

NECTAR AND POLLEN PLANTS FOR EXTENDING THE FLOW PERIOD IN RUBBER-GROWING

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Availability of perennial sources of nectar and pollen is the most important limiting factor in the survival, abundance and distribution of honeybees

Callistemon lanceolatus, *Manihot glaziovii*, *Pongamia glabra*. With the alternative bee forage, and proper bee management, the colony yield from the Indian

importance of *H. brasiliensis* as a nectar source. Honeybees collect large quantities from the extrafloral nectaries at the tip of the petiole where the leaflets join.

TABLE I. Plants for off-season bee forage in rubber plantations.

	<i>Antigonon leptopus</i> Polygonaceae	<i>Callistemon lanceolatus</i> Myrtaceae	<i>Manihot glaziovii</i> Euphorbiaceae	<i>Pongamia glabra</i> Leguminosae
Propagation	vegetative and generative	generative but commonly vegetative (air-layering)	vegetative and generative (stem-cuttings)	generative
No. years to maturity as bee forage	1.5 to 2	3	1	4 to 5
Flowering period*	1 to 12	1 to 12	4 to 11	4 to 6
Peak of flowering*	7 to 9	9 to 10	9 to mid-11	5 to 6
Pollen/nectar ratings**	P ₁ N ₁	P ₃ N ₁	P ₁ N ₂	N ₁

* 1 - 12 refer to the months January - December

** 1 = major, 2 = medium and 3 = minor source

especially during the prolonged dearth period in apiaries based on rubber plantations. It is in this context that an attempt was made to assess the pollen and nectar potential of four bee forage plants in and around the rubber plantations of the Rubber Research Institute of India (RRII) at Kerala that were successfully established at RRII and found to provide the best bee forage during the dearth⁴. They were: *Antigonon leptopus*,

honeybee *Apis cerana indica* was 19 kg honey/colony/year. Twenty hives can be well maintained in a rubber plantation having 400 mature trees.

The honey flow from rubber (*Ilex brasiliensis*) lasts from January to March and the honey yield accounts for approximately 30% of India's total honey production. Jayarathnam³ and Suryanarayana⁶ emphasized the

The dearth period however lasts from April to December.

Our studies show a synchrony in the activities of bees reared at the RRII Farm and the flowering periods of the newly introduced alternative bee forage plants in various seasons of the year (Table 1). Earlier observations indicated that *A. cerana indica* bees visited more than 60 plant species for nectar and pollen in and around the

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RRII, of which *Manihot glaziovii*, *Cocos nucifera*, *Manihot esculenta*, *Bauhinia* spp. and *Rosa* spp., were potential sources of pollen, and *Antigonon leptopus*,

Eucalyptus spp., *Callistemon lanceolatus*, *Pongamia glabra* and

Tamarindus indica were sources of nectar.

Antigonon leptopus, coral vine, is highly attractive to bees as a source of pollen and nectar in India²⁻⁵. It is a robust vine raised both by vegetative propagation and by seed. Its bright coral-pink racemes arising from the axils of leaves make it highly attractive as an ornamental plant. Some varieties have pure white flowers. Plants grow very fast and flowering begins in the second year after planting; it flowers then almost continuously.

Bottle brush, *Callistemon lanceolatus*, has been recorded as an important nectar source in Punjab¹. It is a small tree with erect or spreading branches,

usually propagated by air-layering, and reaches about 2-4 m in height within three years. It grows very well in tropical conditions and flowering begins three years after planting. Its inflorescences have attractive bright red flowers.

Ceara rubber, *Manihot glaziovii*, also grows very fast, and starts flowering a year after propagating by vegetative means. In Kerala State it usually flowers from April to November, but variations are occasionally noted according to variety and agro-ecological regime. This plant is a major producer of pollen and a minor source of nectar.

Pongamia glabra is a tall erect tree with several branches and glabrous leaves. Flowers are borne on simple peduncled axillary racemes nearly as long as the leaves. In India it is a major producer of nectar⁵. The short gaps in flowering that occur after the rubber honey flow (January-March) could be supplemented to a great extent by other *Pongamia* species.

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RUBBER SCALES NEW HEIGHTS

During the 7th Five Year Plan the Rubber Plantation Industry has scaled new heights in accomplishments. Against the area of 40,000 hectares targetted for new and replanting in 5 years of the 7th Plan, the actual area planted is 76,000 hectares registering a 175% increase. The actual production of rubber realised during the plan period is 2,97,000 tonnes against the targetted figure of 2,65,000 tonnes. In respect of the financial target also there has been significant achievement. The initial outlay for the 7th Plan for rubber was only Rs 53 crores. As against this, the actual amount spent is Rs. 74 crores. This was made possible by diverting funds from the unspent reserves of other agencies under the Union Commerce Ministry. These gains are hailed as all time high records.

Performance of the Rubber Industry during the decade 1980-1990 has also touched new heights. Rubber production which was only 1,53,000 tonnes in 1980 shot up to 2,97,000 tonnes in 1990 - a 94% increase. So also the area under rubber rose from 2,78,000 hectares to 4,30,000 hectares in 10 years - a 55 % rise. Consumption of rubber registered a 98% increase from 1,73,000 tonnes in 1980 to 3,42,000 in 1990. Per hectare yield per year which was only 788 kgs in 1980 got up to over 1000 kgs in 1990. Also per capita consumption rose to 0.5 kg per year in 1990 from 0.33 kg in 1980. Natural rubber prices also registered an increase of 72% from Rs 12.42 per kg to Rs. 21.31 during the decade.

These accomplishments are rated as unique and unmatched.