

PLANTS FOR FIELD AND INCREASE PLANTINGS

March 1, 2006

This report includes a summary of non-invasive, promising species for field plantings. It serves as a guide to Field Office personnel when considering plants for new field and increase plantings.

The basic job of the Plant Materials Program is to assemble, test, and release plants for conservation use. Proven plants are jointly released by the NRCS, University of Hawaii, and other institutions. Plant materials of formally released plants are provided to growers for the increase or commercial production of the released plants.

Data collected from field plantings are used to document the release of new cultivars. The field planting is the final phase of testing in the plant materials systematic testing process. It is where a new plant is tested on a farm or other site under actual use conditions. Field plantings may also be used to gather additional information on previously released and commercially available plants and to demonstrate a new plant, technique or practice. Information gained from field plantings is incorporated into the Field Office Technical Guide (FOTG) to make it more useful. Field and increase plantings are conducted through Field Offices.

Field Office personnel may request a field or increase planting of the plants in this report by contacting Bob Joy, Plant Materials Specialist (PMS), via phone at: (808) 567-6868 extension 109 or via e-mail at: Robert.J.Joy@hi.usda.gov. After the PM-9 form is completed by the Field Office Planner, Bob will verify with Glenn Sakamoto, Plant Materials Center (PMC) Manager, that the plant materials are available. Glenn or one of the PMC staff will contact the Field Office regarding shipping. Plant materials are free, but supplies are limited and plantings should be relatively small.



***Arachis pintoii* (perennial peanut, forage peanut):** This perennial peanut is a creeping, low growing legume native to Brazil. It makes a dense cover for erosion control and beautification. On Kauai, it looks good as a conservation cover in papayas. It has bright yellow flowers much of the time. Cultivars of *Arachis pintoii* are Golden Glory, Amarillo, Forrajero, and others from CIAT in South America. It is susceptible to attack by spider mites which can cause yellowing of the leaves at times. Propagation is by seed. A fact sheet on perennial peanut can be found on the University of Hawaii CTAHR Web site:

http://www2.ctahr.hawaii.edu/sustainag/CoverCrops/perennial_peanut.asp.



Crotalaria juncea ('Tropic Sun' sunn hemp): Sunn hemp is an erect, annual legume that grows well throughout the Pacific Islands Area. The cultivar Tropic Sun is an excellent cover/green manure crop and is resistant to root-knot and reniform nematodes. The photo shows a crop being mowed prior to soil incorporation at 55 days after planting. It is popular with farmers for soil improvement and nematode control. It is also used as a short term windbreak. The PMC has seed available of Tropic Sun for demonstration type field plantings and seed increase plantings. A fact sheet on Tropic Sun can be found on the following Web site:
<http://www2.ctahr.hawaii.edu/oc/freepubs/pdf/GreenManureCrops/sunnhemp.pdf>.



Dodonea viscosa ('a'ali'i, lampuaye, Florida hopbush): A widely adapted indigenous shrub that is native to Hawaii and naturalized in the Northern Marianas. It is a good windbreak, hedge, and screen plant. It is mostly seen growing to a height of approximately 10 feet, but can reach 25 feet under certain conditions. It has a moderate growth rate. It is propagated by seed and its attractive seed capsules make colorful leis. We have formally released a selection collected on Molokai referred to as Kamiloloa Germplasm 'A'ali'i Source Identified Class of Natural Germplasm (pictured). A fact sheet on 'a'ali'i may be viewed at: <http://www.ctahr.hawaii.edu/oc/freepubs/pdf/OF-20.pdf>.



Eragrostis variabilis (kawelu, 'emoloa, lovegrass): A perennial bunchgrass that is endemic to Hawaii. It is an attractive grass that is found on all the main islands and in the Northwestern Hawaiian Islands. It occurs on coastal dunes and grasslands, open sites in dry forests, and on exposed cliffs up to approximately 3,600 feet. It shows promise for erosion control on critical areas, restoration, wildlife, and beautification. It may be somewhat short lived. It is propagated by seed. Because it is endemic to the Hawaiian Islands, it should be planted only there. The kawelu pictured was collected on Kaho'olawe and was formally released as Kaho'olawe Germplasm Kawelu Source Identified Class of Natural Germplasm. An interesting article on its restoration and wildlife value is at the following Web site:
<http://www.hawaiianatolls.org/research/NOWRAMP2002/journals/goodseeds.php>.



Gliricidia sepium (gliricidia, quick stick, madre de cacao, rechesengel): Gliricidia is a fast growing leguminous tree that grows approximately 30 feet tall and 30 feet wide. It is used for windbreak, forage, and shade for crops such as cacao and coffee. To maintain a compact, hedge type windbreak, it would require trimming as it gets somewhat rangy at maturity. The trimmings can be used for mulch and green manure. It is propagated by seeds and cuttings. The cuttings root easily which is why one of its common names is quick stick. A Risk Assessment/fact sheet is at the following Web site:

http://www.hear.org/pier/species/gliricidia_sepium.htm.



Heteropogon contortus (piligrass, tanglehead): Piligrass is indigenous to the Pacific Islands Area and is widely distributed in the tropics and subtropics. The native Hawaiians used it to thatch their houses and other buildings in dry areas. It is a drought tolerant bunch grass that is currently being used for erosion control and restoration on Kaho'olawe. It is also used for landscaping. The piligrass pictured was collected on Kaho'olawe and was formally released as Kaho'olawe Germplasm Piligrass Source Identified Class of Natural Germplasm. It is propagated by seed. Interesting additional information on piligrass can be found on the Kamehameha Schools' Web site with its associated links at:

<http://kms.kapalama.ksbe.edu/projects/2003/plants/piligrass/index.html>.



Musa sp. ('Dwarf Brazilian' banana): This cultivar was named Santa Catarina Prata in Brazil and is a delicious dessert banana that has enough wind tolerance to be used as an herbaceous wind barrier. It was brought to Hawaii from Brazil in 1979 by Dr. Leng Chia of the University of Hawaii. We began testing it because of requests from Pacific Islands Area farmers for multipurpose windbreaks. The University of Guam has evaluated it as a firebreak. It has performed well wherever it has been planted in the Pacific Islands Area. The bananas are well accepted in the retail and wholesale food markets where it is sometimes, erroneously, referred to as dwarf apple banana. Propagation is by corms. Additional information on bananas is at:

http://www.extento.hawaii.edu/kbase/crop/crops/i_banana.htm



Paspalum hieronymii ('Tropic Lalo' paspalum): The cultivar Tropic Lalo is widely adapted. It is a perennial, creeping grass that forms a dense cover. The photo shows it mowed (left) and unmowed (right) with a bare strip in the middle. It is tolerant of traffic and is low maintenance. It may be planted to grass waterways, terraces, farm roads, lawns, and used as a permanent cover in orchards. It produces very little seed so propagation is by stolons. Tropic Lalo has become a standard recommendation for erosion control in Hawaii and, therefore, field plantings are warranted only for special applications. The PMC will provide small amounts for growers to increase their own planting material for conservation plantings if material isn't available commercially. Other islands in the Pacific Islands Area are in need of more field plantings to determine its range of adaptability. A fact sheet on Tropic Lalo can be found on the PMC Web page under 'Tropic Lalo' Paspalum:

<http://www.hi.nrcs.usda.gov/technical/pmc.html>.



Pennisetum purpureum (hybrid Napiergrass, hybrid elephantgrass): Napier hybrids and hybrids of Napier and pearl millet are sterile and not invasive. ‘Mott’ (pictured) is a hybrid Napier cultivar that was released by the University of Florida. It is very leafy and makes good forage for cut and carry or grazing. A PMC developed hybrid (HA-5690) is a cross between bannagrass, a tall Napier, and a male sterile pearl millet. HA-5690 performed well on a slope planting using the live fascine technique. A Napier x pearl millet hybrid called PMN Hybrid was developed by the Hawaiian Sugar Planters’ Association for the USDA-ARS Georgia Coastal Plain Experiment Station. It has thinner stems than other Napier. These tall grasses have promise for herbaceous wind barriers, vegetative barriers, and forage. Propagation is by stem cuttings planted in furrows, similar to sugar cane. Additional information is at: http://www.tropicalforages.info/key/Forages/Media/Html/Pennisetum_purpureum.htm.



Polyscias guilfoylei (panax, tanitani): Native to Polynesia, panax is used as a space economizing wind barrier/hedge. An accession at the PMC (pictured) has attained a maximum height of a little over 28 feet. Its growth habit is similar to 'Tropic Coral' tall erythrina which is being devastated by the erythrina gall wasp. A 2/16/06 update on the erythrina gall wasp can be seen at:

<http://www.hawaiiag.org/hdoa/npa/npa05-03-EGW.pdf>.

Like 'Tropic Coral', panax is easily propagated by stem cuttings, but its growth rate is about half that of 'Tropic Coral'. A Risk Assessment/fact sheet on panax can be seen at:

http://www.hear.org/pier/species/polyscias_guilfoylei.htm.



Sporobolus virginicus (seashore rushgrass, ‘aki’aki, totoput,): An indigenous, creeping, perennial grass that is propagated by rhizomes. It is native to sandy, usually coastal, sites in tropical and subtropical areas worldwide. It is usually found just above the high-tide mark. It will grow up to 1,000 feet in elevation, but the soil must be fairly loose for the rhizomes to spread. It is performing well for erosion control on Kaho’olawe where ripping or chiseling was done to fracture the hard soil. It is drought tolerant and very salt tolerant and should be useful for shoreline, stream bank, and critical area stabilization. It is palatable to animals and can be grazed. There is a vigorous strain on the beach near Garapan, Saipan. The most promising accession in Hawaii (HA-4846) was collected from Papohaku Beach on the west end of Molokai. A fact sheet may be seen at the following Web site: <http://www.fao.org/ag/AGP/AGPC/doc/Gbase/data/pf000328.htm>.



Vetiveria zizanioides, syn. *Chrysopogon zizanioides* ('Sunshine' vetivergrass): This tall bunch grass from Sunshine, Louisiana is sterile. Its main use is as a vegetative barrier (FOTG Practice Code 601), but it is used in many other ways for controlling erosion and improving water quality. It is planted as vegetative barriers on American Samoa, Guam, Saipan, and Maui. The photo shows it stabilizing a waterway on Oahu. Vetiver is native to India. It has a strong root system that contains an essential oil used in making perfume. The World Bank has promoted the use of vetiver for erosion control in developing countries. Propagation is by plantlets or slips produced by dividing the crown of a mature plant. According to the ARS Germplasm Resources Information Network (GRIN), the genus *Vetiveria* has been changed to *Chrysopogon*. More information may be obtained from the publication, *Vetiver Grass: A Thin Green Line Against Erosion*, which is in each field office, or the vetiver Web site at <http://www.vetiver.org>.

FIELD OFFICE ROLE IN FIELD AND INCREASE PLANTINGS

- SELECT CLIENTS WHO ARE INTERESTED AND KNOWLEDGEABLE ABOUT THE PURPOSE OF THE PLANTING.
- GOOD PLANNING BETWEEN THE CLIENT, PLANNER, AND PMS IS IMPORTANT FOR TIMELY SERVICE FROM THE PMC AND TO GET GOOD INFORMATION FROM THE PLANTING.
- COMPLETE THE PM-9 FORM AND SEND IT TO THE PMS.
- ADVISE THE CLIENT ON THE PLANTING AS TO SOIL PREPARATION, PLANTING RATE, IRRIGATION, FERTILIZATION (SOIL TESTS), AND OTHER CULTURAL PRACTICES.
- FOLLOW THE APPLICABLE FOTG STANDARD AND SPECIFICATION.
- WITHIN 60 DAYS, VISIT THE PLANTING AND SEND A PICTURE WITH COMMENTS TO THE PMS.
- EVALUATE THE PLANTING ONCE EACH YEAR AND SEND A PICTURE AND COMMENTS TO THE PMS.

Photos by: D. Duvauchelle, R. Joy, G. Sakamoto, F. & K. Starr, and L. Suehiro