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Status, prospects and strategies for development of organic beekeeping in the South Asian Countries

Dr. V. Sivaram
Division of Apiculture and Biodiversity
Department of Botany
Bangalore University
Bangalore – 560056, India
Telefax: 91-80-22961315
e.mail: sivaram900@gmail.com

Summary:

Beekeeping with *Apis cerana* has been practicing in Asia by using traditional methods from time immemorial. Beekeeping as a non-land based income generating tiny industrial sector is fast emerging an important component of present day strategies for integrated rural development and off-farm employment for sustainable livelihoods. Though the beekeeping in South Asian countries has a long history with traditional management practices, the scientific methods of management is poorly understood by the beekeepers. The present paper provides information on present status of beekeeping, honeybee species, potentialities for honey production for sustainable livelihoods in South Asian countries viz., India, Bhutan, Bangladesh, Nepal, Sri Lanka, Pakistan and Maldives. The paper suggests that the South Asian has tremendous scope for commercial beekeeping and use of bee for pollination of diversity agri-horticultural crops and wild flora. Also, the paper emphasizes on the constraints for beekeeping development and strategies for organic honey production in South Asia.

1. India:

1.1 History of beekeeping in India:

The history of scientific beekeeping in India is not too old though it was known in India since ages and its references are made in ancients Vedic and Bodh scripts. The scientific principles to Indian traditional beekeeping were started to be applied at the end of nineteenth century. The first attempts in India to keep *Apis cerana* F. bees in movable frame hives to enhance maneuverability were made in 1880 in Bengal and in 1883-84 in Punjab and Kullu Valley but with little success. In South India, Rev. Newton started beekeeping training and trained a number of rural folks during 1911-17 and also devised a hive for *A. cerana* now named after him *(Newton hive*) for Indian climatic conditions. Beekeeping work in earnest was taken up in Travancore in 1917 and in Mysore in 1925. The recommendation of *Royal Commission on Agriculture (1928)* for developing cottage industries gave a fillip to beekeeping in rural India. Beekeeping work afterwards in real earnest was taken up in Madras in 1931, in the Punjab in 1933, in Coorg in 1934 and in

UP in 1938. In 1938-39, Beekeepers of India organized themselves and founded *All India Beekeepers' Association*. Afterwards, Indian Council of Agricultural Research (ICAR) established the first Beekeeping Research Station in the Punjab in 1945 and 6 years later at Coimbatore in Tamil Nadu. Since 1950, ICAR has been funding various research projects on beekeeping. In 1980, ICAR started All India Coordinated Project (AICP) on Honey Bees Research and Training which at present has 8 centres throughout the country with administrative centre at Haryana Agricultural University Campus at Hisar in Haryana state.

1.2 Beekeeping and honey potentials:

India has rich and varied vegetation. There are 45,000 species of plants and shrubs, which comprise seven percent of the world's flora. All the four species of honey bees - *Apis cerana, Apis mellifera, Apis florea, Apis dorsata* found in Indian subcontinent and the major portion of honey comes from the wildbee, *Apis dorsta* (Sivaram et. al. 1993) The *Apis mellifera* beekeeping is concentrated mainly in states like Punjab, Jammu & Kashmir, Himachal Pradesh, Haryana, Uttar Pradesh, Bihar and West Bengal. India is basically an agricultural country and copious amount of plant resources available for commercial beekeeping and quality honey production. Though, India has 678,333 Km**2** of forest cover (20.55% of the geographical area, Fig 1), commercial exploitation of bee plant species for honey production is considerably very less (Sivaram and Anita, 200). At present there are about 1 million bee colonies of native honeybee, *Apis cerana* and European bee, *Apis mellifera.* Besides several thousand *Apis dorsata* colonies and all these bee species together producing more than 85,000 metric tons of honey. In India, beekeeping covers 40,000 villages and provides part time employment to more than 2, 50,000 persons. The state wise information on beekeeping, number of colonies and potentials for bee colonies is provided (Annexure 1.)

The country has potential to keep about 120 million bee colonies that can provide self employment to over 6 million rural families. In terms of production, these bee colonies can produce 15 million tons of honey and about 15000 tons of be wax. The demand for honey of sting less honeybee is higher than the supply. This honey is considered of high medicinal value fetches an average price of Rupees 300 per Kg. The advantage of these bees is that they require no feeding and very low management practice. These bees can be kept along with Indian bees in an apiary as they have different habits of foraging and they also found useful as pollinators of many crops.

1.3 Honey production and exports:

The total honey production in the country is estimated to be 85,000 MT and the country's export fetched it Rs.60 millions during 2004-05. Collectively, still the wild honey constitutes nearly about 2/3 of country's total honey production. In India, honey is used directly as medicine and 10 per cent in ayurvedic and pharmaceutical preparations. Indian is known for production of both multifloral and unifloral honeys. The country has rich and diversity of flora which ensures quality pollen and nectar to honeybees.

Beekeepers in many parts of India are practicing scientific beekeeping management and migratory beekeeping for higher honey production. There is a good demand for Indian honey in International market and many countries are importing honey form India. Details of honey export to various countries and value in Indian rupees for the years 2002-03, 2003-04 and 2004-05 provided by the Agriculture and processed food products export development authority (APEDA), Government of India (Annexure 2). The Indian Government enacted the rules for exports of honey vide Order no: 277 dated 4th March 2002 in order to maintain the quality of honey to be exported to other countries. The detail of notification is herewith attached as Annexure 4

1.4 Scope of Diversification in Beekeeping:

There is further vast potential and scope from diversification in apiculture i.e. besides honey; it offers scope for production and marketing of other bee products like pollen, propolis, royal jelly, bee's wax and bee venom. Besides, sale of bee packages and rearing and sale of pedigree queen bees offers a tremendous scope. According to a recent estimate, based on the current price status of inputs, an apiary unit of 100 colonies put under diversification plan can earn a profit of Rs. 3, 19,150 per year. Demand of honey bees for crop pollination is also increasing in some parts of the country. This profession offers a great scope in generating employment besides a good livelihood. Apart form direct employment to the beekeepers, there would be need for good artisans, hive manufactures, apicultural equipment and machinery manufactures, transport system for irrigation of colonies, traders, product quality experts, packers, sellers, raw material dealers *etc*. and allied industries. The value addition technologies of PAU, CFTRI and CBRTI have already started helping beekeepers in harvesting rich dividends. This industry has, so far, remained unexplored and offers tremendous scope.

1.5 Bee Diversity in India:

A. cerana and *A. mellifera* have their distinct regional and floral niches. All the above species are known for their crop specific pollination services and so far as flora in India is in abundance, inter-specific competition is ruled out. *A. mellifera* beekeeping has now been in most part of the country and is being fast established owing to it being high yielder, and it has spread in the Punjab, H.P., J&K, Uttranchal, U.P., W.Bengal, Bihar, Jharkhand, Assam, Orissa, A.P., M.P., Rajasthan, Maharastra, Kerala etc. *A. cerana* is being hived in H.P., J&K, Uttaranchal, Assam, A.P., Karnataka, Maharastra, T.N., Kerala etc. In tribal areas of the country and also in some states like Tamil Nadu, Karnataka, Kerala, Uttaranchal, far eastern states and particularly so in Andaman & Nicobar islands, *A. dorsata* colonies are hunted for honey production. In Kuchh area of Gujarat, *A. florea* honey is squeezed out. Stingless bee, *Trigona iridipennis* Smith, offers good scope for pollination and hybrid seed production under green house/ poly-house conditions, besides yielding high priced honey. Though this bee is present almost in whole of country, Meliponiculture is being adopted in Tamil Nadu and Kerala. *Trigona* though yields only about 100-150g a year, but its honey fetches a price considering it to be of high medicinal value though the same remains to be proved as yet. Bombiculture also offers good scope for crop pollination in temperate areas. Conservation of Megachilids and Xylocopids can

argument crop yields of legumes and cucurbits, respectively. In the Punjab alone, 35 bee species spread over six out of nine families have been documented (Pardeep K. Chhuneja, 2006)

1.6 Khadi Village Industries Commission and its role in Beekeeping Research and Development in India:

Beekeeping is the one of the agro based industry in Khadi and Village Industries Commission (KVIC). It is found that beekeeping is an ideal industry for development as subsidiary occupation in a country like India providing supplementary income to a large number of rural population and also for agriculturists and horticulturists, because of the rich flora available in abundance in the rural areas. So far KVIC's efforts are directed on introduction and development on beekeeping industry preliminary as a source of income from honey as subsidiary income to rural and tribal population, which is having rich nutritional value. The bee product has potential for export. Beekeeping also helps in increasing crops yield both quantitatively and qualitatively.
KVIC has been involved in the development of beekeeping in the following branches.

1. Development and extension
2. Research and Development
3. Training and Education
4. Marketing
5. Financial assistance

1.7 Marketing of honey

The Directorate of beekeeping has taken up marketing of honey as departmental activity since 1970's to help the beekeepers and Co-operatives in disposing stock of honey. There are departmental marketing depots at Ernakulam, Pune and Delhi to take care the marketing aspect of south, central and north India respectively. These depots purchase process, graded and marketed the honey. Besides this, there is a chain of marketing sales out lets throughout the country owned by KVIC departmental such as Major Bhavans and institutions/ Co-operatives. The KVIC is continuously extending financial assistance to several societies involved in beekeeping development and marketing of honey in India. The list of KVIC / KVIB recognized in beekeeping and honey trade is listed (Annexure 3)

2. Bhutan:

2.1 Honeybee species in Bhutan: The five species of honeybee – *Apis cerana, Apis florea*, *Apis dorsata, Apis laboriosa* and the Italian bee, *Apis mellifera* are found in the country. *Apis florea* is restricted to southern foot hills. Whereas, Apis dorsata is extensively found in the forest areas from November to March. *Apis laboriosa* is well distributed in the hilly areas / temperate zones of Bhutan

2.2 Beekeeping and honey production in Bhutan:

Among the other South Asian Countries, Bhutan has highest forest cover (72% of the total geographical area) and suitable for commercial beekeeping. The country has rich diversity of flowering plants these resources can be utilized for organic honey production. The Beekeeping Association of Bhutan is the only organization looking after beekeeping development particularly in Bumthang district of Bhutan. There are about 822 beekeepers managing 1800 *Apis cerana* colonies in Tsirang, Dagana and sarpang provinces of Bhutan. In Bumthang, the average honey production rate of *Apis mellifera* is 3-40 kg per colony per year. The honey production in 1998 and 2005 was recorded as 8500 kgs and 11753 kgs respectively.

Honey hunting in Bhutan is restricted due to stringent nature conservation rules. As per the available information the honey produced in 16 out of 20 districts of Bhutan is considered organic because pesticides are rarely used. However, no comprehensive information on bee-flora and their blooming duration is available. Beekeeping with *Apis mellifera* has been practicing in the centrally located Bumthang Azongkhang district after it was introduced in the year 1986 by Mr. Fritz Maurer. *Apis cerana* bees exist in all the 20 districts, but beekeeping with *A. cerana* is noticed in only eight southern foothill district of Bhutan. No serious threats of diseases and pests in Apis cerana colonies in Bhutan. There is an incidence of EFB in Apis mellifera colonies in Bumthang, due to poor management of colonies. As such there is no beekeeping training centres in Bhutan and no beekeeping development personnel in the Ministry of Agriculture, Royal Government of Bhutan.

2.3 Bee-flora in Bhutan:

There is no detailed study on the flora of beekeeping importance in Bhutan. However, some attempts were made to identify the source of nectar yielding plants in different regions of Bhutan. There is diversified range of climate and ecosystem. The large area of orange and cardamom fields which contribute excellent pastures for the honeybees. In addition to these, apples, pears, peaches, plums, apricots are equally important bee forage plants for bees.

Some of the important bee plants identified in Bhutan are : Patle katush (*Castanopsis tribuloides*), Simal (*Bombax ceiba*), Paka saj (*Termnalia alata*), Gweli (*Elaeagnus parvifolia*), Phaledo (*Erythrina arborescens*), Korlinga (*Rhododendron falconeri*), Rukh Kather (*Artocarpus heterophyllus*), Nimbo (*Citrus aurantifolia*), Poksey (*Citrus maxima*), Jambir (*Citrus sinensis*), Amp (*Mangifera indica*), Tori (*Brassica campestris*), Amala (*Emblica officinalis*), Baer (*Zizyphus mauritiana*), Titiri (*Tamarindus indica*), Litchi (*Litchi chinensis*), Dzambooling metog (*Magnolia campbelli*), Gop (*Allium cepa*), Kopi (*Brassica oleracea*), Metog yoenkom (*Spiranthesis sinensis*), Lee (*Pyrus pashia*), Chengmasing (*Salix babylonica*), Sey-gi-metog (*Abelmoschus manihot*).

3. Bangladesh:

3.1 Beekeeping and honey production in Bangladesh:

Beekeeping practice started at least 400 years ago. Honey hunting was virtually a very old practice in the country. In Bangladesh there are three bee species viz. *Apis dorsata, Apis cerana* and *Apis florea* are found. In addition to these bee species, *Apis mellifera* was introduced in Bangladesh in the year 1992 on experimental basis and now in many parts of the country it is gaining popularity because of higher honey yield. The data pertaining to the plants useful as bee forage and their flowering duration is available for understanding the honey and pollen flow seasons. The forest area is only 9% to the land area. Most of the honey in Bangladesh will come from *Apis dorsata*. Due to the concerted efforts of the agencies like Bangladesh Institute of Apiculture, Bangladesh Small and Cottage Industries Corporation and other National and International agencies the total honey production in the country has increased from 596.20 tones in 2002 to 1109.50 tones in 2005.

Though there is an estimated demand of 2500 MT of honey in the country and also the demand for honey is gradually increasing. With the technical and financial support from various International organizations like Hunger Free World, CIDA, SIDA, NORAD, WINROCK International, FAO of UN, OXFAM, UNDP, ICIMOD etc there are 14500 beekeepers are involved in beekeeping sector and 1000 beekeepers are engaged in commercial honey production by practicing scientific methods of beekeeping management. In this country about 800 – 900 MT of honey is being produced

3.2 Types of honeybees in Bangladesh: There are four types of honeybees are found in Bangladesh and useful for honey production, they are:

Apis dorsata (wild bee / rock bee**):** This bee species is originated form Asia. They are the largest among all the honeybees and are ferocious in nature. Each colony of *Apis dorsata* can yield 30-40 kgs of honey in average. Quality of *Apis dorsata* honey comparatively inferior. Most of the bee hunters collect honey from these colonies by adopting traditional methods. The collected honey is sold locally for through away price. These bees are found throughout Bangladesh in natural condition, however, large numbers of colonies are found in Sunderban mangrove forest.

Apis cerana: The species of bee is originated from Asia. There are twelve subspecies are scientifically identified till today. Single colony have many combs and less migratory in nature, also easy to domesticate. Absconding is a common phenomenon, when management of the colony is not proper. Annual honey yield from one colony will be between 8-10 kgs in average. The quality of honey is very good.

Apis florea: This bee species is also originally from Asia. It is commonly called as little bee and smallest in size among honeybees. Honey production capacity is

very low. Five hundred grams of honey may be produced from a healthy colony. The quality of honey is good and has medicinal properties.

*Apis mellifera***:** This bee is originated from Europe and Africa, now domesticated in almost all parts of the world. *Apis mellifera* was introduced to Bangladesh during 20th century. Major honey producing bee species in the world. Less absconding and swarming habit. By practicing good management practice it is possible to harvest more than 50 kgs of honey from a single productive colony.

3.3 Important honey sources in Bangladesh:

A large number of flowering plants found throughout the country and blooming during different months of the year, and provide pollen and nectar to honeybees substantially. Some of the very important bee plant species are: *Brassica napus* (Mustard), *Litchi chinensis* (Litchi), *Zizyphus jujuba*, *Moringa oleifera, Cocos nucifera, Helianthus annus, Eugenia jamolana, Coriandrum sativum, citrus* sp., *Sesamum indicum*. The other important honey sources are : *Raphanus sativus, Brassica sp., Mimosa pudica, Mimusops elengi, Mikania scandens, Musa balbisiana, Mangifera indica, Leucas aspera, Linum usitatissimum, Glycosmis pentaphylla, Foeniculum vulgare, Eugenia jambos, Dolichos lablab, Cucumis sativus, crotalaria juncea, Cajanus cajan, Borassus flabellifer, Bombax malabaricum, Azadirachta indica, Averrhoa carambola, Albizzia sp., Allium* sp.*, Hibiscus esculentus, Ipomoea alba, Lagerstromia frox-reginme, Solanum lycopercum, Trachyspermum, amni, Celosia cristata, Cosmos bipinnatus, Alstonia scholaris, Anthocephalus cadamba, Barringtonia lanceolatus, Ficus elastica, Cucurbita moschata, Momordica dioica, Zea mays, Vigna sesquipedalis, Tamarindus indica, Aegle marmelos, Annona sp., Acacia sp., Areca catechu, Camellia sinensis, Elaeocarous floribundus, Phyllanthus emblica, Manilkara achrus, Phoenix sylvatris, Spondias mangifera, Syzygium jambos, Syzygium samarangense.*

4. Nepal:

Nepal is bordering India in the east, south, west and China in the north. About 26% of the land area is covered by forests. The country is known for its floral diversity and great potentialities for the large scale development of beekeeping

4.1 Honeybee species in Nepal:

There are five honeybee species are reported from Nepal. These include the indigenous honeybees, *Apis cerana, A. dorsata, A. florea, A. laboriosa* and exotic bee, *A. mellifera*. Among all this *Apis cerana* is distributed in all both hilly as well as plain areas of Nepal. *Apis mellifera* has been introduced into Nepal from India during 1990 , currently this bee species is flourishing well in low hill and plain areas. *Apis laboriosa* is found in high mountain areas.

4.2 Beekeeping and honey production in Nepal:

Beekeeping and honey production in Nepal is still under development stage. Much of the honey obtained from *A. dorsata* can be considered as organic since the honey harvested from forests of remote areas in Nepal where usage of pesticides and agro chemicals are considerably very less. According to the Ministry of Agriculture, Nepal has about 123,836 colonies of Asian hive bee, *Apis cerana*; 15,000 colonies of *Apis mellifera* and about 20,000 colonies of wild bee species (Neupane, 2003). The honey is essentially a product and source for the sustainable livelihoods for the poor beekeepers and traditional honey hunters. Honey produced from the indigenous honeybee species is considered as organic honey, whereas the honey obtained from *A. mellifera* is non-organic. There are various brands of honey is available in the Nepal market. There are number of governmental and non-governmental organizations are involved in offering training to the beekeepers in scientific management of bee colonies and extending support in honey trade. As per the information available Nepal produces 1105 MT of honey of which 330 MT comes *Apis cerana* and 400 MT from wild bees and about 375 MT comes from the *Apis mellifera*.

4.3 Honey Export:

Bee-keeping and honey production is not a new economic concept in Nepal . Honey is one of the products which have direct impact on the economy of the poor rural people. Due to the existence of suitable climatic condition for bee-keeping and possibility to start an enterprise with a small-scale investment, more and more farmers are attracted to this sub-sector. Apart from the sale of honey, additional incomes from by-products like bee wax, pollen, royal jelly and queen bee could be the other reasons why farmers are attracted towards this profession. From the commercial point of view, the demand for honey in the international market is ever increasing. Realizing the importance of honey in both national and international markets, the Nepal government has recognized honey as an important high-value product and accorded priority for its development.

The domestic demand for honey is estimated at about 300 metric tons. However, Nepal exports a very small quantity to India and some other countries. In 2003/04, Nepal exported 144 MT of honey to India and 2.56 MT to overseas countries. Norway used to be the largest buyer of Nepali honey till 2001/02. At present, Nepali honey is banned from being imported in any European country including Norway due to problems associated with pesticides residue. Japan and South Korea are buying Nepali honey nowadays and the UAE, Thailand and Bangladesh are emerging as new markets. Apart from export, Nepal imports honey from India and from overseas. As per statistics, Nepal, in 2003/04, imported 1.85 MT and 2.56 MT of honey from India and overseas countries respectively. Honey imports in 2004/05 reached the value of Rs. 3.7 million, which is higher than its previous year import. The imported honey is mostly processed and instant. Almost all of the honey imported by Nepal comes from the US and Saudi Arabia (Skakya, 2006)

5. Sri Lanka:

5.1 Beekeeping in Sri Lanka:

Beekeeping and honey hunting in Sri Lanka has very long history. Honey is considered a highly valued food and an essential item commonly used in traditional medicines. The systematic beekeeping activities in Sri Lanka commenced in the tear 1940 with the active support by the State Department of Agriculture. The beekeeping practice is mainly with domesticated bee, *A. cerana* and about 35% of the honey comes from these hives, as much as 65% of honey comes from wild bees like *A. dorsata.*

5.2 Honeybee species in Sri Lanka:

All the three major honeybee species viz., *Apis cerana, Apis florea, Apis dorasta* are commonly found throughout the island. Apis florea and *A. dorsata* are known to build their nests in open places. *Apis florea* is generally adopted to all the climatic conditions other than the higher elevations (more than 1500 m) indicating its non preferences to cooler climates and it is the only species found in Arid climate zones of Sri Lanka. The beekeepers in Sri Lanka are concentrated on the ecologically well adopted indigenous *Apis cerana* for commercial honey production.

5. 3 Beekeeping potentials in Sri Lanka:

The forest cover of Sri Lanka is about 29.9% to the total land area. The major plantation like Rubber (*Havea brassiliensis),* Eucalyptus and Coconut supports beekeeping in the country. The country has rich floral sources for sustainable beekeeping. It could be estimated that about 40 MT of honey is produced through beekeeping and there is no proper information on the number of bee colonies. In Sri Lanka, four beekeeping zones are identified based on the availability and type of bee pasture as follows:

- Rubber (Havea *brasiliensis*) zone**:** is situated in the low and wet zone covers an area of 161,000 hectares and suitable for beekeeping. Though it is a potential area for beekeeping and honey production, but has not been fully exploited.

- Eucalyptus zone: covering approximately 4500 sq. km in the districts of Badulla and Nuwara Eliya. Based on the several species / varieties of Eucalyptus, the region is potential for beekeeping. The main species are *Eucalyptus camaldulensis* and *E. tereticornis*. Small areas of *E. citriodora, E. grandis* and *E. urophylla* have been planted in some Intermediate zone areas. During the honey - flow season of August and October, a well maintained colony of *Apis cerana* could yield 20 kgs of honey.

- Forest Zone: The forests of Sri Lanka constitute about 25% of the total land area. The natural forest is approximately more than 1600000 hectares and variety of flowering plants available as honey sources during different months of the year.

- Coconut (*Cocos nucifera*)zone: Sri Lanka has around 395,000 ha hectares under Coconut. Since the Coconut is the best pollen plant, beekeeping has been very successful in this zone. It is estimated that about 5-10 MT of honey are produced in areas outside the Rubber and Eucalyptus zones mainly due to Coconut that serves as a maintenance forage plant and benefiting from the minor honey flows of other honey plants.

In addition to the above, some of the important honey plants in the dry zone of Sri Lanka are: Weera (Drypetes sepiaria – Euphorbiaceae) , Palu (*Manikarna hexandra* - Sapotaceae), Mora (*Nephelium longana* – Sapindaceae), Kirikon (*Walsura pisida* – Meliaceae), Divl (*Feronia limonia* – Rutaceae), *Schleichera oleosa* – Sapindaceae), Kohomba (*Azadirachta indica* – Meliaceae), Burutha (*Chloroxylon swietenia* – Rutaceae), Siyambala (*Tamarindus indica* – Leguminoceae), Kumbuk (*Terminalia arjuna* (Combretaceae), Maha Dhang (*Syzygium cumini* - Myrtaceae), Mi (*Madhuca longifolia* – Sapotaceae), Kala Wel (*Derris scandens* – Leguminoceae) (Punchihewa, 1994)

The Ministry of Agriculture is the nodal agency in the promotion and development of beekeeping. The beekeeping is not well developed in the island nation due to various constraints and lack of training for the poor beekeepers.

6. Pakistan:

6.1 Beekeeping and honey production in Pakistan:

Beekeeping has been practiced in the northern areas of Pakistan possibly since the dawn of civilization. Most of the beekeepers are still using traditional apicultural methods. There are four species of honey bees, *Apis cerana, A. dorsata, A. florea* and *A. mellifera*. Some 600 plant species are known to be useful to honeybees. The forest cover in Pakistan is about 3% of the total land area. The honeybee bee flora remains scarse in most parts of the beekeeping areas for a fairly long period during the year (Rafiq Ahmad, 1984). The Pakistan Agricultural Research Council, the premier institution in the country is responsible for the overall growth and development of beekeeping. There is positive trend in the promotion of beekeeping for commercial honey production. In Pakistan, the beekeepers have limited knowledge of modern beekeeping management practices. They are not giving any attention for migration of the bee colonies timely to suitable floral belts and to feed supplementary feeding during dearth period. There are now more than 125,000 bee colonies in Pakistan and their production is about 1000 tones of honey.

6.2 Honey bee species in Pakistan: There are four species of honeybees found in the country. These include the domesticated bee, Apis cerana; the wild bee or rock bee, Apis dorsata; the little bee or dwarf bee, Apis florea and the Italian bee, Apis mellifera. The Apis cerana occurs in Northern and Western hills and foot-hills in some parts of NWFP, Punjab, Baluchistan and Kashmi, and the rock bee and little bee occurs in the foot hills and plains of Pakistan. Whereas, the exotic bee, Apis mellifera was introduced

successfully during 1977-78 after several unsuccessful efforts made between the years 1927- 75. Presently, Honeybee research programme of Pakistan Agricultural Research Council is taking keen interest in rapid multiplication to increase the number of Apis mellifera colonies for its high honey yield potential. Traditional beekeeping with Apis cerana in North Pakistan has been severely affected after the introduction of Italian bee.

6.3 Honeybee Flora: As per the available information there are about 600 plant species are known to constitute honeybee flora in Pakistan. Most of these are minor sources of nectar and pollen. Some plants produce nectar in large quantities, these are not uniformly distributed and their number is very less. The Pakistan Research Council made an attempt to survey the potentialities for beekeeping. The survey of bee flora in tribal areas (Bajour, Chitral and Dir) of Pakistan revealed that, some of the cultivated crops and fruits providing nectar and pollen include rape and mustard (6710 ha), shaftal (42950 ha), berseem (1190 ha), other fodders (1078 ha), maize (14680 ha), citrus (570 ha), cherry (990 ha), temperate fruit trees (999 ha) and other fruit plants (80 ha). In addition to these, some other flora provide nectar and pollen to native *Apis cerana*. These include *Acacia catechu*, *A. modesta, Albizia lebbeck, Mimosa himalayana, Prosopis cineraria, Amorpha fruaticosa, Astragalus candolleanus, A. chitralensis, Acer caesium, Justicia (Adhatoda) vasica, Alnus nitida, Quercus dilatata* (aphids provide honeydew), *Althaea rosea, Aster amelus, Antigonon leptopus, Robinia pseudoacacia Helianthus annuns, Hibiscus cannabinus, H. trionum, Plectranthus coesta, P. rugosus, Phaseolus aureus, Mentha longifolia, Melilotus albus, M. indicus* and *M. officinalis*. Among these, *R. pseudoacacia*, *P. coesta* and *P. rugosus* occur in large plantations in Khandrwo Alam Shah, Amboli, Katkala and also round Dir-Chitral road. Further survey revealed that, several other large *Plectranthus* plantations suitable for *A. cerana* queen production in other valleys. The crops such as sarson, berseem, shaftal, maize and fruit trees like loquat, citrus, pear, peach and plum are also available near *Plectranthus* plantations in some valleys. Thus these areas are suitable for honey production and queen breeding in spring and autumn.

In Baluchistan province, there are some important honey plants like *Albizia lebbeck, Acacia modesta, Calliandra calothyrsus, Cassia fistula, Cedrela toona, Dalbergia sissoo, Eucalyptus albens, E. camadulensis, E. citriodora, E. grandis, E. melliodora, E. tereticornis, Gleditsia triacanthos, Grevillea robusta, Haematoxylon campechianum, Prospopis juliflora, Robinia pseudoacacia, Rosmarinus officinalis, Sapindus mukorossi, vitex negundo, Ziziphus spina-christi are very important for beekeeping. In addition, Antogonon leptopus, Eriobotrya japonica, Lamium album, Melilotus alba, Medicago spp., Plectranthus rugosus* and *Terminalia chebula* also occur in some forest areas. As per the floristic information of Pakistan, the floral sources are fairly abundant for sustainable beekeeping in most of the areas of Pakistan.

6. 4 Potential of Women Beekeeping Income Generation in Tribal Areas

Tribal women, rearing *A. cerana* in walls, pitchers, logs and baskets in their houses were provided 100 colonies of *A. mellifera* for enhancing their income. These colonies yielded 1300 kg honey on *Acacia, Citrus*, *Trifolium* and *Plectranthus* and 800 kg with migration on *Zizyphus*. The cost benefit ratio was worked out and has shown profitability in the

poppy growing tribal areas. Beekeeping can be extended 10-20 times more than it is, at present, practised in that area.

6.5 Parasitic mites in Pakistan: The two brood parasitic mites, Troplaelaps clareae and Varroa destructor are the most commonly found mites in the bee hives. In the year 1981, there was an outbreak of an epidemic like situation caused by Acarapis woodi in Apis cerana which destroyed 95% of both feral and domesticated bee colonies.

7. Maldives:

Where as in the small island nation, Maldives, as such there is no proper information on bees and beekeeping is available. Apart from limited agricultural area, the forest comprises of only 1000 ha / 3% of the land area.

The present regional paper (India, Maldives, Sri Lanka, Bangladesh, Bhutan, Nepal, and Pakistan) provides comprehensive information on the present status of beekeeping, constraints faced by the beekeepers due to various bee pests and diseases, problems facing in the marketing of bee products and suggestions to develop beekeeping industry for additional income to the farming community and professional beekeepers. The paper also suggests the strategies for the development and promotion of organic beekeeping in South Asian Countries.

8. Constraints of beekeeping in South Asia:

- The beekeepers of South Asia have little knowledge on the scientific beekeeping management practices.
- Modern beekeeping equipment, comb foundation sheets and some chemicals are not easily accessible to beekeepers in rural areas.
- There is shortage of trained and qualified manpower.
- Serious threat of Varroa mites; very limited knowledge on disease and pest management
- Very weak and disorganized system of honey marketing
- Little importance and encouragement for indigenous Asian bee, Apis cerana beekeeping
- Lack of coordination between Beekeeping R & D Organizations / Universities in South Asia
- Insufficient Man power for multiplication and distribution of bee colonies

9. Recommendations for beekeeping in South Asia for sustainable livelihoods:

1. Development of productive bee strains through selective breeding
2. Conservation of bee genetic resources for multiple economic benefits

3. Capacity building and awareness raising in terms of management plans and training manuals for farmers, fruit growers, extension workers, NGO's and policy makers
4. Preparation of extensive floral calendars for different ecological zones
5. Encouragement for migratory beekeeping practices for higher honey production.
6. Surveillance of bee diseases, pests and predators in various eco-geographical zones in South Asia.
7. Enforce strict quarantine, isolation, certification of disease free status measures through legislation
8. Create a network of laboratory facilities for the identification, testing and control of bee diseases and pests
9. Organization of regular honey festivals, seminars, conferences to create awareness among farmers, beekeepers and honey traders.
10. Mass multiplication and planting of major honey plants through various forestry schemes.
11. Arrangements should be made by FAO to study the beekeeping status in Maldives, as no proper information available.
12. There is an urgent need to establish an International Apicultural Research Institute in Bangalore by Century Foundation as per the resolutions of 6th Asian Apicultural Association (AAA) International conference 2002, International Beekeeping Congress 2005 and International Workshop on Integrated Beekeeping Development in South Asian Countries, New Delhi 2006 to cater the needs of Beekeepers and farmers of South Asia in Particular and other lower income countries in general. For the establishment of International Institute the FAO Technical Assistance is the need of the hour.
13. FAO may arrange an expert meeting for organic beekeeping development in South Asia at the earliest in any South Asian country.

10. Prospects of organic beekeeping in South Asia:

10.1 Why Organic Beekeeping? The two important reasons beekeepers consider certified organic honey production mainly for the financial gain. Some areas of the standards that may pose the greatest difficulty in becoming certified organic include the following: (Nicholas Annand, 2006)

10.2 How to start Organic Beekeeping? : The following aspects are to be taken into consideration before venture into organic beekeeping**.**

1**. Apiary sites must be situated more than 5 km from any :**

- flower – bearing crop treated with pesticides or genetically modified / engineered organisms
- Urban or industrial wastes;
- Waste sites

2. Detailed records must be kept for each apiary site, including hive numbers and the condition and management of colonies.
3. There are restrictions on materials used in hive construction, and on the preservatives and coatings used on these materials.
4. Extraction and storage surfaces must be made of food – grade materials.
5. Disease control options are restricted, which particularly affects the control of nosema and European foulbrood disease.
6. There are restrictions on supplementary feeding (i.e. what can be fed to hives) if the organic status is to be maintained.
7. Obtaining an adequate number of sites that will maintain the health of your hives for all types of seasonal conditions.

T*he advantages and disadvantages of becoming certified organic*:

Advantages:

- increased price for product;
- increased marketability ;
- satisfaction of producing a clean product with minimal environmental damage;
- product assurance for purchaser;
- complete trace back system for product, from the consumer to the hive;
- Increased management awareness of the enterprise.

Disadvantages:

- availability of suitable apiary sites for a range of seasonal conditions;
- limitation on disease management practices;
- limitation on feeding management practices;
- cost and time involved in converting an enterprise to certified organic production;
- costs associated with certification, such as joining, certification, auditing, sampling, annual membership, levies etc (certified organizations have varying fee structures);
- increased record keeping;
- one year probation period prior to becoming certified;
- many importing countries paying little or no premium for organic honey;
- countries having different organic requirements;
- the majority of sites suitable for organic honey produce dark strong flavoured honeys which usually have a lower market demand.

10.3. Strategies for Development of Organic Beekeeping in South Asian:

- By encouraging and with possible financial support to established beekeepers to adopt organic beekeeping practices.

- By establishing Commercial scale beekeeping in most favourable and natural habitats like Himalayas, Sunderban mangrove forest, Western Ghat forests of India and Sri Lanka.
- By developing systematic Marketing network for Organic honey and other hive products.
- Emphasize the importance of organic honey production in Print and electronic media
- Conduct exclusive workshops for beekeepers on methods of Organic honey production.
- By creating coordination among beekeepers and R& D organizations in South Asia.
- By initiating buyback policy by the beekeeping cooperative societies and other honey trading organizations.

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Annexure: 1

STATE WISE POTENTIALS OF BEEKEEPING INDUSTRY IN INDIA

Name of the State	POTENTIAL (No of colonies)	ACTUAL NO. OF BEE COLONIES	NO. OF BEEKEEPERS	QUANTITY OF HONEY (Kg)
ANDHRA PRADESH	8,00,000	28930	5970	1,70,025
ASSAM	4,00,000	46233	24,422	3,09,422
WEST BENGAL	10,00,000	65,425	15795	4,14,535
BIHAR	10,00,000	51,907	20,067	3,41,719
GUJARAT	1,00,000	------	------	-------
HARYANA	3,00,000	923	263	9,230
HIMACHAL PRADESH	3,00,000	15,700	3144	44,000
JAMMU & KASHMIR	2,50,000	1950	281	4760
KARNATAKA	15,00,000	1,34,965	26,181	6,31,579
KERLA	10,00,000	2,67,009	24,305	19,16,524
MEGHALYA	5,00,000	16,728	2929	95,800
MADHYA PRADESH	10,00,000	8357	1,323	32532
MAHARASHTRA	8,50,000	10,740	2,320	94140
MANIPUR	-	27157	7976	1,02,391
NAGALAND	-	4275	747	17,3224
MIZORAM	-	80	-----	480
TRIPURA	-	11026	490	797
ORISSA	1,00,000	57,620	35,322	3,94918
PUNJAB	9,00,000	26,620	1897	1,50,348
RAJASTHAN	1,00,000	28	13	34
SKKIM	75,000	1539	512	8801
TAMILNADU	10,00,000	2,107,17	45,927	115,25,44
UTTAR PRADESH	8,00,000	27,367	6793	72,984
GOA	5,000	------	------	------
ARUNACHAL PRADESH	50,000	1772	1042	30185
ANDAMAN & NICOBAR	50,000	-----	-----	-----

Annexure 2

Details of Honey export country wise from India

Country	2002-03		2003-04		2004-05	
	Quantity	Value	Quantity	Value	Quantity	Value
Australia	-	-	-	-	32600	3148755
Austria	12500	1011207	-	-	-	-
Belgium	100100	6183120	42050	2638681	-	-
Bangladesh	-	-	219200	4864728	-	-
Baharain	-	-	-	-	19532	853803
Canada	3120	164904	-	-	1002	72602
China	-	-	34000	5833716	197200	8013123
Ivory Coast	30	3470	-	-	-	-
Cameroon	-	-	48	6028	-	-
France	-	-	500	146772	280	24847
Germany	3998979	311454159	3453413	355031773	4138500	308838004
U.K.	25400	1224819	29900	2913901	327300	22695531
Ghana	26	2146	1000	114000	825	61156
Gambia	-	-	-	-	200	24847
Hong Kong	-	-	100	4003	58	9194
Indonesia	-	-	-	-	1200	117220
Italy	69800	6409241	-	-	-	-
Japan	150	33618	1144	161049	5100	898206
Kenya	-	-	120	12298	7479	2672514
Korea Republic	430	100647	2	201	-	-
Kuwait	-	-	-	-	52255	4870162
Sri Lanka	-	-	19300	2148135	-	-
Maldives	3600	144965	-	-	156	9543
Malta	-	-	-	-	10000	942257
Morocco	-	-	-	-	100	25893
Mauritius	300	17666	3238	211435	-	-
Malaysia	9815	527755	7061	692786	3964	474726
Netherlands	-	-	-	-	35000	2020601
Norway	-	-	2000	278184	-	-
Nepal	220636	10988227	-	-	35054	2843215
Oman	-	-	843	31955	-	-
Philippines	12848	1336273	-	-	-	-
Poland	-	-	20000	731186	-	-
Reunion	-	-	60	9761	285	37685
Russia	-	-	15000	2085607	-	-
South Africa	-	-	840	184032	20000	1026348
Saudi	9250	1047582	13050	1460863	203266	20315804

Arabia						
Singapore	30920	2221269	6454	385087	4345	284759
Switzerland	290	108713	-	-	891	76007
Seychelles	-	-	-	-	33	5026
Tanzania	**48**	**8503**	**-**	**-**	**-**	**-**
UAE	**8570**	**702461**	**18373**	**1184732**	**41069**	**3838396**
Vietnam	**-**	**-**	**158**	**8824**	**-**	**-**
Yemen	**-**	**-**	**-**	**-**	**8000**	**840888**

Annexure 3

List of societies recognized and funded by KVIC / KVIB for procuring and marketing of honey in India

SlNo	Name of the Society / Organization with address		Name of the Society / Organization		Name of the Society / Organization
1	The Secretary Shri Gandhi Sewa Sadan, Shalimar Road, Gandhi Bhavan, New Secretariat, Jammu Race Range, Jammu – 180001, J& K	2	The Secretary Gandhi Gram Mandal 93 – B, Gandhi Nagar, Jammu	3	The Secretary Himachal Khadi Ashram, 70, The Mall Road, Shimla, Himachal Pradesh
4	The Secretary Shivalik Khadi Ashram, Arvind Marg, Chattarpur, Santoshgrah, Una, Himachal Pradesh	5	The Secretary Janata Gramodyog Kendra, Village Dhungri, Manali, Dist Kulu, Himachal Pradesh	6	The Secretary Pragatisheel Khadi Gramodyog Samiti, Gadagusaini, Block-janje Hill, Sub The – Bali Chowki, Dist – Mandi, Himachal Pradesh
7	The Secretary Sanjay Gramodyog Samiti, Badimajara PO, Panasara, Dist-Yamunanagar, Harayana	8	The Secretary Himachal Khadi Mandal, Akhara Bazar, Dist: Kullu, Himachal Pradesh	9	The Secretary Janata Gramodyoga Kendra, Village Dhungri, Manali, Dist: Kullu, Himachal Pradesh
10	The Secretary Himachal Khadi Ashram, 70, The Mall Road, Shimla, Himachal Pradesh	11	The Secretary Khadi Gramodyoga Sanstha, Nagrota (Bagwan), Dist: Kangra – 176067, Himachal Pradesh	12	The Secretary Him Honey and Agriculture Association, Jogipur (Gupta Ganga Road), P.O. – Kachhiari, Dist: Kangra , Himachal Pradesh
13	The Manager Punjab State Beekeepers Federation, Kharar Road, Basipatana, Dist: Fathegarh Sahib, Punjab – 140 412	14	The Secretary Punjab Honey and Village Industries Sansthan, No 1, Village & PO Narayangarh, Dist: Amritsar, Punjab	15	The Secretary Kshetra Punjab Khadi Mandal, Village & PO – Sujanpur, Dist: GUrudaspur, Punjab
16	The Secretary Madhupalan Khadi Gramodyog Vikas Sangha, Near Vishwakarma mandir,	17	The Secretary Kshetriya Shree Gandhi Ashram, Queens Road, Amritsar, Punjab -	18	The Secretary Manni Gramodyog Samiti, Village – Firojpur, Post – Bassipatanam, Punjab - 140412

	Dina Nagar, Dist: Gurudaspur, Punjab		143001		
19	The Secretary Apis Gramodyog sansthan, Village: Nainkhera, PO- pahansu, Utter Pradesh	20	The Secretary Beekeeping Gramodyog Samiti, Village: Sangatpura, PO: Nosida, Dist: Ropar, Punjab	21	The Secretary Friends Beekeepers Gramodyog Samiti, Village Sahidgarh, Post: Bassipathana, Dist: Fathegarh Sahid, Punjab
22	The Secretary Honeybee Khadi Gramodyog, Samiti Khadur Sahib, Dist: Amritsar, Punjab	23	The Secretary Punjab Khadi Mandal, Adampur Doaba, Jalandhar – 144102, Punjab	24	The Secretary Kasturba Khadi Gramodyog, Karyakarta Sangh, Bassipathana – 1404142, Dist: Fatehgarh Sahib, Punjab.
25	The Secretary Janakalyan Gramodyog Samiti, Ganeshpur, 9, laximinagar, Sarajkund Road, Meerut, (U.P.)	26	The Secretary Ekta Gramodyog Sansthan, Village Rangali, PO Gangoh, Dist: Saharanpur (U.P.)	27	The Secretary Mono Gramodyog samiti, Village and PO Umahikalan, Dist: Saharanpur (UP)
28	The Secretary Laxmi Khadi Gramodyog sansthan Bhairmu, PO – Nakur, Dist: Saharanpur	29	The Secretary Dharam Gramodyog Sansthan, Village & PO Pahansu, Saharanpur (UP)	30	The Secretary Kshetriya Shri Gandhi Ashram, Maghar, Sant Kabir Nagar, (UP)
31	The Secretary Parvatiya Gram Swarajya mandal, Kunj Jayanti, Dist: Moradabad, Uttaranchal	32	The Secretary Ankur Gramodyog Sansthan, Shetala Kheda, PO Nagal, Dist: Saharanpur (UP)	33	The Secretary Gram Seva Mandel, Jagatpur, Allahabad (UP)
34	The Secretary Shanti Gramodyog samiti, Village: Dekravarkalan, PO: Umahikalan, Dist: Saharanpur (UP)	35	The Secretary Shiv Gramodyog Sanstahn, Village & PO: Beera Kheri, Dist: Saharanpur – 247340 (UP)	36	The Secretary Gandhi Ashram, 9, Shehanazaa Road, Lucknow (UP)
37	The Secretary Kambal Grih Udyog, Sahakari samiti Ltd, Deva Bairnapur, Ghajipur, Punjab	38	The Secretary Sarvodaya Samiti Sarguja, Ambikapur, Chhatisgarh	39	The Secretary Sarguja Gramin Vikas Mandal Sankar Garh, Chhatisgarh
40	The Secretary	41	The Secretary	42	The Secretary

	Vaishali Zilla Khadi Gramodyog Sangh, Gandhi Ashram Hajipur, Dist: Vaishali, Bihar - 844101		Saharsa Zilla Khadi Gramodyog sangh, Saharsa – 852201, Bihar		Gram Bharti Sarvodaya Ashram, PO: Kuranda, Simultala – 811316, Dist: Jamuai, Bihar
43	The Secretary Madhubani Zilla Khadi Gramodyog Sangh, Madhubani – 847211, Bihar	44	The Secretary Gram Swarajya Sangh, PO: Bariyapur, Dist: Munger – 811211, Bihar	45	The Secretary Khagria Zilla Khadi Gramoduog Sangh, PO: Gogari, Dist: Khagria, Bihar
46	The Secretary Sitamarhi Zilla Khadi Gramodyog Sangh Dhwaja Ashram, Sitamarhi – 843302, Bihar	47	The Secretary Bhagalur Zilla Khadi Gramodyog Sangh, Lakshmi Narayan Bhavan, Naya Bazar, Bhagalpur – 841002, Bihar	48	The Secretary Paschim Chamaran Zilla Khadi Gramodyog sangh, Chhta ramana, Betia – 845438, Bihar
49	The Secretary Samastipur Anumandaliya Khadi Gramodyog samiti, Laxmi Narayanpuri, Pasa Road, PO: Wainni, Dist: Samastipur, Bihar	50	The Secretary Saran Zilla Khadi Gramodyog Sangh, Salempur Chhapara, Dist: Saran – 841301, Bihar	51	The Secretary Muzaffarpur Zilla Khadi Gramodyog sangh, sarvodaya Ashram, Goshalla Road, Muzaffarpur, Bihar
52	The Secretary Chhotanagpur Khadi Gramodyog Sansthan, Post – Tiril, Block Ratu, Teh & Dist: Ranchi – 834004 (Jharkhand)	53	The Secretary Santhal Paragana Gramodyog Samiti, Near Tower Chowk, Post : B. Deoghar Block, Dist: Deoghar – 814112, Jharkhand	54	The Secretary Adimjati Samagra Vikas parishad, PO Anagara, Dist: Ranchi – 35103, Jharkhand
55	The Secretary Ranchi Zilla Banbasi Khadi Gramodyog Sansthan, Aryapuri Ratu Road, ranchi – 840001, Jharkhand	56	The Secretary Khadi Gramodyog Sangh, Ravindra Path, Hazaribag – 825301, Jharkhand	57	The Secretary Chandrakanta Lalitmaohan Resham Khadi Samity, PO – Khagra, Dist – Murshidabad, West Bangal
58	The Secretary 24 Parganas Beekeepers Co-operative Society Ltd, Village – Shasan, Post – Baruipur, Dist -24	59	The Secretary Abhoy Ashram Khadi & I. activities, PO – Birati, Kolkata – 51, West Bengal	60	The Secretary Midnapore Beekeepers Khadi & V.I. Co-operative Society Ltd. PO – Pratappur, Dist –

	Paraganas (South), West Bengal				Midnapore, West Bangal
61	The Secretary Nagarukhara sustainable Agro Cultural Association, Village: Nagaukhara, Dist: Nadia – 741257, West Bengal	62	The Secretary Silk Khadi Seva Mandal, Raghunathsyer, PO – Bishnu, Dist: Bankura – 722122, West Bengal	63	The Secretary Balarampur Sarvodaya Gram Swarajya Sangha, Village / PO – Balarampur, Dist: Midnapore – 721301, West Bengal
64	The Secretary Kshetrya Gandhi Ashram, Village & Po – Jalapur, Tehsil – Kayiachak, Dist: Malda – 732206, West Bengal	65	The Secretary Sarvodaya Samithi, Gandhi Nagar, Koraput, Orissa	66	The Secretary Sampradaya Seva Samity, Dighapandi Tehasil Colony, Ganjam, Orissa.
67	The Secretary Boipariguda Kshetra Samity, Koraput, Orissa	68	The Secretary Gram Loa Seva Sangha, PO – Niz Dhamdhama, Dist : Nalbari – 781349, Assam	69	The Secretary Barkhetri Unnayan Samiti, PO – Mukalmua, Dist: Nalbari – 781126, Assam
70	The Secretary Balijana Anchlik Jana Seva Samiti, PO – Agia, Dist: Golapare, Assam	71	The Secretary Tamalpur Anchlik Grandan Sangh, KUmrikata, Nalbari – 781360, Assam	72	The Secretary Tazpur Anchlik Gram Bikas Sangh, Village : Dekargoan, PO: Dekargoan, Dist: Sonitpur, Assam
73	The Secretary Gram Swarajya parishad Rangia, PO : Rangia, Dist: Kamruk – 781354 Assam	74	The Secretary Kasturba Seva mandir, Tejpur, Bhairabai Temple Road, Tejpur, Dist: Sonitpur, Assam	75	The Secretary Kokila Vikas Ashram, Sonitpur, Assam
76	The Secretary Manipur Khadi production & sales Co-op society Ltd. Roop Mahal Tank, B-T Road, Imphal , Manipur	77	The Secretary Dorcas Society, Old Lambulane, Imphal, Manipur	78	The Secretary Paham Khadi Gramodyog Sangh, Village – Paham, PO: Paham, Block – Selsela, Dist: Tura – 994104, Meghalaya
79	The Secretary Ambasamudram Sarvodya Viravanlur –	80	The Secretary Gandhi Nikatan Ashram, T.	81	The Secretary Aruppukottai Sarvodaya sangh, Sathiyamoorti

	627426, Tamil Nadu		Kallupatty – 626702, Dist: Madurai, Tami Nadu		Bazar, Aruppukottai – 626102, Tamil Nadu
82	The Secretary Kanyakumari District Sarvodaya Sangh, 22-23 Vagayadi South Car Street, Kottar, Nagarcoil – 629002, Tamil Nadu	83	The Secretary Gandhigram Khadi & V.I. Public Charitable Trust, Gandhigram – 624302, Dist: Dindigul, Tamil Nadu	84	The Secretary Madurai District Sarvodaya sangh, 26, Town Hall Road, Madurai - 625001
85	The Secretary Karaikudi Sarvodaya sangh, 2-2 / 87 DEvakottar Road, Karaikudi, Tamil Nadu	86	The Secretary Madurai West Sarvodaya Sangh, Sastripuram, Tirumangalam – 625706, Dist: Madurai, Tamil Nadu	87	The Secretary Madurai East Sarvodaya sangh, 256 Kamarajar Salai, Madurai – 625009, Tamil Nadu
88	The Secretary Naguneri Sarvodaya sangh, 28, Siva Nagar, Panagudi – 627 109, Dist: Tirunelveli, Tamil Nadu	89	The Secretary Madurai North Sarvodaya Sangh, Kasturibha Nagar, Sinthalabadampatty, Palani, Tamilnadu	90	The Secretary Periyakulam sarvodaya sangh, 17-A, Cumbum Road, Periyakulam - 623601
91	The Secretary Puliyangudi Sarvodaya sangh, 28, Karpaga Street, Puliyngudi 627858, Dist: Tirunveli, Katta Pomman, Tamil Nadu	92	The Secretary Ramanathapuram Central Sarvodaya Sangha, 6/774, Arumugam Colony, Satsiyapuram, Sivakashi (W), Tamil Nadu	93	The Secretary Ramnathapuram Dist. Sarvodaya sangha, 45, East Car Street, Srivilliputhur – 626 125, Tamil Nadu
94	The Secretary Ramnathpuram East sarvodaya sangh, Paramkudi – 623707, Tamil Nadu	95	The Secretary Sankarankoil sarvodaya sangh, North Car Street Sankarankoil – 627756, Dist: Tirunelveli, Tamil Nadu	96	The Secretary Tirichendur sarvodaya sangh, West Car Street, Tiruchendur – 628125, Tamil Nadu
97	The Secretary Tirunelveli Sarvodaya sangh, 59, South Car	98	The Secretary Tuticorin Sarvodaya sangh, KVK Nagar,	99	The Secretary Virudhunagar Sarvodaya sangh, 329, Railway

	Street, Tirunelveli – 627006, Tamil Nadu		Tuticorin 628008, Dist : Tuticorin, Tanil Nadu		Feeder Road, Virudhunagar – 626001, Tamil Nadu
100	The Secretary Tamilnadu Gandhi Smarak Nidhi, Madurai , Tamil Nadu	101	The Secretary Eranil Sarvodaya Sangh, 28/92, Muttom Road, Eranial, Post: Neyoor – 629802, Dist: Kanyakumari, Tamilnadu	102	The Secretary Gram Rajya Nirman Sangh, Dindigul, Tamilnadu
103	The Secretary Chidambaram sarvodaya sangh, 48, South Car Steet, Post : Chidambaram, Dist: Chidambaram – 608001, Tamil Nadu	104	The Secretary Tirupur Sarvodaya Sangh, Murugampalyam, Veerapandi, Post: Iduvampalayam, Dist: Coimbatore – 641687, Tamil Nadu	105	The Secretary Udamalpet Sarvodaya sangh, 4B Nehru Street, Udamalpet, Dist: Coimbatore – 642126, Tamilnadu
106	Pollachi Sarvodaya Sangh, 36, Venkataramana Street, Post: Pollachi, Dist: Coimbatore – 642001, Tamilnadu	107	Khadi Gramodyog sangh, 844, Anna Salai, Chennai – 600002, Tamil Nadu	108	Arni sarvodaya sangh, 36, Mettu Street, Post Arni, Dist: Tiruvannamalai – 632301, Tamil Nadu
109	The Secretary Annur Sarvodaya sangh, 7/34, Nehruji Street, Post Annur, Dist: Coimbatore – 641653, Tamil Nadu	110	The Secretary Avarampalayam Sarvodaya Sangh, 129 Appusamy Layout, Red Fields, Coimbatore – 641045, Tamil Nadu	111	The Secretary Nambiyur Sarvodaya Sangh, PO: Nambiyur, Erode – 638 458, Tamil Nadu
112	The Secretary Coimbatore Central Sarvodaya sangh, Muthonampalyam, Dist: Coimbatore – 641 665, Tamil Nadu	113	The Secretary Coimbatore South Sarvodaya sangh, 33 New Beemar Street, P.B. No. 11, Post: Dharapuram, Dist: Erode – 638656, Tamil Nadu	114	The Secretary Sathyamangalam sarvodaya sangh, 9/467 Main Road, Sathyamangalam, Dist: Erode – 638 401, Tamil Nadu
115	The Secretary Tiruchirapalli sarvodaya sangh, 9, J.P. Nagar,	116	The Secretary Padiyur Sarvodaya sangh, Post: Padiyur,	117	The Secretary Karur sarvodaya Sangh, Village: Vaiyapurinagar,

	Dindigul Road, Tiruchirapalli – 620001, Tamil Nadu.		Via Kangayam – 638701, Dist: Erode, Tamil Nadu		Post/ Dist: Karur – 639001, Tamil Nadu
118	The Secretary Mulanar Sarvodaya sangh, 65 Vadugapatti Road, PO: MUlanur, Dist: Erode – 638106, Tamilnadu	119	The Secretary Erode Sarvodaya sangh, Chennimalai Road, Post: Kasipalayam, Dist: Erode – 638009, Tamilnadu	120	The Secretary Gandhi Ashram, Nallipalayam, PO: Gandhi Ashram, Dist: Namakal – 637201, Tamilnadu
121	The Secretary North Arcot Sarvodaya sangh, 10-11, New Sitting Bazar, PO& Dist: Vellore – 632513, Tamilnadu	122	The Secretary Thanjavur West Sarvodaya Sangh, 28, Giri Road, Srinivaspuram, Post/Dist: Thanjavur – 613009, Tamilnadu	123	The Secretary Thanjavur sarvodaya Sangh, 8-9, K.V. Koil East Street, Kumphkonam, Dist: Thanjavur
124	The Secretary Tiruchirapalli North Sarvodaya sangh, 123, Double Mall Street, PO: Teppakulam, Dist: Tiruchirapalli – 620008, Tamilnadu	125	The Secretary Salem District Sarvodaya Sangh, 9, Gandhi Nagr, Post: Attur, Dist: Salem – 636102, Tamilnadu	126	The Secretary Cuddalore Sarvodaya sangh, Parvithipuram, Sarvodaya Nagar, Post: Vadalur, Dist: Cuddalore – 607303 Tamilnadu
127	The Secretary Chigleput District Sarvodaya sangh, 40, Amudhupadium Street, Kancheepuram – 631503, Tamilnadu	128	The Secretary Madras sarvodaya sangh, 199, Linghi Chetty Street, Chennai – 600001, Tamilnadu	129	The Secretary Gandhipuram Sarvodaya sangh, Maruthamalai Road, Vadavalli Post, Dist: Coimbatore – 641041, Tamilnadu
130	The Secretary Seethanagaram Khadi Gramabhivrudhi Samstha, Post: seethanagaram, Rajamundry Dist, East Godavari, Andhra Pradesh	131	The Secretary The Beekeepers Co-op Society Ltd, PO: Sakleshpur, Dist: Hassan – 573134, Karnataka.	132	The Secretary The South Kanara Beekeepers Co-op Society Ltd. Puttur – 574201, Dist: South Kanara, Karnataka
133	The Secretary Karnataka Khadi Gramodyog Samyukta	134	The Secretary Kerala Sarvodaya sangh, Gandhi	135	The Secretary Kerala Khadi and V.I. Federation, 48 / 497 c,

	Sangha (Federation), Benegari – Hubli – 5800023, Karnataka		Ashram, Civil Station, PO: Calicut – 673020, Kerala		Padivattam, Eddappily, PO: Cochin – 24, Kerala.
136	The Secretary Alleppy Sarvodaya sangh, Pallarimangalam, PO: Mavelikkara – 690107, Kerala	137	The Secretary Kozhikode Sarvodaya Sangh, S.M. Street, Khadi Gram, Kozhikode – 673001, Kerala	138	The Secretary Kerala Khadi and V.I. Association, Avanissery, Trichur – 680313, Kerala
139	The Secretary Cannanore Sarvodaya Sangh, Chettenkoonu, Telicherry, Dist: Cannanore, Kerala	140	The Secretary Trivendrum Sarvodaya Sangh, Gramodya, P.B. No. 89, M.G.. Road, Trivendrum – 1, Kerala	141	The Secretary Kerala Gandhi Smarak Nidhi, Gandhi Bhavan, Trivendrum – 695001, Kerala
142	The Secretary Changancherry Social Service, Arch Bishop's House, Changancherry, Dist: Kottayam, Kerala	143	The Secretary Pragathi Bahudeshiya Sanstha, Weekly market, Pulgaon – 442302, Maharashtra	144	The Secretary Mahatma Gandhi Seva Ashram, Joura – 476221, Dist: Morena, Madya Pradesh
145	The Secretary Mirja Nagar Gramodyog Sahayog Samiti Ltd. PO: Mirja Nagar, Dist: Vaishali – 844139, Bihar	146	The Secretary Ashok Honey Inc. Naincy Complex, Jeolikote, Nainital, (UA)		

Annexure - 4

Notification

Order 277 dated 4th March, 2002

In exercise of the powers conferred by Clause (d) of subsection 2 of section 17 of the Export (Quality Control and Inspection) Act, 1963 (22 of 1963), the Central Government hereby makes the following rules, namely: -

1. Short title and commencement - (1) These rules may be called the Export of Honey (Quality Control, Inspection and Monitoring) Rules, 2002.

   (2) They shall come in to force on the date of their publication in the Official Gazette.

2. **Definitions** - In these rules, unless the context other wise requires -

(a) "Act" means the Export (Quality Control and Inspection) Act, 1963 (22 of 1963);

(b) "Agency" means any of the Export Inspection Agencies established by the Central Government at Mumbai, Kolkotta, Kochi, Delhi and Chennai under section 7 of the Act for inspection including its sub-offices located at various places of the region;

(c) "Council" means the Export Inspection Council established under section 3 of the Act;

(d) "Batch" means a quality of honey, which have been prepared under the same conditions and in particular treated in single continuous operation;

(e) "Certificate" means certificate issued under sub-section (3) of section 7 of the Act;

(f) "Collection Centre" means an establishment where honey is collected.

(g) "Country of Dispatch"- means India;

(h) "Country of Destination" means the country to which honey is dispatched from India;

(i) "Placing on the market" means the stocking or display with a view to sale, offering for sale, delivery or any other manner of disposal with the exception of retail sale, which must be subject to the checks laid down by national rules for retail business;

(j) "Competent Authority" means any one of the Export Inspection Agencies at Mumbai, Kolkotta, Kochi, Delhi and Chennai established under section 7 of the Export (Quality Control and Inspection) Act, 1963;

(k) "Establishment" means any premises where honey is prepared, processed, packaged or stored.

3. Basis of compliance. - The quality control and inspection of honey shall be carried out as follows:-

(a) The honey intended for export shall be handled at all stages of production, storage and transport based on good manufacturing practices (GMP) and good hygienic practices (GHP) and the product shall conform to the specification given in the Order by the Central Government under section 6 of the Act. The Competent Authority shall conduct regular monitoring of the establishments to ensure that good manufacturing practices and good hygienic practices are adopted by the establishment at all stages of production, storage and transport of honey. For effective monitoring of the scheme, the Council shall issue necessary instruction in this regard.

(b) On the basis of inspection and testing carried out in the manner prescribed by the Council.

4. Procedure of Quality Control and Inspection

4.1 The procedure to be followed for compliance under clause (a) of rule 3 shall be as under: -

(1) It is the primary responsibity of the industry to ensure that honey intended for export is processed and handled at all stages of production, storage, and transport under proper hygienic and manufacturing conditions and that the product conforms to the specifications given in the order by the Central Government under section 6 of the Act.

(2) Any statutory restrictions imposed by any State/ Central Government with respect to commercial or environmental or conservation measures from time to time shall be strictly adhered to.

(3) Having satisfied itself that the establishments meet the requirements with regard to nature of activities they carry out, the Competent Authority shall accord approval to such establishments.

(4) The Competent Authority may take the assistance of representatives from Agricultural and Processed Food Export Development Authority (APEDA), Department. of Food Processing Industry and Ministry of Agriculture in the matter of approval of establishments.

(5) The Competent Authority shall take necessary measures for the requirements cease to be met.

(6) The Council shall draw up a list of approved establishments, each of which shall have an official number.

(7) The inspection and monitoring of establishment shall be carried out regularly under the responsibility of the Competent Authority which shall at all times have free access to all parts of the establishments and records pertaining to the controls exercised by the establishment for hygienic handling and processing of honey during all stages of production, storage

and transport.

4.2 The procedure of inspection under clause (b) of rule 3 shall be carried out as under: -

(1) An exporter intending to export a consignment of honey shall give intimation in writing to the Agency furnishing therein only the technical specifications alongwith a copy of the export contract blanking out pricing and other details.

(2) Every intimation under sub rule (1) shall be given not less than two days before the inspection is to be carried out at the premises situated at the same station where the office of the Agency is located; and not less than five days before the inspection is to be carried out at the premises which are not situated at the same station where the office of the Agency is located.

(3) On receipt of intimation under sub rule (1), the Agency shall carry out the inspection of honey meant for export by drawing samples for inspection and testing. The Agency, on satisfying itself that the consignment of honey conforms to the standard specifications recognized for the purpose on the basis of inspection and testing carried out as laid down by the Council, shall, within two days or five days, as the case may be, issue certificate declaring the consignment of honey as export worthy: Provided that where the Agency is not satisfied, it shall refuse to issue a certificate to the exporter and shall communicate such refusal within two days if the inspection is carried out at the station where the Agency is situated or five days, if the premises are not situated in the same station where the Agency is located, as the case may be, to the exporter along with the reasons thereof.

(4) Subsequent to certification, the Agency shall have the right to re-assess the quality of the consignment at any place or storage, in transit or at the posts before its actual shipment.

(5) In the event of the consignment being found not conforming to the standard specifications at any of these stages, the certificate of inspection originally issued shall be withdrawn.

5. Packing and Marking. An exporter intending to pack honey for export after preparing the consignment as per the rules shall pack in hygienically clean wide mouth, glass containers or in acids resistant lacquered tin containers. The screw caps for the glass container shall be non-corrosive and non-reactive material to honey and shall be provided with washers to avoid spilling.

Each container shall be legibly and indelibly marked with the following information, namely:-

1.Name and address of processor or manufacturer.

2. Name and address of the exporter

3. Name of the material and grade designation.

4. Batch or Lot number.

5. Year, month and date of processing or manufacturing.

6. Gross mass and net mass.

7. Product of India.

8. Shipping mark.

(6) Inspection Fee: -

In the case of approval and monitoring system, inspection fee @ 0.2%of the fraight on board (FOB) value and in the case of consignment wise inspection @ 0.4%of freight on board value subject to a minimum of Rupees 500/- per consignment, shall be paid by the exporter to the Agency.

(7) Appeal: - (a) Any exporter aggrieved by the refusal of the Agency to issue the certificate of inspection may within 10 days of the receipt of the communication of such refusal may prefer an appeal which shall be referred by the Agency to a panel of experts consisting of not less than three, but not more than seven persons appointed for the purposes by the Central Government.

(b) At least two-thirds of the total membership of the panel shall consist of non-officials.

(c) The quorum of the panel shall be-
(i) two, in case the panel consists of three members.
(ii) Three in case the panel consists of four or more members .

(d) The decision of the panel on such appeal shall be final.

Fig 1: Forest types - potential for commercial beekeeping in India