Protocols for Establishing Mauʻu ʻakiʻaki (*Fimbristylis cymosa*) along Roadside Rights of Way Areas

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Mauu akiaki (*Fimbristylis cymosa*)

Coastal sedge

Grows on sandy beaches and rocky outcrops

Leaves are fleshy and leathery

Flowers are ball shaped

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Mauu akiaki (*Fimbristylis cymosa*)

Salt and wind tolerant

Ideal for coastal roadsides

Irrigated median strips and other landscaped areas

Establishment options

Hydroseeding

Plugs

Establishment from hydroseeding

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Raw seeds are typically used for hydroseeding

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Site preparation is important!

Flush and kill weeds at least 3 to 5 times

Clear site of dried plant material and rocks

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Seeding rate determination

1 gram of pure seed = 15,000 seeds

74 viable seeds per square foot

0.5 lbs pure live seed per acre

Seeding rate determination

A standard germination test: pure live seed per seed batch

Weigh approximately 0.5 grams of raw seed

Obtain 4 samples per seed batch.

Seeding rate determination

Germinate seed samples on petri dishes or clean, clear plastic container.

Line container with moistened filter paper or paper towels.

Seeding rate determination

Seal/close container and place in a bright area but away direct sunlight

Keep paper towels saturated

Observe for 15 days

Seeding rate determination

Seeds will germinate 15 days after sowing

Count the number of seedlings that germinated for each sample

Seeding rate determination

Use a handheld counter to make the count easier

Assigning grids for counting makes it easier

Seeding rate determination

Calculate the average number of seedlings per sample

Use this to calculate the amount of raw seed for hydroseeding

Seeding rate determination

Sample problem: Calculate the amount of raw seed needed per acre based on seedling counts of 0.5 gram raw seed samples. Sample 1, 2, 3 and 4 had 319, 232, 210 and 276 seedlings respectively. Calculate the amount of raw seed needed to hydroseed an acre plot. Use the recommended rate of 74 viable seeds/ft^2.

Conversion factors:

1 acre = 43,560 square feet
1 lb = 453.592 grams

Seeding rate determination

First, calculate the average number live/viable seeds per gram of raw seed:

Average number of live/viable seed per 0.5 gram sample

$$= \frac{319+232+210+276}{4}$$

= 259.25 live seeds per 0.5 gram raw seed

Seeding rate determination

Second, calculate the number of live seeds needed to sow an acre of land.

$$\text{Number of live seeds for 1 acre} = \frac{74\ live\ seeds}{1\ square\ foot} \times \frac{43560\ square\ foot}{1\ acre}$$

= 3,223,440 live seeds per acre

Seeding rate determination

Third, calculate the weight (lbs) of raw seed needed to sow 1 acre. You are given the conversion of 1 pound = 453.592 gram:

$= \frac{3{,}223{,}440 \text{ seeds}}{\text{acre}} \times \frac{0.5 \text{ gram raw seed}}{259.25 \text{ seeds}}$ = 6,216.86 grams of raw seed per acre.

Pounds of raw seed per acre = $6{,}216.86 \times \frac{1\ lb}{453.592\ grams}$

= 13.71 lbs per acre

Hydromulch rate determination

For mauu akiaki, the recommended paper mulch and tackifier rates are 1,963 lbs per acre and 2 lbs per acre, respectively.

Hydromulch rate determination

Sample problem: Calculate the amount of raw seed, paper mulch and tackifier needed to hydroseed a 5,000 square foot area. Use the calculated raw seed per acre in the previous sample problem. Also use the recommended rates of paper mulch (1,963 lbs/acre) and tackifier (2 lbs/acre).

Area to be hydroseeded: 5,000 square foot
Pounds of raw seed per acre = 13.71 lbs/acre
Recommended rate of paper mulch = 1,963 lbs/acre
Recommended rate of tackifier = 2 lbs/acre

Conversion factor:
1 acre = 43560 square feet

Hydromulch rate determination

First, calculate the amount of raw seed needed to hydroseed 5,000 square feet:

$$= \frac{13.71\ lbs\ raw\ seed}{1\ acre} \times \frac{1\ acre}{43{,}560\ square\ feet} \times 5{,}000\ square\ feet$$

= 1.57 lbs of raw seed

Hydromulch rate determination

Second, calculate the amount of paper mulch needed to hydroseed 5,000 square feet:

$$= \frac{1{,}963\ lbs\ paper\ mulch}{1\ acre} \times \frac{1\ acre}{43{,}560\ square\ feet} \times 5{,}000\ square\ feet$$

= 225 lbs of paper mulch.

Hydromulch rate determination

Third, calculate the amount of tackifier needed to hydroseed 5,000 square feet:

$$= \frac{2lbs\ tackifier}{1\ acre} \times \frac{1\ acre}{43{,}560\ square\ feet} \times 5{,}000\ square\ feet$$

= 0.23 lbs of tackifier

Amount of raw seed and hydromulch

To hydroseed a 5,000 square foot area you will need:

1.57 lbs of raw seed (259.25 live seeds per 0.5 grams of raw seed)

225 lbs of paper mulch

0.23 lbs of tackifier

Hydromulch rate determination

Amount of mulching material can be varied

Steeper slopes, more tackifier and mulch

Pre-wet mulch first

Add seed last

After hydroseeding

Keep area moist for the first 2 months

Gradually withdraw water: DO NOT TURN OFF COMPLETELY!

Fertilize 6 months after planting: complete fertilizer (16-16-16) at 312.5 lbs/acre

Establishment from plugs

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Ideal for establishing seed production areas

Revegetation of small areas: Small planting beds or narrow median strips

Establishment from plugs

Germinate seeds in trays

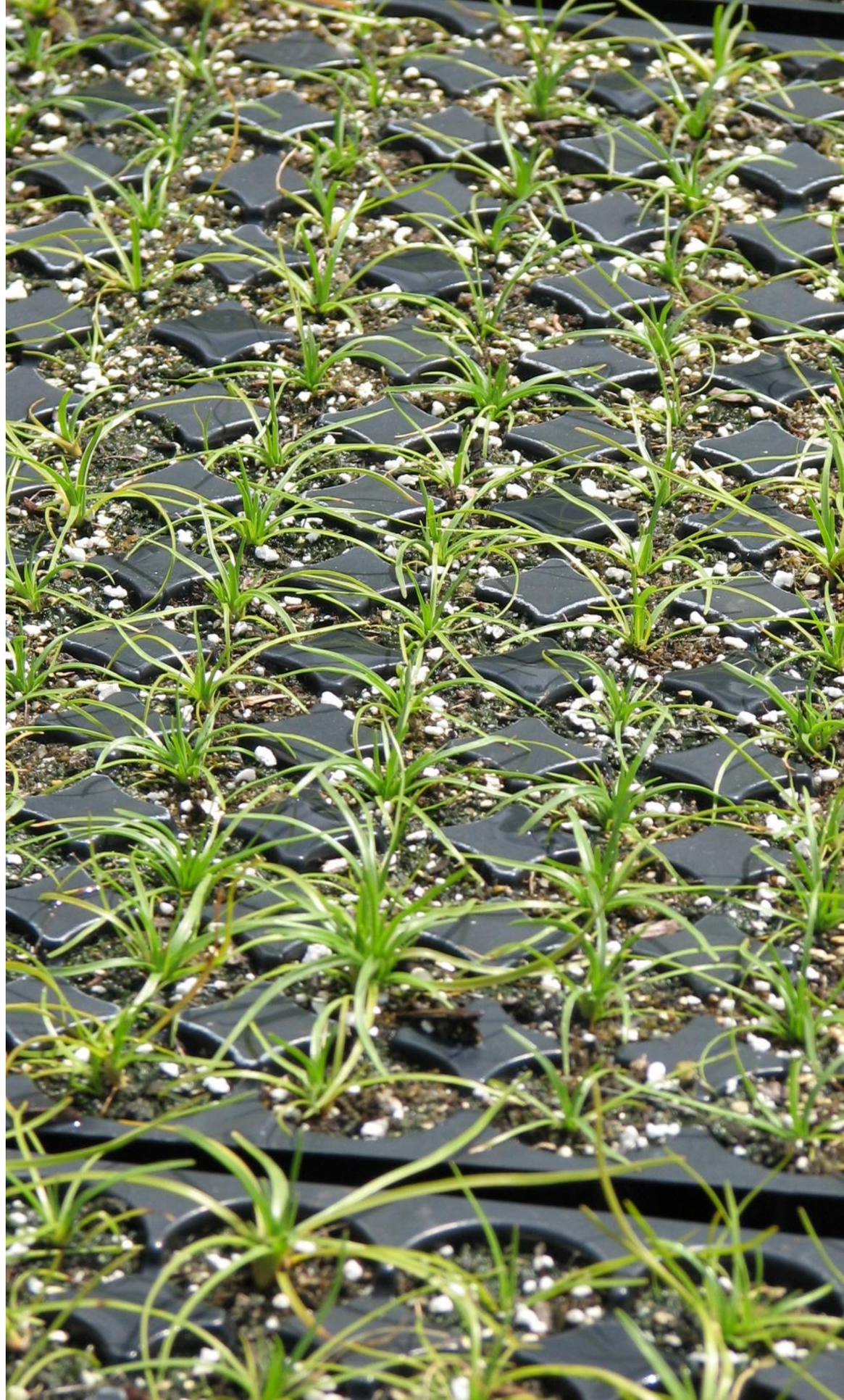
Transplant seedlings in multicell trays

Potting mix:
60% by volume potting mix
40% by volume black cinder

Establishment from plugs

Fertilize: Complete fertilizer (15-15-15) at 312.5 lbs/acre

Grow for at least 3 months under irrigated, full sun conditions



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Transplanting

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Clear trash, stones and living weeds

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Use a digging bar for planting

Recommended spacing: 4 to 6 inches on center

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Establishment from plugs on 4-inch centers

Sample problem: Calculate the number of mau‘u ‘aki‘aki plugs needed to plant a 5,000 square foot area. Use the recommended spacing of 4 inches on center (16 square inches per plant).

Conversion factor:
144 square inches = 1 feet

Establishment from plugs on 4-inch centers

Calculate the amount of plugs needed:

$$= \frac{1\ plant}{16\ square\ inches} \times \frac{144\ square\ inches}{1\ square\ feet} \times 5{,}000\ square\ feet$$

= 45,000 plants.

After transplanting

Spray over the top with Ronstar 50 WP (at 3.6 lbs/acre) or Surflan AS (at 58 ounces/acre)

Fertilize with 312.5 lbs/acre complete fertilizer (16-16-16)

Maintain overhead irrigation

After transplanting

Keep the field moist for the first month with overhead irrigation

Gradually withdraw water: DO NOT COMPLETELY TURN WATER OFF!

Plantings can be mulched as long as mulch is free of weed seeds.

Weed Management

Newly transplanted plugs:

Ronstar 50 WP (50% oxadiazon) at 3.6 lb/acre

Surflan AS (40% oryzalin) at 58 ounces /acre

Weed Management

Established plantings hydroseeded (2-3 months) and transplanted plugs:

Fusilade II T&O (fluazifop-p-butyl 24% at 24 oz/acre) for grasses

Milestone VM (40.6% aminopyralid at 7 oz/acre) for broadleaves (except spurges)

Spot spray for sedges: Certainty (75% sulfosulfuron at 1.0 dry oz/acre)

Mahalo!

Questions?

You can email me at:
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