

**Update on Perennial Grass  
Weed control in Hawaii's  
Sport Turf**

**04/13/2020**

**with**

**J. DeFrank – UH MANOA  
In Consultations with  
Rey Ito – The Green Doctor  
David Kira – West Loch G.C.**



**Tropical Plant & Soil Sciences Department**  
University of Hawaii at Manoa

# Topics Covered

- Review of Goose and Bermuda grass management in Seashore paspalum turf
- Herbicides for perennial grassy weed control
- Research update: Focus on Torpedo Gr.
- Case study West Loch demo 2020-21
- Participant Q & A: What's your weed control problems in turf?



# Factors to consider for Bermuda and Goose grass control in seashore paspalum greens and fairways

**Bermudagrass-BG**  
*(Cynodon dactylon)*



**Goosegrass-GG**  
*(Eleusine indica)*



## SENCOR® 75%

1. OK for Estb. Bermuda Grass ½” or higher
2. Not for greens, tees, aprons. Not for SP.

## Pylex™ herbicide

1. BG & SP, OK tolerance = marginal .
2. 1 application/year, see supl. label
3. Not for greens or collars = aprons.

## Tenacity®

1. OK on BG & SP “avoid...unless control or injury can be tolerated”.
2. Not for greens w/5 ft. b/w treated area.

## PROGRASS® SC

1. St. Aug OK w/pest = BG. SP not listed as site!
2. No restrictions for greens, tees, aprons.
3. Milky liquid, 4 lb ai/gal

## PROGRASS®

1. SP as site with BG suppression
2. Not on greens. Fairways & tees OK.
3. Clear yellow liquid 1.5 lb ai/gal



# Seashore paspalum fairways, control Bermuda and Goose grass

In turf heavily infested with goose grass apply preemergence prior to the start of the post emergence application

**Provides seedling control in turf gap due to Gosse grass control**

45 days prior to post emergence spray application  
1<sup>st</sup> Barricade 65 WG at 1.0 lb./a

**+ N-fertilizer**

10-14 days prior to postemergence spray application  
2<sup>nd</sup> Barricade 65 WG at 1.0 lb/a

**+ N-fertilizer**

Start 2-spray sequence of post emergence herbicides

Turf Species	Barricade 65 WG	
	Lb product/A	Oz product/1,000 sq ft
Bermudagrass <sup>2</sup>	1.0-2.3 <sup>1</sup>	0.36-0.83
Bahiagrass		
Centipedegrass		
Kikuyugrass		
Seashore Paspalum		
St. Augustinegrass <sup>3</sup>		
Tall Fescue (including turf-type)		
Zoysiagrass		

**Do not apply more than 2.3 lb./a per year!**



## Seashore paspalum fairways, control Bermuda and Goose grass

- Winter best for BG suppression due to slower growth recovery
- Sequence of **TWO** 3-way tank mixes for maximum BG suppression and SP safety!

1<sup>st</sup> of 2 applications

Tenacity +	4 oz/a
Sencor +	4 oz/a
Prograss SC (4.0 lb ai/gal)	32
Prograss (1.5 lb ai/gal)	85.3 oz <b>(6 gallons/yr limit)</b>
MSO	2%

- Tenacity + Prograss provides long lasting growth suppression of BG, goose grass=NO, smut grass=YES control, UH tests show Tenacity helps with reduction of Pylex green color loss in next application
- Sencor provides reduced green color loss in SP due to growth suppression of SP
- Follow up 3-way tank mix provides goose grass control and added BG suppression
- Apply 14 days after 1<sup>st</sup> application

**EXPERIMENTAL PROTOCOL – JUSTIFICATION FOR PRODUCT LABEL MODIFICATIONS**



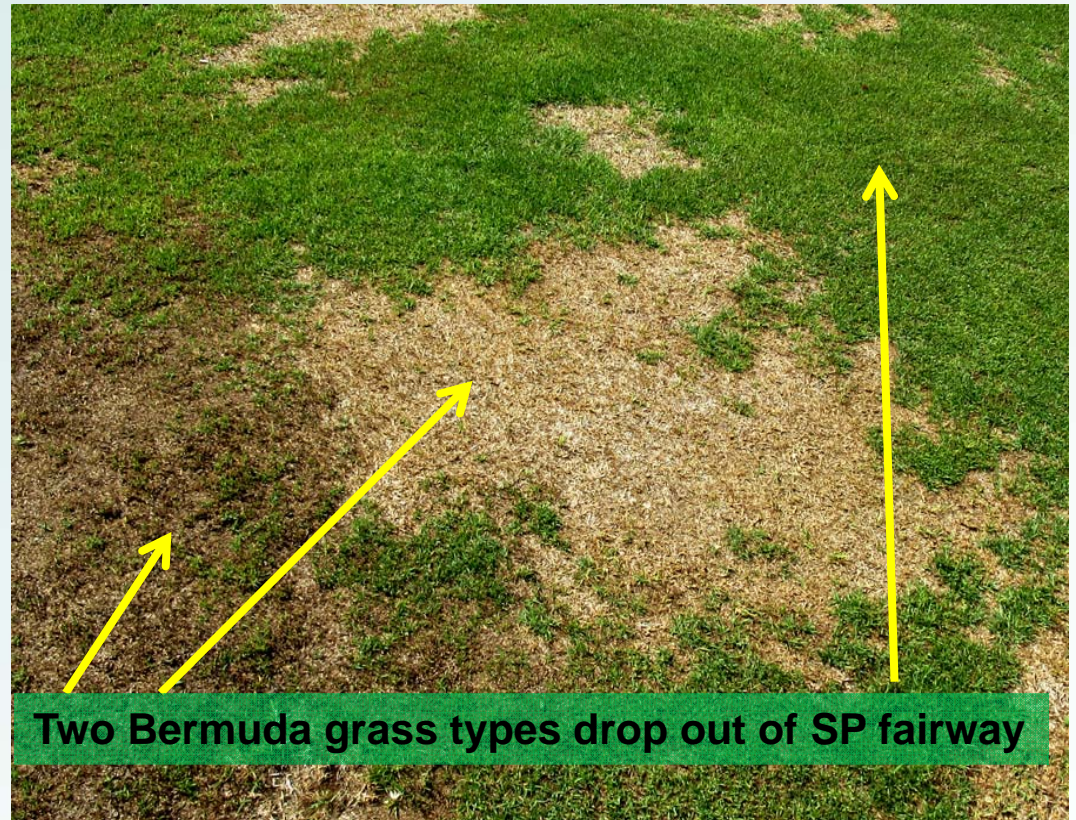
## Seashore paspalum fairways, control Bermuda and Goose grass

- Follow up 3-way tank mix for goose grass control and added BG suppression

2<sup>nd</sup> of 2  
applications

Pylex +	1 oz/a
Sencor +	4 oz/a
Prograss SC	32 oz/a
Prograss	85.3 oz
MSO	2%

- Pylex for goose grass control
- Sencor provides reduced green color loss in SP
- Mix adds to growth suppression of BG



Two Bermuda grass types drop out of SP fairway

- Questions: next step to help SP fill BG space?

1. Methods to enhance SP encroachment into BG patches: verticut, top dress & plug planting?
2. Follow up applications for continued BG suppression: Pro-G alone or tank mix sequence repeat?

**EXPERIMENTAL PROTOCOL – JUSTIFICATION FOR PRODUCT LABEL MODIFICATIONS**



## Seashore paspalum greens, Goose grass control only!

- Summer best for rapid SP recovery
- Minimize BG loss if present

Pylex +	.5 oz/a
Sencor +	2 oz/a
MSO	1%

- Pylex for goose grass
- Sencor provides reduced green color loss in SP



21DAS01-03/07/17

- “1 and done” needs 3-5 day post spray dry down.
- Dry down keeps Pylex in root zone longer for better GG kill
- Good drainage essential for flushing & rapid greens recovery

**EXPERIMENTAL PROTOCOL – JUSTIFICATION FOR PRODUCT LABEL MODIFICATIONS**





# Hoakalei Country Club

**Pylex Discoloration Reduced with Sencor 75% DF**

**14 DAS-01 08/15/17**

**SeaDwarf Seashore Paspalum fairway.**



Pylex alone  
1.0 oz/a

Pylex 1.0 oz/a+ Sencor 4.0 oz/a



**Good drainage provides better control of Pylex leaching from root zone for more rapid turf recovery of turf green color**



Bermudagrass ('TifGrand') response to Pylex 0.5 oz/a 14 DAS-01, green band above tile drain at Magoon **(push up green w/heavy clay soil)**



***Suggested wording on all herbicide labels to allow experimental use pattern discussed here on seashore paspalum & Bermuda Grass greens, tees aprons & fairways***

Suggested wording would be published in the form of a  
“Special Local Need Label”

**ETIRA**

**Section 24(c) Special Local Need Label**

FOR DISTRIBUTION AND USE ONLY WITHIN THE STATE OF HAWAII

***SENCOR 75 DF – TENACITY - PYLEX***

***Do not apply to warm season turf (Seashore/Bermuda grass) less than ½ inch high unless injury or removal of turf can be tolerated***

**TALK TO YOUR COMPANY REPRESENTATIVES  
AND ASK FOR A 24c LABEL**



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# Perennial Grassy Weeds in Bermuda grass

- Australian carpet grass (*Axonopus compressus*)
- Torpedo Grass (*Panicum repens*)
- West Loch Paspalum (*Paspalum spp.*) – larger mutation of turf type SP
- Tropical Signal Grass (*Urochloa distachya/ Brachiaria subquadripara*)

**ENABELING SOIL CONDITION = HIGH TO EXCESSIVE SOIL MOISTURE  
MUST BE ADDRESSED FOR LONG TERM CONTROL IN ALL TURF GRASS SETTINGS**





Forest Starr & Kim Starr

# Australian carpet grass

*Axonopus compressus*



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# Torpedo Grass

*Panicum repens*



# West Loch Paspalum

*Paspalum spp.*



Torpedo Grass  
*Panicum repens*

West Loch Paspalum  
*Paspalum* spp.

Seashore paspalum  
*Paspalum vaginatum*



# Tropical Signal Grass

*Urochloa distachya*/ *Brachiaria subquadrifera*



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# Australian Carpet, Tropical Signal grass, Torpedo grass control in Bermuda and Zoysia



MSMA restrictions:

- For newly constructed golf courses, One broadcast application only
- Established golf courses: only spot treatment with 100 ft<sup>2</sup> maximum per spot.
- Spot applications not to exceed 25% of total golf course acreage per year

For Bermuda & Zoysiagrass	Average size of golf course (acres)		
	100	150	200
MSMA Spot rate/1000 ft <sup>2</sup>	25% of total course area (acres)		
w/1– 2.5 gallons of water	25 a	37.5 a	50 a
add ↓	Gallons of MSMS per 25% of total course area/year		
0.9 oz	7.6 gal	11.4 gal	15.2 gal
1.8 oz	15.2 gal	22.8 gal	30.4 gal



# Australian Carpet, Tropical Signal grass, Torpedo grass control in Bermuda and Zoysia

## **MSMA + Sencor 75 DF –tank mix**

### MSMA restrictions:

- Weeds controlled: Brachiaria spp. (TSG), some level of control, inconsistent
- Guinea grass (Panicum spp.)

### Sencor 75 DF

- 5-11 dry oz./ a
- Reapply tank mix 2 weeks later



Australian Carpet, Tropical Signal grass, Torpedo grass control in Bermuda and Zoysia

Monument: **Monument<sup>®</sup>75WG**

- 2 Xs 0.53 dry oz. /a, always use NIS, max yearly = 1.7 oz./acre/yr.
- Tropical SG, Torpedo G = suppression



Tribute total :

- 2 Xs 3.2 dry oz./a, w/ NIS or MSO , 6.4 oz./acre/yr.
- Tropical SG (spring application up to 4-tiller stage ?)
- Fall application to control perennialized TSG ? Clue for improved performance when dormancy follows herbicide application!

Suggestions from work conducted in Florida:

Joe - have you tried low rates of RoundUp combined with Celsius or Tribute Total (on Bermuda only)? P.M. has had pretty good luck combining 4-8 oz/A of RoundUp with Tribute Total for controlling Tropical Signalgrass in Bermuda in FLA. It's a mid-summer two app schedule when golf is lowest so the phyto the Bermuda is not a huge issue, given how tough tropical signal grass is. Might be worth a try if you haven't done so already.



Australian Carpet, Tropical Signal grass, Torpedo grass control in Bermuda and Zoysia

## Celsius® WG

Celsius:

- Broadleaf signal grass listed as controlled, same genus as Tropical Signal Grass  
(*Urochloa platyphtha*) (*Urochloa subquadrifera*)
- 3.7 dry oz/a (2.4 grams/1000 ft<sup>2</sup>), not more than 7.4 oz/a/year
- Apply 2 Xs 21-30 days apart, with active growth and good soil moisture.
- Post applications imposed dry down needed for optimum effect
- Site modification to reduce/eliminate excessive moisture
- Constant wet conditions reduce herbicide effectiveness, weeds will return.



Australian Carpet, Tropical Signal grass, Torpedo grass control in Bermuda and Zoysia

Manuscript

**Manuscript®**

+ Agidor – recommended surfactant

Tropical Signal Grass:

Australian carpet grass

Bahia grass, Dallis grass, Seashore paspalum = all Paspalum species

Suppression of Torpedograss

Broadcast Label rate: 19.2 fl oz/a, applied 1 time

9.6 fl oz/a, applied 2 times 14 days apart



# Australian Carpet, Tropical Signal grass, Torpedo grass control in Bermuda and Zoysia

Manuscript + Spot treatment rates to match UH-research rates

For Bermuda & Zoysiagrass	Average size of golf course (acres)		
	100	150	200
Manuscript Spot rate 9.6 oz./20 gallon	No more than 10,000 ft. <sup>2</sup> / acre Total treatable acres as “spot treatment”		
	23 a	34.5 a	46 a
Spray to wet but not runoff	Gallons per total course area/year with yearly maximum of 19.2 oz./a		
	3.4 gal	5.1 gal	6.9 gal
To obtain 41 oz./a As “spot treatment” apply 20 gallons to 10,200 ft. <sup>2</sup>  85 GPA	46 total - 20-gallon batches	69 total - 20-gallon batches	92 total - 20-gallon batches



Manuscript, Monument & Tribute Total on Tropical Signal Grass at West Loch G.C. - 2017

Applications: 3 X's at 0, 21 & 42 days

Monument 22 g/a



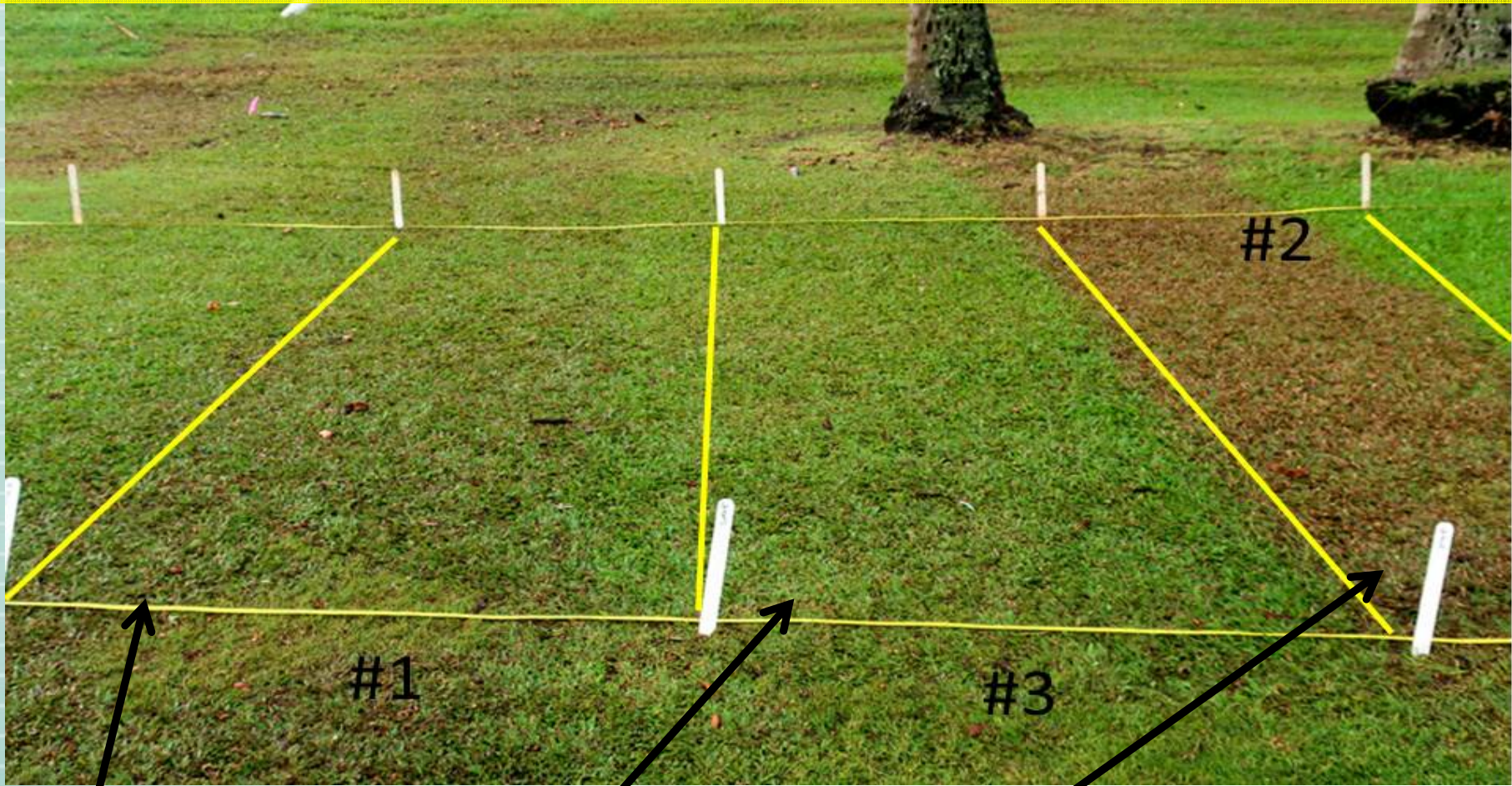
Tribute Total DF 3.2 oz/a



Manuscript 38.3 oz/a



Monument, Manuscript order of application vs a tank mix on *Australian Carpet grass*



#1 Monument 15 g/a 7-D  
then Manuscript 19.2 oz/a

#3 Monument 15 g/a +  
Manuscript 19.2 oz/a

#2 Manuscript 19.2 oz/a  
7-D then Monument 15 g/a

14 days from start and 7 days after 2<sup>nd</sup> application

**SEQUENCE & TANK MIX PARTNERS - MATTER**





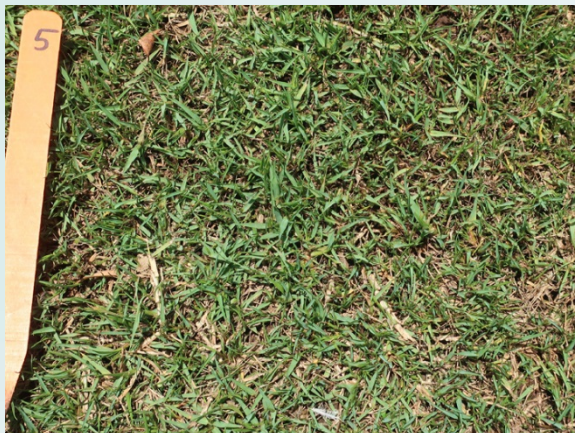
**Monument, Manuscript multiple applications & a tank mix on West Loch Paspalum**

**MAN 21 oz/a**



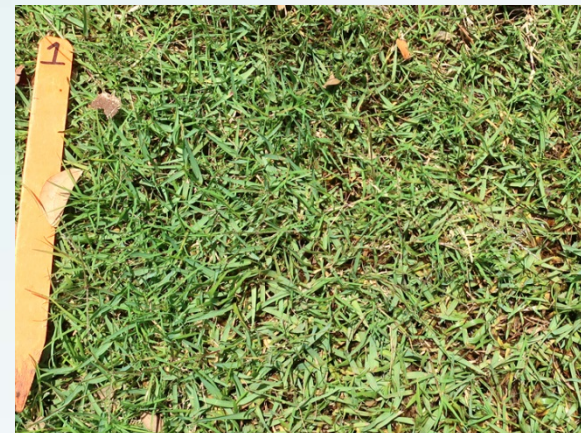
**0, 14 & 35 DAY**

**MAN 21 oz/a +  
MON 5 G/A -AGD**



**0, 14 & 35 DAY**

**MON 15 G/A**



**0 & 35 DAY**

**MAN 41 oz/a**



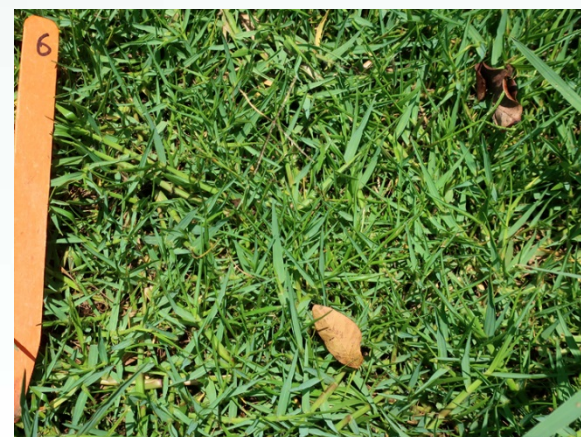
**0 & 14 DAY**

**MAN 41 oz/a then  
MON 15 G/A then MAN 41 oz/a**



**0 - 14 - 35 DAY**

**NOT TREATED**



**ALL TREATMENT OK ON BERMUDA (419)  
Results at 50 DAS03**

Determine the response of TG to sequence of split application of  
selective systemic herbicides

West Loch Torpedo Grass Study – Started August 2019



# Determine the response of TG to sequence of systemic herbicides

## West Loch Torpedo Grass Study – Aug 2019

### Rational for herbicides used in this study

**Monument<sup>®</sup>75WG** Torpedo grass suppression

**Celsius<sup>®</sup>WG** Label lists grassy weed control for Switchgrass, Common millet, Texas Panicum & Fall panicum all same species as Torpedo grass (Panicum repens)

**Manuscript<sup>®</sup>** Torpedo grass suppression

 **Dismiss<sup>®</sup>NXT** Torpedo grass suppression



Conclusion of 2019 study at West Loch  
 Torpedo grass response 29 Days after 3<sup>rd</sup> spray application  
 76 days between 1<sup>st</sup> and 3<sup>rd</sup> application

## Conclusions

Most consistent suppression of Torpedo Grass using a single Manuscript application

1. **Start with Celsius (105 g/a or 3.7 dry oz/a) – wait 35 days to see normal foliage**
2. **Apply single application of - Manuscript (41 oz/a)**
3. **Wait -41 days to see normal foliage then apply Celsius (3.7 dry oz/a g/a)**

	Average size of golf course (acres)		
	100	150	200
To obtain Monument 41 oz./a As "spot treatment" apply 20 gallons to 10,200 ft. <sup>2</sup>  85 GPA	46 total - 20-gallon batches	69 total - 20-gallon batches	92 total - 20-gallon batches



Australian Carpet, Tropical Signal grass, Torpedo grass control in Bermuda and Zoysia

## The Green Doctor Says:

**Celsius® WG**

+

**Revolver®**

Tank mix

- Celsius: 3.0 grams/ 1,000 ft<sup>2</sup> +
- Revolver: 14 ml/ 1,000 ft<sup>2</sup> + MSO 1%

Apply then allow for 3-5 day dry down

2<sup>nd</sup> application requires flush of new normal looking green foliage

When any surviving grasses recover, use alternating single treatment applications of Monument 15 g/a or 0.53 dry oz/a

Allow for new foliage to appear then followed with

Manuscript 9.6 oz./20 gallon spray to wet and cover 10,000 ft<sup>2</sup>

Recommended time of year is May-Oct in Hawaii, seed head suppression during rainy season




Australian Carpet, Tropical Signal grass, Torpedo grass control in Bermuda and Zoysia

## The Green Doctor Says:

Hawaii Landscape March|April 2020  
Article discusses 4 sequential spray protocol at:

[https://www.ctahr.hawaii.edu/defrankj/NON\\_HOMEPAGE\\_PAGES/Simplot\\_03032020.htm](https://www.ctahr.hawaii.edu/defrankj/NON_HOMEPAGE_PAGES/Simplot_03032020.htm)

plots at Oahu's City and County  
managed West Loch Golf Course.



# Perennial grassy weed control in Hawaii's Bermuda grass sport turf.

By: Joseph DeFrank, Ph.D. Department of Tropical Plant and Soil Science UH-Manoa and Rey Ito, dba The Green Doctor.



**Tropical Plant & Soil Sciences Department**  
University of Hawaii at Manoa

## West Loch demonstration using 4 sequential applications for control of Perennial Grassy weeds in Bermuda Grass turf 2020-2021

Spray 50 GPA Batch volume (gallons)	Revolver 26 oz./a (fl. oz./ml)	Celsius 3.6 oz/a dry oz./ grams	Manuscript 41 oz./a* (fl. oz/ ml)	Monument 5 g/a (dry oz./ grams)	MSO 1% v/v (fl. oz./ ml)	Adigor 1% v/v (fl.oz./ ml)
25	13/ 384.4	1.8/ 51	20.5/ 606.3	0.26/ 7.5	32 oz./ 946.4	32 oz./ 946.4
50	26/ 768.9	3.6/ 102	41/ 1212.5	0.53/ 15	64 oz./ 1922.3	64 oz./ 1922.3
100	52/ 1537.8	7.2/ 104	82/ 2425.0	1.06/ 30	128 oz./ 3785.4	128 oz./ 3785.4
200	104/ 3075.7	14.4/ 208	164/ 4850.1	2.12/ 60	256 oz/ 7570.8	256 oz/ 7570.8

Spray #	Activity	Date	Day of the year	Days from previous
1	1 <sup>st</sup> spray Revolver + Celsius, use 20 gallon batch	10/13/20	287	
2	2 <sup>nd</sup> spray Revolver + Celsius	12/07/20	342	55
3	1 <sup>st</sup> Manuscript	02/10/21	41	66
4	1 <sup>st</sup> Monument	04/12/21	102	61

\*To obtain Monument 41 oz./a, make applications as “spot treatment” add 9.6 fl oz to 20 gallons and apply to 10,200 ft.<sup>2</sup>





West Loch GC  
b/w 15<sup>th</sup> Green  
and 16<sup>th</sup> Tee







**28 DAS01 – 11/13/20**

**00 DAS01 – 10/14/20**

Spray 50 GPA Batch volume (gallons)	Revolver 26 oz./a (fl. oz./ml)	Celsius 3.6 oz/a dry oz./ grams
25	13/ 384.4	1.8/ 51
50	26/ 768.9	3.6/ 102
100	52/ 1537.8	7.2/ 104
200	104/ 3075.7	14.4/ 208





Very good control of  
Australian Carpet Grass



**28 DAS01 – 11/13/20**

**00 DAS01 – 10/14/20**

Spray 50 GPA Batch volume (gallons)	Revolver 26 oz./a (fl. oz./ml)	Celsius 3.6 oz/a dry oz./ grams
25	13/ 384.4	1.8/ 51
50	26/ 768.9	3.6/ 102
100	52/ 1537.8	7.2/ 104
200	104/ 3075.7	14.4/ 208





Very good control of  
Henry's Crabgrass  
**21 DAS01 – 11/05/20**

**00 DAS01 – 10/14/20**

Spray 50 GPA Batch volume (gallons)	Revolver 26 oz./a (fl. oz./ml)	Celsius 3.6 oz/a dry oz./ grams
25	13/ 384.4	1.8/ 51
50	26/ 768.9	3.6/ 102
100	52/ 1537.8	7.2/ 104
200	104/ 3075.7	14.4/ 208





**28 DAS01 – 11/13/20**

**00 DAS01 – 10/14/20**



Spray 50 GPA Batch volume (gallons)	Revolver 26 oz./a  (fl.oz./ml)	Celsius 3.6 oz/a  dry oz./ grams
25	13/ 384.4	1.8/ 51
50	26/ 768.9	3.6/ 102
100	52/ 1537.8	7.2/ 104
200	104/ 3075.7	14.4/ 208





**28 DAS01 – 11/13/20**



**00 DAS01 – 10/14/20**

**51 DAS01 – 12/04/20**  
See normal leaves = time for  
2<sup>nd</sup> spray Rev + Cel





51 DAS01 – 12/04/20



00 DAS01 – 10/14/20

2<sup>nd</sup> app on 12/07/21

Spray 50 GPA Batch volume (gallons)	Revolver 26 oz./a  (fl. oz./ml)	Celsius 3.6 oz/a  dry oz./ grams
25	13/ 384.4	1.8/ 51
50	26/ 768.9	3.6/ 102
100	52/ 1537.8	7.2/ 104
200	104/ 3075.7	14.4/ 208



24 DAS02 – 12/31/20





24 DAS02 – 12/31/20

2<sup>nd</sup> app on 12/07/21

Spray 50 GPA Batch volume (gallons)	Revolver 26 oz./a  (fl. oz./ml)	Celsius 3.6 oz/a  dry oz./ grams
25	13/ 384.4	1.8/ 51
50	26/ 768.9	3.6/ 102
100	52/ 1537.8	7.2/ 104
200	104/ 3075.7	14.4/ 208



24 DAS02 – 12/31/20



3<sup>rd</sup> app on 02/10/21

Spray 50 GPA Batch volume (gallons)	Manuscript 41 oz./a (fl. oz/ ml)	Adigor 1% v/v (fl. oz./ ml)
25	20.5/ 606.3	32 oz./ 946.4
50	41/ 1212.5	64 oz./ 1922.3
100	82/ 2425.0	128 oz./ 3785.4
200	164/ 4850.1	256 oz/ 7570.8

64 DAS02 – 02/09/21

See normal leaves = time for 3<sup>rd</sup> spray Manuscript





64 DAS02 – 02/09/21



3<sup>rd</sup> app on 02/10/21

Spray 50 GPA Batch volume (gallons)	Manuscript 41 oz./a (fl. oz./ ml)	Adigor 1% v/v (fl. oz./ ml)
25	20.5/ 606.3	32 oz./ 946.4
50	41/ 1212.5	64 oz./ 1922.3
100	82/ 2425.0	128 oz./ 3785.4
200	164/ 4850.1	256 oz./ 7570.8



15 DAS03 – 02/25/21



3<sup>rd</sup> app on 02/10/21

15 DAS03 – 02/25/21



Spray 50 GPA Batch volume (gallons)	Manuscript 41 oz./a (fl. oz/ ml)	Adigor 1% v/v (fl. oz./ ml)
25	20.5/ 606.3	32 oz./ 946.4
50	41/ 1212.5	64 oz./ 1922.3
100	82/ 2425.0	128 oz./ 3785.4
200	164/ 4850.1	256 oz/ 7570.8



15 DAS03 – 02/25/21

Spray Co GPA Batch volume (gallons)	Manuscript 41 oz./a  (fl. oz/ ml)	Target 1% v/v  (fl. oz./ ml)
25	20.5/ 606.3	32 oz./ 946.4
50	41/ 1212.5	64 oz./ 1922.3
100	82/ 2425.0	128 oz./ 3785.4
200	164/ 4850.1	256 oz/ 7570.8

3<sup>rd</sup> app on 02/10/21



15 DAS03 – 02/25/21



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00 DAS01 – 10/14/20

1<sup>st</sup> app=R+C



51 DAS01 – 12/04/20

2<sup>nd</sup> app=R+C



Manuscript  
on 02/10/21

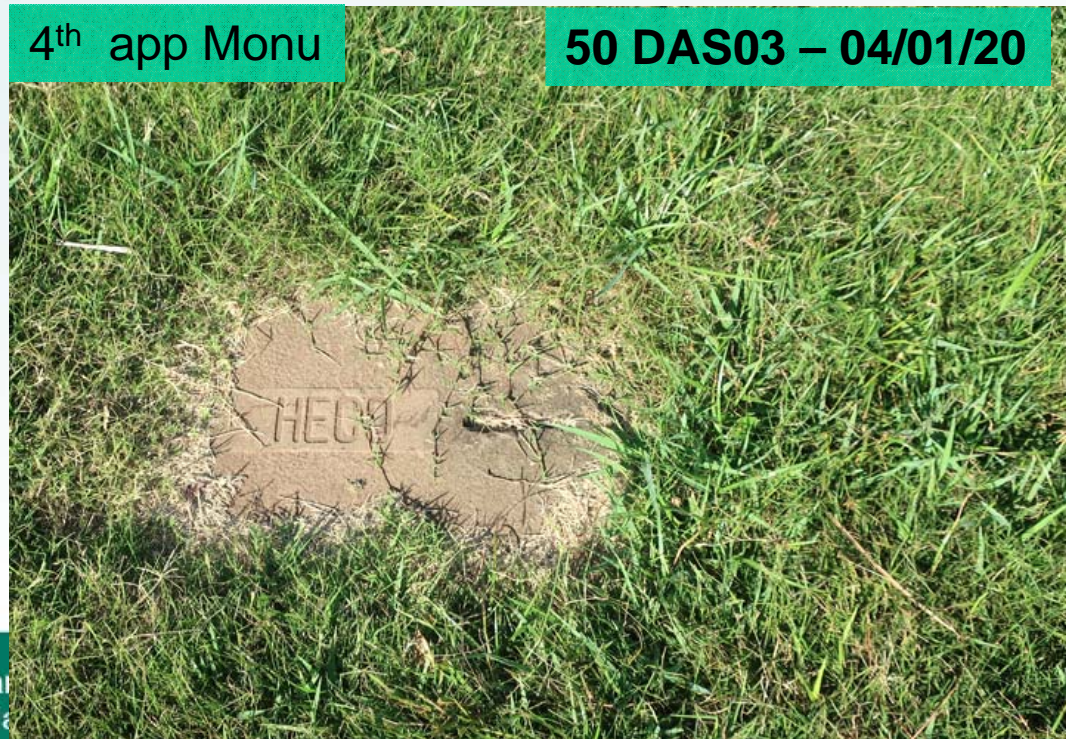
3<sup>rd</sup> app Manu



64 DAS02 – 02/09/21

4<sup>th</sup> app Monu

50 DAS03 – 04/01/20



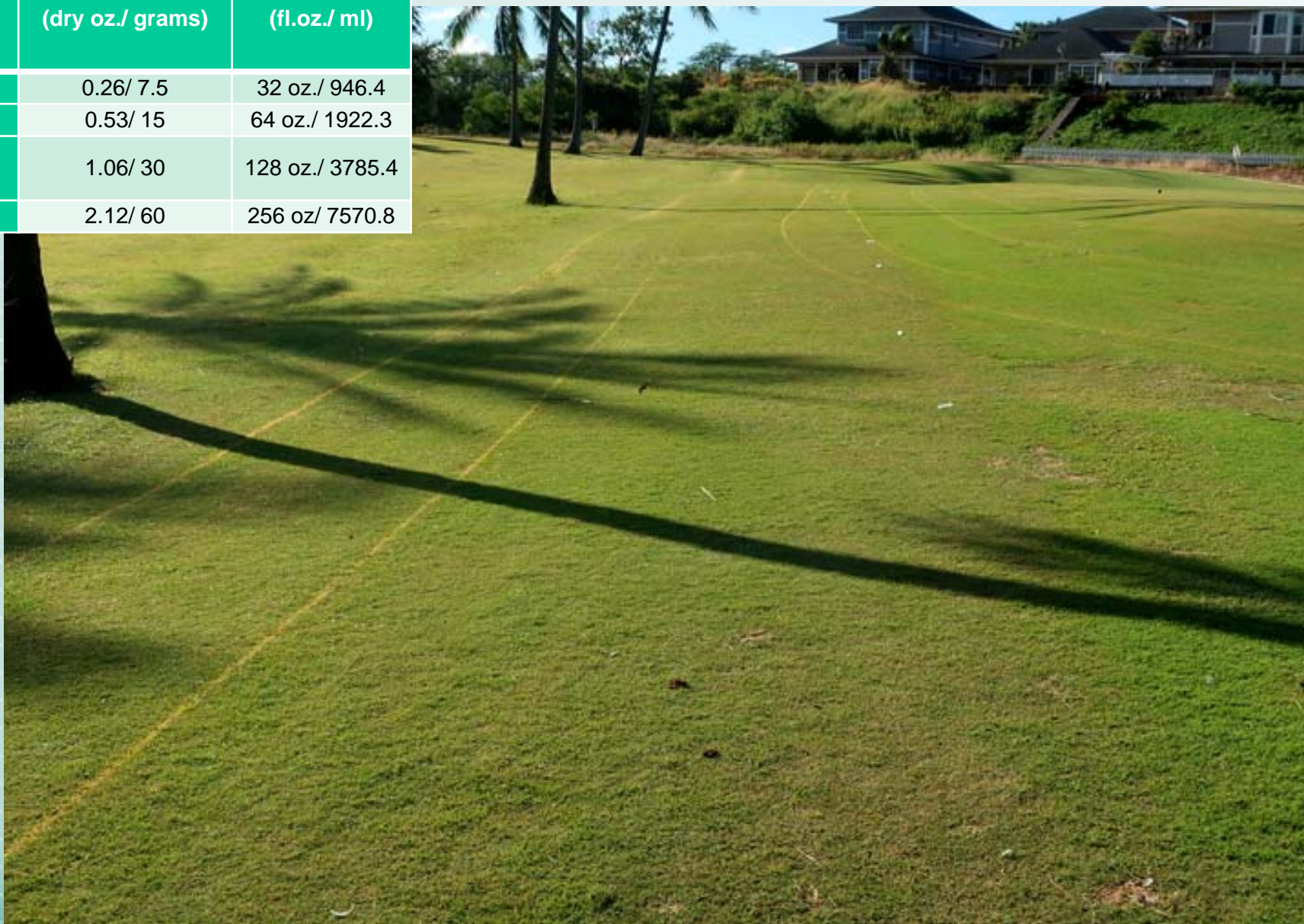
**Apply Monument on 04/12/21 - 61 DAS03**



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Spray 50 GPA Batch volume (gallons)	Monument 5 g/a (dry oz./ grams)	MSO 1% v/v (fl.oz./ ml)
25	0.26/ 7.5	32 oz./ 946.4
50	0.53/ 15	64 oz./ 1922.3
100	1.06/ 30	128 oz./ 3785.4
200	2.12/ 60	256 oz./ 7570.8

**Apply Monument on 04/12/21 61 DAS03**



# Conclusions to West Loch Demo

## 04/13/2021

1. 2 Apps Rev +Cel very good at 85-90% TG and SP stand Reduction in BG.
2. R+C control of H. crab grass very good.
3. R+C control of ACG very good.
4. About 60 days needed b/w R+C spray, label indicates only 14 days.
5. Manuscript selective suppression over SP very clean in BG, current label only allow for spot application with research rates reported here.
6. Manuscript suppression shorter than R+C so Monument needed at 45-50 days.
7. Winter mowing for rough reduced by  $\frac{1}{2}$  with near complete seed head suppression.
8. ? For look when R+C can be applied 1 year after start.





## Visual 50 GPA for spot treatments

Spray 50 GPA Batch volume (gallons)	Revolver 26 oz./a (fl. oz./ml)	Celsius 3.6 oz/a dry oz./ grams	Manuscript 41 oz./a (fl. oz/ ml)	Monument 5 g/a (dry oz./ grams)	MSO 1% v/v (fl. oz./ ml)	Adigor 1% v/v (fl. oz./ ml)
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100	52/ 1537.8	7.2/ 104	82/ 2425.0	1.06/ 30	128 oz./ 3785.4	128 oz./ 3785.4
200	104/ 3075.7	14.4/ 208	164/ 4850.1	2.12/ 60	256 oz./ 7570.8	256 oz./ 7570.8



# Take home points

Torpedo grass @ irrigation head



1. Persistent perennial grassy weeds favored by wet conditions
2. Allow systemic herbicides time to work before next application
3. Elimination of top growth breaks buds on underground stems
4. Fresh stems/foilage best target for subsequent treatment
5. Mixing certain herbicide modes of actions can cause tank mix antagonisms.
6. Avoid herbicide tolerance need to rotate herbicide mode of action



For more information

Dr. Joe DeFrank

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