Alternative Weed Control in Seashore Paspalum

Jim Brosnan, Ph.D.
Assistant Specialist- Turfgrass Mgmt.
University of Hawaii
2008 LICH Conference & Trade Show
29 May 2008
Weed Control in Hawaii

Top ranked
Seashore paspalum

(Paspalum vaginatum)

44% of renovations
Few POST products labeled
Crabgrass  
(*Digitaria sp.*)

Goosegrass  
(*Eleusine indica*)
MSMA + metribuzin
Foramsulfuron (Revolver™) injury
Spot treatments with glyphosate
Product?  
Application?  
Rate?
Product?  
Application?  
Rate?  
Soil Quality?
Hilograss
(Paspalum conjugatum)
Hilograss
(*Paspalum conjugatum*)

- “Sour grass”
- “Cow grass”
- “Ti grass”
- “Sour paspalum”
- Stoloniferous perennial
- Roots / pubescence at nodes

(USDA, 2008)
Hilogramgrass
(Paspalum conjugatum)

- Pasture grass
- Rubber, oil palm, tea, rice
- Spreads by stolons and seeds
1500 seeds per plant

King (1966)
Control Options

- Glyphosate
- Imazapyr
- No selective control options in seashore paspalum
MSMA + metribuzin
Research at Ko’olau G.C.

• Products
  – Fine (83%, 0.50-0.25 mm)
  – Coarse (75%, 2.0-1.0 mm)

• Application
  – Solution vs. Granular

• Rate
  – 10 lbs NaCl /M (three apps)
  – 30 lbs NaCl /M
Research at Ko’olau G.C.

• Herbicides – 2 apps low
  – MSMA (1.35 pt/A)
  – MSMA (2.70 pt/A)
  – MSMA + metribuzin (1.35 pt/A + 0.33 lb/A)
  – MSMA + metribuzin (2.70 pt/A + 0.66 lb/A)

• % Control

• Turf Color & Chlorophyll Index (R840/700)

• Soil SAR, EC (0, 8WAT)
### Control (8WAT)

<table>
<thead>
<tr>
<th>Source</th>
<th>%Control</th>
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<tbody>
<tr>
<td><strong>Treatment</strong></td>
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<tr>
<td>Salt vs. Herb.</td>
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<tr>
<td>Solution vs. Granular</td>
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<tr>
<td>Fine vs. Coarse</td>
<td>**</td>
</tr>
<tr>
<td>Low vs. High</td>
<td>***</td>
</tr>
<tr>
<td>SALT mean</td>
<td>67</td>
</tr>
<tr>
<td>HERB mean</td>
<td>13</td>
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*, **, *** Significant at the $P \leq 0.05$, 0.01, 0.001 levels, respectively

ns Not significant at $P \geq 0.05$
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<td>***</td>
</tr>
<tr>
<td>Solution mean</td>
<td>55</td>
</tr>
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<td>Granular mean</td>
<td>71</td>
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Fine mean: 82  
Coarse mean: 60  

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<td>**</td>
</tr>
<tr>
<td>Low vs. High</td>
<td>***</td>
</tr>
<tr>
<td>Low rate mean</td>
<td>86</td>
</tr>
<tr>
<td>High rate mean</td>
<td>46</td>
</tr>
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10 lbs NaCl/M (Fine granular) – 97% Control
Fine Granular
30 lbs/M
~100 % Control at 2WAT
Fine Granular
30 lbs/M

~68 % Control at 8WAT
Solution not practical

- Solubility = 35.9 g/100 mL pure water
- To deliver 10 lbs NaCl per 1000 sq. ft.
- Carrier volume needs to be at least 145 gallons / acre
What about ocean water?

Ocean water ~ 55 millimhos/cm

~ 35,200 mg/L

At 40 GPA, this delivers approximately 12.6 lbs NaCl per acre
Some tip burn
All salt treatments >7 (0-9)
MSMA Damage
MSMA + metribuzin
No Negative Effect on Soil Quality

0 WAT SAR mean = 0.43
8WAT SAR range = 0.54-2.67
8WAT EC range = 0.40 - 0.74
Rainfall Total

10/9/07 – 12/4/07
10.60 inches
Can we go lower than 10 lbs/M?

What about Ca++ and K+?
Research at Koʻolau G.C.

• Products
  - NaCl fine
  - CaCl (82% 1.0-0.5 mm)
  - KCl (92% 0.15-0.05 mm)

• Rates
  - 10, 5, 2.5, 1.25 lbs/M
Research at Koʻolau G.C.

- Herbicides - 2apps low
  - MSMA (1.35 pt/A)
  - MSMA (2.70 pt/A)
  - MSMA + metribuzin (1.35 pt/A + 0.33 lb/A)
  - MSMA + metribuzin (2.70 pt/A + 0.66 lb/A)

- % Control
- Turf Color
- Chlorophyll Index (R840/700)
- Soil SAR, EC (0, 8WAT)
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<tr>
<td>NaCl</td>
<td>10 lb/M</td>
<td>93</td>
</tr>
<tr>
<td>MSMA (H)</td>
<td></td>
<td>78</td>
</tr>
<tr>
<td>MSMA (L)</td>
<td></td>
<td>54</td>
</tr>
<tr>
<td>KCl</td>
<td>10 lb/M</td>
<td>53</td>
</tr>
<tr>
<td>MSMA+mz. (H)</td>
<td></td>
<td>47</td>
</tr>
<tr>
<td>MSMA+mz. (L)</td>
<td></td>
<td>41</td>
</tr>
<tr>
<td>NaCl</td>
<td>5 lb/M</td>
<td>28</td>
</tr>
<tr>
<td>CaCl</td>
<td>1.25 lb/M</td>
<td>27</td>
</tr>
<tr>
<td>CaCl</td>
<td>10 lb/M</td>
<td>25</td>
</tr>
<tr>
<td>CaCl</td>
<td>5 lb/M</td>
<td>22</td>
</tr>
<tr>
<td><strong>LSD (0.05)</strong> = 50</td>
<td></td>
<td></td>
</tr>
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</table>
10 lb/M → 1.25 lb/M
Goosegrass
(*Eleusine indica*)
Research at Coral Creek

• Products
  Fine (83%, 0.50-0.25 mm)
  Coarse (75%, 2.0-1.0 mm)

• Application
  Solution vs. Granular

• Rate
  10 lbs NaCl /M (three apps)
  30 lbs NaCl /M
Research at Coral Creek

- Herbicides - 2apps low
  - MSMA (L) (1.35 pt/A)
  - MSMA (H) (2.70 pt/A)
  - MSMA + metribuzin (L) (1.35 pt/A + 0.33 lb/A)
  - MSMA + metribuzin (H) (2.70 pt/A + 0.66 lb/A)
  - Foramsulfuron (L) (17.4 fl oz/A)
  - Foramsulfuron (H) (26.2 fl oz/A)
<table>
<thead>
<tr>
<th>Treatment</th>
<th>Apps</th>
<th>Rate</th>
<th>% Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSMA + metribuzin</td>
<td>1</td>
<td>(H) 89 fl.oz/A</td>
<td>89</td>
</tr>
<tr>
<td>MSMA + metribuzin  Seq (L)</td>
<td></td>
<td>84</td>
<td></td>
</tr>
<tr>
<td>Foramsulfuron Seq 1 26.2 fl.oz/A</td>
<td>60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NaCl (Fine Granular) Seq 10 lb/M</td>
<td>56</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foramsulfuron Seq 17.4 fl.oz/A</td>
<td>55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSMA 1 (H) 25 Seq (L) 18</td>
<td></td>
<td>25</td>
<td></td>
</tr>
</tbody>
</table>

LSD (0.05) = 25
Preemergence
Dr. Jim Brosnan
brosnan@hawaii.edu
808-284-7913

http://turfgrass.ctahr.hawaii.edu
Turfgrass Management at the University of Hawaii

Turf Team
Industry News
Research
Fact Sheets
Upcoming Events

Latest News
Turfgrass Soils Laboratory Open at UH
A turfgrass soils testing laboratory, under the direction of Dr. Jim Brosnan, opened this past week at the University of Hawaii. Currently, this laboratory has the ability to perform particle size analyses on rootzone samples according to the methods outlined in the ASTM F-1632 specification. In the coming months the laboratory will be expanded to provide measurements of saturated hydraulic conductivity, air-filled and capillary porosity, as well as the organic matter content of turfgrass rootzone mixes. For more information on soil physical properties analyses at the UH Turfgrass Soils laboratory, contact Dr. Jim Brosnan.

Research Updates
Students aid in research plot establishment
Research areas were established this past Friday at the National Memorial Cemetery of the Pacific.

The use of salt as an alternative to herbicide on seashore paspalum
Studies were initiated this week at Ko'olau High School to study the use of salt as an alternative to herbicides to control growth of seashore paspalum.

Upcoming Events
Nov. 29 – The Georgia Water Story
GCSAA Education 800-472-7878. More »

Nov. 30 – 15th Annual Sports Turf Field Day
Yuma, Ariz. Contact the Sports Turf Managers Association of Arizona. More »

Dec. 5 – GCSAA Webcast: Financial Management and Budgeting

Poll
Will You Be There?
Do you plan on attending the 2008 LICH Conference and Trade Show at the Neal S. Blaisdell Center in Honolulu, HI on May 28th-29th?

- Yes
- No
- Undecided