PLANT MATERIALS SPECIALIST REPORT

R.J. Joy, Plant Materials Specialist

September 2002

This report includes a summary of promising species in field plantings. We have approximately 100 active field plantings in Hawaii and the Pacific Basin Area.

Information gained from field plantings is incorporated into the Field Office Technical Guides to make them 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. Field office personnel may request a field planting of any of the species described in this report.

The excellent cooperation between plant materials and field office personnel in the Pacific Basin Area and Hawaii 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

Arachis glabrata & *Arachis pintoi* (forage peanut): Forage or perennial peanuts are native to Brazil and make a dense cover, although they are slow to establish and spread**.** They may be grazed but are probably more useful as a low maintenance, permanent cover for erosion control and beautification. *Arachis pintoi* cultivars (Amarillo, Forrajero, Golden Glory) are susceptible to chlorosis caused by spider mites. Amarillo and Forrajero are commercially available as seed. *Arachis glabrata* cultivars are propagated by rhizomes.

Avena strigosa (black oat): A new cultivar of black oat named Soilsaver was recently released by Auburn University and is in commercial seed production in Georgia. In our trials, black oat has looked similar to common oat. Its advantages include root-knot nematode resistance and allelopathy. Soilsaver is a selection from the Brazilian cultivar, IAPAR 61-Ibipora, that is being grown on many acres in Brazil as a cover crop.

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. We are testing neem as a windbreak tree. It grows approximately 60 feet tall and has a moderate growth rate. Its branches are somewhat brittle so it should be used as the inside tree in a multiple row windbreak. It shows some damage from salt spray when planted near the ocean. It has a tendency to produce sprouts from the roots and these must be removed when it is used as a windbreak adjacent to cropland.

Brachiaria decumbens (signalgrass): Signalgrass is resistant to the yellow sugar cane aphid, which can significantly reduce yields of

other forage grasses such as kikuyu. It is growing well where fertility is adequate such as on the limestone soils on Guam and Tinian. It is showing some intolerance to low fertility soils in a field planting in Hakalau, near Hilo, where it requires fertilizer to compete with the relatively unpalatable Hilo or T-grass (*Paspalum conjugatum*).

Canthium ordoratum (alahe'e, lla't): This indigenous tree has a moderate growth rate and grows to approximately 15 feet. It is native to the Hawaiian and Mariana islands. The botanical variety *tinianense* is endemic to the Marianas. *Canthium* is an attractive tree with glossy, green leaves and clusters of small, fragrant, white blossoms. It is wind tolerant and will be included in windbreak field plantings as soon as enough seed becomes available.

Chloris gayana (rhodesgrass): Rhodesgrass is naturally adapted to areas that receive between 25 and 40 inches of rainfall annually. It has long been a popular grass for grazing in these areas. Although it may not persist in higher rainfall areas, it may have application as a living mulch in vegetable production where it could be re-seeded periodically. Invasiveness would not be a problem. Seeds are available commercially. The cultivar Nemkat is resistant to root-knot nematodes and Katambora is resistant to reniform nematodes.

Crotalaria juncea (sunn hemp): Sunn hemp grows well throughout the Pacific Basin Area and Hawaii. The cultivar Tropic Sun is an excellent cover/green manure crop and is resistant to root-knot and reniform nematodes. It is becoming popular in California and the South. The restrictions on the use of methyl bromide have increased its popularity because of its ability to control nematodes. Growers in southern Florida have been successful in producing Tropic Sun seed on a commercial scale.

Dodonaea viscosa (‘a’ali’i, lampuaye): 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 and has use in landscaping and restoration work. Its morphological features are variable or polymorphic. It grows to a height of approximately 10 to 20 feet, depending on the amount of moisture it receives, and has a moderate growth rate. Its attractive seed capsules make colorful leis. We have released a source identified selection collected on Molokai referred to as Kamiloloa Germplasm ‘A’ali’i.

Eragrostis variabilis (‘emoloa, kawelu, lovegrass): ‘Emoloa 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. The native Hawaiians sometimes used ‘emoloa as an alternative to piligrass for thatching their houses. 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, restoration, and beautification. It may be somewhat short lived.

Heteropogon contortus (piligrass, tanglehead): Pili is indigenous to Hawaii 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 the island of Kaho’olawe. This selection of pili was collected on Kaho’olawe and is in the process of being formally released as Kaho’olawe Germplasm Piligrass Source Identified Class of Natural Germplasm. In a stream bank stabilization field planting at Kanaha stream on Oahu, this accession of pili appears to be somewhat shade tolerant.

Ischaemum digitatum (baronsgrass): Baronsgrass is a creeping perennial with a somewhat open growth habit. Ranchers in the

Hilo area like it for grazing. It is tolerant of high rainfall and low soil fertility. *Ischeamum* grows well in Palau and Pohnpei.

Lepturus repens (lasaga): Lasaga is a creeping perennial grass that is indigenous to the Pacific Basin and Northwestern Hawaiian Islands. It's a good sand binder that grows just above the high-water mark. It also grows on limestone soils and is shade tolerant. The identity of the selection we collected on Guam should be verified because if it proves to be sufficiently useful, it could be officially released as a source identified class of natural germplasm.

Musa balbisiana (dwarf brazilian banana): The cultivar Santa Catarina Prata is a delicious dessert banana that has enough wind tolerance to be used as a windbreak. It was brought to Hawaii from Brazil by Dr. Leng Chia of UH. We began testing it as a windbreak because of requests from Pacific Basin farmers for multipurpose windbreaks. It has performed well wherever it has been planted in the Pacific Basin and Hawaii. The bananas are well accepted in the commercial market.

Paspalum hieronymii (paspalum): Cultivar Tropic Lalo is widely adapted in Hawaii and the Pacific Basin Area. It is a perennial, creeping grass that forms a dense cover when mowed, is tolerant of traffic, and is low maintenance. It is becoming popular as a cover crop in the southern US.

Paspalum vaginatum (seashore paspalum): The cultivar Tropic Shore is planted to a constructed wetland in Wahiawa on Oahu. Heliconia was also planted, primarily as an income generating crop. The Tropic Shore, which is very tolerant of salt water, is doing well while the heliconia is not growing well. The constructed wetland was designed to filter waste water which may contain a high concentration of salts.

Pennnisetum purpureum (napiergrass, elephantgrass): There are various accessions of napiergrass; common, hybrid, and hybrids of napier and pearl millet. The hybrids are sterile which means that there is little concern they will become invasive. 'Mott' is a hybrid napier cultivar that was released by the University of Florida. It is very leafy and is performing well as a forage plant in Hawaii and the Pacific Basin Area. A PMC developed hybrid (HA-5690) is a cross between bannagrass, a tall napier, and a male sterile pearl millet. This is a tall plant that has promise for windbreak, vegetative barrier, and forage. It performed well on a slope planting using the live fascine technique. A napier x pearl millet hybrid (PMN Hybrid) was developed by the Hawaii Agriculture Research Center (formerly Hawaiian Sugar Planters' Association) for the USDA-ARS Georgia Coastal Plain Experiment Station. It was developed for forage and has thinner stems than other napiers.

Sporobolus virginicus ('aki'aki, seashore rushgrass): An indigenous, creeping, perennial grass that spreads 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 drought tolerant and very salt tolerant. There is a vigorous stand of 'aki'aki 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.

Stenotaphrum secundatum (st. augustinegrass): The accession HA-4963 has performed well as a cover crop at the UH Poamoho and Kainaliu Experiment Stations. It competes well with weeds, has good drought tolerance, and is very shade tolerant.

Vetiveria zizanioides (vetivergrass): The cultivar Fort Polk (formerly called Louisiana Sunshine) is sterile. It is planted as a vegetative barrier for erosion control on Guam, Saipan, and Oahu.

On the island of Hawaii, it is stabilizing waterway outlets. Vetivergrass is native to India. It is a tall bunch grass with 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. It has pioneered the use of vegetative barriers using vetiver.