

**NATURAL RESOURCES CONSERVATION SERVICE
PACIFIC ISLANDS AREA**

CONSERVATION PRACTICE JOBSHEET

PRESCRIBED GRAZING (528)



Definition

Managing the controlled harvest of vegetation with grazing and/or browsing animals.

Purpose

- Improve or maintain desired species composition and vigor of plant communities.
- Improve or maintain quantity and quality of forage for grazing and browsing animals' health and productivity.
- Improve or maintain surface and/or subsurface water quality and quantity.
- Improve or maintain riparian and watershed function.
- Reduce accelerated soil erosion, and maintain or improve soil condition.
- Improve or maintain the quantity and quality of food and/or cover available for wildlife.
- Manage fine fuel loads to achieve desired conditions.
- Promote economic stability through grazing land sustainability.

Conditions Where Practice Applies

This practice applies to all lands where grazing and/or browsing animals are managed.

Conservation Management System

Prescribed Grazing is implemented as part of a conservation management system to meet the client's objectives and address the soil, water, air, plant, and wildlife/domestic animal needs.

Plans and Specifications

The following section of this Jobsheet shall be completed to pull together all the elements of the grazing plan including operation and maintenance requirements and discussed with the client.

All conservation practices that assist in achievement of Prescribed Grazing will be operated and maintained properly.

All Jobsheet details are prepared in accordance with requirements in the Conservation Practice Standard (Code 528) and the guidance in the Conservation Practice Specification (Code 528).

Prescribed Grazing - Jobsheet						
Client Name:	ABC Ranch					
Tract(s):	1234	TMK(s):	1-1-1-111:111	Field(s):	1, 2, 3, 4	
CIN(s):	3, 5, 7			Unit Size (acres):	225	
Planner Name:	Jane Conservationist			Date Prepared:	3/18/11	

Purposes for Implementing Prescribed Grazing
<i>The client's goals for resource health and sustainability, livestock health and production, wildlife habitat, quality of family life, etc. are as follows:</i>
Maintaining and enhancing forage and livestock health and production, maintaining control of invasive brush species and preserving economic sustainability. A moderately intensive grazing system is planned for the managed grazing of one cow-calf herd. The system will utilize 11 paddocks. The grazing period per paddock will vary as paddock size varies and as herd size increases.

Forage Inventory and Forage-Animal Balance																																																		
A forage inventory was conducted in a representative area(s) of the paddocks within the grazing plan, or from the soil yield tables if field conditions were less than optimal. The inventory results are shown on the PI-Range-1 (if applicable). The animal balance and recommended number of pastures results are shown on the PI-Range-2. The NRCS Grazingland Spatial Analysis Tool (GSAT) or the PI-Range-5 can be used in lieu of the PI-Range-2.																																																		
<i>Client's current stocking rate (AUM*/acre or AUD/acre*), prior to implementation of the prescribed grazing plan:</i>	86																																																	
<i>Initial NRCS recommended stocking rate (AUM*/acre or AUD/acre*) for the management unit, based on available forage from the forage inventory or soil yield tables:</i>	~110																																																	
*One Animal Unit Month (AUM) equals approximately 791 pounds of air-dry forage, and represents the monthly amount of forage needed for a 1,000 pound cow and her calf up to 6 months old. This also equates to 26 pounds per day of air-dry forage (which is one AUD).																																																		
<i>Additional information needed, if any:</i>																																																		
The main forage species in the Upolu management unit is guinea grass with areas of star grass, kaimi clover and haole koa (<i>Leucaena</i>) scattered throughout. There are random Formosa koa trees intentionally left behind from Brush management for shade and lantana brush in the process of being controlled. Forage species composition has the potential to make a significant difference in the management unit's carrying capacity. Forage clippings collected in 2008 and 2009 showed significant differences in forage yield between guinea grass and star grass after typical recovery periods. Star grass, as a dense mat forming grass, produces more forage per unit area, appears to tolerate drought better and seems to be spreading as a result of periodic mowing of pastures. Clippings collected in areas with over one year's rest showed guinea produces more lbs/ac, but it is expected that star grass needs periodic removal to stimulate production and that an accurate annual production estimate would need to be collected from an area clipped regularly over a year with re-growth measured cumulatively. The table below shows all data collected through Oct. 2009.																																																		
<table border="1"> <thead> <tr> <th>Date</th> <th>Species</th> <th>Pasture</th> <th>Recovery Period</th> <th>Lbs/ac</th> <th>AUM/ac</th> <th>% moisture</th> </tr> </thead> <tbody> <tr> <td>04/10/09</td> <td>Guinea grass</td> <td>3</td> <td>1+ year</td> <td>10640</td> <td>13.64</td> <td>60%</td> </tr> <tr> <td>04/10/09</td> <td>Star grass</td> <td>5</td> <td>1+ year</td> <td>7400</td> <td>9.49</td> <td>61%</td> </tr> <tr> <td>04/10/09</td> <td>Guinea grass</td> <td>2</td> <td>41 days</td> <td>880</td> <td>1.13</td> <td>58%</td> </tr> <tr> <td>04/10/09</td> <td>Star grass</td> <td>2</td> <td>41 days</td> <td>6320</td> <td>8.10</td> <td>71%</td> </tr> <tr> <td>09/24/09</td> <td>Guinea grass</td> <td>5</td> <td>49 days</td> <td>2440</td> <td>2.9</td> <td>53%</td> </tr> <tr> <td>09/24/09</td> <td>Star grass</td> <td>5</td> <td>49 days</td> <td>3960</td> <td>4.71</td> <td>56%</td> </tr> </tbody> </table>	Date	Species	Pasture	Recovery Period	Lbs/ac	AUM/ac	% moisture	04/10/09	Guinea grass	3	1+ year	10640	13.64	60%	04/10/09	Star grass	5	1+ year	7400	9.49	61%	04/10/09	Guinea grass	2	41 days	880	1.13	58%	04/10/09	Star grass	2	41 days	6320	8.10	71%	09/24/09	Guinea grass	5	49 days	2440	2.9	53%	09/24/09	Star grass	5	49 days	3960	4.71	56%	
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Grazing Plan

The livestock grazing plan identifies periods of grazing and/or browsing, deferment, rest, and other treatment activities for each management unit. One management unit is typically comprised of multiple paddocks that receive similar management.

The grazing plan can be described and documented in a number of ways. If the PI-Range-3 (Grazing Plan Worksheet) was used, attach it to this jobsheet. If other documentation was used, attach that to this jobsheet. For example, if the conservation plan map was used as the basis for determining the grazing rotation, it will be attached and must show for at least 1 year the desired grazing rotation, including: 1) which paddocks will be grazed at approximate dates; 2) NRCS recommended stocking rate for each paddock; 3) total days of rest planned for each paddock. The client agrees to keep livestock grazing records and provide them to NRCS annually.

A general description of the grazing plan follows:

In order to achieve the management objective of maintaining and enhancing forage health and productivity, good grazing uniformity across a paddock should be encouraged by managing stock density and, if necessary, supplement placement. As paddock size varies, pasture utilization and grass growth will be evaluated during each grazing event in order to determine grazing period. Management will also consider the growing conditions and physiological needs of the grass. In general, grazing periods during the growing season should be shorter, with grazing impact light to moderate on desirable species in key grazing areas. This management of stock density will enable desirable forage species opportunity to develop healthy root systems and complete life cycles. "Excessive removal of green leafy material during the growing season reduces root growth and replacement, decreasing the ability of plants to harvest solar energy and soil moisture needed for maintenance and growth. Conversely, moderate grazing causes little reduction in root growth or plant vigor (Fig. 3)."

Grazing periods during the slow growing season may be slightly longer, allowing for more uniform utilization between species and plant parts. This will also allow opportunity for legumes and seedlings to emerge in the next growing season.

Since our seasons do not always coincide with the calendar, climatic factors such as rainfall and air/soil temperatures as well as grass growth rates should be monitored in order to make appropriate grazing period adjustments. "Low air temperatures occurring several nights in a row during the growing season can greatly slow plant growth... several nights of less than 60° F may slow growth of warm-season plants" (guinea).

In general, the grass will be grazed to the recommended stubble height for guinea grass of 8-10 inches and will be allowed a minimum recovery period of 25-40 days. Generally guinea grass' nutritive value is highest in the vegetative state and grazing should occur prior to the boot stage, however, as necessary, grass will be allowed to set seed before grazing commences to ensure a good seed crop for germination for the next growing season.

Prescribed Grazing requires grazing records are kept. Records must document herd size, kind and classes of animals, and any changes to herd composition throughout the year, grazing schedules (dates in/out per paddock) and other notes on conditions or circumstances that affect changes to management.

Records can be kept on the attached Prescribed Grazing Record Keeping worksheet, on a map or in a rancher's diary. These records will be reviewed as a part of Prescribed Grazing certification.

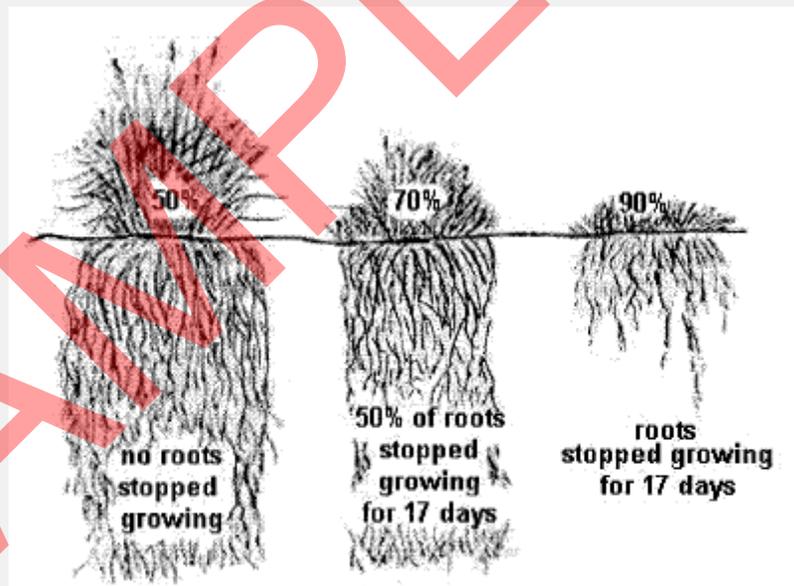


Figure 3. Root development in relation to top removal (Leithead 1979).

Contingency Plan

A contingency plan shall be developed that details potential problems (e.g., severe drought, flooding, wildfire) and serves as a guide for adjusting the grazing prescription to ensure resource management and economic feasibility without resource degradation.

This will include contingency plans to evacuate or de-stock all grazing management units except a "sacrifice lot" in order to minimize damage to the greater grazing resource.

The contingency plan for the management unit is as follows:

Monitoring rainfall and other climatic indicators (soil moisture, grass growth) can help to identify the beginning of a drought. As a condition of prescribed grazing, rainfall will be monitored and records kept. Well managed pastures (healthy vigorous grass with a good root system) have been shown to perform better during and after a drought than poorly managed pastures. In the event of a drought, care will be taken to avoid reducing the pasture's ability to respond to improved conditions. Some management options to consider in order to minimize the effects of a drought on the pasture are: 1. Reduce herd or 2. Move animals off-site.

In order to minimize the effects of a drought on herd performance, a supplementation plan should be developed. It should be noted that supplementation helps animals keep their condition during dry periods, and should be given from the beginning of a drought, not at the end. Supplementation will not improve animal's body condition after it has declined during a drought. When selecting a supplementation method (blocks vs. liquid, etc) consider animals ability to ingest daily ration, flexibility of supplementation composition, and labor available.

After a drought, pasture productivity will continue to be reduced as the grass recovers. Pastures should be allowed a recovery period similar to that of pastures coming out of the slow-growing season before grazing (grass should be allowed to get to the 4-5 leaf stage). Grazing pressure should be light and quick in order to not hinder the development of stem and leaf area and to allow the grass to restore roots and reserves that may have been depleted during the drought. Restocking to pre-drought levels should not commence until after the grass has had several full recovery periods (at least 45 days) of good growing conditions (adequate soil moisture) with little to no grazing. (Reference University of Arizona's "Rangeland Management Before, During, and After Drought").

As a general rule of thumb, the drought management plan will be implemented when the rainfall for the three previous months have been $\leq 50\%$ of average rainfall per location. Average monthly rainfall at the ranch is attached to this jobsheet for the client for drought monitoring.

All drought management actions must be documented in sufficient detail (dates, actions taken, numbers) to demonstrate the plan has been implemented.

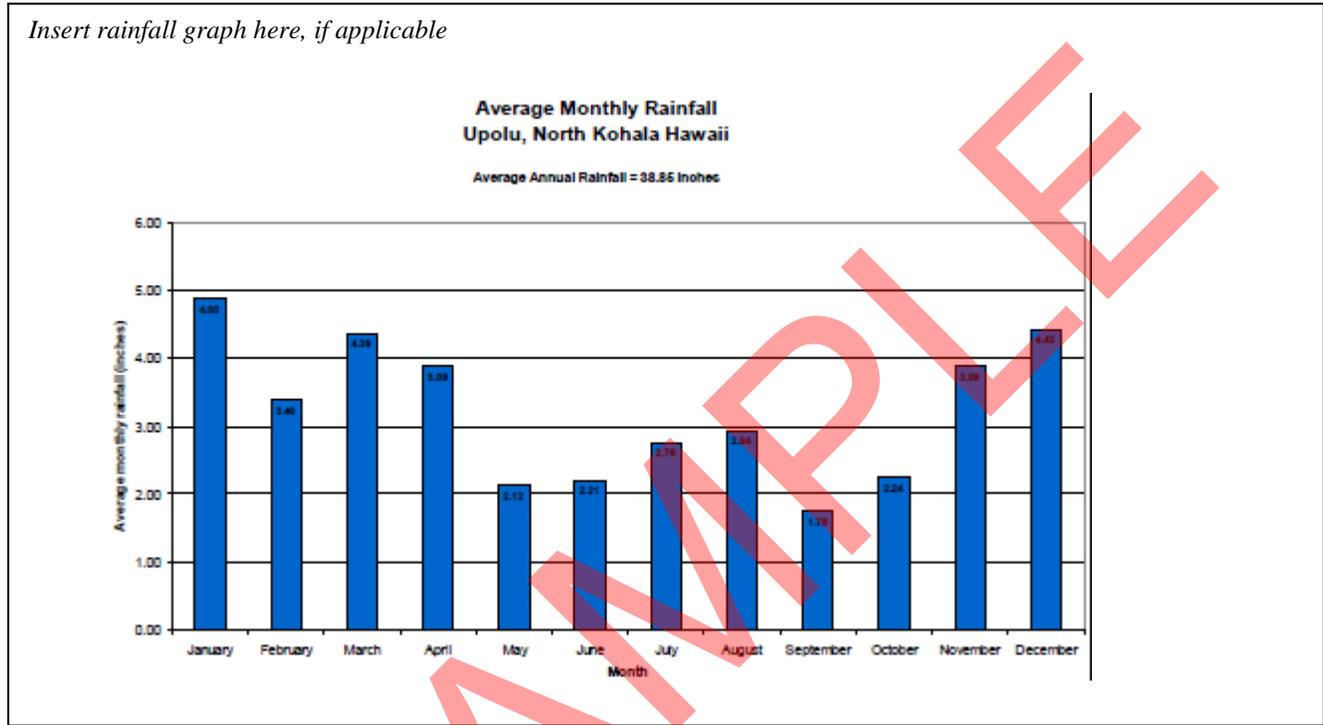
Monitoring Plan			
<p>A monitoring plan shall be developed with appropriate records to assess in determining whether the grazing strategy is resulting in a positive or upward trend and is meeting objectives. Identify the key areas and key plants that the manager should evaluate in making grazing management decisions.</p> <p>In the Pacific Islands Area, the Monitoring Plan will include use of the PI-RANGE-6 Stubble Height & Frequency Worksheet (optional), PI-RANGE-7 Stubble Height & Basal Gap Worksheet (required), PI-NRCS-414 Prescribed Grazing Certification Worksheet and/or the PI-NRCS-416 Browse Resource Evaluation Worksheet. Only use the PI-NRCS-416 if the predominant grazing forage resource and key plants are woody species. If the predominant forage base and the key grazing plants are herbaceous (not woody), use the PI-NRCS-414.</p> <p>"X" or describe the type of worksheet(s) to be completed as part of the monitoring plan (to be attached to this Jobsheet when completed):</p>			
	PI-RANGE-6 Stubble Height & Frequency Worksheet (optional)		
x	PI-RANGE-7 Stubble Height & Basal Gap Worksheet (required) + Photo Documentation (required)		
x	PI-NRCS-414 Prescribed Grazing Certification Worksheet (required)		
	PI-NRCS-416 Browse Resource Evaluation Worksheet (optional)		
Other, as described:			
Key Grazing Species and Key Grazing Areas for Management Unit			
Mgt. Unit Name or #	Key Forage or Browse Species	Key Grazing Areas (shown on map)	Measurement Taken & Time of Year (e.g., stubble height, basal gap, frequency, etc. in the month of October)
1,2,3,4	Guinea Grass, Star grass, haole koa, desmodium	Transects	Line-point intercept, basal gap

Average Monthly Rainfall Information

The following graph is intended to help client in considering the timing of grazing and other activities such as Planting, Brush Management, etc. in association with Prescribed Grazing.

Data from precip_a_hi00x grid codes:

Insert rainfall graph here, if applicable



Prescribed Grazing Record Keeping

Ranch Name:			Herd Name:			
Kind, class and numbers of animals in herd and dates			Paddocks used by herd and acreages			
Kind/class	No.	Dates	Paddock No:	Acres:	Paddock No:	Acres:
Bulls			1	13	8	20.4
Cow-calf pairs			2	19.7	9	20
Heifers			3	16.1	10	26.6
Steers			4	21.4	11	18.9
Horses:			5	17.8	12	10.9
Sheep:			6	17.3	Horse	2.2
Goats:			7	21.4		

20__ Grazing Records																																			
Total Rain- fall	Months	Days																																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
	September																																		
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	March																																		
	April																																		
	May																																		
	June																																		
	July																																		
	August																																		

*Enter notes on the back if necessary.

Practice Approvals

This section documents the practice approvals and the client's acknowledgement of his/her responsibilities.

Job Approval Authority	
NRCS policy requires that the practice inventory and evaluation (I&E) data, design, and installation be approved by a NRCS or partner employee with the required Job Approval Authority (JAA) or higher.	
Required Job Approval Authority for Practice (Enter Job Class I-V): See Ecological Practice JAA Worksheet: http://www.pia.nrcs.usda.gov/technical/.	Required JAA

Practice I&E and Design Approvals				
Practice Approvals	Print Name	Signature	Date	JAA of Approver (I-V)
Inventory and Evaluation*				
Design**				

- * The inventory and evaluation data needed to design the practice is adequate and accurate.
 ** The practice "design" (job specifications - requirements for installation, operation, and maintenance) as documented in this Jobsheet has been prepared in accordance with the Conservation Practice Standard.

Client's Acknowledgement (To be completed after practice I&E and design have been approved.)	
By signing below, I acknowledge that I: <ul style="list-style-type: none"> • 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 keep accurate and current grazing records and provide to NRCS annually, to include: <ul style="list-style-type: none"> • Total number of livestock at the beginning of grazing season (or 12-month period). • Dates of and numbers of livestock moved between paddocks. • Total number of livestock at the end of the grazing season (or 12-month period). • 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

Practice Installation Approval (To be completed after practice installation and checkout.)				
Practice Approvals	Print Name	Signature	Date	JAA of Approver (I-V)
Year 1: Implementation*				
Year 2: Implementation*				
Year 3: Implementation*				

* The practice has been installed in accordance with this Jobsheet, as verified by the practice checkout and checkout notes.