

2012 Turf Grass Weed Control Update



**Joe DeFrank - UH-Manoa
Tropical Plant and Soil Science
With Honolulu City & County Parks and Rec.
Under supervision of Kaipo Bernie
Advisement from Rey Ito-The Green Doctor**

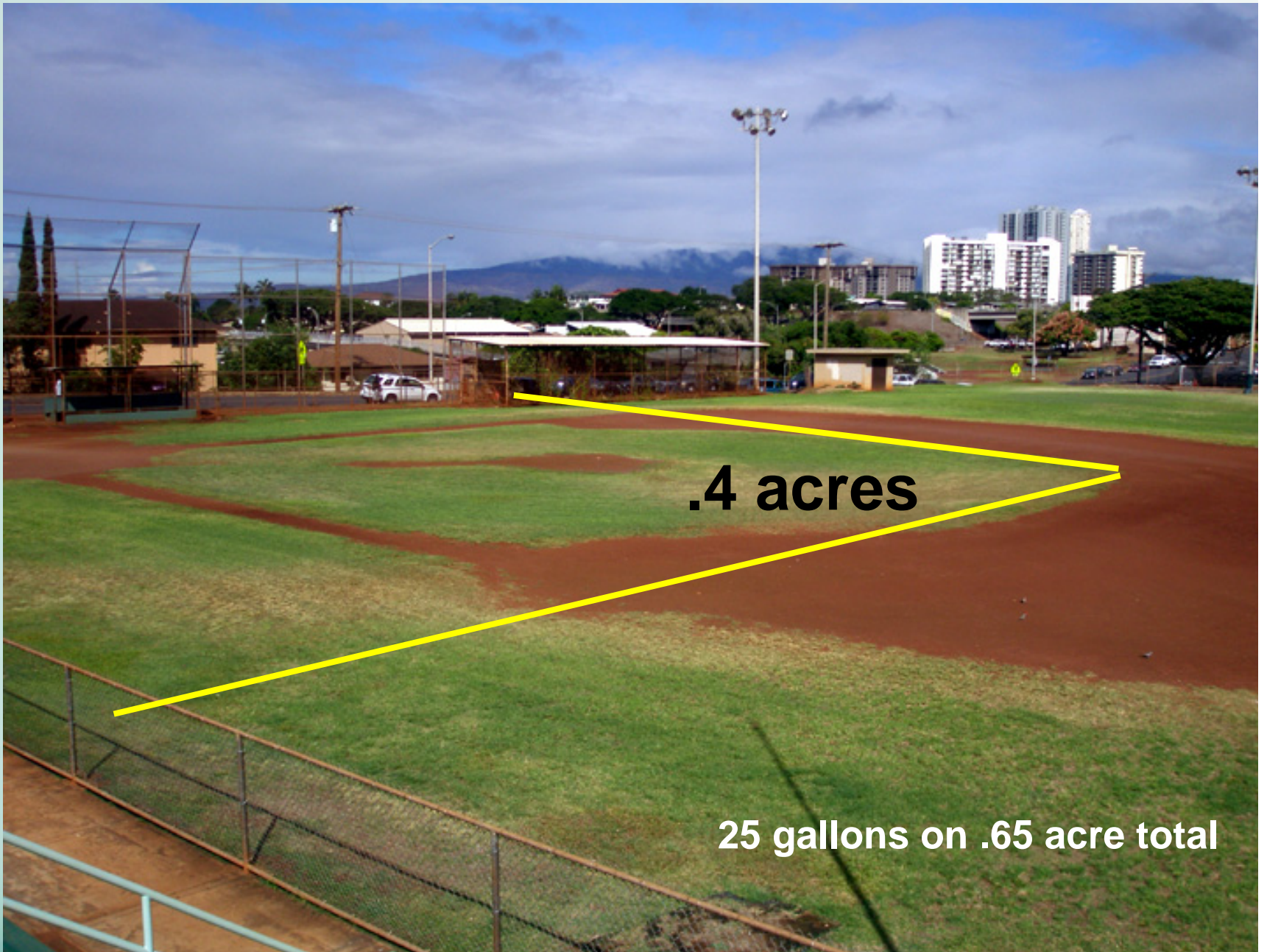


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Topics Covered

- **Review Aiea ball field cleanup 2010-2012**
- **Weed control lessons for Waipio soccer fields**
- **New ruling for aquatic weed control in HI**





.4 acres

25 gallons on .65 acre total



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Aiea Highschool Baseball Field

Turf type: common Bermuda

Weeds: Goosegrass, Dallis Grass, Love Grass, Seashore paspalum, Henry's crabgrass, Blanket crabgrass, Star Grass, Creeping indigo, Sprawling Horseweed, Purple nutsedge.

Irrigation: good coverage with overhead

Mowers: rotary only at start followed by reels.





Goose grass



Dallisgrass



Dallisgrass adapted to turf height





Love grass



Carolina Love grass



Henry's Crabgrass



Blanket Crabgrass



Blanket Crabgrass



Star Grass



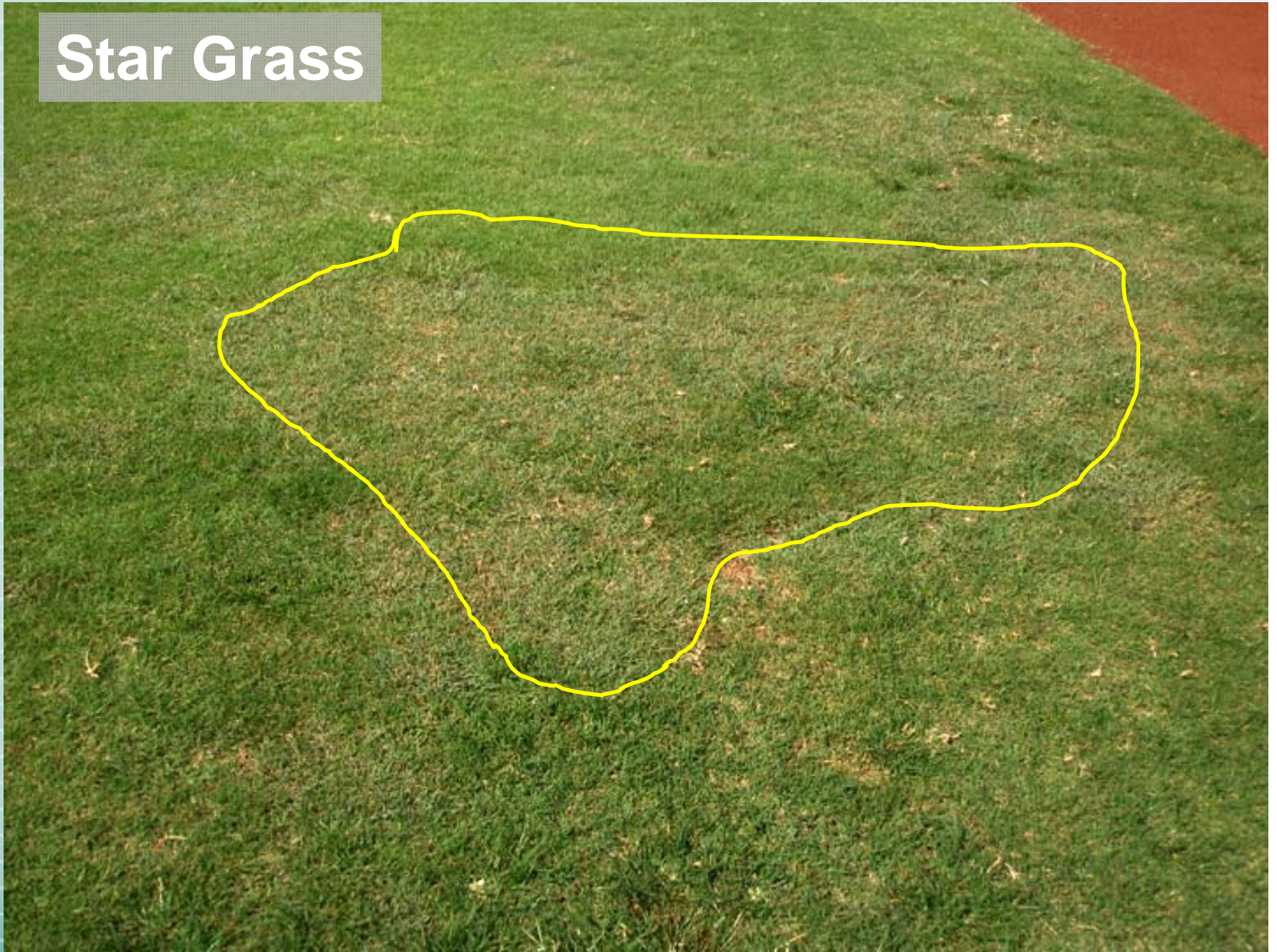
Star Grass



Star Grass



Star Grass





Creeping indigo



Sprawling Horse Weed

(*Calyptocarpus vialis*)



Purple nutsedge



Large GG management with Revolver



Revolver-Goose Grass Survival Mechanism

Rooting At Nodes.

Large Goose grass survives Revolver Injury by rooting at stem node



Combating Goose Grass Survival Mechanism

Rooting At Nodes.

Goose grass survives Revolver Injury by rooting at stem node



**Root pruning
herbicide
needed to stop
roots from
entering soil**



Start 08/13/2010 – nutrient activation



1st Herbicide spray 09/01/10



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1st Herbicide spray 09/01/10



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Aiea Highschool Baseball Field

Description	Date	Day of year	Days after previous activity
01-Foliar Feed Ca & K Nitrate, w/Fe	08/13/10	225	0
1 st herbicide spray (Barricade/Celsius/Revolver)	09/01/10	244	19
* Thatch breakup +dry app. of K nitrate	09/23/10	266	22
2 nd herbicide spray (Sencor)	10/14/10	287	21
3 rd herbicide spray (Celsius/Monument)	11/10/10	314	27
02-Foliar Feed Ca & K-nitrate, w/Fe	11/24/10	328	14
4 th herbicide spray (Sencor)	12/08/10	342	14
5 th herbicide spray (Celsius/Monument)	12/29/10	363	20

For complete written protocol

<http://www.ctahr.hawaii.edu/deFrankJ/index.htm>

Click: Streaming Media Content

Click: Weed control update.... (posted 01/19/2012)



Rational for 1st herbicide application

1. Barricade, amount added to 26 gallon tank is .3lb (136 g)
ROOT PRUNER, pre to grass and broadleaf weeds
2. Celsius (3-way mix), amount added to 26 gallon tank is 3.2 dry oz (91 g)
**POST for “Gopher” Lovegrass, Large crabgrass, Bull paspalum & Dallisgrass
Also controls many broadleaf weeds such as Morning Glory, Plantains,
Bittercress, Sprawling horseweed and Oxalis**
3. Revolver, amount added to 26 gallons is 17.0 oz (775 ml)
SYSTEMIC Goosegrass – kill main plant, use Sencor for surviving parts
4. MSO (methylated seed oil) 1% v/v , amount to 26 gallons is 33.3 oz (945 ml)
use to penetrate leaf surface.

After the 1st application, the volume of herbicide spray was doubled using 2 26-gallon batches in crisscross pattern.



09/23/10 -27 Days 1st spray



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09/23/10 -27 Days 1st spray



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09/23/10 -27 Days 1st spray



**09/23/10 -27 Days 1st spray
H-Crabgrass flashes yellow**



09/23/10 -27 Days 1st spray

**Goosegrass = green, Love grass yellow
Due to Rev.+Cels+Baric**



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4 th herbicide spray (Sencor)	12/08/10	342	14
5 th herbicide spray (Celsius/Monument)	12/29/10	362	20

**Spray to control Goosegrass, pre for seeds
43 DA 1st spray**



Rational for Sencor herbicide application

Sencor amount to 26 gallon tank is .22 lb (103 g), apply 2Xs = 2/3 lb-Sencor/a
Contact kill of Goose grass and pre-to grass and broadleaf weeds

Rational for Monument/Celsius herbicide application

Celsius amount to 26 gallon tank is 1.6 dry oz (45 g), apply 2Xs = 3.2 dry-oz/a
Systemic kill of grass and broadleaf weeds – LG, DG & SP

+

Monument amount to 26 gallon tank is 5 gram packet, apply 2X's = 15g (0.53oz)/a
Systemic suppression of DG, SP, CG & control Purple nutsedge



Day of Sencor spray 10/14/10
43 DA-1st spray



GG + nutsedge



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**2nd Herbicide Spray
Sencor
2/3 lb/a**

10/14/2010



5 Days after Sencor spray 10/19/10



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5 Days after Sencor spray 10/19/10



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8 Days after Sencor spray 10/22/10



GG drying up



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8 Days after Sencor spray 10/22/10



Lovegrass drying up, injury enhanced by previous applications



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8 Days after Sencor spray 10/22/10



Lovegrass drying up, Dallis OK



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8 Days after Sencor spray 10/22/10



GG/LG drying up Seashore Paspalum OK



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**Spray to control Goosegrass, pre for seeds
43 DA 1st spray**



Day of Celsius/Monument spray 11/10/10



Creeping Indigo germinated



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Rational for Sencor herbicide application

Sencor amount to 26 gallon tank is .22 lb (103 g), apply 2Xs = 2/3 lb-Sencor/a
Contact kill of Goose grass and pre-to grass and broadleaf weeds

Rational for Monument/Celsius herbicide application

Celsius amount to 26 gallon tank is 1.6 dry oz (45 g), apply 2Xs = 3.2 dry-oz/a

Systemic kill of grass and broadleaf weeds = LG, DG & SP

+

Monument amount to 26 gallon tank is 5 gram packet, apply 2X's = 10g
(0.53oz)/a

**Systemic suppression of DG, SP, CG & control of CI & Purple Nutsedge
Available in .5 gram packs – includes home lawns.**



20 Days after Mon/Cels spray 11/30/10



6 Day as after 02-FF



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Weed response requires alternating herbicide control spectrum



**GG regrows = Sencor,
contact kill and
premergence to seeds**



**DG/SP/PN/LG regrows =
Celsius+ Monument
Weakens weeds BG fills in**



Aiea Highschool Baseball Field

Description	Date	Day of year	Days after previous activity
5 th herbicide spray (Celsius/Monument)	12/29/10	362	20
2010 year ends	12/31/10	365	3
Start close mowing with reel mowers	01/21/11	21	24
Apply 15-0-15 1% Ronstar 250 lb/a, infield only	02/04/11	35	14
Silica sand top-dress	02/08/11	39	18
6 th herbicide spray (Revolver spot-2 oz/g) 2 gallons total on .4 acres	02/09/11	40	43-DA-C/M SPRAY
7 th herbicide spray (Specticle/Revolver)	04/12/11	102	62 DA Rev-spot



01/28/11

**DG control
improves as
temp rises
more
sunshine**



31 days after Mon/Cel spray of 12/29/10



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01/28/11

**DG control
improves as
temp rises
more
sunshine**



31 days after Mon/Cel spray of 12/29/10



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01/28/11

**LG control
improves as
temp rises
more
sunshine**



31 days after Mon/Cel spray of 12/29/10



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11/30/10 - 20 DAS 1st Mon/Cel



**BG fills in
w/close
mowing and
warmer temps**

**Top-dress
needed to
improve fill in**

01/28/11



31 days after Mon/Cel spray of 12/29/10



8 Days after top-dress with silica sand 02/16/11



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8 Days after top-dress with silica sand 02/16/11



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65 DA Rev. + Specticle. On 06/16/11



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12/29/10-21 DA-2nd Sencor



65 DA Rev + Spect. 06/16/11



**Herbicides
provide
openings for BG
to fill in**



**Tropi
Univer**

3rd base line

08/13/10

SP start

65 DA Rev. + Spect.06/16/11

3rd base line



**65 DA Rev + Spect.
06/16/11**

GG still alive but roots stunted



65 DA Rev + Spect. 06/16/11



**LG looks normal w/flowers
but roots severely pruned
and easily removed**



Conclusions

1. Carpet crabgrass, Creeping Indigo, Purple nutsedge other broadleaves controlled.
2. LG, DG & GG reduced cover by 90-95%
3. StarGr. emerges in gaps, present since start
4. LG & GG require some mechanical removal: weighted drag, light verticutter, hand weeding in combo with **strategic drought stress**.



**Current update: 05/16/12
400 DA-Spec/Rev of 04/12/11**

- 1. * Continued close reel mowing w/hand weeding, LG well control within infield.**
- 2. Remaining weeds= GG, DG, SP and C. Indigo**
- 3. Star Gr. Present but lacks vigor**
- 4. Consider additional procedures to tune up weed control and Bermuda grass fill in.**



**Current update: 05/16/12
400 DA-Spec/Rev of 04/12/11**

- 1. Continued close reel mowing w/hand weeding,
LG well control within infield near home plate.**



**Current update: 05/16/12
400 DA-Spec/Rev of 04/12/11**

- 1. Continued close reel mowing w/hand weeding, LG well control within infield.**
- 2. Remaining weeds= GG, DG, SP and C. Indigo**
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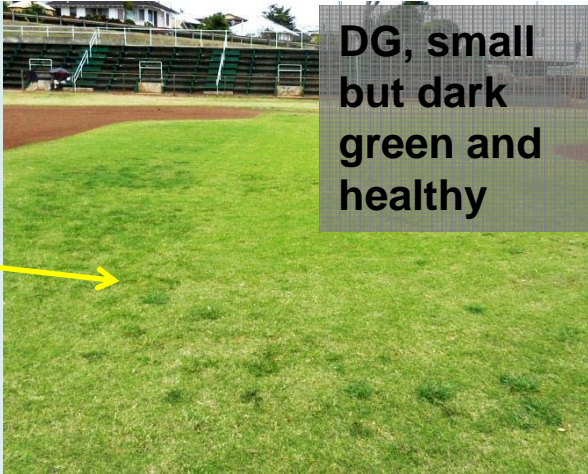
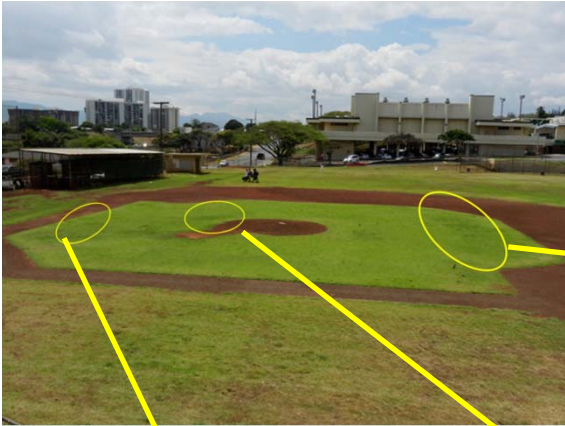
**Current update: 05/16/12
400 DA-Spec/Rev of 04/12/11**



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**Current update: 05/16/12
400 DA-Spec/Rev of 04/12/11**



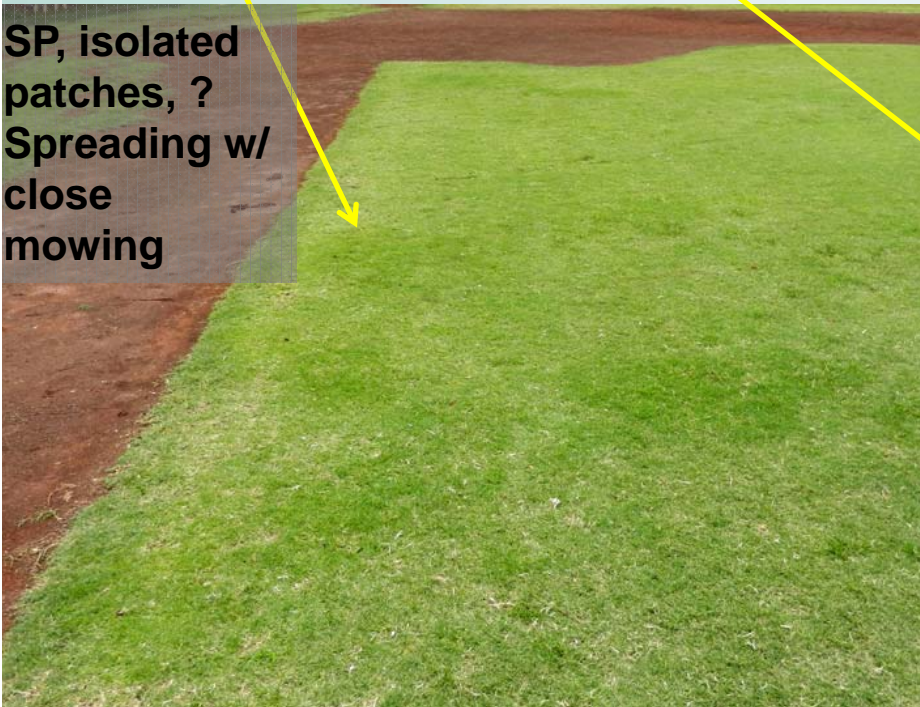


DG, small but dark green and healthy



C. Ind.- in spots

Current update: 05/16/12
400 DA-Spec/Rev of 04/12/11



SP, isolated patches, ?
Spreading w/ close mowing



GG, small/larger plants w/isolate hot spots



Summer 2012 tune up

1. Nutrient activation w/irrigation- 2 wks
2. Revolver + Specticle for GG + pre contr. – 3-4 wks
3. Celsius + Monument for C.I., DG, SP & LG -3 wks
4. Sencor for GG and weakened LG. -2 wks.
5. Impose strategic water stress & mech. Removal
6. Fert. w/top dress for fill in & water -.5 inch 2X/wk.



Take away points used for Waipio cleanup-2011

- 1. Combine Foliar feed CN 9-0-0 w/Specticle, apply w/booms = weed/turf activation/pre-RP.**
- 2. 35 DA#1, Tank mix Rev./Cels. for GG, LG & DG control/weaken.**
- 3. Needed fewer irrg. w/drying of surface to stress weeds with weakened roots.**
- 4. 24 DA#2 foliar feed w/CN 9-0-0.**
- 5. 14 DA #4 Sencor use 2/3 lb/a & repeat 14-20 Days**
- 6. So far GG gone, LG weak but still alive.**
- 7. Final large scale LG removal needed.**



**Waipio after: Foliar-N + Specticle (2.5 oz/a)
3 weeks
Then Celsius + Revolver 06/06/2011**



**Waipio after: Foliar-N + Specticle (2.5 oz/a)
3 weeks
Then Celsius + Revolver 06/06/2011**



**Waipio after: Foliar-N + Specticle (2.5 oz/a)
3 weeks
Then Celsius + Revolver 06/06/2011**



**With reduced irrigation, 2X-Sencor 2/3 lb/a, reel mowing and fertilization with both foliar and granular fertilizer -
07/07/2011**



With reduced irrigation, 2X-Sencor 2/3 lb/a, reel mowing and fertilization with both foliar and granular fertilizer - 07/07/2011



**With reduced irrigation, 2X-Sencor 2/3 lb/a, reel mowing and fertilization with both foliar and granular fertilizer -
07/07/2011**

65 DAS Rev + Spec



LG still alive but roots weak - ? – spot trt. ?



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Waipio Soccer Fields 2012 Update Some body dropped the ball



Progress made in summer of 2011
practically gone in 2012



Waipio Soccer Fields 2012 Update Somebody dropped the ball



Summary of Current Conditions

1. Reel mowing changed to rotary – weedy grass to high = Bermuda stand reduced.
2. Uneven irrigation with dusty dry and adequate moisture in same field.
3. Nutrition levels OK but cultural conditions (compaction/dryness) favor weeds



Suggestions for Waipio turf recovery

1. **Wanted – One control Freak with authority (water/soil/spray) for performance compliance**
2. **Upgrade irrigation system for coverage uniformity w/controls compatible with supply.**
3. **Reel mowers with back up systems, close mowing favors Bermuda.**
4. **Facility policy: close fields for restoration, relief from compaction, user understanding.**
5. **Weed control, restore soil for turf health, reseeding to enhance turf density**
6. **User fees go back to facility = management/employee recognition and pride.**



- **Waipio Facility is too important to community and youth sport development to ignore.**
- **Income for city with tournaments.**
- **Hawaii as soccer Mecca/tourism.**
- **Local pride.**



**New permit (NPDES) requirements for Aquatic pesticide applications
Based on court decision on 10/31/2011**

- 1. Applies to pesticide applications to, over or near waters of the state of HI = point source pollution, violation of the CWA.**
- 2. Runoff from land based surfaces is exempt = non-point source.**
- 3. Drainage ditches, ponds and reservoirs required as part of water pollution control system are excluded.**
- 4. Permits will be issued by HI DOH Clean Water Branch.**
- 5. All current aquatic pesticide uses banned.**



New permit (NPDES) requirements for Aquatic pesticide applications Based on court decision on 10/31/2011

clean water branch

About 22,100,000 results (0.18 seconds)

[Clean Water Branch - Hawai'i State Department of Health](http://hawaii.gov/health/environmental/water/cleanwater/index.html)

hawaii.gov/health/environmental/water/cleanwater/index.html

Hawaii Administrative Rules (HAR), Chapter 11-55, **Water** Pollution Control, was signed by Governor Linda Lingle on June 5, 2009. The rules, including the ...

[Current Warnings, Advisories, and Postings](http://hawaii.gov/doh/waterquality)

hawaii.gov/doh/waterquality

Clean Water Branch ... Sewage Spill - Waste Water spill 155 North Beretania Street ... Detail: CWB was notified of a 300 gallons plus waste water spill from a ...

[Clean Water Branch - Hawai'i State Department of Health](http://hawaii.gov/health/environmental/water/index.html%20)

hawaii.gov/health/environmental/water/index.html%20

Water Quality. **Clean Water Branch** (CWB) CWB protects the public health of residents and tourists who enjoy playing in and around Hawaii's coastal and inland ...

[Clean Water Branch - Contact Us - Hawai'i State Department of Health](http://hawaii.gov/health/environmental/water/cleanwater/contact/index.html)

hawaii.gov/health/environmental/water/cleanwater/contact/index.html

CWB Home | About CWB | Administrative Procedures | Contact Us | Current Warnings, Advisories, and Postings | Forms ... Mailing Address: Clean Water Branch ...

[Water Enforcement | Region 6 | US EPA](http://www.epa.gov/region6/en/w/index.html)

www.epa.gov/region6/en/w/index.html

The Water Enforcement **Branch** assures compliance and takes appropriate enforcement action against facilities for violations of the **Clean Water Act** (CWA) and ...

[Water Protection Program - DNR](http://www.dnr.mo.gov/env/wpp/index.html)

www.dnr.mo.gov/env/wpp/index.html

Our goal is to keep you informed about the status of water quality throughout the state. You'll find current ... Public **Drinking Water Branch**. Annual Compliance ...

[Environmental Management : Clean Water Branch - Aloha United Way](http://www.auw211.org/Detail.aspx?n;-1;;N;0;0;3922;9;HEALTH;...)

www.auw211.org/Detail.aspx?n;-1;;N;0;0;3922;9;HEALTH;...

(808) 586-4352 Fax - **Clean Water Branch**. email: webmail@mail.health.state.hi.us ... PROGRAM PHONE: (808)586-4309 **Clean Water Branch** ...

[Drinking Water - Alabama Department of Environmental Management](http://www.adem.state.al.us/programs/water/drinkingwater.cnt)

www.adem.state.al.us/programs/water/drinkingwater.cnt



Clean Water Branch

CWB Home | About CWB | Administrative Procedures | Contact Us | [Current Warnings, Advisories, and Postings](#) | Forms | General Health Advisory | Ocean Recreation Links | Polluted Runoff Control Program | [Public Notices and Update](#) | Reports and Plans | Standard NPDES Permit Conditions | Water Quality Data | [Water Quality Standards Maps](#) | Workshop Presentations |

Public Notices and Update

Public Notices

Notice of Public Hearing on Changes to Water Quality and Water Pollution Rules Regarding Pesticide Applications to State Waters

- [Notice of Public Hearing](#)
- [HAR_Chapter 11-55 Ramseyer](#)
- [HAR_Chapter 11-55 Rationale](#)
- [HAR_Chapter 11-55, Appendix M](#)
- [HAR_Chapter 11-55, Appendix M Fact Sheet](#)
- [HAR_Chapter 11-54 Ramseyer](#)
- [HAR_Chapter 11-54 Rationale](#)

Updated BMP procedures regarding General Permits

Authorizing the discharge of storm water associated with construction activities.

- [DOH-CWB Procedures for the Use of New Technologies as BMPs](#)
- [DOH-CWB Procedures for Changing Construction Site-Specific BMPs](#)

Page 95 – Weed and Algae Control
What is needed for permitted applications

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University of Hawaii at Manoa

**New permit (NPDES) requirements for Aquatic pesticide applications
Based on court decision on 10/31/2011**

Information requirements prior to Management Measure Usage

- Identify areas to be treated
- Identify target pests
- ID factors causing or contributing to pest problem
- Establish action threshold, when is pesticide use required
- Evaluate all options for control = mechanical, cultural, biological and chemical

W/pesticide:

1. survey prior to spray to determine threshold limit exceeded
2. Reduce impact to Env. Timing for applications = best for control



**New permit (NPDES) requirements for Aquatic pesticide applications
Based on court decision on 10/31/2011**

Hearing for proposed rules:

When: June 4, 2012 at 9:30 a.m.

Where; 919 Ala Moana Blvd. 5th Floor Conf. Room

Video Conference locations on Kauai, Maui & Hilo:

Kauai	Kauai District Health Office, Conference Room, 3040 Umi Street, Lihue, 96766
Maui	Department of Health, BT Conference Room, 210 Imi Kala Street, Suite 204 (in Millyard), Wailuku, 96793
Hilo	Hawaii District Health Office – Hilo, Conference Room, 1582 Kamehameha Avenue, Hilo, 96720



For more information on topics covered

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