



O'CONNELL
LANDSCAPE MAINTENANCE

Testing the efficacy of 8 leading post-emergent herbicides

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Where & When

- Date of Application: 4-9-19
- Weather: Slightly overcast, 60 degrees
- Final Observations: 05-01-19
- Location of Test Site: O'Connell operations yard in Rancho Mission Viejo
- Plot Size (each): 7 x 7 Feet
- Target: Mature Fescue Turf

What Are Signal Words?



As defined by the Environmental Protection Agency (EPA)

Signal words are found on pesticide product labels, and they describe the acute (short-term) toxicity of the formulated pesticide product. The signal word can be either: DANGER, WARNING or CAUTION. Products with the DANGER signal word are the most toxic.

The Environmental Protection Agency (EPA) requires a signal word on most pesticide product labels. They also require it to be printed on the front panel, in all capital letters, to make it easy for users to find. The only pesticide products that are not required to display a signal word are those that fall into the lowest toxicity category by all routes of exposure (oral, dermal, inhalation, and other effects like eye and skin irritation).

CAUTION 

Products with the signal word CAUTION are lower in toxicity. A “CAUTION” label means the pesticide product is slightly toxic if eaten, absorbed through the skin, inhaled, or it causes slight eye or skin irritation.

WARNING 

“WARNING” indicates the pesticide product is moderately toxic if eaten, absorbed through the skin, inhaled, or it causes moderate eye or skin irritation.

DANGER 

“DANGER” means that the pesticide product is highly toxic by at least one route of exposure. It may be corrosive, causing irreversible damage to the skin



Products Tested	Signal Word	Products Tested	Signal Word
● Suppress	Warning	● Avenger	Caution
● Scythe	Warning	● Reward	Caution
● Final-San-O	Warning	● Surfactant: MSO Gold	Caution
● Weed Zap	N/A	● Surfactant: Oroboost	Warning
● Finale	Warning	● Surfactant: Ag Aide	Warning
● AXXE Herbicide	N/A		

Note: O'Connell is now phasing out "Finale" in favor of "Lifeline" which has the same active ingredient but has the signal word "CAUTION". We will also add a surfactant with a CAUTION signal word.



Plot #	Product (s)	% of Solution	Organic or Synthetic	Signal Word	Ounces Per Gallon Water
A	Suppress EC	9.00%	Organic	Warning	12
	Oroboost	0.78%	Organic	Warning	1
B	Suppress EC	9.00%	Organic	Warning	12
	Ag Aide	78.00%	Organic/ Surfactant	Warning	1
C	Scythe	10.00%	Organic	Warning	13
	Oroboost	0.78%	Organic	Warning	1
D	Final-San-O	20.00%	Organic	Warning	26
	Orboost	0.78%	Organic	Warning	1
E	Weed Zap	5.00%	Organic	N/A	6.5
	Oroboost	0.78%	Organic	Warning	1
F	Weed Zap	5.00%	Organic	N/A	6.5
	Ag Aide	0.78%	Organic	Warning	1
G	Finale	1.50%	Synthetic	Warning	2
H	Finale	0.39%	Synthetic	Warning	0.5
I	Avenger	25.00%	Organic	Caution	32
	Oroboost	0.78%	Organic	Warning	1
J	Reward	1.00%	Synthetic	Caution	1.32
	Mso Gold	0.78%	Seed Oil	Caution	1
K	Axxe	10.00%	Warning	N/A	13
L	None- Control Plot	0.00%	water	N/A	-



Methodology

- All products were applied according to the manufacturer's label instructions
- Each product was applied using a separate sprayer
- There were (12) 7'x7' plots labeled A, B, C, D, E, F, G, H, I, J, K and L
- Plot "L" was the control plot (no product applied)
- The products were allowed to dry for two days, then irrigation resumed to replicate normal conditions
- Photographs were taken 2, 7, 12, 17 and 22 days after initial application



Mixing and Labeling Sprayers



Mixing and Labeling Sprayers



12 Test Plots Before Application



Test Plots Ready to Go...

2019.04.09



Each Plot Labeled with Product and Rate





Plot A

Suppress Herbicide, 12 ounces per gal, plus 1 oz of Oroboost

04-11-19



04-16-19



04-22-19



05-01-19





Plot B

Suppress Herbicide, 12 ounces per gal, plus 1 oz of Ag-Aide





Plot C

Scythe Herbicide, 13 ounces per gal, plus 1 oz of Oroboost





Plot D

Final-San-O Herbicide, 26 ounces per gal, plus 1 oz of Oroboost





Plot E

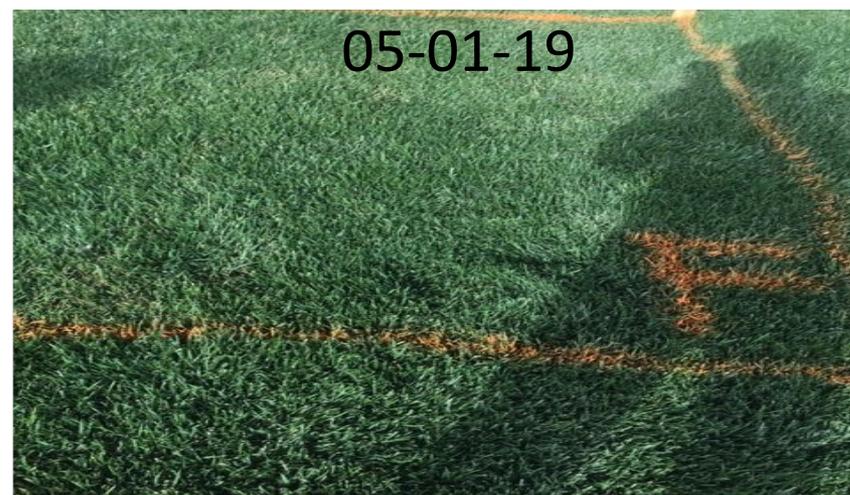
Weed Zap Herbicide, 6.5 ounces per gal, plus 1 oz of Oroboost





Plot F

Weed Zap Herbicide, 6.5 ounces per gal, plus 1 oz of Ag-Aide





Plot G

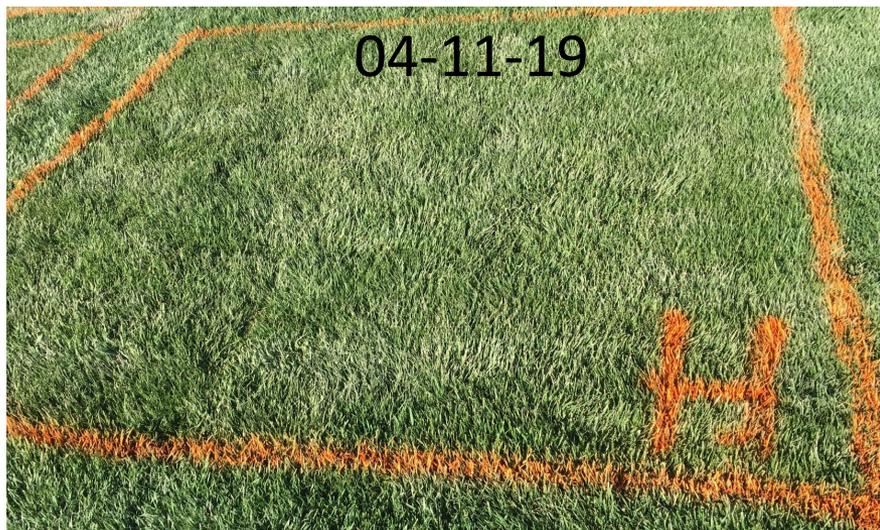
Finale Herbicide, 2 ounces per gallon, no surfactant





Plot H

Finale Herbicide, .5 ounces per gallon, no surfactant





Plot I

Avenger Herbicide, 32 ounces per gallon, 1 oz of Oroboost





Plot J

Reward Herbicide, 1.32 ounces per gallon, 1 oz of MSO Gold





Plot K - AXXE Herbicide

Ammonium Nonanoate 40%, 13 ounces per gallon, No Surfactant





Plot L

None-Chemical Plot, Control



Conclusions



Plot #	Product used	% of Solution	Organic or Synthetic	Signal Word	Rate/ gallon of water- ounces	Results	Effectiveness	After 22 Days
A	Suppress EC	9.00%	Organic	Warning	12	Only killed top layer of turf	Ineffective	Turf returning to normal
	Oroboost	0.78%	Organic	Warning	1			
B	Suppress EC	9.00%	Organic	Warning	12	Only killed top layer of turf	Ineffective	Turf returning to normal
	Ag Aide	78.00%	Oganic/ Surfactant	Warning	1			
C	Scythe	10.00%	Organic	Warning	13	Only killed top layer of turf	Ineffective	Turf returning to normal
	Oroboost	0.78%	Organic	Warning	1			
D	Final-San-O	20.00%	Organic	Warning	26	Only killed top layer of turf	Ineffective	Turf returned to normal
	Orboost	0.78%	Organic	Warning	1			
E	Weed Zap	5.00%	Organic	N/A	6.5	Only killed to layer of turf	Ineffective	Turf returned to normal
	Oroboost	0.78%	Organic	Warning	1			
F	Weed Zap	5.00%	Organic	N/A	6.5	Only killed top layer of turf	Ineffective	Turf returned to normal
	Ag Aide	0.78%	Organic	Warning	1			
G	Finale	1.50%	Synthetic	Warning	2	Complete efficacy	Effective	Killed the turf
H	Finale ***	0.39%	Synthetic	Warning	0.5	Vey good efficacy	Effective	Killed the turf
	***Applied at less than label rate, no surfactant							
I	Avenger	25.00%	Organic	Caution	32	Only killed top layer of turf	Ineffective	Turf returning to normal
	Oroboost	0.78%	Organic	Warning	1			
J	Reward	1.00%	Synthetic	Caution	1.32	Only killed top layer of turf	Ineffective	Turf returning to normal
	Mso Gold	0.78%	Seed Oil	Caution	1			
K	Axxe	10.00%	Warning	N/A	13	Only killed top layer of turf	Ineffective	Turf returning to normal
L	None- Control Plot	0.00%	water	N/A	-	Turf remained the same	N/A	
Sendero Field Trial	WeedRot	19.00%	Natural	N/A	24			
	Oroboost	0.78%	Organic	Warning	1			



Conclusions

- Test Plot G: Finale Herbicide
 - Proved to be very effective at 2 ounces per gallon.
- Test Plot H: Finale Herbicide
 - At .5 ounces per gallon also proved to be mostly effective.
- All of the other Test Plots did not perform
 - When it came down to efficacy, all other products only burned the top layer of the turf.
 - By the end of test, they were all recovering to various degrees
- Oroboost / Ag-Aide / MSO Gold
 - Did not help in the efficacy of the products.

Product Costs



Plot #	Product used	% of Solution	Organic or Synthetic	Signal Word	Rate/ gallon of water- ounces	Cost of Product- no tax	Size of container	Size of Container- ounces	Cost per ounce	Cost of product in 3 gallons of water
A	Suppress EC	9.00%	Organic	Warning	12	\$170.09	2.5 gallons	320	\$0.53	\$20.54
	Oroboost	0.78%	Organic	Warning	1	\$45.00	quart	32	\$1.41	
B	Suppress EC	9.00%	Organic	Warning	12	\$170.09	2.5 gallons	320	\$0.53	\$19.91
	Ag Aide	78.00%	Oganic/ Surfactant	Warning	1	\$99.00	gallon	128	\$0.77	
C	Scythe	10.00%	Organic	Warning	13	\$159.35	2.5 gallons	320	\$0.50	\$20.83
	Oroboost	0.78%	Organic	Warning	1	\$45.00	quart	32	\$1.41	
D	Final-San-O	20.00%	Organic	Warning	26	\$52.94	2.5 gallons	320	\$0.17	\$14.31
	Orboost	0.78%	Organic	Warning	1	\$45.00	quart	32	\$1.41	
E	Weed Zap	5.00%	Organic	N/A	6.5	\$70.95	gallon	128	\$0.55	\$12.22
	Oroboost	0.78%	Organic	Warning	1	\$45.00	quart	32	\$1.41	
F	Weed Zap	5.00%	Organic	N/A	6.5	\$70.95	gallon	128	\$0.55	\$11.58
	Ag Aide	0.78%	Organic	Warning	1	\$99.00	gallon	128	\$0.77	
G	Finale	1.50%	Synthetic	Warning	2	\$128.42	2.5 gallons	320	\$0.40	\$2.41
H	Finale	0.39%	Synthetic	Warning	0.5	\$128.42	2.5 gallons	320	\$0.40	\$0.60
I	Avenger	25.00%	Organic	Caution	32	\$139.56	2.5 gallons	320	\$0.44	\$43.27
	Oroboost	0.78%	Organic	Warning	1	\$45.00	quart	32	\$1.41	
J	Reward	1.00%	Synthetic	Caution	1.32	\$201.80	2.5 gallons	320	\$0.63	\$2.50
	Mso Gold	0.78%	Seed Oil	Caution	1	\$67.11	2.5 gallons	320	\$0.21	\$0.63
K	Axxe	10.00%	Warning	N/A	13	\$120.00	2.5 gallons	320	\$0.38	\$14.63
L	None- Control Plot	0.00%	water	N/A	-	-				
Sendero Field Trial	WeedRot	19.00%	Natural	N/A	24	\$100.00	2.5 gallons	320	\$0.31	\$23.91
	Oroboost	0.78%	Organic	Warning	1	\$45.00	quart	32	\$1.41	