

MULTI-PURPOSE TREES FOR HONEY PRODUCTION

BY DR. G.F. TOWNSEND,
UNIVERSITY OF GUELPH, GUELPH, ONTARIO, CANADA

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Next to food, firewood is the most scarce item in developing countries. More than one third of the world is dependent upon firewood to supply their energy needs and ninety percent of the people in the poorest countries depend upon it as their chief source of fuel.

What better way is there to solve the firewood problem than by planting fast growing trees that will not only produce firewood but also food and fodder? Some of the most suitable trees for this purpose are also valuable honey producing trees that have nitrogen fixing properties which will support grasses.

The growing of trees could make a community almost self-sufficient. A large proportion of the honey produced in tropical areas comes from trees, in contrast to the temperate regions where it is produced mostly from forage crops. Some of these, such as *Prosopis* species will produce food for humans and fodder for animals within three to five years from seed, even under arid conditions. It can be thinned for firewood and will support the growth of dryland grasses. Moreover, the trees will support a traditional income from beekeeping in the form of honey and beeswax. Work in Kenya has shown that beekeeping can in many cases double or triple the family income, with no requirement for land and very little investment. With suitable infrastructure, no investment was needed at all.

The trees in Table 1 are the most suitable for this purpose. Many of these trees are very adaptable to dryland conditions where the problem is most acute. For additional information consult the book *Firewood Crops* volumes 1 and 2 [National Academy of Sciences 2101 Constitution Avenue, Washington, D. C. 20418, USA].

Table 1. HONEY PRODUCING TREES SUITABLE FOR MULTIPLE USES.		
Species Name	Common Name	Other Uses
A. Humid Areas		
<i>Avicennia nitida</i>	White mangrove	Firewood, animal fodder, fast-growing.
<i>Calliandra calothyrsus</i>	Red calliandra	Firewood, fencing, animal fodder.
<i>Gliricidia sepium</i>	-	Firewood, timber.
<i>Gmelina arborea</i>	-	Firewood, timber, animal fodder, edible fruit.
<i>Guazuma ulmifolia</i>	-	Excellent charcoal.
<i>Laguncularia racemosa</i>	Black mangrove	Resins, tannin, pulp.
<i>Syzygium cumini</i>	Java plum	Firewood, shade.
B. Tropical Highlands		
<i>Eucalyptus globulus</i>	Southern blue gum	Firewood, tools, poles, pulp.
<i>Grevillea robusta</i>	Silk oak	Firewood, cabinet wood, shade for coffee or tea.
<i>Inga vera</i>	Guaba	Firewood, furniture, shade, food, seed pulp.
C. Arid Regions		
<i>Acacia senegal</i>	Gum acacia	Charcoal, poles, implements, gum arabic, animal fodder, food -- dried seeds.
<i>Acacia tortilis</i>	Umbrella thorn	Firewood, fence posts, animal fodder. Fast growing.
<i>Albizia lebbek</i>	East Indian walnut	Firewood, furniture, animal fodder. Tolerates salt.
<i>Albizia citriodora</i>	-	Firewood, poles, railroad ties, citronella.
<i>Eucalyptus camaldulensis</i>	Red gum	Firewood, excellent charcoal, termite-resistant wood, pulp.
<i>Eucalyptus citriodora</i>	Spotted gum	Firewood, posts, general construction, fodder, food -- pods.
<i>Pithecellobium dulce</i>	Manila tamarind	Firewood, posts, general construction, fodder, food -- pods.
<i>Prosopis</i> spp.		Firewood, fence posts, fodder -- leaves & seeds, food -- seeds, erosion control.
<i>P. pallida</i>	Algarrobo	Fast growing, tolerates salt and arid conditions up to 300 meter elevation.
<i>P. juliflora</i>	River algarrobo	Tolerates very arid regions up to 1500 meters. May become a weed.

NOTES ON PROSOPIS

There still seems to be considerable confusion over the proper name for the *Prosopis* varieties. I would suggest you obtain *Prosopis chilensis* or *P. pallida*. *P. pallida* is very suitable when it is lowland near the coast as long as the elevation is under 300 meters. *P. chilensis* will grow at much higher elevations. As far as I can gather, *P. juliflora* would be the best for the very dry zone areas, although some claim that it has weed characteristics similar to the mesquite. This would not matter in the desert or semi-desert areas of Africa where anything that will grow is suitable. It is certainly adaptable to those areas with its deep roots and low rainfall requirements.

It is generally recognized that what is needed most in the desert or semi-desert areas of the tropics is a plant which will grow under difficult circumstances with low water requirements that will grow quite fast and have multiple uses. I know of no plant which suits this purpose better than *P. juliflora*. It is still recognized as the most important plant that was ever introduced into Hawaii. The introduction of *Prosopis juliflora*, sometimes called *P. pallida*, into Hawaii made this area the world's largest producers of honey in the early 1930's.

Over 1,000 hectares of *P. juliflora* have been introduced into the coastal desert of Piura in Chile. It is recommended that plants be established about 16-17 m (50 feet) apart. Because it is not the best source of food for livestock when used alone, it is suggested that between the plantings drought-resistant grasses should be planted. Grasses grow well under *Prosopis* as it provides both humus and nitrogen. In the Chilean situation, land containing the planting was turned over to the families living on the project site within three years of its establishment. It was estimated that it would be in full production by the end of the fifth year. Sheep were introduced after trees had grown sufficiently that loss of their small branches will not interfere with production of the pods. There are two harvests a year for seed and correspondingly two crops for honey and wax.

To propagate these trees, the seeds must be placed on a screen and boiling water poured over them. Otherwise they will not germinate satisfactorily. If this is done, they should germinate within a few days.

OTHER HONEY PRODUCING PLANTS

Table 2 lists other important honey producing plants.

Table 2. OTHER IMPORTANT TROPICAL HONEY PRODUCING PLANTS.	
Species Name	Common Name
<i>Acacia sp.</i>	
<i>A. drepanolobium</i>	-
<i>A. mellifera</i>	-
<i>A. zanthophloea</i>	-
<i>Actinodaphne angustifolia</i>	-
<i>Alseodaphne semecarpifolia</i>	-
<i>Antigonon leptopus</i>	Coral vine
<i>Berberis lycium</i>	Barberry
<i>Brassica spp.</i>	Mustards
<i>Cajanus cajan</i>	Pigeon pea
<i>Carvia callosa</i>	Karvi
<i>Conocarpus erectus</i>	Buttonwood
<i>Coriandrum sativum</i>	Coriander
<i>Croton megalocarpus</i>	-
<i>Dombeya goetzenii</i>	-
<i>Eucalyptus spp.</i>	
<i>E. camaldulensis</i>	Red gum
<i>E. melliodora</i>	Yellow box
<i>E. robusta</i>	Swamp mahogany
<i>E. sideroxylon</i>	Red ironbark
<i>Eugenia jambos</i>	Rose apple
<i>Gmelina arborea</i>	-
<i>Gouania lupuloides</i>	Indian vine
<i>Hevea brasiliensis</i>	Para rubber tree
<i>Lepedagathis cuspidata</i>	-
<i>Litchi chinesis</i>	Litchi
<i>Lysiloma bahamensis</i>	Wild tamarind
<i>Madhuka indica</i>	Common mohwah
<i>Mimosa domingensis</i>	-
<i>Nephelium litchi</i>	-
<i>Pegnamia pinnata</i>	Indian beech
<i>Plectranthus rugosus</i>	-
<i>Premna coriacea</i>	Firebrand teak
<i>Prosopis spp.</i>	Algarrobo
<i>P. chilensis</i>	Algarrobo
<i>Rivea corymbsa</i>	-
<i>Sapindus laurifolius</i>	Soap nut
<i>S. mukerossi</i>	Soap nut
<i>Schefflera spp.</i>	-
<i>Sesamum indicum</i>	Goldenrod
<i>Synadenium grantii</i>	African milk bush
<i>Tamarindus indica</i>	Tamarind
<i>Terminalia alata</i>	-
<i>T. arjuna</i>	Winged myrobalan
<i>T. bellerica</i>	Belleric myrobalan
<i>T. chebula</i>	Chebulic myrobalan
<i>Thelepaepale ixicocephala</i>	-