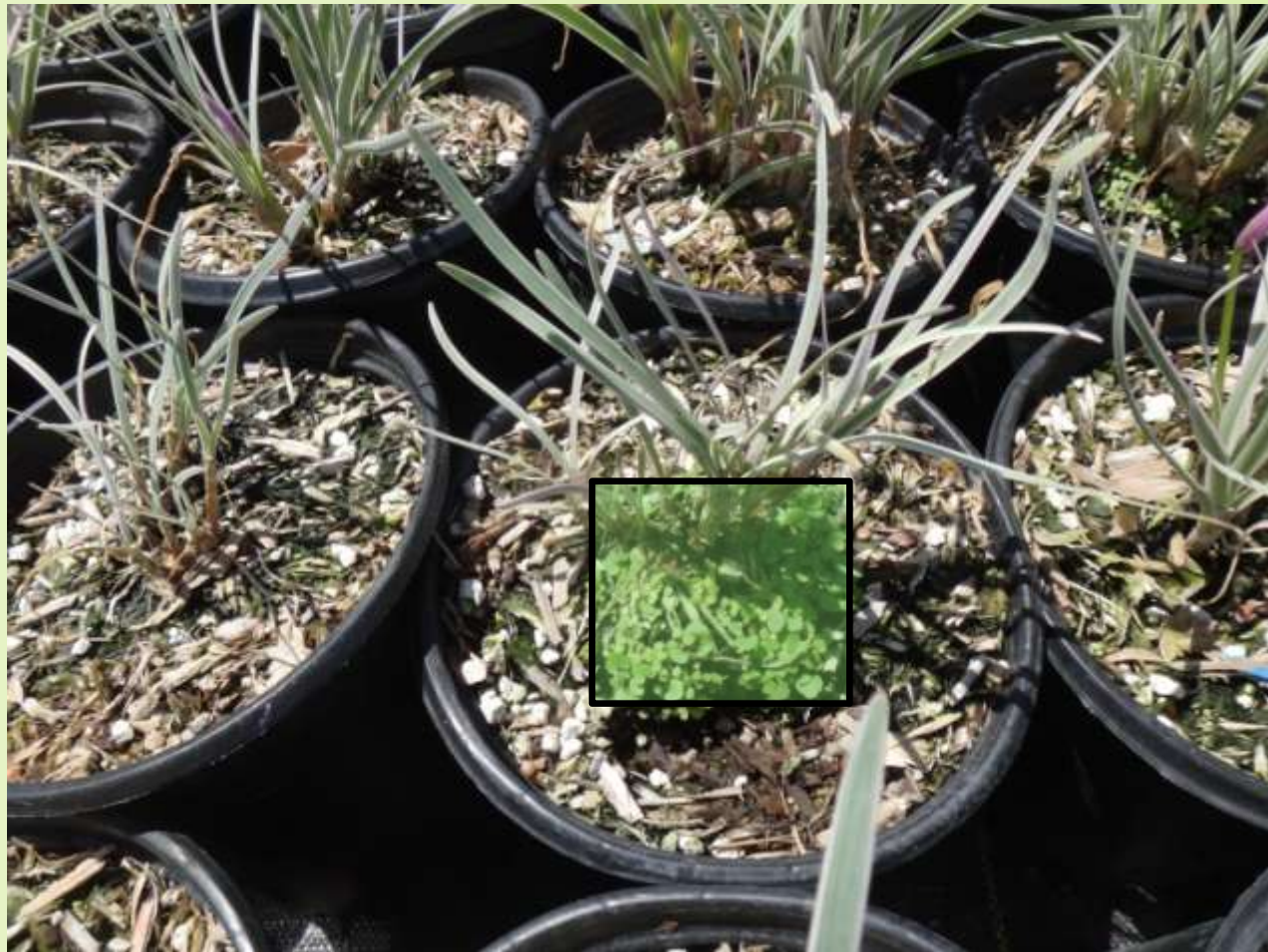
Formulation

Sanitation



Starts with propagation

Bittercress from liners



Other weeds can blow in, are carried, or otherwise disseminated





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Sanitation

Remove escapes



Clean up sources
of re-infestation

Sanitation

Irrigation management



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Sanitation

Irrigation management



should be placed.

Step 2a

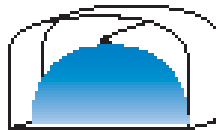
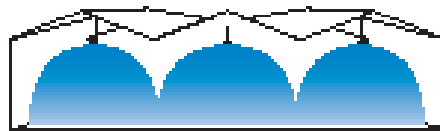
Select a Sprinkler Head for Watering Applications (go to Step 2b for Misting, Propagation or Cooling Applications)

All sprinkler solutions are based on an average sprinkler working pressure of 30 psi and spacing between the sprinklers of three feet.



Single Bench Solutions

Bench Width (ft)	Spacing Between Sprinklers (ft)	Height Above Crop	
		2'	4'
4	3	VS-GN	VS-GN
5	3	VS-GN	VS-GN
6	3	VS-GN	VS-GN



One Line Solutions for Single Bay or Quonset

Bay Width (ft)	Spacing Between Sprinklers (ft)	Height Above Crop		
		2' - 3'	4' - 5'	6' - 7'
10	3	R-R-BL	-	-
12	3	R-R-BL	R-R-BL	-
14	3	BR-BR-BL	BR-BR-BL	R-R-BL
15	3	R-R-GY	BR-BR-BL	R-R-BL
16	3	R-R-GY	BR-Y-GY	R-R-BL
18	3	R-R-GN	BR-Y-GY	BR-Y-GY
20	3	-	R-R-GN	BR-BR-GN
22	3	-	R-R-GN	BR-BR-GN
24	3	-	-	BR-BR-GN



Two Line Solutions for Single Bay or Quonset

Bay Width (ft)	Spacing Between Sprinklers (ft)	Spacing Between Sprinkler Lines (ft)	Height Above Crop		
			3'	4' - 5'	6' - 7'
20	3	11	R-R-BL	-	-
22	3	12	R-R-BL	R-R-BL	-
24	3	12	R-R-BL	R-R-BL	R-R-BL
26	3	14	BR-BR-BL	R-R-BL	R-R-BL
28	3	15	BR-BR-BL	R-R-BL	R-R-BL
30	3	16	R-R-GY	R-R-GY	BR-BR-BL
32	3	17	R-R-GN	R-R-GY	BR-BR-BL
34	3	18	R-R-GN	R-R-GY	BR-BR-BL
36	3	19	R-R-GN	R-R-GY	R-R-GN
38	3	20	BR-BR-GN	R-R-GN	R-R-GN

Ordering Guide

Code	Description	Model Number	Flow
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Sanitation

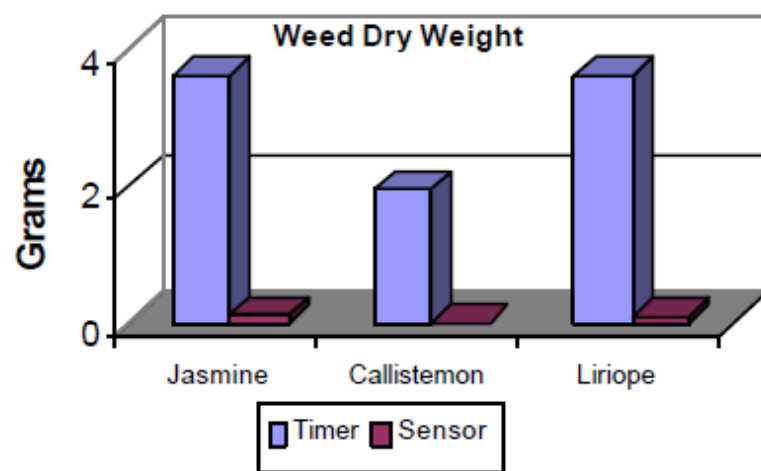
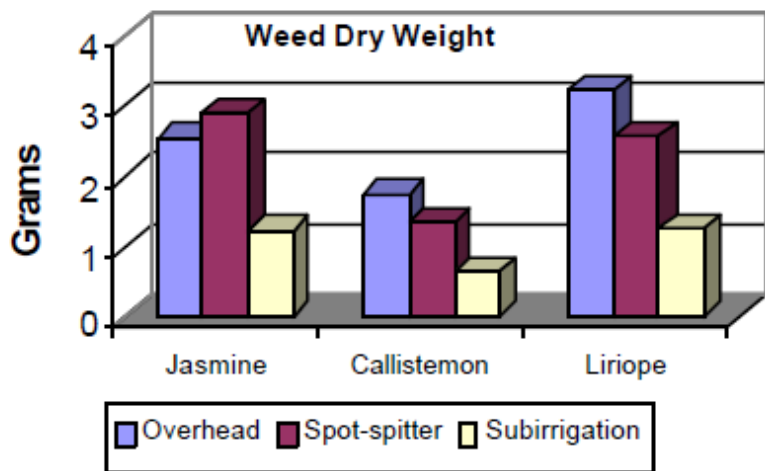
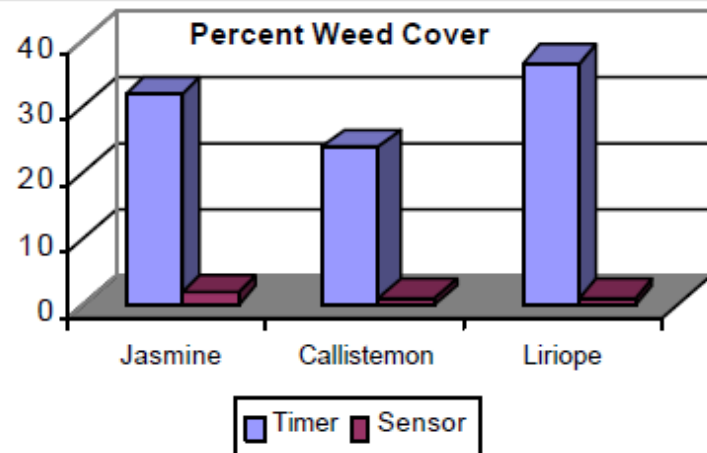
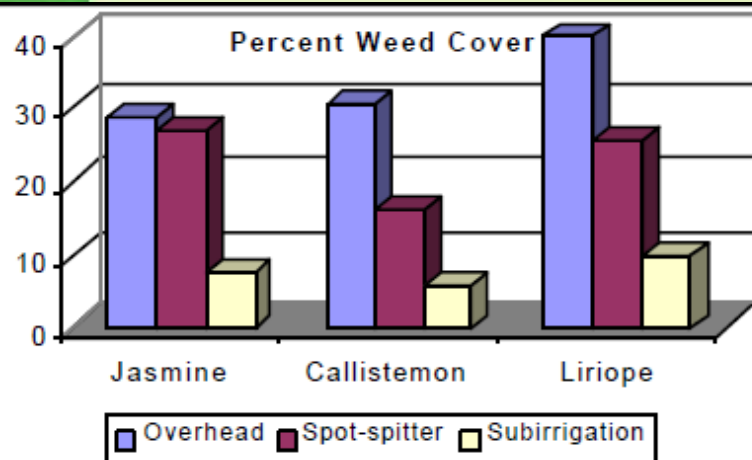
Secondary Pests



While on the the subject of
irrigation...
Have you tried a sensor?



Effect of method of irrigation



*For each group of bars, different letters above the bar indicate significant differences at the $P \leq 0.05$ level by SNK multiple range test; "ns" is "no significant differences."

Herbicides

Formulation

- Liquid preferred but granules seem easier to apply
 - Water-based preferred over Ecs
 - Good coverage esp. when small
- Granules – apply to dry leaves
 - Wash off after application
 - Watch out for plants with whorled leaves
 - Uniformity may be an issue



The "Shadow Effect"



2-4 passes



SPACING



Timing Your Application

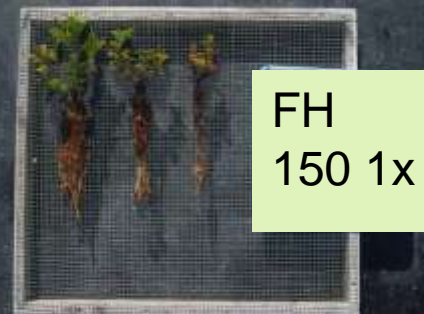
Treat ASAP after TPing



Choice of Product and Real Cost

Weed spectrum: Are you really using the best product for the weeds you have *at this time*??

Are you afraid of putting on something too soon??



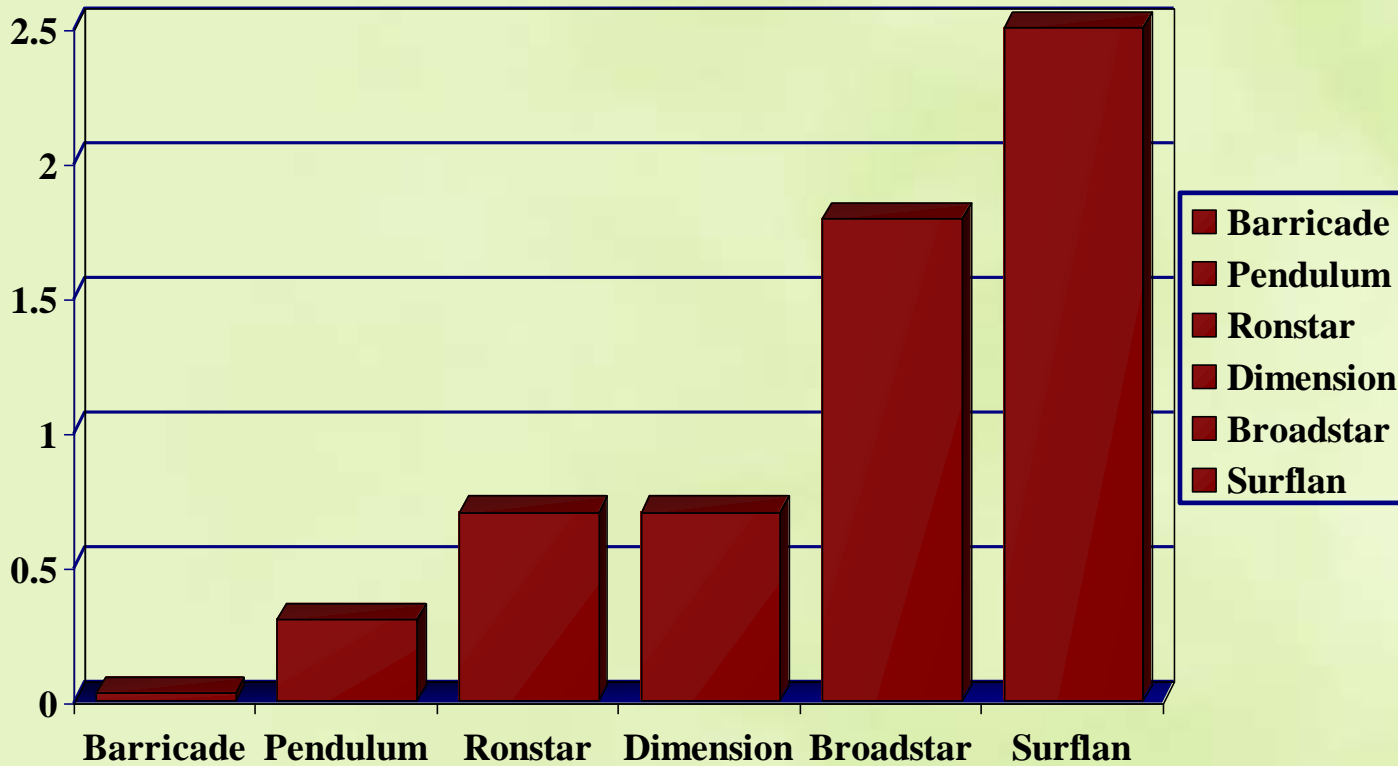
Pesticide Properties

- **Solubility (ppm)**
- **Adsorption (K_{oc})**
- **Persistence or half-life ($T_{1/2}$)**
 - **affected by biotic and abiotic factors**
 - **microbes**
 - **photodecomposition**
 - **pH**
 - **others**

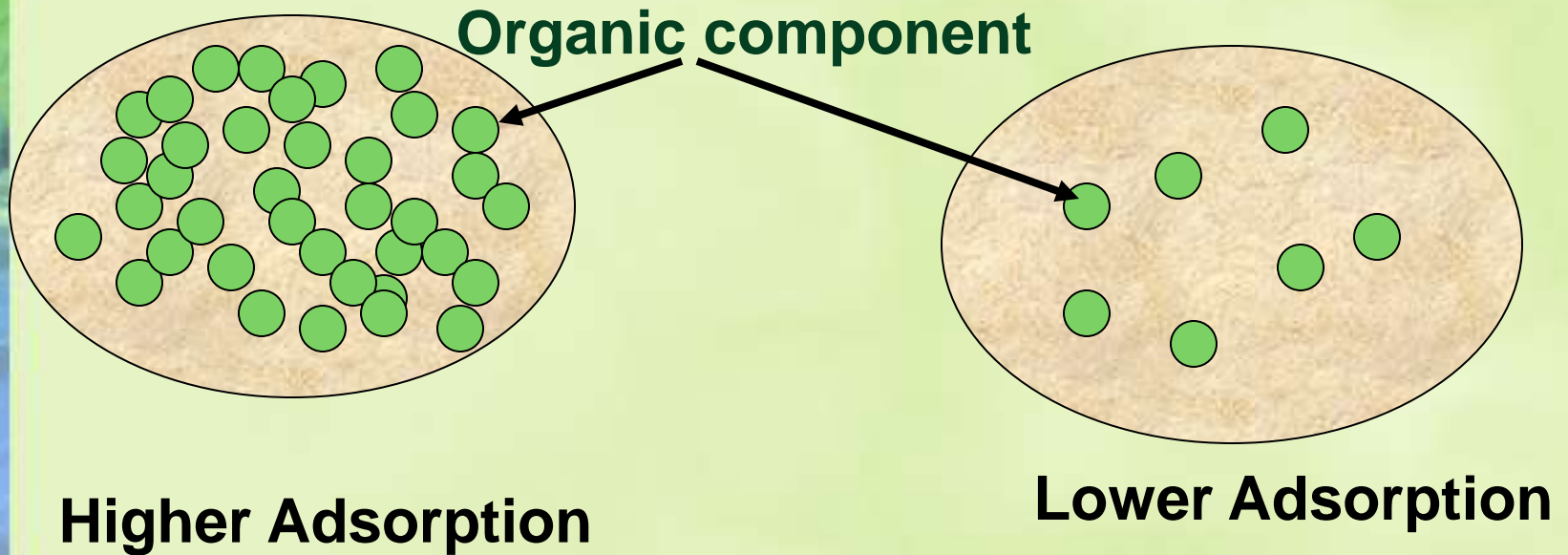
Herbicide Properties

Water Solubility

Freehand=1449ppm

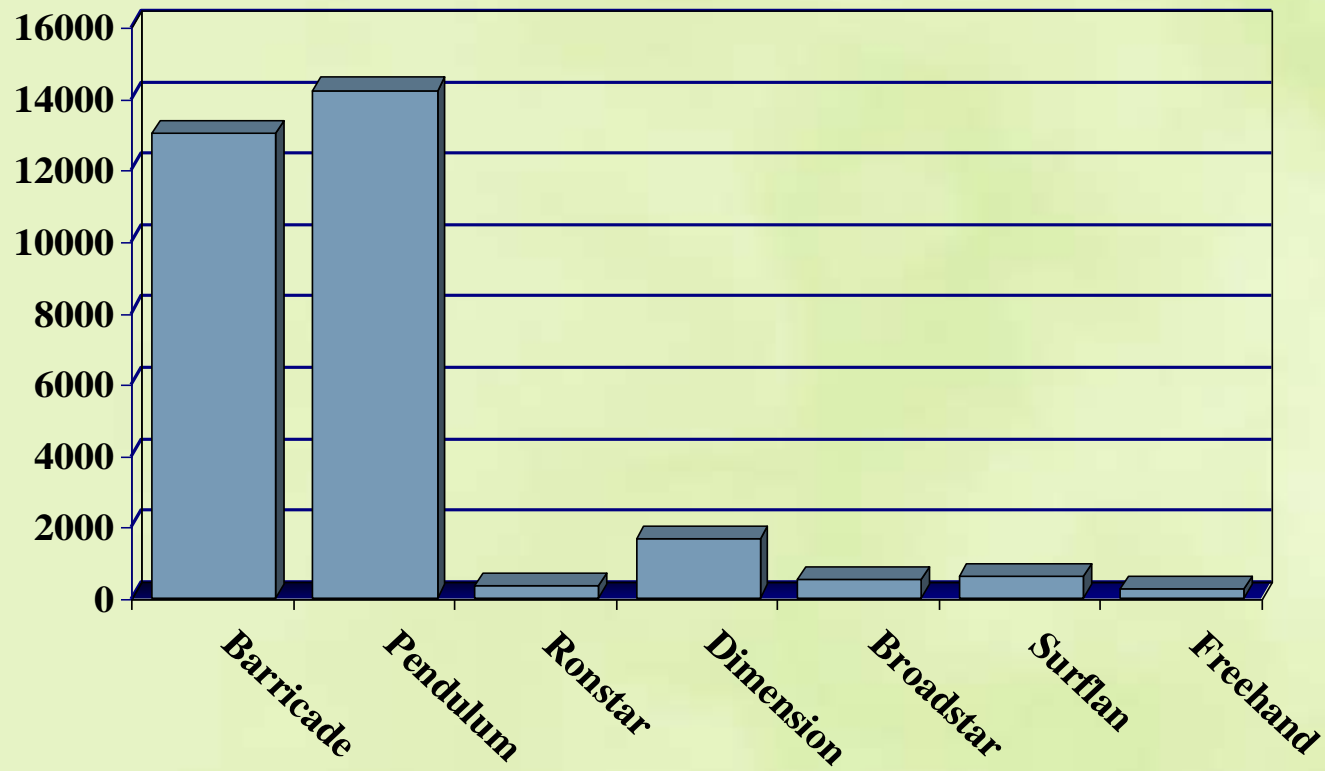


Organic Matter

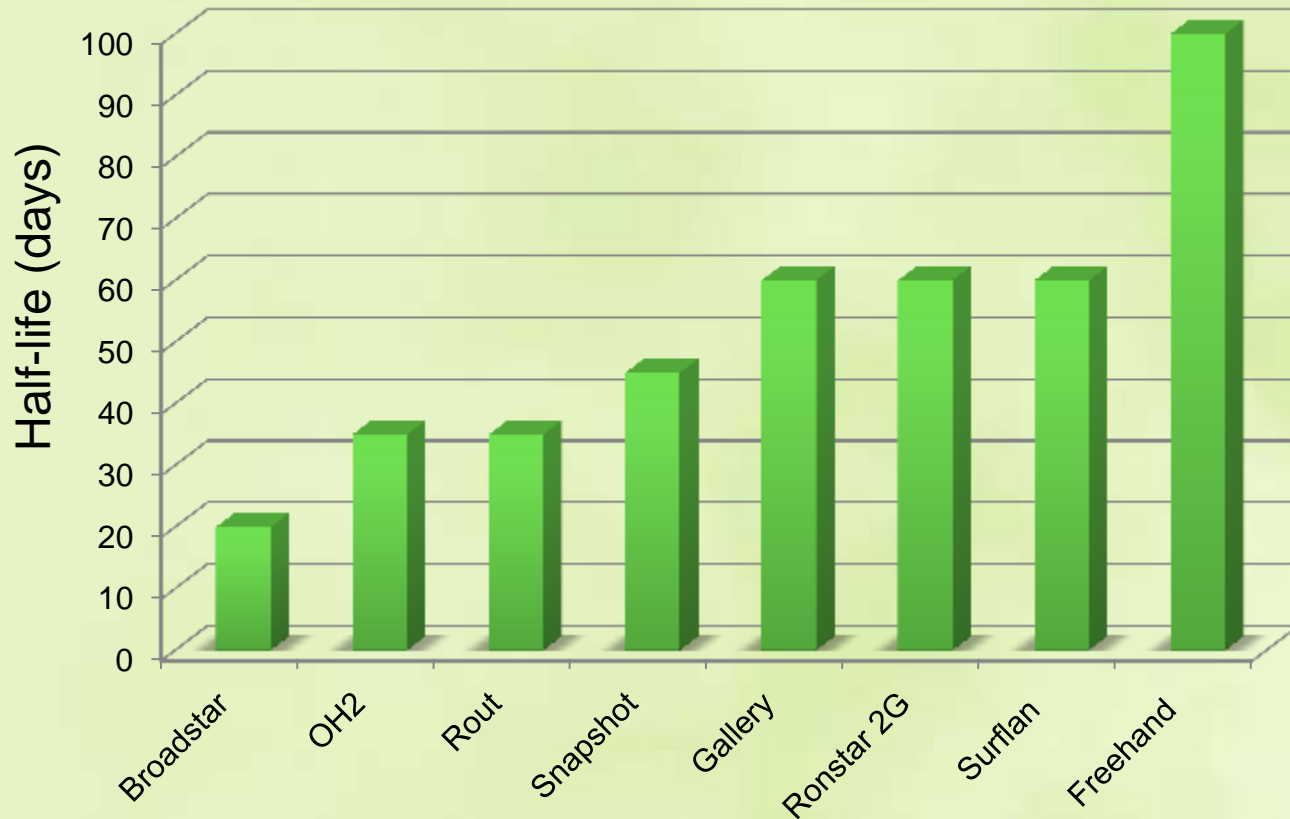


Herbicide Properties

Binding to Organic Matter



Length of efficacy



- specific chemical being used
- physical and chemical properties of herbicide
- moisture and temperature
- application placement
- soil (and water) properties

Weed ID & Spectrum of Weed Control



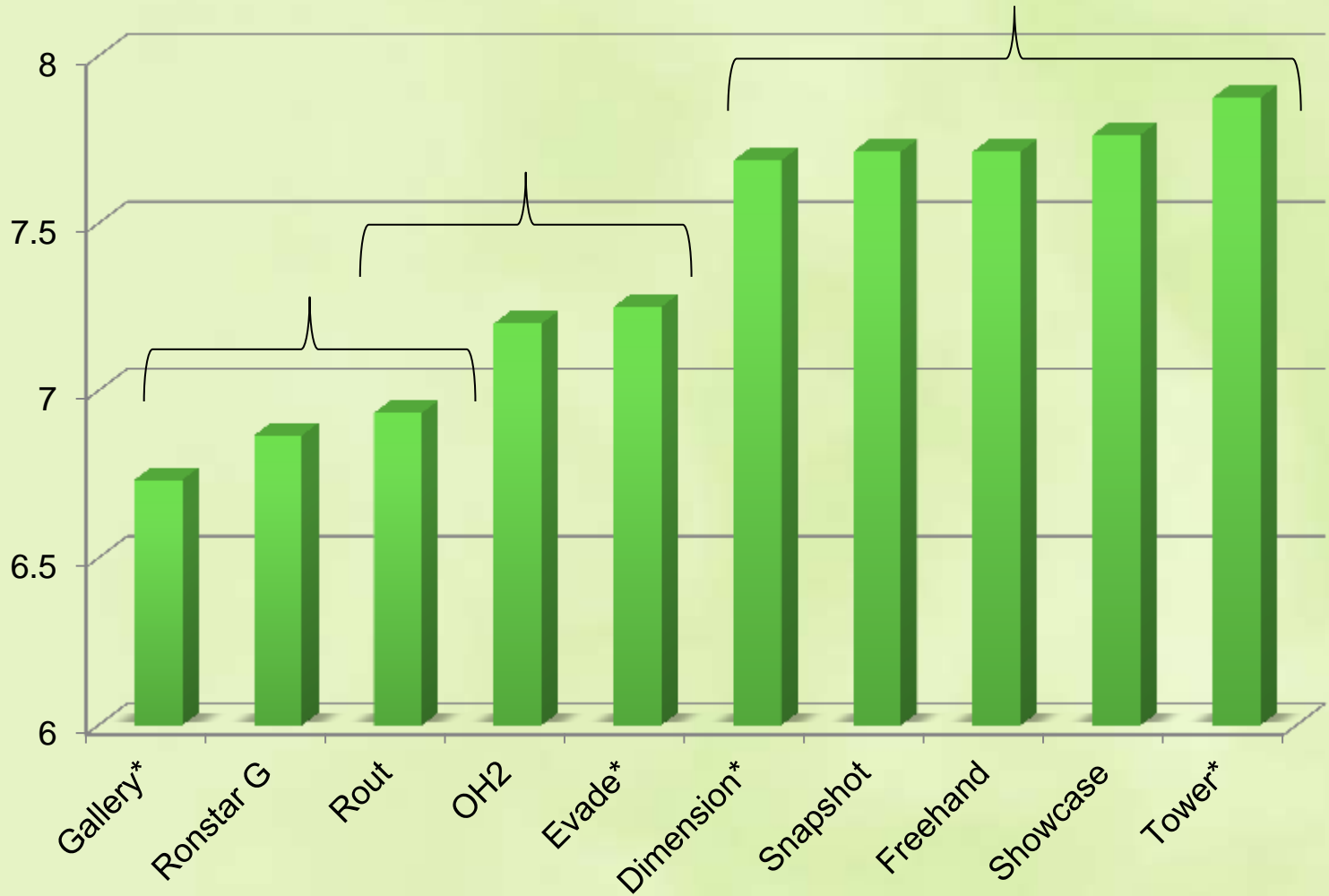
Weed ID & Spectrum of Weed Control

	oxyfluorfen (Rout+)	oxadiazon (Ronstar)	isoxaben (Gallery)	oryzalin (Surflan)	pendimethalin (Pendulum)	proflaminate (Barricade)	trifluralin (Treflan)	DCPA (Dacthal)	flumioxazin (Broadstar)	napropamide (Devrinol)
ANNUAL WEEDS										
bittercress, lesser-seeded	C	C	C	P	P	P	P	—	P	
groundsel, common	C	P	C	P	N	N	N	P	C	C
spurge, prostrate or spotted	C	C	C	C	C	C	C	P	—	N
willowherbs	C	P	P	P	N	N	N	N	C	N
PERENNIAL WEEDS										
woodsorrel, creeping (plant)	N	N	N	N	N	N	N	N	—	N
woodsorrel, creeping (seedling)	C	C	C	C	C	C	C	C	—	N
liverwort	P	P	—	—	—	—	—	—	C	—



Spurge, ~4WAT

Euonymus and Raphiolepis tests combined



*Liquid 0=no control, 10=perfect control

Choice of Product and Real Cost

Weed spectrum: Are you really using the best product for the weeds you have *at this time*??

	oxyfluorfen (Rout+)	oxadiazon (Ronstar)	isoxaben (Gallery)	oryzalin (Surflan)	pendimethalin (Pendulum)	prodiamine (Barricade)	trifluralin (treflan)	DCPA (Dacthal)	flumioxazin (Broadstar)	napropamide (Devrinol)
ANNUAL WEEDS										
bittercress, lesser-seeded	C	C	C	P	P	P	P	P	—	P
groundsel, common	C	P	C	P	N	N	N	P	C	C

Choice of Product and Real Cost

Weed spectrum Are you really using the best product for your weed problem?

Are you afraid of putting on something too soon??

Can you tank mix or anticipate weeds to pick up species?

	oxyfluorfen (Rout+)	oxadiazon (Ronstar)	isoxaben (Gallery)	oryzalin (Surflan)	pendimethalin (Pendulum)	prodiamine (Barricade)	trifluralin (treflan)	DCPA (Dacthal)	flumioxazin (Broadstar)	napropamide (Devrinol)
ANNUAL WEEDS										
bittercress, lesser-seeded	C	C	C	P	P	P	P	—	P	
groundsel, common	C	P	C	P	N	N	N	P	C	C
spurge, prostrate or spotted	C	C	C	C	C	C	C	P	—	N
willowherbs	C	P	P	P	N	N	N	N	C	N

ROLE OF FERTILIZERS

Liverwort





www.ipm.ucdavis.edu

Take the Long View

- Source of weeds
- Modifying irrigation
 - Timing and amount
- Check calibration
- Adapt spacing if you can
- Think about herbicide choice and anticipate weed species
- Don't be afraid to experiment