Edwin Mas, NRCS Plant Materials Specialist, Puerto Rico. 'Iron Clay' cowpea cover crop.

PLANT MATERIALS SPECIALIST REPORT: A SUMMARY OF PROMISING SPECIES IN FIELD PLANTINGS

September 2010

PLANT MATERIALS SPECIALIST REPORT

Robert J. Joy, Plant Materials Specialist

Introduction

This report includes a summary of promising species that are in our Field Planting Program. Information gained from field plantings is incorporated into the Field Office Technical Guide to make it more useful to our Field Office personnel. New cultivars or varieties that are released through our Plant Materials Program depend on the data collected from field plantings to support and document their release. 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.

Forty two field plantings were established in FY 09.The excellent cooperation between Plant Materials and Field Office personnel in the Pacific Basin Area has enabled us to maintain a viable Plant Materials Program. We look forward to the continued high interest in plant materials by our field people who are so important to the success of the program.

SUMMARY OF PROMISING SPECIES IN FIELD PLANTINGS

Arachis pintoi (perennial or forage peanut)

Perennial peanuts are native to Brazil and make a dense cover, although they are slow to establish and spread. They may be grazed and are useful as a low maintenance, permanent cover for erosion control and beautification. The cultivars Amarillo and Forrajero are commercially available as seed and can also be established as cuttings. They have performed well as a conservation cover in coffee in the Kona area of Hawaii. Rhizoma peanuts *(Arachis glabrata),* popular in Florida for forage, are propagated by rhizomes only and have been somewhat slower and more difficult to establish than forage peanuts.

Azadirachta indica (neem)

The neem tree contains several useful active ingredients. Among the most useful is a natural pesticide called azadirachtin. It is mainly extracted from the small fruits but it is also contained in the leaves. There are natural pesticides on the commercial market that contain azadirachtin. Neem has been tested as a windbreak tree. It grows approximately 60 feet tall, has a moderate growth rate, and is moderately wind-tolerant. Its branches are somewhat brittle so it should be used as the inside tree in a multiple

row windbreak. It has shown some damage from salt spray in a field planting near the ocean on Kauai. A concern is that neem has a tendency to produce sprouts from the roots. These sprouts will act as weeds in cultivated fields and must be removed when the tree is used as a windbreak adjacent to cropland.

Canavalia ensiformis (jack bean)

Jack bean is a vigorously growing annual legume that made a satisfactory cover crop for vegetable crops on Guam. It occurs mainly in cultivation in the tropics of both hemispheres. Its growth habit is somewhat bushy and it provides a good cover.

Chrysopogon zizanioides (vetivergrass)

The Sunshine cultivar is non-fertile. It is performing well for erosion control in the PIA for vegetative barriers, stream bank stabilization, and other uses. Commercial plant sources of Sunshine vetiver are established in American Samoa, Guam, and on all the main islands in Hawaii. A plant guide was developed and the Oahu RC&D produced a DVD on Sunshine vetiver as a result of our field plantings.

Crotalaria juncea (sunn hemp)

Sunn hemp grows well throughout the Pacific Islands Area. The cultivar Tropic Sun is an excellent cover crop. It is resistant to root-knot nematodes and the seed and foliage are non-toxic. The seed is commercially produced on Oahu and approximately 12,000 pounds were produced in 2009. Pioneer Seed on Oahu produced 80,000 pounds for their own cover crop use to rotate with their corn seed crops. They also found that a butterfly lays eggs on the sunn hemp flowers. The eggs attract a beneficial parasitic wasp that also parasitizes the corn ear worm. By growing sunn hemp as a cover crop in adjacent fields with corn, the wasp parasitizes the corn ear worm. This is making it possible for them to use little or no pesticide for control of the corn ear worm.

Eragrostis variabilis (kawelu, ‘emoloa, lovegrass)

Kawelu is a perennial bunchgrass that is endemic to Hawaii. It is an attractive grass that is found on all the main islands and the Northwestern Hawaiian Islands as well. A selection collected on Kaho’olawe was formally released as Kaho’olawe Germplasm Kawelu Source Identified Class of Natural Germplasm. The native Hawaiians sometimes used kawelu as an alternative to piligrass for thatching their houses and other buildings. Restoration and erosion control plantings on Kaho’olawe have been moderately successful. Damping-off disease of seedlings has been a problem that can be overcome by treating the seed with a fungicide.

Gliricidia sepium (gliricidia, quick stick, madre de cacao, rechesengel)

Gliricidia is a leguminous tree about 30 to 35 feet tall. It is easily propagated by cuttings or seeds. A windbreak planting on the Hamakua Coast is performing well; however, the annual rainfall there is apparently at the upper limit for gliricidia. It requires trimming to maintain a compact form. The trimmings are used as mulch for weed suppression and nitrogen addition. The leaves decompose fairly quickly. It's a good species for agroforestry. It works well as a shade tree for coffee and cacao. Livestock will browse the foliage.

Heteropogon contortus (piligrass, tanglehead)

Piligrass is indigenous to the tropics and subtropics. The native Hawaiians used it to thatch their houses in dry areas. It is a drought tolerant bunch grass that is currently being used for erosion control and restoration on the island of Kaho'olawe. This selection of pili was collected on Kaho'olawe and has been formally released as Kaho'olawe Germplasm Piligrass Source Identified Class of Natural Germplasm. On Kaho'olawe, it is the main grass planted in restoration plantings and is doing a good job of erosion control. It also shows promise for roadside revegetation.

Lablab purpureus (lablab)

'Rongai' lablab performed well in a cover crop field planting on Guam. It is a somewhat bushy legume and provides good cover.

Paspalum hieronymi (paspalum)

The cultivar Tropic Lalo is performing well throughout the Pacific Islands Area. It is a perennial, creeping grass that forms a dense cover when mowed, is tolerant of traffic, and is low maintenance. It is popular for foot paths and conservation cover in Kona.

Polyscias guilfoylei (panax, tanitani)

Panax has a relatively slow growth rate using conventional cultural methods. We have been able to achieve a reasonable growth rate of approximately 6-7 feet per year with drip irrigation and applications of nitrogen fertilizer. To achieve the equivalent wind protection of 'Tropic Coral' tall erythrina, panax rows need to be spaced closer in the field because its maximum height is only 25 to 30 feet as compared to 40 to 50 feet for Tropic Coral. The plants should also be spaced closer (2' apart) in the row. Termites will occasionally attack panax, but it is mainly in the dead stems and the frequency of occurrence is very low.

Sporobolus virginicus ('aki'aki, totoput)

Native to sandy, usually coastal sites in tropical and subtropical areas worldwide, ‘aki’aki 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 shows promise for erosion control in dry, salty areas. It is drought tolerant and very salt tolerant. There is a vigorous stand of totoput on the beach near Garapan, Saipan.

Stenotaphrum secundatum (St. Augustinegrass)

A shade tolerant dwarf selection of St. Augustinegrass is performing well as a conservation cover in Kona orchards. The chinch bug has been reported to damage St. Augustine lawns on Kauai. We haven’t observed damage in our field plantings, but it is something we must look for during our evaluations.

Urochloa brizantha (signalgrass)

Signalgrass is resistant to the yellow sugar cane aphid. The aphid can significantly reduce yields of other forage grasses. It is performing well on the limestone soils in Guam and Tinian and in pastures near Hilo and Waimea on the island of Hawaii.

Vigna unguiculata (cowpea)

‘Iron Clay’ cowpea (cover photo) was tested as a cover crop on Saipan and performed satisfactorily. It is resistant to root-knot nematodes. Seed is commercially available. Because of its good performance, Iron Clay was added as a recommended cowpea cultivar on the list of species suitable for cover crop (340) in the Pacific Islands Area Vegetative Guide.