LOCAL NAMES
Spanish (palo prieto,chaperno,ateleia)

BOTANIC DESCRIPTION
Ateleia herbert-smithii is a small-medium sized tree usually 10-20 m.

Leaves pinnate.

Flowers greatly reduced with only a single pale cream petal. Two floral morphs are described by Tucker (1990).

The male tree tends to be taller than the female tree and bears much longer branches set at vertical angles.

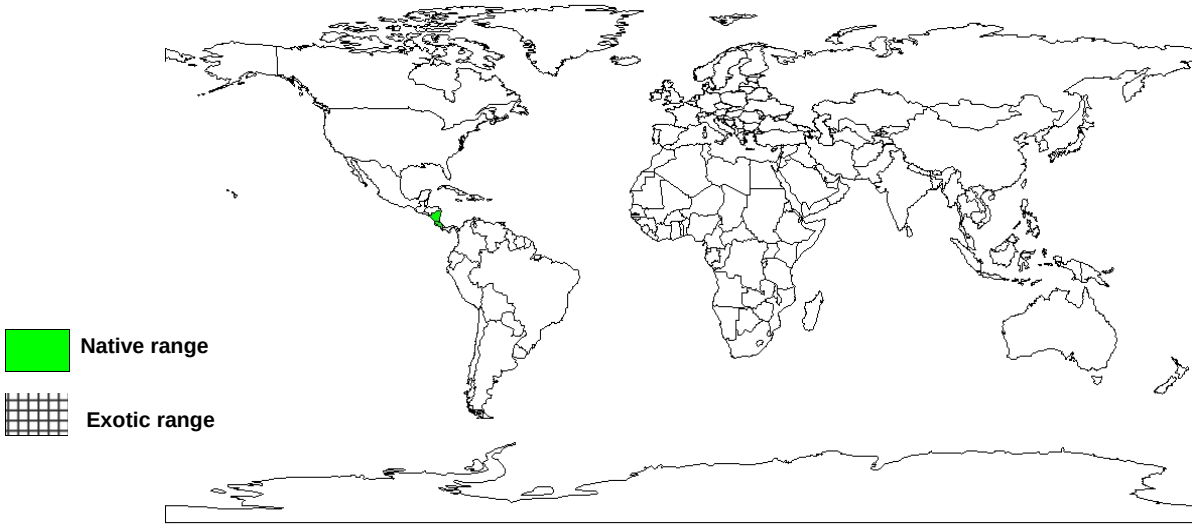
BIOLOGY
This is the only known dioecious (with carpellate and staminate flowers restricted to different trees) and wind-pollinated member of the family Leguminosae.
Males produce pollen in pulses, and the females are continuously receptive for several weeks. In its native range, it flowers in October-November, and its seeds are ready for collection the following March. Fruit production is prolific and bi-annual. Late onset of seeding (20-30 years) has been reported in Costa Rica. Although the male trees are heavily visited by pollen-collecting social bees, the tree is wind-pollinated and dispersed. The wind-dispersed fruits move up to several hundred meters into open pastures. The very small geographic distribution of this tree appears to be due to a combination of its dioecious behaviour, wind-pollination, wind-dispersal, and slow rate of reaching an age of abundant seed production.

ECOLOGY
The natural occurrence of this species is limited to two small areas in central Nicaragua and Costa Rica (Guanaste Province). Prefers dry rocky hillsides but also tolerates waterlogged soils. It is a light-demanding, drought-tolerant pioneer species which rapidly colonizes open ground, shading out grass, however its spread is checked by fires.

BIOPHYSICAL LIMITS
Altitude: 0-600m
Mean annual temperature:
Mean annual rainfall:
Soil type: Dry rocky and black clay soils and can tolerate waterlogged soils.

DOCUMENTED SPECIES DISTRIBUTION

Native: Costa Rica, Nicaragua
Exotic:



The map above shows countries where the species has been planted. It does neither suggest that the species can be planted in every ecological zone within that country, nor that the species can not be planted in other countries than those depicted. Since some tree species are invasive, you need to follow biosafety procedures that apply to your planting site.

PRODUCTS
Fodder: The leaves and seeds are not preferred by livestock though they occasionally eat them during the dry season. The foliage of A. herbert-smithii is eaten by very few species of insects and not browsed by vertebrates, it is relatively free of phenolics, but very rich in aromatic compounds.

Apiculture: Bees visit the male flowers for pollen.

Timber: Wood is hard, strong, fine-textured and quite easy to work. The wood is used in making posts and material for house construction. The sapwood is preferred for making wooden handles because of its strength.

SERVICES
Nitrogen fixing: Known to nodulate, and probably fixes nitrogen.

Other services: Its good resprouting ability makes it ideal for live fencing.

TREE MANAGEMENT
The tree has strong colonizing attributes and therefore a high potential to develop into an aggressive weed. The tree requires little management attention.

GERMPLASM MANAGEMENT
There are about 19,000 seeds /kg. The seed may be pretreated by manual scarification or by hot water (immersion in boiling water for up to 1 minute, then cold water for 12-24 hours). Seed collection must be done in the absence of wind.

PESTS AND DISEASES
A. herbert-smithii seeds are heavily predated on (up to 90%) by the larvae of a monophagous weevil (Curculionidae, Apion johnschmitti) while the fruits are green and the seeds are just developing. The mature dormant seeds are rejected as food by the common generalist seed predator. The spiny pocket mouse (Liomys salvini) also feeds on the seeds.

FURTHER READNG

Janzen DH. 1989. Natural history of a wind-pollinated Central American dry forest legume tree (Ateleia herbert-smithii Pittier). Advances in legume biology. Monographs in Systematic Botany from the Missouri Botanical Garden. 29:293-376.

Schroth G et al. 1996. Root system characteristics with agroforestry relevance of nine leguminous tree species and a spontaneous fallow in a semi-deciduous rainforest area of West Africa. Forest Ecology and Management. 84(1-3): 199-208.

Stewart JL. et al. 1992. Wood Biomass estimation of Central American dry zone species. Oxford Forestry Institute, University of Oxford.

Tucker SC. 1990. Loss of floral organs in Ateleia (Leguminosae: Papilionoideae: Sophoreae). American Journal of Botany. 77(6):750-761.

SUGGESTED CITATION

Orwa C, Mutua A , Kindt R , Jamnadass R, Simons A. 2009. Agroforestree Database:a tree reference and selection guide version 4.0 (http://www.worldagroforestry.org/af/treedb/)