Hoolehua PMC
Annual Report of Activities
FY-2006

NRCS Natural Resources Conservation Service

Plant Materials Center

Activity Report
Year 2006

Hoolehua Plant Materials Center
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Location

The Hoolehua Plant Materials Center is located on the island of Molokai and situated on the fertile agricultural plains of Ho'olehua. It is one of 27 Centers located throughout the United States. The island of Molokai is 27 miles long and 11 miles wide (261 square miles) and the fifth largest island in the Hawaiian chain. The Center is responsible for servicing the plant conservation resource needs of the Pacific Island Area, which includes the State of Hawaii, Guam, the Northern Mariana Islands, The Federated States of Micronesia, The Republic of Palau, The Republic of the Marshall Islands and American Samoa.

The Hawaii Plant Materials Program

Controlling erosion, enhancing and protecting our natural resource base through the use of plant materials, is our main mission. To do this and be consistent with the USDA objectives and NRCS Strategic Plans, the Plant Materials Program develops, tests and transfers effective state of the art plant science technology, to meet stakeholders and conservation resource needs.

Current Priorities and Status

The Hawaii Plant Materials Program is currently involved in addressing the following concerns:

- Native plant re-vegetation efforts on the island of Kaho'olawe
- Testing native plants to address resource concerns
- Identifying seed source for plants used in conservation work
- Water quality issues
- Testing conservation cover and green manure crops for diversified agriculture operations
- Multi-use windbreaks - native and non-natives

FY 2006 Accomplishments:

Continued Assistance to the Kaho'olawe Island Reserve Commission (KIRC) Kaho'olawe Island re-vegetation effort

Assisting the KIRC in their efforts to re-vegetate Kaho`olawe's highly erodible sites continued to be one of the main focuses of the Plant Materials Program in 2006.

The island of Kaho'olawe is the smallest major island in the Hawaiian archipelago. It is located approximately seven miles off the southwest coast of Maui and roughly covers 45 squares miles. The island raises above the ocean to an elevation of 1,477 feet and has annual precipitation of 27 inches near the summit. From the early 1800's through 1992, overgrazing by feral goats and livestock left the upper one third of the island barren of vegetation, severely eroded and virtually uninhabitable. To compound the environmental problems of the island, the U.S. military used the island as a target and training area at the onset of WWII . In 1993 the island of Kaho'olawe was returned to the State of Hawaii with the responsibility of the implementation of an environmental restoration plan by the Department of Navy, so as to control the soil erosion problems of the island. In the same year the State of Hawaii created the Kaho'olawe Reserve and the Kaho'olawe Island Reserve Commission (KIRC), enabling the State to receive federal funds for their restoration efforts. In 1997, the KIRC requested the assistance of the Hawaii Plant Materials Center to provide native plant seeds and technical support in their restoration efforts. Since 1999, the Hawaii NRCS has received congressional earmarks, hence directing efforts towards the re-vegetation of the island.

Current Status:

Providing native plant seeds, developing seed production fields and providing technical support to the KIRC has been the ongoing priority in FY 2006. Starting in FY 2001, twenty undeveloped acres of the PMC were dedicated for the re-vegetation project. The development of the site included the clearing and removal of the existing vegetation, the installation of 9,000 linear feet of primary and secondary windbreaks, the installation of 1,200 linear feet of 3 inch irrigation sub-mains, automated control valves and seedbed preparation for nearly 20 acres of land.

Four native plant species have been selected to be the 'pioneer' plants in the re-vegetation efforts on island Kaho'olawe. They include *Heteropogon contortus*, piligrass; *Eragrostis variablilis*, kawelu; *Chenopodium oahuense* 'aweoweo; and *Dodonaea viscosa*, 'a'ali'i. These four selections have preformed well at both the Hawaii PMC and on the island of Kaho'olawe. These tough dryland plants are well suited for the dry, windy and sometimes infertile conditions of the island. During the years from 2001 through 2005, fields of the selected native plants were incrementally planted on the twenty acre site. By the fall of 2006, all twenty acres of the designated fields had been planted for seed increase.

Deliverable to Kahoolawe Island Reserve Commission (KIRC)

Piligrass Hay Bales and Native Seeds

The use of piligrass hay bales on Kahoolawe continues to be one of the main conservation materials utilized on the island. During fiscal year 2006, approximately thirty-seven tons of pili hay bales were delivered to Kaho'olawe. These bales were used as both seed source and erosion control treatments on the island.

The technique for baling native grass seeds for re-vegetation was studied and tested at the Tucson Plant Material Center in Arizona. It involves the conventional baling procedure for mature grass species with mature seeds. The native straw bales are then transported to the desired site and spread to cover the eroded site. In time seeds would germinate from the spread bales. This approach of re-vegetation has several benefits. The straw acting as a mulch will conserve moisture, trap sediment, reduce the impact from rain and thereby enhancing deeper water penetration, instead of surface runoff, and thereby reducing soil loss, and providing a micro-environment for the native grass to have good chance of germination and survival. The bales could also be placed whole and used as physical barriers, laid on contour to trap sediment or provide a barrier from the wind, so young natives can take hold.

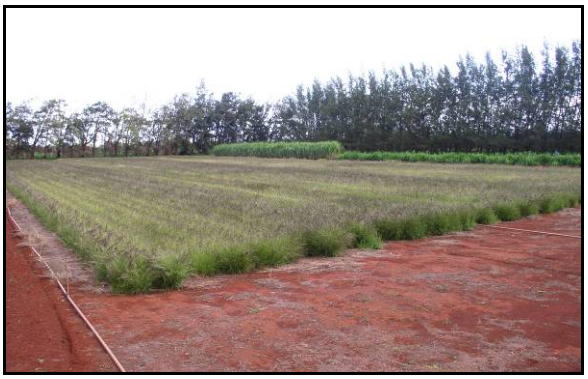
In addition to the pili hay bales, 585 pounds of kawelu (emoloa), 237 pounds of aweoweo and 22 pounds a'ali'i seeds were harvested at the Plant Materials Center (PMC) and delivered to the KIRC.

In cooperation with the University of Hawaii at Manoa, research work with selective herbicides to aid in the establishment of native plants, has had very promising results. These chemicals selectively control undesirable weeds and allow native plants to compete with alien plant species with little injury to themselves.

Piligrass

Piligrass is a perennial native bunch grass and is commonly found, although not in great numbers, on all major islands. It mainly grows in arid and sometimes rocky areas from sea level to over a thousand feet. Piligrass was the main thatching material used by Polynesians for construction of their homes.

Heteropogon contortus, piligrass



Piligrass increase field

Kawelu

Kawelu or emoloa is an attractive native perennial bunch grass that can be found in open Hawaiian dryland forests or coastal dunes throughout Hawaii. It produces an abundance of seeds year round and is very easy to propagate. Kawelu was sometimes used by early Polynesians as an alternative to piligrass for house thatching.

Eragrostis variabilis, kawelu

Kawelu increase field

A’ali’i

‘A’ali’i is a native perennial shrub or small tree that is commonly found on all major islands except Kaho’olawe. It can be found growing in a variety on environmental conditions from dry arid sites to wet tropical forests. It is easily propagated from seed and once established can produce an abundance of seeds. The wood of ‘a’ali’i is dense and was used by early Polynesians for tools and spears. Seeds were also used in making dye. In modern time the colorful pink to maroon seed capsules are used for lei making and hula dance rituals.

A’ali’i flower capsules

A`ali`li seed increase field

Aweoweo

‘Aweoweo is a woody native perennial dryland shrub or small tree. It is found on all major islands except Kaho’olawe. ‘Aweoweo is an extremely drought tolerant plant and readily reproduces itself by seed. Initial evaluations of aweoweo showed it to be a fast growing plant with very little insect or disease problems. In the wild, aweoweo can be seen growing vigorously along road cuts and infertile eroded sites, this attribute made it an ideal candidate for Kaho’olawe.

Chenopodium oahuense, aweoweo

Aweoweo increase fields

Total Amount of Seeds Provided to KIRC 1999-2006

Native Plants	Pounds Seed	Pounds Bales
Chenopodium oahuense	1364	
Dodonaea viscosa	63	
Erogrostis variabilis	1919	
Heteropogon contortus	348	361,725

Native Plants Being Evaluated

Numerous other native plants are currently being evaluated at the PMC. These include a variety of native dryland trees and shrubs for wildlife habitat encouragement, windbreaks, critical area planting, and conservation cover. Plant species include the following:

	Scientific Name	Common Name
1.	[1]*Thespesia populnea*	Milo
2.	*Erythrina sandwicensis*	Wiliwili
3.	*Cordia subcordata*	Kou
4.	*Acacia koa*	Koa
5.	*Nototrichium sandwicense*	Kului
6.	*Meterosideros polymorpha*	Ohia
7.	*Hibiscus rockii*	
8.	*Myoporum sandwicense*	Naio
9.	*Sophora chrysophylla*	Mamane
10.	*Alphitonia ponderosa*	Kauila
11.	*Dodonaea viscosa*	`A'ali'i
12.	*Sesbania tomentosa*	Ohai
13.	*Gossypium tomentosum*	Ma'o
14.	*Sporoblus virginicus*	`Aki' aki
15.	*Dubautia linearis*	Na'ena'e
16.	*Canthium odoratum*	Alahe'e
17.	*Cocculus trilobus*	Huehue
18.	*Scaevola sp*.	Naupaka
19.	*Vigna marina*	kukaiwaa
20.	*Panicum torridum*	Kakonakona
21.	*Eragrostis deflexa*	Pacific Lovegrass
22.	*Eragrostis leptophylla*	
23.	*Acacia koaia*	Koaia
24.	*Plumbago zylanica*	Iliee
25.	*Achyranthes splendens*	
26.	*Nesoluma polynesicum*	Keahi
27.	*Reynoldsia sandwichensis*	Ohe makai
28.	*Wikstromia Uva-ursi*	Akia
29.	*Vitex rotundifolia*	Pohinahina
30.	*Cenchrus agrimonioides*	Kamanomano

[1] Early Polynesian introduction

Polyscias guilfoylei, Panax: An Alternative to *E. variegata*‘ Tropic Coral’

In early April of 2005 the erythrina gall wasp (EGW), *Quadrastichus erythrinae Kim* was found and identified on the island of Oahu. By August of that summer, it was found at the Hoolehua Plant Materials Center. This recently introduce pest is causing major damage to native and non-native Erythrina sp. across the State and more recently in the Pacific Island Area. The tiny wasps (1 - 1.5 mm in length) damage the erythrina trees by laying eggs in the young tender growing parts of the trees. The larvae that emerge from these eggs induce the formation of galls on leaves and leaf stems. As the infestation progresses, leaves, stems and shoots become severely deformed causing a loss of plant vigor, health, and even death to the tree in severe cases.

Deformed leaves and stems of *Erythrina variegata L*. caused by the Erythrina Gall Wasp

PMC ‘Tropic Coral’ erythrina windbreak just 9 months after being infected by the Erythrina Gall Wasp

As a result of this aggressive pest, agricultural stakeholders have been hardest hit due to the loss of their ‘Tropic Coral’ erythrina windbreaks. *Erythrina variegata L*., ‘Tropic Coral’ is a Hawaii PMC plant release. ‘Tropic Coral’ or more commonly called “tall erythrina” or “tall wiliwili” is one of the more popular windbreaks due to its ease of establishment, fast rate of growth (8-10 ft/yr.), compact columnar growth characteristics and nitrogen fixing attributes.

By the spring of 2006, it had become clearly evident that the tall erythrina windbreaks throughout the State of Hawaii would not survive the attack of this tiny wasp. Hence, in April of 2006, a trial was initiated with another commonly used windbreak called panax (*Polyscias guilfoylei)*. Panax was selected because of its similar growth form and ease of establishment. Unfortunately, panax is considered a slower grower and has not been documented to reach growth heights to that of tall erythrina (40 ft.).

The objective of this trial was to determine if the application of varied amounts of fertilizer would increase the rate of growth and height of panax, so as to be comparable to the growth rate and height of tall erythrina.

Preliminary observations in September of 2006, indicated that panax grew an average height of 5 feet in 9 months. This rate of growth is considered exceptional for panax, considering it was planted as 18 inch un-rooted cuttings, just 9 months prior. Unfortunately, this rate of growth did not indicate any statistical difference in the varied fertilizer application rates. A second study with 2 selections of panax will be initiated in FY-07 to eliminate any variables that may have biased the previous experiment.

Kristen Cuelho, Americorps Volunteer stands besides 9 month old panax (5 feet)

Polyscias guifoylei, Panax at 16 months (8 feet)

At the present time, tests are being conducted by the Hawaii State Department of Agriculture to try and find insecticides, as well as biological approaches to combat the EGW. If you need more information on this invader, you can call the Hawaii State Department of Agriculture or log onto their website at www.hawaiiag.org/hdoa

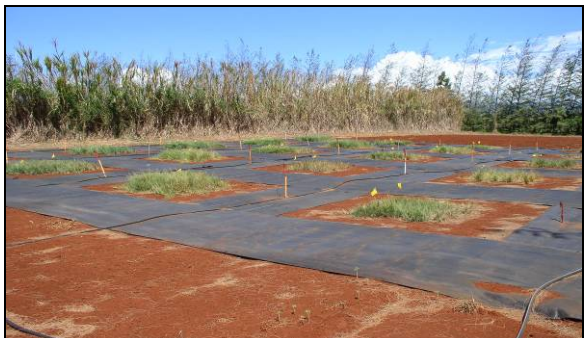
Sporobolus virginicus, Seashore Rush Grass

The PMC is currently evaluating five native accessions of seashore rush grass or more commonly known in Hawaii as aki'aki grass. Although indigenous to Hawaii, Aki'aki is also found throughout the Pacific island area, as well other parts of the world.

Aki'aki is a turf forming, vigorous perennial grass that spreads mainly by underground rhizomes. It is commonly found along Hawaiian shores extending down to high-tide level. Aki'aki is extremely salt and drought tolerant and has been observed growing in a variety of soils and elevations. It resembles bermuda grass, but its leaves and stems are larger and stiffer. Aki'aki can attain a height of 16 inches.

The objective of this study is to determine if there are any significant differences between five accessions of S*porobolus virginicus,* which were collected from various locations in the State of Hawaii. A 'Tested Release' will be selected based on propagation, vigor, and rate of growth. Aki'aki will be tested for conservation practices such a critical area plantings, conservation cover and possible livestock forage use. The accessions include:

Scientific Name	Accession No.	Location	Collector
Sporobolus virginicus	9079840	Molokai	Sakamoto/Joy
Sporobolus virginicus	9079681	Molokai	G. Sakamoto
Sporobolus virginicus	9079841	Oahu	L. Yamamoto
Sporobolus virginicus	9079839	Maui	K. Gooding
Sporobolus virginicus	9079745	Kahoolawe	G. Sakamoto



Sporobulus virginicus, Aki'aki advanced evaluation test plots

Sporobulus virginicus, Aki'aki Kaho'olawe accession

Combating Weeds in Native Plant Populations

Dr. Joseph DeFrank, UH Manoa / NRCS

Weed control in large seed production blocks of native Hawaiian plants is important due to concerns over introduced species on Kaho'olawe and other conservation sites in Hawaii. Herbicide screening experiments were conducted on pili grass (*Heteropogon contortus*), kawelu or emoloa (*Erogrostis variabilis*) and akiaki grass (*Sporobolus virginicus*)

Control of grassy weeds in production sites and newly established landscapes where native grasses are present is a challenging management issue. Herbicides that control grassy weeds while minimizing detrimental impact to stands of native Hawaiian grasses would be a powerful and important tool for plant producers and landscape managers.

Herbicides that can selectively control grassy weeds in broadleaf crops have been commercially available for 15-20 years. These grass herbicides can illicit a wide range of effects from complete kill to varying levels of growth suppression. There is no literature describing the response of native Hawaiian grasses to commercially available postemergence grass herbicides.

The research conducted at he PMC was designed to characterize the response of 3 native Hawaiian grasses, with potential for use in revegetation efforts, to 5 commonly available grass herbicides. In this experiment, the growth response of Piligrass (PG-Heteropogon contortus, HA 5748, NRCS accession #9079683), Emoloa (EM-Eragrostis variabilis, HA 5746, NRCS accession #9079729) and Aki aki (AA-Sporobolus virginicus, HA 5802, NRCS accession #9079745) to spray applications of 5 commercially available selective postemergence grass herbicides will be determined.

The herbicides evaluated for injury and growth effects on 3 native Hawaiian grasses are: Assure II (quizalofop p-ethyl, DuPont), Fusilade DX (fluazifop-p-butyl, Syngenta), Plateau (imazapic ammonium salt, BASF T&O), Prism (clethodim, Valent) and Vantage (sethoxydim, Micro Flo Company LLC). All herbicides evaluated, except Fusilade DX have use sites that include highway rights-of-way, non-crop areas and out door ornamental sites.

Dr. DeFrank applies Fusilade herbicide to native grasses

Postemergence trial 45 days after transplanting

Table 1, Herbicides and rates for application to 3 native Hawaiian grasses. The herbicide formulations used in the experiment were Assure II (0.88 lb ai/gal), Fusilade DX (2.0 lb ai/gal), Vantage (1.0 lb ai/gal), Prism (0.94 lb ai/gal) and Plateau (70% DG-dry granular)

Herbicides	Labeled Recommended Rates of Formulated product per acre	lb. ai/a	Amount ml or grams/3liter of finished spray
1 Assure II (.88 lb ai/gal)	8 oz	.06	4.7 ml
2 Assure II	12 oz	.08	7.0 ml
3 Fusilade DX (2.0 lb ai/gal)	12 oz/a	.19	7.0 ml
4 Fusilade DX	16 oz/a	.25	9.4 ml
5 Vantage (1.0 lb ai/gal)	44 oz/a	.34	25.8 ml
6 Vantage	60 oz/a	.47	35.2 ml
7 Prism (.94 lb ai/gal)	24 oz/a	.18	14.1 ml
8 Prism	34 oz/a	.25	19.9 ml
9 Plateau DG (70 %)	2.88 dry oz	.13	1.6 g
10 Plateau DG	4.32 oz – 3-bags	.19	2.4 g
11 Untreated			

Discussion

It was somewhat surprising that none of the herbicide applications caused a complete kill of the grasses evaluated in this experiment. The rates of application for all herbicides were well within the killing dose range as specified on the product labels. All grasses were actively growing when treated thus insuring a rigorous screening for inhibitory effects caused by the herbicides. It is generally recognized that smaller plants are more susceptible to herbicides than larger ones. It is reasonable to assume that the application of these herbicides at the rates reported here would cause higher levels of stunting and even death if applied to younger plants than those used in this experiment.

The data provide clear direction for the use of these selective grass herbicides for the control of weeds in these three Hawaiian grass species. For PG, Plateau DG should be useful in controlling weeds actively growing when treated as well as weeds emerging from seeds. Plateau DG has both preemergence and postemergence activity and should be useful in both plant production and landscape settings. Plateau DG controls a wide range of grass and broadleaf weeds. The Plateau DG label should be consulted to determine if a specific weed can be controlled prior to using it on a large scale. The only other herbicide that appears to be safe enough for use in PG is Prism. Although the lower rate of Prism did cause a 60% reduction in PG biomass accumulation, it may be useful for controlling grassy weed seedling in larger stands of PG when employing a spot treatment application technique.

Herbicides were generally more inhibitory on EM than they were on PG and AA. Only the low rate of Vantage, Prism and Plateau DG should be used in EM and only as a spot treatment to small weed seedlings. AA was most sensitive species to Plateau DG and this is consistent with the product label that lists two *Sporobolus* weed species as being control by this chemical. Assure II and Prism appears to be the only herbicides with potential use as spot treatment sprays to small grassy weed seedlings in AA.

The integration of numerical data and images of representative plots was used to rank herbicides from most inhibitory to least inhibitory for each grass species. With PG; Vantage > Assure II > Fusilade DX > Prism > Plateau DG. With EM; Assure II > Fusilade DX > Prism ≥ Plateau DG ≥ Vantage. With AA; Plateau DG > Vantage > Fusilade DX ≥ Prism > Assure II.

All the herbicides evaluated in this experiment allow for application to weedy plants in a variety of locations that are important land mangers of highway right-of-ways, airports, parks and other non-crop areas. Fusilade DX is the only product that does not have a non-crop use site. However, the same active ingredient packaged under the trade name Fusilade Turf and Ornamental (Syngenta) can be used in non-crop areas. This research has special importance where the growth of these native Hawaiian grasses is desired along roadways. All these herbicides can be used to kill certain grassy weeds in sites that include highway “right-of-ways”. Plateau DG also has broad leaf weeds listed on the label. No additional label changes are required to use these herbicide in and around stands of these native Hawaiian grasses when they are growing along road sides and similar non-crop areas.

Acknowledgements and Disclaimer

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The authors would like to acknowledge the staff of the NRCS Plant Materials Center on Molokai for their assistance in conducting this work. The assistance of Mr. Orville Baldos is also appreciated for his efforts with this experiment. Funding for this project was provided in part by grant from the USDA and Natural Resources Conservation Service.

Response of transplanted Pacific Lovegrass and Mau'u aki aki to two preemergence herbicides.

Joseph DeFrank, UH Dept. of Tropical Plant and Soil Science
And
Glenn Sakamoto, Manager Plant Materials Center NRCS-Molokai
July 30, 2007

Introduction

An essential part of using more native Hawaiian plants in landscapes and various conservation and road side revegetation efforts is the availability of a weed free seed production system. Two species identified for seed increase at the Plant Materials Center on Molokai are the native Hawaiian grass, Pacific Lovegrass (PL-Eragrostis deflexa, HA #5856, 9079813), and a native sedge Mau'u aki aki (MA-Fimbristylus cymosa, HA #5866, 9079806). These plants are generally started from transplants and require good weed control to allow them to establish quickly and produce seed in weed free production blocks.

An experiment was conducted to characterize the growth response of these 2 native Hawaiian plants to spray applications of 2 preemergence herbicide, Ronstar WP (oxadiazon, Bayer Crop Science) and Surflan (oryzalin, UPI). The research reported here will provide a starting point for developing large scale seed production blocks using chemical weed control tool.

Table 1, Herbicides and rates of application to 2 native Hawaiian plants. The herbicide formulations used in the experiment were Ronstar 50WP (wetable power with 50% active ingredient (ai)) and Surflan (oryzalin 4.0 lb ai/a).

Herbicides	Amount per acre	lb. ai/a	Amount ml or grams/3liter
1Ronstar (oxadiazon) 50WP	4.0 lb	2.0	36 grams
2 Ronstar (oxadiazon) 50WP	8.0 lb	4.0	72 grams
3 Surflan 4AS (oryzalin)	32 oz	2.0	37.5 ml
4 Surflan 4 AS (oryzalin)	64oz	4.0	75.0 ml
5 Ronstar + Surflan	4.0 lb + 32 oz	2.0 + 2.0 lb	36 grams + 37.5 ml
6 Ronstar + Surflan	8.0 lb + 64 oz	4.0 + 4.0	72 grams + 75.0 ml
7 Weeded non chemical			

Results

PL was a weak transplant and many died in the untreated plots making it difficult to accurately evaluate this plant for response to herbicide sprays. All ratings and discussions in this report will be for MA only. The weed control for all herbicide treatments was generally excellent with inconsistent weed populations throughout the experiment in untreated plots. Therefore data will only be presented for MA growth vigor on 4 dates and seed head counts, see Table 2. On the first evaluation date (43 DAS) both rates of Ronstar WP alone and the high rate of the Ronstar WP and Surflan combination reduced visual ratings of MA growth vigor. On the second evaluation date (71 DAS), only the low rate of Ronstar WP did not significantly reduce MA vigor. By the third evaluation date (120 DAS) only the high rate of the Ronstar WP and Surflan combination was significantly reducing MA growth vigor. On the 4th evaluation date (211 DAS) weed pressure in the untreated plots was reducing MA vigor so that the highest levels of growth vigor were recorded in treatments containing Ronstar WP alone at the low rate and Surflan at the high rate, 80% and 90% of maximum vigor respectively.

PL seed head counts were not significantly different between treatments. However, the numerically highest seed head counts corresponded to the treatments with the highest vigor ratings. Although seed head counts were not significantly different, it is clear that the most vigorous plants would produce the highest amount of seeds. The images in Table 3 provide a clear representation of MA vigor at 211 DAS. The inset images for each treatment allow for direct visual comparisons between treatments, since all plants were evenly spaced at the start of the experiment. The plants with the smallest amount of space between plants were the most vigorous.

Discussion

The data in this experiment provides clear and useful information for the use of Ronstar WP and Surflan for preemergence control of weeds in MA. The low rates of both herbicides provided excellent weed control with an acceptable level of growth suppression. New plantings of MA can be treated with either of these herbicides alone with the alternating chemical used in subsequent treatments. A recommended protocol for using Ronstar WP and Surflan for seed production of MP would be to establish the planting with a broadcast application of Surflan at 32 oz/a. After weeds begin to grow in 65 to 75 days, a mechanical weed removal procedure should be employed. After weeds are removed a broadcast application of Ronstar WP can be made to carry the crop for another 55 to 65 days. Alternating herbicides will help to prevent the build up of solid stands of resistant weeds. Germination studies with PL seeds did not show a detrimental impact for any herbicide treatment, data not shown. Both Ronstar WP and Surflan should be considered for seed production of MA and a request to add MA to the product labels should be considered.

Pre-emergence herbicide being applied to Mau'u aki aki

Fimbristylus cymosa, Mau'u aki aki

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The authors would like to acknowledge the staff of the NRCS Plant Materials Center on Molokai, Nancy Bauman, David Duvauchelle, Robert Joy, and JB Juario for their assistance in conducting this work. The assistance of Mr. Orville Baldos is also appreciated for his efforts with this experiments. Mr. Bill Garnett (University of Hawaii at Manoa, Horticulturalist) is also acknowledged for collecting the original seeds if Mau aki aki and providing them to NRCS. Funding for this project was provided in part by grant from the USDA Natural Resources Conservation Service.

Americorps Volunteers a Great Help to the PMC

David Duvauchelle

Americorps to the Rescue

The Hoolehua PMC Earth Team was fortunate to have three hard working Molokai youths from the Americorps program volunteer this past summer. Kawaiola (Dane) Dudoit, Albert (Baba) Dudoit and Kawelo Apiki are a great bunch of energetic men that helped PMC staff with seed-harvesting and planting of native plants and the routine maintenance of test plots.

One project encountered every year at the PMC is the harvesting of aalii for the Kahoolawe re-vegetation effort. They were instrumental in the harvest because currently there is no mechanical means to harvest the crop other than by hand. A record 20+ pounds of seed was harvested. The PMC staff is very appreciative of the efforts from these guys. What would have taken two months of harvesting had been reduced down to three weeks.

The seven weeks of Americorps' help came to an end sooner than we hoped and it was time to say "aloha" to these fine, hardworking and dedicated young men. They learned a lot about plants and their use in conservation. They gained a wealth of practical farm field work experience and Dane, Baba and Kawelo hope to return again next year.

Both Dane and Baba will be heading off to College in California this year while Kawelo will be finishing up his senior year at Kamehameha School on Oahu. We wish them the best of luck in the future and want to thank them for all their hard work while at the PMC.

Americorps volunteers: Kawaiola Dudoit, Albert Dudoit, Kawelo Apiki

Baba Dudoit is nothing but smiles and a positive attitude when it comes to hard work

West Regional Plant Materials Specialist Visits Molokai PMC

In September of 2006, Jim Briggs, West Regional Plant Materials Specialist of the National Technology Support Center - West paid a visit to the Hoolehua PMC. This was Jim's first visit to the PMC in the middle of the Pacific Ocean. His brief four day visit included a one day visit to the PMC discussing current PMC activities, PM Multi-year Plan, PMC Long Range Plan (LRP), touring the facility and offering assistance in support of strengthening our PMC program. His second day was spent flying on a helicopter to the island of Kahoolawe to get a first hand look and feel of what the Kahoolawe Island Reserve Commission (KIRC) re-vegetating effort was all about. The group was met by Natural Resources Specialist, Paul Higashino of KIRC who took the group to various highly erodible sites where native plant re-vegetation projects were being conducted. The third day was spent on the island of Oahu visiting the Kunia Hawaiian Agricultural Research Center (HARC), Del Monte Pineapple Company, and the Pioneer Seed Company. The site visits gave Jim an overview of the diversified agricultural operations in Hawaii and an opportunity to view some of the conservation practices being applied with PMC planting materials. Of particular interest was the commercial seed production of sunn hemp seeds by Pioneer Seed Co., which is the first successful attempt to commercially produce a PMC plant release.

David Duvauchelle, Paul Higashino, Jim Briggs and Bob Joy discussing the growth characteristics of *S. virginicus*, aki'aki on Kahoolawe hardpan

Jim Briggs at LZ 3 pili bale planting site

Newly planted vetiver slips in waterway at HARC experiment station

Vetiver grass stabilizes banks of waterway at Del Monte pineapple fields

Tours and Presentations

Date	Audience	Location
3-15-2006	General Public PMC Activities	PMC
3-21 2006	Current PMC Activities	PMC
4-18-2006	General PublicField Day Earth Day	PMC
4-18-2006	General Public Field Day Open House	PMC
4-21-2006	General Public Earth Day	PMC
4-27-2006	West Regional PMS Tour	PMC
6-13-2006	Training for Americorps Employees	PMC
7-20-2006	Fireman/Realtors	PMC
9-13-2006	PMC Orientation for New Employees	PMC

Nancy Bauman, Biological Science Technician explains seed cleaning process during PMC Field Day

David Duvauchelle, Natural Resource Specialist answers questions on the importance of windbreaks during PMC Tour

Dr. Joe Defrank Living Mulch trial using piligrass to establish hardwood tree plantation

Heteropogon contortus, piligrass, a recent plant release from the PMC being used as living mulch