Seed Production Protocols for Pili grass (*Heteropogon contortus*)

J. DeFrank & Orville Baldos
Department of Tropical Plant and Soil Sciences
University of Hawaii at Manoa
Pili grass
(*Heteropogon contortus*)

Fire tolerant, clump growing native grass

Found in dry leeward sides of all islands from 0 to 2,300 ft above sea level
Pili grass
(*Heteropogon contortus*)

Culturally important
- thatching (hale)
- floor coverings
- torches

Ecologically important
- Grasslands support more native species vs. introduced African grasses
Pili grass
(*Heteropogon contortus*)

Drought tolerance and ability to grow in low fertility soils: ideal re-vegetation species for severely degraded sites

Recent increased interest:
- Streambank stabilization
- Buffer strips
- Urban landscaping
- Roadside re-vegetation
- Vegetation on land fill cap
- Filter strip for farms
Pili grass
(*Heteropogon contortus*)

Readily produces seeds

However, fresh seeds are dormant

Requires storage for 12 months at 86°F and 6% seed moisture content (dry weight basis)
Seed crop establishment protocol for pili grass
Step 1
Site preparation

Very important for success of plantings!

Clear site of trash and other debris
Step 1
Site preparation

Irrigate to promote weed growth

Flush and kill the weeds for at least 3 to 6 months before planting
Step 2
Prepare pili grass plugs

Determine if seeds are dormant

Long method: store for 12 months at 86°F and 6% seed moisture content (dry weight basis). Results in > 90% germination.

Short method: Soak for 15 minutes in 1% Colgin Mesquite Liquid smoke or undiluted pili grass smoke water. Results in about 50% germination.
Step 2
Prepare pili grass plugs

Plant seeds in trays

After 1 week, transplant into dibble tubes filled with potting mix and fertilizer

Grow for 2 months under irrigated conditions

Prior to planting, cut to 4 inches in height to prevent transplant shock
Step 3
Transplant plugs

Install drip irrigation 3.5 ft. between rows

Plant at 3.5 ft. between rows and 1.5 to 3.0 ft. in rows

Fertilize with 100 lbs N/acre

Apply:
Ronstar® G (granular, 100lbs/acre)
Step 4
Weed control during establishment

Two months after planting

Directed spray

Broadleaf weeds: Garlon 4 (1.12 gallons/acre)

Grassy weeds: Assure II (8 fl oz/acre)
Step 5
Preparing the field for seed production

Mow pili grass plants to 4 inches height using a hedge trimmer or sickle bar mower

Mowing encourages upright growth and tillering

Take note of the mowing date = day to start counting for seed harvest 75-85 days
Video
Step 6 Seed Harvesting
Step 7 Seed Drying
Step 8 Seed Cleaning
Step 9
Storage conditions for dormancy loss

After seed has been cleaned and air dried, place them in the 5 gallon after ripening system with a dry or recharged silica gel canister.
Silica gel canister

opened bag of seeds

Seal container using airtight lid

Allow to dry until seeds reach 6% moisture (dry weight basis)
How to monitor seed moisture content

1. Collect 1 gram of seed from the container.

2. Dry sample for 1 day in an oven set at 217°F.

3. 1-gram sample of seeds will need to be dried to a finalized non-changing weight of 0.943 grams to achieve 6% moisture.

   \[
   \frac{1.0 \text{ g} - 0.943 \text{ g}}{0.943 \text{ g}} \times 100 = 6
   \]

4. 2-3 Seed sampling operations may be required to reach 6%. Conditioning container needs to allow for all seeds to be exposed to drying agent, cannot be over packed.
Seal container using airtight lid

Once seed has dried to 6% moisture, remove silica gel

Plug in the thermostat and set to 86°F

Store seeds for 12 months
Step 10
Storage conditions before planting

After 12 months of storage, remove seeds from the afterripening bucket

Seal seeds in airtight bags and store in a reefer set at 41°F

Store until ready for planting
Mahalo!

Questions?