

**NATURAL RESOURCES CONSERVATION SERVICE
PACIFIC ISLANDS CONSERVATION PRACTICE JOBSHEET
BRUSH MANAGEMENT (314)**

Participant:	Joe Rancher			Date Prepared:	06/10/2009	
Tract(s):	1234	TMK(s):	Xxxxxx	CIN(s):	6, 7	
Field(s):	2, 4, 5			Area Treated (acres):	30	
Ecological Site(s):	F159BY500HI – Ohia-Koa/Hapu`u-Kanawao Forest			Avg. Rainfall (in):	80	
Soil Map Units:	570, Puu Oo (HI801 SSA)					
Slope %:	20	Aspect:	South			
Planner Name:	Jane Conservationist			JAA Level :	III	Job Class: II

SCOPE
This jobsheet provides guidance for the design and implementation of Brush Management.
Objectives of treatment: Manage noxious woody plants; improve forage quantity and quality.
Species Benefited are (list the desirable species): Guineagrass, kikuyugrass, signalgrass (to be planted).

Table A. Brush / Tree Stand Information

Table A shows the target species, the species density before treatment, and the desired maximum species density after treatment (or the minimum required treatment level). The “maximum density after treatment” is calculated on an 80% success (kill) rate.

Target Species 1/ (use common and scientific names)	Field Name or Number	Average Density Before Treatment (stems/acre) 2/	Maximum Density After Treatment (stems/acre) 2/ 3/
Christmasberry (<i>Schinus terebinthifolius</i>)	2, 4, 5	834 stems/ac	<167 stems/ac
Waiawi (<i>Psidium cattleianum</i>)	2, 4, 5	200 stems/ac	<40 stems/ac

^{1/} See attached information sheets from Motooka 2003 “Weeds of Hawaii’s Pastures and Natural Areas” for recommended chemical(s) and application methods that are successful. [HTTP://WWW.CTAHR.HAWAII.EDU/INVWEED/WEEDSHI.HTML](http://www.ctahr.hawaii.edu/invweed/weedsHI.html) Also refer to information below for specifics.

^{2/} Measured using one of the following: 1) Belt Transect; **2) Circular Plot**, or; 3) Ocular estimate because of unsafe terrain and/or impenetrable brush. Attach the completed plot forms to this jobsheet.

^{3/} This is the maximum density of target species after treatment that is required before Farm Bill program payment can be made on this practice. NRCS will withhold payment until these density requirements are achieved. Density after treatment will be measured between 6 and 12 months after the treatment was applied, depending on the species treated. This is to observe any re-growth and the need for additional treatment prior to certification. If the post-treatment measured densities are higher than those shown in column 3 on Table A, the treatment will not be certified by NRCS as completed. In that case, the application of additional treatment(s) using mechanical, chemical and/or biological techniques will be used to achieve the targeted treatment densities, and will be considered as “Operation and Maintenance” for this practice.

MECHANICAL TREATMENT			
Kind of equipment:	Bulldozer and brush rake	Optimum dates of control:	August thru March
Specific techniques or procedures:			
Push large trees into windrows. Use brush rake where possible to minimize soil disturbance. Debris will be placed/piled at least 75 feet away from the edge of drainageways or gulches. Piles will be placed across-slope, not parallel with the slope, to reduce soil erosion potential from treated areas.			
Erosion protection needed post-treatment:			
None.			

BIOLOGICAL TREATMENT			
Kind of biological agent or grazing animal:	N/A		
Season/dates of treatment:		Duration of treatment:	
Planned degree of use on target species:			
Maximum degree of use on non-target species:			
Number of livestock planned (AU):			
Special techniques:			

ORGANIC TREATMENT			
Describe type of treatment:	N/A		
Season/dates of treatment:		Duration of treatment:	
Planned degree of use on target species:			
Maximum degree of use on non-target species:			
Special techniques:			

NEED FOR REPEAT, MULTIPLE APPLICATION TREATMENTS	
<input type="checkbox"/>	Yes, the species treated are highly likely to re-sprout or vigorously reseed, and multiple applications will be needed. Multiple applications may need to be done in the same year, and/or in different years.
<input type="checkbox"/>	No, the species treated should respond after one treatment.

ADDITIONAL INFORMATION PROVIDED TO AID IN THE SUCCESS OF 314 – BRUSH MANAGEMENT	

MANAGEMENT AFTER TREATMENT	
<input type="checkbox"/>	Deferment Period: All treated acres grazed by livestock after brush management is implemented must be deferred from livestock grazing for the entire growing season(s) of the year in which treatment occurred. This is intended to optimize response of desired forage species. Consult with your NRCS representative for an on-site determination if re-entry of livestock is desired sooner.
<input type="checkbox"/>	Prescribed Grazing: A prescribed grazing plan will be followed on the treated acres after the period of deferment is completed.

Additional Management Recommendations and Notes:

None.

OPERATIONS AND MAINTENANCE

- When applied on grazed lands, a prescribed grazing plan **will be implemented** following treatment to encourage improvement of the desired grasses and forbs.
- Brush management practices shall be applied using approved materials and procedures. Operations will comply with all local, state, and federal laws.
- Some re-growth, re-sprouting, or regeneration of target species should be expected. Spot treatment of individual plants will be applied as needed to meet objectives.
- Success of the practice shall be determined by evaluating re-growth or reoccurrence of brush species after sufficient time has passed to monitor the situation and gather reliable data. Practice will be evaluated by NRCS personnel periodically in order to determine whether or not treatment was successful. If target densities after treatment have been achieved within 6 to 12 months of treatment, the practice will be certified. If not, follow up treatment is required, either using mechanical, chemical or biological techniques.
- Abnormal conditions following treatment such as drought, low vigor of desirable grasses, or invasion of undesirable plants may require extension of the grazing deferment period.

Client's Acknowledgement (To be completed after practice I&E and design have been approved)

By signing below, I acknowledge that I:

- have reviewed this Jobsheet and have an understanding of its contents and requirements;
- will make no changes to this Jobsheet, without prior concurrence of NRCS;
- will install, operate, and maintain this practice in accordance with this Jobsheet; and
- will obtain all necessary permits and/or rights, comply with all ordinances and laws, and notify all utilities pertaining to the installation, operation, and maintenance of the practice.

Signature

Date

**NATURAL RESOURCES CONSERVATION SERVICE
PACIFIC ISLANDS PRACTICE CERTIFICATION SHEET**

BRUSH MANAGEMENT (314)

AREA OF TREATMENT (acres) 30 DATE OF FIELD VISIT FOR CERTIFICATION: 07/05/2010 PHOTOS ATTACHED

APPLIED TREATMENT (CHECK METHODS)			
<input checked="" type="checkbox"/> CHEMICAL APPLICATION* <input type="checkbox"/> Applied as designed, or:			
<input type="checkbox"/> Aerial Application		<input checked="" type="checkbox"/> Ground/Foliar Application	
Chemicals applied:	<u>2,4-D ester and triclopyr ester</u>	Application rates:	10% triclopyr ester; 4% 2,4-D ester
Carriers used, if any:	<u>diesel oil on cut surface</u>	Dates of treatment:	<u>09-25-2009 through 10-01-2009</u>

*Attach a copy of the producer's completed Pesticide Recordkeeping Form for certification.

<input checked="" type="checkbox"/> MECHANICAL TREATMENT <input type="checkbox"/> Applied as designed, or:			
Kind of equipment:		Dates of treatment:	<u>09-05-2009 through 09-15-2009</u>
Specific techniques or procedures:			
Erosion protection applied post-treatment:			
<u>N/A</u>			

<input checked="" type="checkbox"/> BIOLOGICAL TREATMENT* <input type="checkbox"/> Applied as designed, or:			
Kind of biological agent or grazing animal:			
Number of biological agents, or livestock grazed (AU):			
Dates of treatment:		Duration of treatment:	
Degree of use obtained on target species (%):		Degree of use on non-target species (%):	

*If applicable, attach a copy of the producer's completed grazing records for certification.

<input checked="" type="checkbox"/> ORGANIC TREATMENT <input type="checkbox"/> Applied as designed, or:			
Describe type of treatment:			
Dates of treatment:			
Degree of use obtained on target species (%):		Degree of use on non-target species (%):	

TREATMENT EVALUATION

Objectives met: Yes No

Target Species (common <u>or</u> scientific name)	Average Density After Treatment (field-certified; enter actual values after treatment)	Target Species (common <u>or</u> scientific name)	Average Density After Treatment (field-certified; enter actual values after treatment)
<u>Christmasberry</u>	<u>32 stems/acre</u>		
<u>Waiawi</u>	<u>1 stem/acre</u>		

Wildlife habitat requirements were met, and cultural resources were protected (if applicable).

CERTIFICATION:

I hereby certify that this practice has been installed in accordance with NRCS standards and specifications.

Jane Conservacionist
NRCS Conservacionist

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Job Approval Authority

07/05/2010
Date

Schinus terebinthifolius

Brazilian peppertree, Christmasberry, wilelaiki

Schinus terebinthifolius Raddi

Family: Anacardiaceae

Description: Small tree to 20 ft tall, bark dark, slightly rough. Leaves alternate, pinnately compound with ~7 leaflets each about 3 inches by 1.25 inches wide, terminal leaflet largest. Flowers in clusters, greenish white; male and female trees separate. Fruit a cluster of bright red “berries,” papery hull, single seed per berry. Fruits in fall and winter, hence the name “Christmasberry.” A local political figure, Willie Rice, used to wear the berries on his hat, hence the name “wilelaiki”⁽⁵⁹⁾. The seed is also used as a condiment, which accounts for the name “Brazilian peppertree.” The resinous sap is aromatic. *Schinus* a Greek name for another resinous tree; *terebinthifolius*, turpentine leaves, referring to the aromatic leaves^(5, 70).

Distribution: Native of Argentina, Brazil, and Paraguay. An attractive ornamental, it has been introduced to subtropical areas worldwide⁽⁶⁰⁾. Widespread throughout Hawai‘i in mesic to dry areas. Dense infestations in wasteland in Ka‘ū on Hawai‘i. Also a serious problem in Florida and Australia.

Environmental impact: Grows densely in drier mesic pastures and forests. Related to the mango and poison ivy. Pollen can cause respiratory problems and sap can cause rash. The seed, a condiment, is known to kill raccoons, deer, and horses⁽⁷⁵⁾.

Management: Cattle avoid Christmasberry but birds spread the seed. Seeds do not germinate while in the fruit and will retain viability no more than 9 months. Thus ingestion by birds is critical not only for dispersal but for pulp removal and germination⁽⁶⁰⁾. This suggests that eradicating small, isolated stands is possible. Sensitive to foliar applications of imazapyr and to foliar and



cut-surface applications of triclopyr, dicamba, and glyphosate, and to basal bark applications of triclopyr. Not sensitive to 2,4-D. Sensitive to soil applications of tebuthiuron and hexazinone⁽¹⁶⁾. Kline and Duquesnel⁽³⁰⁾ reported excellent control with triclopyr ester/oil applied basal bark at 10% of product, triclopyr amine at 50% of product in water applied to cut surfaces, and imazapyr at 1% of product in water applied as foliar sprays. HAVO staff reported control with triclopyr ester at 5% of product in diesel oil applied to basal bark (Chris Zimmer, HAVO). Good control was achieved with high-volume foliar application of a 1% solution of triclopyr amine product. The National Park Service in Big Cypress National Preserve, Florida, used high-volume spraying of triclopyr ester at 2.5 lb/acre. For plants close to native ones, basal bark treatments are made with a 20% triclopyr ester product in oil⁽³⁾. Reported sensitive to cut-surface applications of dicamba, glyphosate, and picloram⁽⁴⁵⁾. Goats will control Christmasberry (An Peischel).

Psidium cattleianum

Strawberry guava, waiawi 'ula-'ula

Psidium cattleianum Sabine

Family: Myrtaceae

Description: Tall shrub or tree to 20 ft. Bark smooth, reddish, mottled, peeling. Leaves opposite, ovate, size variable, to 5 inches long by 2.5 inches wide, aromatic, leathery, shiny, lateral veins not prominent. Flowers, usually 1, in leaf axils, white with many stamens. Fruits 1 inch diameter, red with white pulp; used in making fruit drinks and jams. Seeds small, hard, many, tan color. *P. cattleianum* f. *lucidum* is a narrow tree with yellow fruit. *P. c.* var. *littorale* is a substantial tree with yellow fruit. Name derived from the Greek *sidion* for “little poma-granate”⁽⁷⁰⁾; *cattleianum*, after William Cattley, 19th century English botanist⁽⁶⁹⁾; *lucidum*, shining (leaves); *littorale*, seashore, probably where discovered.

Distribution: Originally from tropical America, now found throughout the tropics. Probably introduced into Hawai‘i in 1825 and widely distributed in mesic to high-rainfall areas⁽⁷⁰⁾. Seed spread by pigs and birds. Seeds have high rate of germination but short viability⁽²⁷⁾.

Environmental impact: Tolerates shade, prolific seeder. Forms dense stands in pastures and forests, is reportedly allelopathic (suppressive)⁽⁷⁰⁾. A serious pest of pastures and probably the most severe weed in rain forests. Fruit hosts fruit flies.

Management: Strawberry guava is sensitive to foliar, frill, and cut-surface applications of triclopyr, dicamba, and 2,4-D, in descending order of efficacy. Glyphosate was ineffective over the long term, although early defoliation was severe. Strawberry guava was also sensitive to basal bark applications of 2,4-D, picloram, and triclopyr. Where applications were made during dry days, conventional basal bark applications of triclopyr ester at 2% and 2,4-D ester at 4% of respective products were effective at Kōke‘e. Thin line applications of triclopyr ester, 20% product in diesel or crop oil, were effective⁽⁵⁶⁾. Thin line vertical applications to opposite sides of stems to 5 inches diameter was also effective. HAVO staff con-



P. cattleianum f. *lucidum*

trolled strawberry guava with triclopyr amine at 50% product in water applied to cut stumps or frills (Chris Zimmer, HAVO). Responses to soil applications of tebuthiuron and hexazinone were erratic, excellent to poor.

