

**NATURAL RESOURCES CONSERVATION SERVICE**  
**CONSERVATION PRACTICE SPECIFICATION**

**RANGE PLANTING**

(acre)  
**CODE 550**

**SCOPE**

This document establishes the technical details, workmanship, and quality and extent of materials required to install the practice in accordance with the Conservation Practice Standard. The information shall be considered when preparing site-specific specifications for the practice.

For standard plantings, the site-specific specifications shall be documented on the NRCS Hawaii Jobsheet for this practice and given to the client. Plantings that require more detailed information, may require the use of other practices prior to planting and require the preparation of a special site-specific specification.

Other documents, such as practice worksheets, maps, drawings, and narrative statements in the conservation plan may be used to plan or design the practice and to prepare the site-specific specifications.

**SPECIES SELECTION**

Refer to Table 1 for adapted forage plants, seeding or planting rates and rainfall and elevation requirements.

**ESTABLISHMENT**

**Seeding**

**Seedbed Preparation**

Seedbed preparation shall consist of plowing or ripping, followed by discing where soil conditions permit. Prepare a firm seedbed. Use no-till seeding methods and equipment, where practicable. If planting large areas of sloping land and no-till is not possible, establish new plantings in increments or in strips across the slope or on the contour alternating with undisturbed areas to minimize erosion.

The use of pitting disc plows, intermediate pits or a contour furrower will break compacted soil, reduce soil erosion and improve moisture conditions in dry areas.

**Seeding Method**

Seeding may be accomplished by either broadcasting, drilling with a grain drill or special range drill or aerial application. Where seed is broadcast, drag the area after seeding with a chain, light harrow or plank to ensure good soil-seed contact.

Depth of seeding depends on seed size, soil moisture and soil texture. A general recommendation is to plant 1/4-1/2 inch deep on medium to fine textured soils and 1/2 -1 inch deep on coarse - textured soils. Plant deeper when soil moisture is low and shallow when moisture is abundant. Large seeds are generally planted deeper than small seeds.

## **Vegetative**

### **Land Preparation and Planting Methods**

Where terrain permits the use of heavy equipment, land preparation will be the same as for seedbed preparation described above. Vegetative material should be evenly distributed on the prepared ground and disced in.

For a more positive placement of the vegetative material, seedbed preparation may be followed by plowing furrows at a maximum depth of 6 inches and a maximum spacing of 6 feet apart. Vegetative material is then placed in the furrow at a maximum spacing of 6 feet between sprigs. Cover the material with soil by discing, or other suitable means, in the direction of the furrow; then compact lightly to ensure good plant-soil contact.

Dense plantings will result in a more rapid stand establishment and fewer weeds. Unless planting material is in short supply, make the furrows about 3 feet apart and place the stolons, sprigs or rhizomes as close as practicable in the furrows.

Where terrain restricts the use of heavy equipment, the minimum site preparation shall consist of providing 6-inch deep holes at the maximum spacing shown in Table 1 for the vegetative material being planted. Fertilize according to soil test recommendations. Place the recommended amount of fertilizer in each hole and cover with approximately 1 inch of soil. Sprigs should be inserted at least 5 inches in the hole. The sprigs should have a minimum of two nodes. The hole should then be filled with soil and compacted to ensure good plant-soil contact.

Adequate moisture is critical when planting vegetative material. Plant only after the rainy season has begun and the soil is moist.

Seedbed or site preparation, seeding and vegetative planting shall be cross sloped or on the contour to minimize erosion hazard.

### **Interseeding Legumes**

Where the intent is to establish legumes in an existing grass range, use a special range drill or a no-till drill or broadcast the legume seed into the grass at the seeding rate given in Table -1. Drill seed directly into existing plant community after excess forage has been removed by grazing or mowing. If broadcasting, use a disc to cover seed or graze livestock using high numbers and a short grazing period to trample seed into the ground.

This type of seeding must be part of a grazing management system that permits adequate control of the livestock. Refer to practice standard 528A-**Prescribed Grazing**.

Rotary or flail mowers may be used where terrain permits.

## **Fertilization**

The Nutrient Management (590) standard must be used when working with the land user on a fertilizer program.

Fertilizer and other amendments should be applied according to soil test results and recommendations.

## **MANAGEMENT**

Newly planted range shall not be grazed or harvested until the stand is well established and has reached the stage of growth given in the standard and specification for **Prescribed Grazing** (Code 528A).

## **WEED CONTROL**

### **Mechanical**

Mow with a rotary or flail mower when the weeds over top a new planting. Mow above the forage plants, if possible. Mow between grazings on an established range.

Limited and controlled grazing may be used to control broadleaf weeds and annual grasses if mowing is not practicable. Livestock numbers should be sufficient to accomplish desired control. Remove livestock if seedling damage occurs.

### **Chemical**

Do not use herbicides when a full cover of desirable legumes is present unless legumes are tolerant to the herbicide used. The **Pest Management** (595) standard must be used when working with the land user on a weed control program.

Herbicide users should be cautioned as follows: If herbicides are handled or applied improperly, or if unused portions are not disposed of safely, they may be injurious to humans, domestic animals, desirable plants, fish, or other wildlife and they may contaminate nearby crops and other vegetation. Follow the directions and heed all precautions on the container label.

Cooperators should be aware of and adhere to the provisions of state and federal laws and regulations concerning the use of agricultural chemicals.

### **Spot Control of Undesirable Weeds**

Use appropriate chemicals according to manufacturer's recommendations, treating individual weeds or patches of weeds carefully, avoiding the desired species.

### **Wick Applications**

Use appropriate chemicals according to manufacturer's recommendations on weeds that are at least 6 inches taller than the desired species.

## **SEEDING MIXTURES**

Where more than one species is to be seeded, reduce the seeding rate for each species in proportion to the number of species in the mixture

**TABLE 1. ADAPTED GRASSED AND LEGUMES \*\***

<b>GRASSES/CULTIVARS</b>	<b>Rainfall range (inches)</b>	<b>Elevation Range (feet)</b>	<b>Seeding 1/ rate (lbs PLS/ac)</b>
giant bermudagrass: 'NK-37' ( <i>Cynodon dactylon</i> )	15-50	0-3,000	2
Buffelgrass: 'T-4464', 'Gayndah' ( <i>Cenchrus ciliaris</i> )	12-35	0-1,000	2
'Biloela', 'Nueces'	12-35	0-1,500	2
'Molopo'	12-35	0-3,000	2
Dallisgrass ( <i>Paspalum dilatatum</i> )	35-100	0-6,000	6
Green panicgrass: 'Petrie' ( <i>Panicum maximum var. trichoglume</i> )	20-70	0-2,500	2
Guineagrass ( <i>Panicum maximum</i> )	35+	0-2,500	2
Kikuyugrass: 2/ 'Whittet', 'Noonan' ( <i>Pennisetum clandestinum</i> )	40+	0-6000	1
Lovegrass, kawelu, 'emo loa 3/ ( <i>Eragrostis variabilis</i> )	20-70	0-2000	2
Orchardgrass ( <i>Dactylis glomerata</i> )	40-100	3,000-7,000	4
Piligrass 3/ ( <i>Heteropogon contortus</i> )	15-35	0-1,500	2
Perennial ryegrass: 'Linn', 'Tetraploid' ( <i>Lolium perenne</i> )	40-100	2,500-7,000	5
Rhodesgrass: 'Bell', 'Katambora' ( <i>Chloris gayana</i> )	25-40	0-1,500	2
Signalgrass: 'Basilick') ( <i>Brachiaria decumbens</i> )	50+	0-3,000	3

**TABLE 1. CONTINUED**

<b>LEGUMES/CULTIVARS 4/</b>	<b>Rainfall range (inches)</b>	<b>Elevation Range (feet)</b>	<b>Seeding 1/ rate (lbs PLS/ac)</b>
Big trefoil: 'Grasslands Maku' ( <i>Lotus pedunculatus</i> )	40+	1500-1600	2
Kaimi clover) ( <i>Desmodium canum</i> )	60-150	0-3000	2
white clover: 5/ 'Haifa', 'Grasslands Huia' ( <i>Trifolium repens</i> )	35-80	1500-1700	2
Siratro ( <i>Macroptilium atropurpureum</i> )	20-70	0-2,500	2
Stylo: 'Cook', 'Schofield', 'Endeavour' ( <i>Stylosanthes guianensis</i> )	50+	0-3,000	2
<b>GRASSES NORMALLY ESTABLISHED VEGETATIVELY</b>			
Kikuyugrass ( <i>Pennisetum clandestinum</i> )	40+	0-6,000	*
Limpograss: 'Bigalta' ( <i>Hemarthria altissima</i> )	60+	0-4,000	*
Napiergrass: 'Mott' ( <i>Pennisetum purpureum</i> )	40+	0-3,000	*
Digitgrass: 'Mealani', 'Pangola' (common) ( <i>Digitaria decumbens</i> )	40+	0-3,500	*
Paragrass (californiagrass) 6/ ( <i>Brachiaria mutica</i> )	40+	0-2,000	*
Stargrass: 'Florico' (puerto rican) ( <i>Cynodon nlemfuensis</i> )	15-80	0-3,000	*
Stargrass: "South Point" ( <i>Cynodon plectostachyus</i> )	15-80	0-3,000	*

- \* For hand planting or planting in furrows, place sprigs in ground at maximum spacing of 6'X6'.
- \* For disced-in plants, use 40 bushels of material per acre. 7/
- 1/ Minimum seeding rate, PLS (Pure Live Seed): The amount PLS is equal to percentage of purity, multiplied by percentage of germination plus hard or otherwise sound seed--that is if a buffelgrass tag states 50% purity and 50% germination, then  $50 \times 50$  divided by 100 = 25% PLS; and the seeding rate should be 8 lbs. bulk seed per acre. The recommended seeding rate in pounds (2) divided by percent PLS (25) equals the actual seeding rate in pounds (8).
- 2/ Seed commercially available with required Federal permit. Permit forms are available from commercial seed suppliers.
- 3/ Native to Hawaii.
- 4/ Legumes must be inoculated with the correct *Rhizobium* culture before seeding.
- 5/ Will not tolerate highly acid soils (stronger than pH 5.5).
- 6/ Prefers wet soil.
- 7/ One bushel equals 1.25 cu.ft. or about 15 pounds.
- \*\* Note: Cultivars indicated have been tried successfully; however, others may be satisfactory. This list is not all-inclusive. Other species may be selected for this practice based on prescriptions by qualified technical specialists and with approval of the NRCS Hawaii State Resource Conservationist.