

Need For a Honeyed Shot for Aatmanirbhar Bharat

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“If the bees disappeared from the surface of the globe the man would only have four years of life left. No more bees, no more pollination, no more plants, no more animals, no more man”.

Albert Einstein

Introduction

India is an agriculture based economy and about 55 per cent of its population depends upon agricultural sector. Agriculture sector involves a lot of money in the sense of investment in inputs while on the other hand, output received from it is not enough to meet the cash requirements throughout the year. So it becomes necessary for the farmers to adopt any side business to increase their income. Also, agriculture not only means the cultivation of land but also undertaking subsidiary occupations of farming for economic benefit. Beekeeping or apiculture is one such activity. Beekeeping is an age old tradition in India and is considered a no investment profit giving venture. Keeping in view the importance of beekeeping as part of the integrated farming system in the country and to provide a booster shot to sweet revolution, government approved the allocation for Rs. 500 crore for National Beekeeping and Honey Mission (NBHM) for three years (2020-21 to 2022-23) as a part of the Atma Nirbhar Bharat scheme.

NBHM aims for the overall promotion and development of scientific beekeeping in the country to achieve the goal of ‘Sweet Revolution’ which is being implemented through National Bee Board. According to bee experts at the Food and Agriculture Organization (FAO) of the UN, a third of the world’s food production depends on bees. Animal pollination has proved to be essential for food production directly as well as indirectly; supply of human food and animal feed resources (Kumari, 2022). Globally animal pollinated crops have been estimated to constitute 1/3rd of human diet (Klein *et al.* 2007). Of the total value of Indian agriculture, the proportion of animal pollinated crops is 32.74 per cent with the direct contribution of insect pollination being 8.72 per cent, besides spill over benefits of increase in



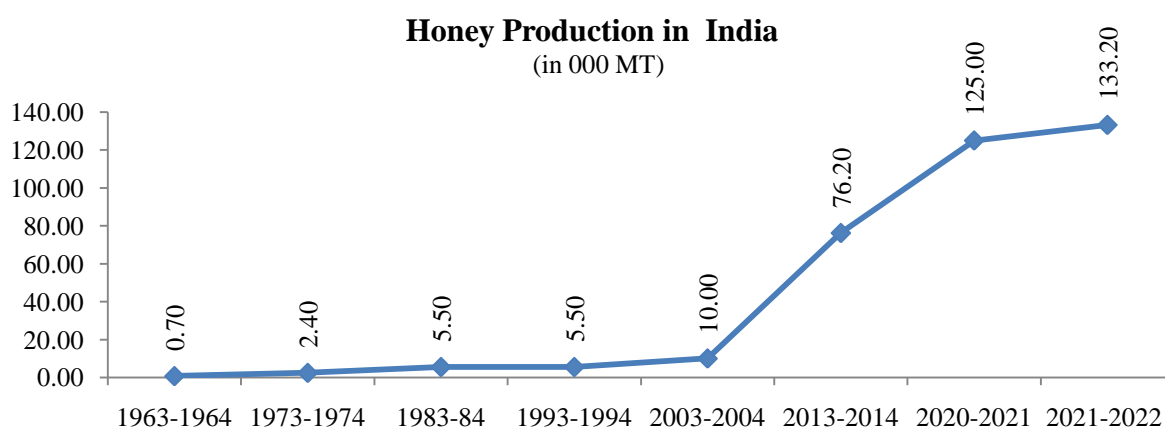
quality traits, seed production, breeding efficiency, etc (Calderone, 2012) which unfortunately are considered to be at risk now (Palmer *et al.*, 2004). Thus for stagnant Indian agriculture, this “micro concept” of using honey bees for planned pollination of crops has the potential “macro-economic” impact (Chaudhary, 2017). Being entirely honey centric, Indian beekeeping lacks emphasis on pollination service (Chaudhary, 2017). Levin (1984) reported the economic benefits of bee pollination in USA at \$ 6 billion and the value of honey and beeswax produced at \$ 45 million only. Chaudhary (1999) provided subjective estimates of economic benefits from insect pollinators from 12 selected entomophilous crops at Rs 2997 crores annually while Chaudhary (1999) also quantified the incidental pollination gains from existing stock of honey bee colonies at Rs 1470 crores.

Benefits of beekeeping

Beekeeping is a low investment and highly skilled enterprise model, in which technology application has emerged as a great enabler for socio-economic growth. The demand for good quality honey has grown over the years as it is considered a naturally nutritious product. Other apiculture products such as royal jelly, beeswax, pollens, etc., are also used extensively in different sectors like pharmaceuticals, food, beverage, beauty, and others. Scaling up beekeeping will double farmers’ income, generate employment, ensure food security and bee conservation, and increase crop productivity and pollination.

India is emerging as a new exporter of honey in the international market. Worldwide honey production amounts to 1.88 million metric tons (MT) in 2020. Asia Pacific was responsible for producing more than half of it. India has traditionally been the leading producer of honey globally. In 2021, its honey output was 11% greater than China’s output. India is also home to a majority of the world’s commercial beekeepers (82%). It has exported 74,413.05 MT of natural honey to the world for the worth of Rs. 1,221.17 Crore/ 163.73 USD Millions during the year 2021-22 with major export destinations being U.S.A, United Arab EMTs, Saudi Arab, Nepal and Morocco (APEDA). India with 67,442 tons of production per year is ranked as seventh largest producer of honey in the world. India with a potential of 12.2 million bee colonies which can produce over 1.2 million tons of honey and about 15000 tons of beeswax (Sen and Thakur, 2004). Around 50 per cent of the honey produced in India is consumed domestically while the rest is exported across the globe.

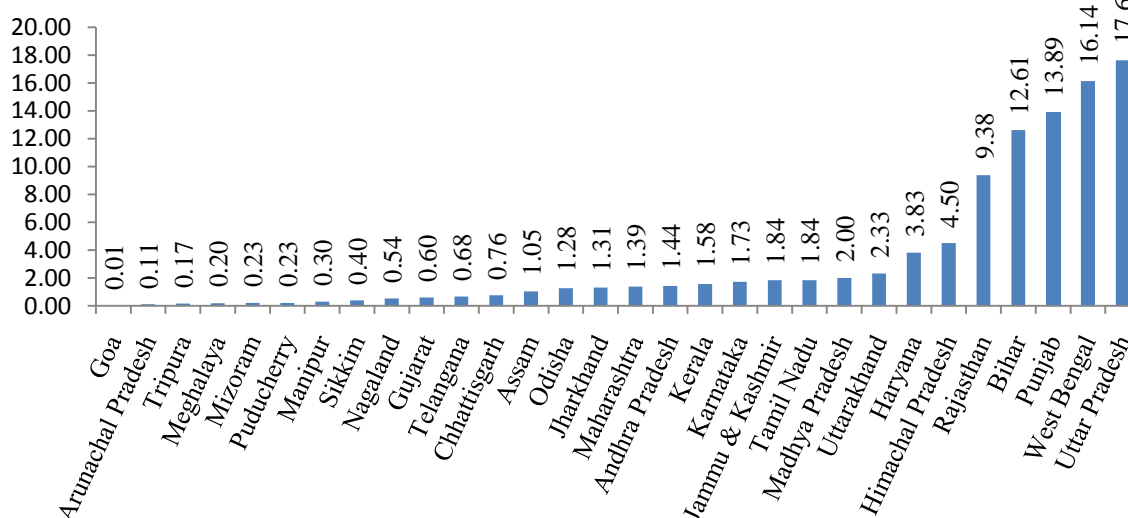
Honey production from all nectar sources, agricultural plants, wildflowers, and forest trees in the country in the year 2020-21 increased to 125 thousand MT from 76150 MT in the year 2013-14 (Figure 1). This is to be attributed to the collective efforts of the beekeepers and the government.



Source: www.indiastat.com

Analysis of production data indicated that two state namely West Bengal (16.14%) and Uttar Pradesh (17.64%) contribute more than 15 per cent each to the national honey production while Punjab (13.89%) and Bihar (12.61%) had contribution of 12-13 per cent and another 13 states' share varied between one to 5 per cent (Figure 2).

Figure 2: Statewise Production of honey in India, 2021-22
(% share in total production)



Source: Author's calculations based on data from www.indiastat.com



India ranks 9th in the world in honey exports. At present, India's natural honey exports are majorly dependent on one market – the United States, which accounts for more than 80 per cent of the exports. India exported 59,999 MT of natural honey worth Rs. 716 crore during 2020-21, with the United States taking a major share at 44,881 MT. Saudi Arabia, United Arab Emirates, Bangladesh, and Canada were the other top destinations for Indian honey. To further ease honey export, India is also renegotiating the duty structure imposed by various countries for boosting honey exports. APEDA is also helping the honey producers to access export markets besides availing government assistance under different schemes, quality certification, and lab testing. It is also addressing challenges such as higher freight cost, limited availability of containers in peak honey export season, higher nuclear magnetic resonance test costs, and inadequate export incentives.

Scope for Growth

Sweet revolution is an ambitious initiative of the Government of India aimed at promoting apiculture for accelerating the production of quality honey and other related products. With technology intervention, sweet revolution can achieve self-sufficiency and make significant gains in the international market to help double farmers' income.

The intervention of technology in bee-farming can help scale up the sector and promote entrepreneurship. The development of an organised bee-farming sector from local to high-tech apiaries can play a significant role in this regard. Mobile sensors and smart phone apps can help beekeepers in raising healthy bee colonies and timely extraction of quality honey and other products. The development of cost-effective indigenous technology that enables farmers to raise healthy bees on farms and assess their hive fitness through sensors or cloud information can also be introduced to this sector. Technology can preserve and support bee conservation, prevent diseases or the loss of bee colonies and provide bumper quality and quantity of apiculture products. Hi-tech apiaries for commercial bee-farming will lead to the manufacture of high-volume marketable products. Good farming practices will yield superior-quality honey and other products for the domestic as well as international market. Research in the fields of beekeeping, bee-behaviour, etc., will increase the scope for commercial rearing of healthy bee colonies and apiculture products.

The apiculture market is estimated to register a CAGR of 4.3 per cent during the period 2020–25, with Asia–Pacific as the dominant producer. As per report by IMARC, the



Indian apiculture market size is expected to reach a value of Rs 33,128 million by 2024, expanding at a CAGR of nearly 12% by 2024. The demand for organic honey in the international market could be leveraged for promoting organic beekeeping guidelines. For propagating the sector, the landscape for beekeeping and the species could be expanded on a commercial scale.

India is home to four of the seven known bee species. Two of these are domesticated, *Apis cerana* (oriental honey bee) and *Apis mellifera* (European honey bee), and the other two are wild. The conservation and multiplication of bees depend on the density and composition of local flora, which acts as the food base for these pollinators. Around 500 flowering plant species are major or minor sources for foraging, which provides varieties of natural honey flavours which further provides lucrative opportunities for beekeeping industry. Top trends in honey market include growing shift towards flavored honey; increased exploitation of wildflowers for honey production and corporate investment in niche products which need to be followed. An organised and tech-driven bee-farming sector is also an excellent initiative for generating employment opportunities, with skill-building projects. It will also help attain Sustainable Development Goals of no Poverty, zero hunger, good health and well-being, and biodiversity and vibrant ecosystem.

Conclusion

There is a rising demand for food security in the face of threats posed by a growing human population. Proper pollination can improve the quantity and quality of fruits, nuts, oils, and other crops produced and bees as an insect play a crucial role in it. The development of an organised bee-farming sector from local to high-tech apiaries can play a significant role in this regard. Further there is a strong need to promote beekeeping as a subsidiary occupation. Thus, creating awareness regarding apiary, developing marketing facilities, trainings, making arrangement for availability of flora by road side plantation and easy credit facilities for rural people can have a positive impact on income enhancement and employment generation in rural areas.

References

Calderone, N.W. (2017). Insect pollinated crops, insect pollinators and US agriculture: Trend analysis of aggregate data for the period 1992–2009. PLoS ONE. 7, e37235.

- Chaudhary, O.P. (2017). Economic benefits of animal pollination to Indian agriculture Article *in* Indian Journal of Agricultural Sciences. <https://www.researchgate.net/publication/320136745>
- Chaudhary, O P. (1999). Honeybees – constituents of second green revolution. Contribution of Research in Agriculture Development: 100-10. Dubey S K, Kumar A, Singh R K and Tyagi N K (Eds). Central Soil Salinity Research Institute, Karnal. <https://www.indiastat.com/data/agriculture/honey-beekeeping/data-year/all-years>
- Klein, A.M., Vaissière, B.E. Cane, J.H. Steffan-Dewenter, I. Cunningham, S.A. Kremen, C.;T scharntke, T. (2007). Importance of pollinators in changing landscapes for world crops. Proc. R. Soc. B Biol. Sci., 274, 303–313.
- Kumari, R (2022) Honey Production in India culled from <https://newsonair.com/2022/01/06/apeda-helping-boost-honey-exports-to-the-world/>
- Levin, M. D. (1984). Value of bee pollination to United State agriculture. American Bee Journal 124: 184–6.
- Palmer, M., Bernhardt, E., Chornesky, E., Collins, S., Dobson, A., Duke, C., Gold, B., Jacobson R, Kingsland S, Kranz R, Mappin M, Martinez ML, Micheli F, Morse J, Pace M, Pascual M, Palumbi S, Reichman OJ, Simons A, Townsend A, Turner M. Ecology. Ecology for a crowded planet. Science. 2004 May 28; 304(5675):1251-2. doi: 10.1126/science.1095780. PMID: 15166349.
- Sen, A. and Thakur, R. (2004) Rock Honey: A case of Pathankot. The Livelihood School 113-34 (culled from www.thelivelihoodschool.in).