

Accelerating the Adoption and Implementation of Proven Cover Crop Technologies in Hawaii



Farmers and Hawaii agriculturists examine cover crops plots in Waialua, Hawaii at a Field Day held on January 9, 2007.

Crop Care Hawaii, LLC is a local agricultural consulting company that is dedicated to the establishment and adoption of sustainable agricultural practices. Since 2000 the privately owned business has been coordinating a series of on-farm cover crop plantings to demonstrate the use of cover crops as an easily implemented, cost effective, Best Management Practice (BMP) for soil conservation on Oahu farms. In 2006 and 2007, with funding from the Conservation Innovation Grant Program administered by USDA-Natural Resources Conservation Services, large scale demonstration cover crop plantings of at least 6 acres were established at three farm sites on the North Shore of Oahu – a prime agricultural area for the state of Hawaii. The overall goal of the project was to accelerate the adoption of the cover crop practice as a BMP. Two Field Days were conducted which exhibited the ability of the cover crops to stabilize soil and suppress weeds. Cover crops planted were sunn hemp (*Crotalaria juncea*), oats (*Avena sativa*), buckwheat (*Fagopyrum esculentum*), winter wheat (*Triticum aestivum*), mung beans (*Vigna radiata*), and sunn hemp planted in combination with each of the other cover crops. Field sites were cooperator farms (Pioneer Hi-Bred International, Inc., Monsanto Hawaii, and Twin Bridge Farms, Inc.) in Waialua and Haleiwa. Sunn hemp in combination with oats or in combination with buckwheat was best at suppressing weeds while sunn hemp in combination with oats provided the best protective cover for the soil from wind and rain erosion. Sunn hemp alone significantly increased the amount of soil

nitrogen at Monsanto Hawaii's site while sunn hemp in combination with oats increased soil nitrogen levels significantly at Pioneer Hi-Bred's Waialua farm site. Soil organic matter was improved significantly by the combination of sunn hemp + oats at Monsanto Hawaii's Haleiwa field and by oats planted alone at Twin Bridge Farm's Waialua farm. Per acre cost for the BMP was mostly less than the standard practice of bare ground fallow which does not contribute to soil improvement or conservation. The work will continue from 2007 through 2010 in another project funded by the USDA- Natural Resources Conservation Service Conservation Innovation Grant Program which will expand the effort statewide and seek to quantify the impact of the cover crops on the commercial crops which follow them as a means to encourage further adoption of the BMP.

Cost of the Cover Crop Best Management Practice and Seed Availability.

	BUCKWHEAT	OATS	MUNG BEANS	SUNN HEMP	WINTER WHEAT	BAREGROUND
Seed cost/acre (estimated)	\$48	\$28	\$26	\$120	\$24	N/A
Irrigation Requirements	None*	None*	None*	None*	None*	None*
Seeding Rate (lb/acre)	60	70	70	40	60	N/A
Seed Planting Method	1. initial soil disking 2. broadcast seed 3. light disk or harrow to no more than 2 in.	1. initial soil disking 2. broadcast seed 3. light disk or harrow to no more than 2 in.	1. initial soil disking 2. broadcast seed 3. light disk or harrow to no more than 2 in.	1. initial soil disking 2. broadcast seed 3. light disk or harrow to no more than 2 in.	1. initial soil disking 2. broadcast seed 3. light disk or harrow to no more than 2 in.	N/A 2 rounds of disking to maintain weed control
Time to establishment	7 to 10 days	7 to 10 days	7 to 10 days	7 to 10 days	7 to 10 days	N/A
Time to Plowdown (for green manure)	N/A	N/A	At green seed pod stage	6 – 8 weeks after establishment	N/A	N/A
Cost (field prep and planting)/acre	\$70	\$70	\$70	\$70	\$70	\$70
Herbicide application cost (equipment and material)/acre	N/A	N/A	N/A	N/A	N/A	\$45
Seed Suppliers	Peaceful Valley Farm & Garden Supply (888-784-1722)	Douglass King Company (210-661-4191)	Asian Grocery (808-593-8440)	Koolau Seed & Supply, Inc. (808-239-1280) Crotolaria Seed Specialists, LLC (808-341-0230)	Douglass King Company (210-661-4191)	N/A
Total Cost/A	\$135	\$93	\$92	\$160	\$88	\$140 (if only disk twice) \$185 (if disked twice + herbicide)

*Irrigation is not used with the cover crop practice. Cover crops were planted immediately prior to the rainy season (mid-October 15 through mid-April 15).