

NECTAR AND POLLEN PLANTS OF PAKISTAN

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Purposeful planting should be the keynote for all planting compaigns, endeavours and pursuits. All trees are multi-purpose assets but the choice should fall on a specie which fulfills the chief object of planting; the secondary benefits would accrue automatically. Among the multifarious uses of plants, the one rather less appreciated and even neglected aspect is that the plants are the sole source of nectar and pollen for the bees and bee-keeping industry. We talk and dream nostalgically about a land overflowing with milk and honey but practically do nothing to realise our ambition. Generally it does not pay to raise plants specially for the bees but we can combine and encourage, by thoughtful selection of nectar-producing plants for the chief object which could be wood or landscaping and thus a honey crop would be harvested as a by-product.

The climate and other factors of Ecology in Pakistan are suitable for the growth of rich flora in situations ranging from hot coastal climate to sub-tropical and even temperate regions. There are, therefore, no limitations imposed by Ecology or choice of species.

As far as I am aware no study or research has been conducted in Pakistan on the subject of nectar and pollen plants, their phenology and qualitative and quantitative production of nectar and pollen, and prolific flowering plants during the scarcity periods of winter and very hot season. It has not been possible to come across any relevant literature on the subject. Of course, studies have been carried out and scientific papers are available in U. S. A, Austrailia and Europe. Indeed one of the objects of writing this article is to incite research and studies along the line for the benefit of bee-keepers farmers and other planters.

Nectar which is the sole source for the manufacture of pure honey consists of a solution of sugars such as sucrose, levulose and dextrose, plus small amounts of colouring matter and flavours. Nectar flow varies greatly from specie to specie and from plant to plant in the same specie. A number of environmental factors such as temperature, soil, altitude, length of day, cloudiness and humidity in soil and atmosphere affect the availability of nectar. Generally speaking a wide range between day and night temperatures is favourable; a condition which is prevalent in Pakistan. It may not be known to many people in Pakistan that nectar is not only secreted by flowers but also from the leaves, stems, nodes and bracts. Even more interesting is the fact, again scarcely known in our country that there are extra-floral nectaries on the leaves and bracts of cotton. All flowering plants do not secrete nectar; nearly 20% of them do but then even these may be of no value to bees because of insufficiency of nectar or scarcity of plants. Numerous plants are important source of pollen but do not yield any nectar. Concentration of sugar is yet an important factor and bees naturally show preference to plants affording greater percentage of sugar in their nectar. Horse chestnut pyramidal panicles of flowers contains as high as 75% of sugar. High wind velocity retards flight of bees but the presence of trees ameliorated such situation. Rains are harmful and helpful for the bees and nectar yield respectively. However light misty rainfall is beneficial.

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Honey obtained from specific places abounding in specific pure crops of Flora has characteristic qualities of colour, flavour and definite contents of levulose, dextrose and sucrose. The colour of honey may be white, light amber, amber, orange-amber or blueish amber. In Changa Manga Plantation the bees (*Apis dorsata*) produce two crops during spring. The first crop is mainly derived from Shisham flowers, has amber colour and has self-preserving qualities. The second crop is a mixed from shisham flowers and mulberry compound berries. This crop which is dark bluish in colour can not be long preserved owing to larger moisture contents. Chua Saiden Shah honey from the Salt Range is famous because small bees (*Apis meilefera*) manufacture it from the nectar of roses, loquat and phulai

Main nectar producing plants of Pakistan are many and varied from region to region according to topography, rainfall and other Ecological factors. The plants may be wild or cultivated among trees, shrubs, herbs and agricultural crops. It will be beyond the scope of this article to project an exhaustive list of all plants of great importance, fair providers or of minor value to the bees. In the submountainous tract a *Acacia modesta* (phulai) is most valueable to the bees during the hot months of March to May. Here mention must be of certain garden plants which not only add to the beauty of gardens/ parks but would also enhance the supply of nectar to the bees. Black locust (*Robinia pseudacacia*) is among the top listed beautiful plant with white fragrant flowers during April-May when the tree is a virtual bee- hive of activity. This plant deserves encouragement for it is a tree par-excellent for multiple purposes. There is profuse nectar flow and the honey produced is white and of excellent flavour. Tulip tree is another prolific supplier of nectar, the greenish flowes are large 2 inches across, hung evenly on an ornamental shapely crown. It is an important and reliable source of amber honey. Tree of Heaven (*Ailanthus glandulosa*) and *Vitex negundo* are two more small trees commonly employed for their soil-stabilizing effects, but are also ornamental and a source of nectar and pollen. Before leaving the sub-mountainous and the foothills, it would be unfair to ignore and already unjustly neglected charmer of a plant, the redbud (*Cercis* sp.) which is a decorative plant and a friend of the bees. A passing mention may also be made of the many fruit plants and their charming blossom during the spring, like apple, apricot, peaches and prunus which afford wholesome nectar. Loquat flowers are of special importance because they appear during winter months when other flowers are scares.

Coming to the plains, the most conspicuous among the trees is the versatile Eucalyptus which in its native country, Austrailia, has as many as more than a thousand species, a position which accounts for Australia being a leading exporter of honey. About a dozen species grow vigorously in Pakistan. Some of them blossom heavily and almost quarterly including during the scarcity winter months of November and December. If you were to look towards a Eucalyptus tree through a binocular you will observe clusters of flowers during winter and the tree alive with bees. We should encourage planting of more species such as *Eucalyptus ficifolia* which bears scarlet flowers and *E. torquata* (coral gum) which is a small charming tree. Among agricultural crops, Brassica genus plants which include *toria*, *sarson*, *raya* and are important source of nectar during autumn months. Similarly cotton is also valuable for the bees. Among garden trees, citrus plants produce orange colour honey and flavour which is sold it a premium. *Alfa-alfa* (*Medicago sativa*) or lucern and all other cultivated clovers when in flower supply fair amount of nectar. The more important consideration is the availability

of nectar during scarcity months of winter. *Zizyphus jujuba* (ber), loquat and Eucalyptus are valuable trees which flower in winter. An important climber which provides copious nectar throughout spring, summer and autumn months is *Tecoma grandiflora* which must be planted by every home gardener for its beauty and utility. *Dombeya* species is another garden plant, flowers in spring and is just smothered by the bees. Large bees prefer to hang their hives on large trees with strong boughs. Gul-i-fanoos (*Kigelia pinnata*), shisham, neem and semal are suitable for this purpose.

The Holy Quran and hadis are eloquent in praise of honey for its health-promoting and healing properties. It should be an act of piety for Muslims to promote bee-industry in all aspects of its development.