

Good Practices 6: April 2014



BEE KEEPING IN CHAMBAL REGION OF MADHYA PRADESH



The Chambal region of Madhya Pradesh, India has an abundant availability of flora that provides nectar and pollen to honey bees throughout the year. Keeping this in view, the Krishi Vigyan Kendra (KVK) Morena promoted bee keeping as it can generate self-employment and also enhance crop productivity. Bee keeping requires fewer investments and provides good income. Encouraged by the success of bee keeping in Morena, farmers and rural youth from other districts of the state have now started bee keeping as a new vocation. Dr A S Yadav and Dr Y P Singh share their experience with promotion of bee keeping in this Good Practice Note

CONTEXT

The Chambal region of Madhya Pradesh (MP) has an abundant flora of sesame, green gram, black gram, pearl millet, rape seed, mustard, short duration pigeon pea, coriander, mustard and berseem and during August to April. During the rest of the year, the flora of forest plants such as adusa (*Adhatoda vasica*), kher (*Acacia catechu*), drum-stick (*Moringa oleifera*), shisham (*Dalbergia sissoo*), neem (*Azadirachta indica*) are available in abundance. Honey bees (*Apis mellifera*) are the most important agents of cross pollination in this region. The region is semi-arid and the conditions of this region (temperature and availability of flora) are highly favorable for multiplication of honey bees and development of apiculture as a major source of employment.



During 2004-05, Krishi Vigyan Kendra (KVK), Morena (<http://rvskvv.nic.in/kvkmorena>) decided to promote bee keeping in its adopted villages (*Sirmourkapaura*, *Nayagoan* and *Mirghan*). It conducted a 10 day training programme on bee keeping for 28 selected rural youth during that

year. All these trainees started bee keeping with 5-20 colonies (depending on their economic status) and the KVK scientists supported them with advice and regular visits to their fields. Honey production increased up to 80 Kg/colony during this season and observing this progress, rural youth from neighboring villages (*Gapara, Bistoli, Pahargarh*) approached the KVK for training in bee keeping. Since then KVK, Morena has organized several training programmes on bee keeping. Many of the bee keepers trained by the KVK are now working as master trainers for other organizations to promote bee keeping. Morena District (Box 1) is also ranked first in the state of MP for honey production.

Box 1: Morena District

Chambal Division is an administrative geographical unit of Madhya Pradesh state of India. Currently, the division consists of three districts, Morena, Bhind and Shoepur. Morena is the administrative headquarters of Chambal Division. About 50 per cent of the total geographical area of Morena district is available for cultivation and nearly about 58.74 per cent of the cultivable area in the district is irrigated. Important rivers such as Chambal, Kunwari, Asan and Sank pass through this district. Canal is the main source of irrigation, which accounts for 42.94 per cent of the total irrigated area. Agriculture and dairying are the main occupation of the people of Morena. The major crops include wheat, gram, rapeseed-mustard during *rabi* and pear millet, pigeon pea and sesame in *Kharif*. Majority of the farm holdings are small (31.3%) and marginal (23.5%). The KVK, Morena was established in 2004 and it operates under Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, (Gwalior) with financial support from the Indian Council of Agricultural Research ICAR).

Apart from increased income, the bee keeping has also led to increased productivity of crops (mainly mustard, pigeon pea and barseem) through better pollination. Approximately 3200-3500 beekeepers in the Chambal region currently have 55,000-60,000 colonies (*Apis mellifera*) that extract 4,899 tones of honey contributing about 4.33 million US\$ income in a year.

GOOD PRACTICES

Training: KVK, Morena is currently recognized as a pioneer training centre for bee keeping and processing. Every year the KVK is organizing 3-4 trainings on bee keeping. As bee wax is an important product, training on improved method of wax extraction and purification are also conducted. KVK is organizing vocational training on bee keeping for farmers, NGO staff and extension



Practical discussion with State level trainees of Bee Keeping

workers in other districts of the state and also other states (Uttar Pradesh, Chhattisgarh, Bihar and Rajasthan). During 2004-05 to 2011-12, KVK trained 1,172 entrepreneurs through 29 trainings. It also supported entrepreneurs for production of wooden boxes, wax sheets and honey extracts in the district.

Technical backstopping: Sometimes beekeepers face natural enemies like mite and viral infections in bee colonies. The KVK scientists have been supporting bee keepers with diagnosing and treatment of infections and also organized demonstrations on ways of addressing these problems. Now, beekeepers are successfully sorting out these problems and managing their colonies even in adverse circumstances. The KVK is also supporting migratory beekeepers from Uttar Pradesh, Bihar and Rajasthan through provision of technical guidance and facilitating interactions with local bee keepers.

Introduction of new crops: For enlargement of floral period, the KVK introduced short duration variety of pigeon pea and barseem crop for fodder and seed production. This helped in enhancing the availability of flowers for honey bees from September to April. Due to introduction of new crops and increased pollination through honey bees, the area, production and productivity of many crops increased over the last few years (Table 2). KVK is also supporting intensification of farming in the region to further increase availability of flora round the year.

Marketing: Due to the increase in honey production, marketing of honey was facilitated by the KVK through formation of Self Help Groups (SHGs). Presently 12 SHGs of beekeepers are working with the KVK. To strengthen marketing of quality honey, the KVK established a honey processing and packaging plant and a quality testing laboratory with the support of ICAR (Indian Council of Agricultural Research). The quality testing lab regularly monitors the quality parameters of honey such as moisture content, Fructose/Glucose ratios, acidity, sugar etc.

Awareness Building and Promotion: The KVK organized three seminars and workshops on beekeeping with the financial support of National Bee Board, New Delhi (<http://nhm.nic.in/NBB/index.htm>) and Madhya Pradesh Science and Technology Department, Bhopal.



IMPACT

KVK, since its inception in 2004 has been promoting bee keeping as an income generation activity for rural youth and it has trained 1,172 entrepreneurs till 2011-12. Morena has currently about 3,500 bee keepers. KVK Morena is currently recognized as an important centre for bee keeping, processing and packaging in the country. Training on commercial bee keeping



State level trainees visiting the processing plant

and bee management is a regular feature of the KVK. Rural youth and farmers from other districts of Madhya Pradesh (*Sagar, Hosangabadd, Gwalior, Damoh, Guna, Ashok Nagar, Jabalpur, Jhabua* etc and other states (Rajasthan and Bihar) have participated in the vocational trainings organized by the KVK. Apart from these trainings, several farmers from other districts and other states also visit KVK Morena as part of their exposure visits.

The promotion of bee keeping by the KVK has resulted in two types of impacts:

1. Enhanced production of honey and increase in income

Bee keepers having 10-1200 bee colonies can get an annual income of Rs .04 million (666 US\$) to Rs 3 million (50,000 US\$). Approximately 3500-4000 rural youth are directly or indirectly associated with bee keeping and marketing of bee products and bee equipments, The increase in rural income in Morena that have come through bee keeping could be understood from details presented in Table 1. About 4900 tonnes of honey worth Rs 260 million (4.3 million US\$) are produced in Morena every year.

Table 1: Growth in bee keepers in Morena

Year	Beekeeping status			No of Colonies possessed
	No. of Courses organized	No. of Trained entrepreneurs	No. of Practicing Bee Keepers	
2003-04	01	35	4	345
2004-05	06	415	10	567
2005-06	03	87	126	3500
2006-07	05	160	130	10500
2007-08	01	25	156	9100
2008-09	02	49	250	10000
2009-10	03	95	374	12000
2010-11	03	110	1500	30000
2011-12	04	165	3800	55000

2. Enhanced area, production and productivity of crops

Among insects visiting mustard and pigeon pea inflorescence, the honey bees (*Apis mellifera*) are the dominant. Honey bee visit flowers for collection of both nectar and pollen which, in turn results in to florets getting cross pollinated. The role of honey bees in pollination, which leads to increase in the quality and yield of crops, has been widely documented. In Morena, bee keeping has also contributed to enhanced production and productivity of crops especially pigeon pea and mustard (Table 2).

Table 2: Impact of honey bee and insect pollination on yield of mustard and pigeon pea in Morena District

(Area-000 ha, Production-000 Ton, Productivity-Kg/ha)

Year	Mustard			Pigeon pea		
	Area	Production	Productivity	Area	Production	Productivity
2003-04	135.8	184.6	1359	5.2	4.0	769
2004-05	158.1	202.7	1282	3.8	3.0	788
2005-06	151.2	222.9	1474	4.5	3.6	790
2006-07	146.7	195.3	1331	4.1	2.8	675
2007-08	138.0	193.6	1403	3.5	2.3	650
2008-09	151.8	201.0	1324	2.9	2.5	867
2009-10	146.2	219.0	1500	7.5	5.8	775
2010-11	165.0	297.0	1800	9.6	10.3	1075
2011-12	165.0	326.0	1980	9.80	11.50	1182

The productivity of mustard increased from 797 kg/ha in 2002-03 to 1980 kg/ha in 2011-12. The productivity of pigeon pea increased from 592 kg/ha to 1182 kg/ha during the same period. To cope up with increasing demand of pulses and oil seeds, pollination has to be increased to achieve higher yields. As honey bees can help in improving pollination, there is a bright future for bee keeping in this region.

CONCLUSIONS

Beekeeping is a simple business which requires less investment and technical skill and provides good income due to increasing demand of good quality honey in domestic and international market. Beekeepers of Morena have proved this and they are a good role model for unemployed rural youth in India and elsewhere.

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