

Financial Analysis of Commercial Honey Production in Uttara Kannada District

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Abstract

Beekeeping enterprise is highly profitable but less aware enterprise among Indian farmers. The present study was focused to investigate the cost and returns involved honey production in Uttara Kannada district. The 120 sample beekeepers and 20 market intermediaries were selected in multistage random sampling method and used as sample beekeepers for the study. The results revealed that the two methods was found in commercial honey production in study area namely, Stationary and migratory honey production and the total fixed cost (TFC) was ₹5,722.26 and ₹6274.12, with total variable coat (TVC) of ₹1,371.18 and ₹1,559.77 respectively. The financial analysis revealed that the NPV was ₹ 20,712.58 and ₹42,363.03, BCR of 3.61 and 6.75, IRR of 62 per cent and 112 per cent and PBP of 11 months and 7 months and 10 days respectively at 12 per cent discount rate for 10 years time period. It indicates that the either methods of honey production found to be financially feasible and migratory method was much more feasible than stationary method.

Keywords: Beekeeping, economic feasibility, Net present value, Benefit cost ratio.

Introduction

Beekeeping is not new for India, it was practiced from ancient period for the purpose of honey as food supplement as well as for medicinal purpose. In commercial beekeeping, *Apis cerana* was most preferable species for domestication and it was origin in India hence it also called Indian bee. This species yield about 20kg of honey in commercial beekeeping per year and less swarming in nature therefore it was most preferable for commercial purpose. Indian ecology and greatly diversified floral sources will increase importance for beekeeping and enhances the honey productivity in India. In present Indian agricultural situation, farming community need to adopt more subsidiary enterprise for generating additional income to escape from uncertainty of weather as well as price risks in Agricultural commodities. Beekeeping enterprise is one among best enterprise as both subsidiary as well as main enterprise for resources poor (Small & marginal) farmers. In addition to that it enhances the yield of agricultural crops by cross pollination process. In commercial beekeeping we found two kinds viz., **stationary beekeeping** in which the hives doesn't transfer to floral potential areas during dearth period instead of it artificial feed was provided to hive and another method was **migratory beekeeping** in this case hives shifted to floral potential areas to further honey production during dearth period.

Methodology

The study was taken in Uttara Kannada district which is one of leading honey producing district in Karnataka as per (Secondary data/information collected from) the records of Forestry Department. The 120 beekeepers taken as total sample size including both stationary and migratory beekeepers. Beekeepers were selected from four major honey producing taluks namely, Honnavar, Siddapura, Sirsi and Supa. From each taluk 30 beekeepers were selected randomly. The primary data pertaining to investment, maintenance cost, yield and average selling price was collected from beekeepers by using pre-tested and well structured schedule through personal interview method.

The tabular analysis was used to ascertain the cost and returns of beekeeping enterprise. Net Present Value (NPV), Benefit Cost Ratio (BCR), Internal Rate of Returns (IRR) and pay-back period was calculated to find the financial feasibility of the enterprise.

Results and discussion

The beekeeping enterprise is one that has a unique pattern of investment. It usually very less variable cost compared to any other enterprise. The honey production process majorly involved more initial investment and a very less variable cost. The life span of a single beehive was taken for 10 years. The maintenance cost was calculated for every year and it was almost similar and it was considered as cash out flow. The returns generated from selling honey was considered as cash inflow. Therefore, in this study cash flows were assumed as same for next 10 years for calculation of financial feasibility of beekeeping enterprise.

Table.1: Fixed cost incurred in production of honey from different methods in Uttara Kannada district

Sl. No.	Particulars	Stationary Honey Production (n=99)	Migratory Honey Production (n=21)
1	Bee box	1,766.60	1,822.80
2	Nuclear colony	1,441.50	1,582.20
3	Super chamber	574.74	561.90
4	Hive tool	200.00	200.00
5	Smoke sprayer	150.00	150.00
6	Iron stand	120.36	173.14
7	Miscellaneous	850.00	1,150.00
8	Interest on fixed cost	619.06	634.08
	Subtotal	5722.26	6274.12

It could revile from table.1, the fixed cost in migratory beekeeping was higher (₹ 6,274.12 per hive) and in the case of stationary beekeeping was comparatively less (₹ 5,722.26 per hive). In the case of migratory beekeeping, the good quality bee box was used to prevent the mechanical damage of the colony and to avoid sudden variations in temperature at the time of migration during dearth periods. But in case of stationary honey production method, the beekeeper needs not to shift to any places therefore, the lesser quality of bee boxes could use. That will make a slight variation in fixed cost.

In addition to that, the superior quality iron stand was used in the case of migratory beekeeping when compared to stationary honey production because in migratory beekeeping it was used in many places and every year it would be transferred from one place to other places along with beehive. In migratory beekeeping, the migration net was used to cover the hive during transportation to prevent the absconding of bees from hives. It would increase additional fixed cost in migratory beekeeping.

Table.2: Variable cost incurred in production of honey from different methods in Uttara Kannada district

Sl. No.	Particulars	Stationary Honey Production (n=99)	Migratory Honey Production (n=21)
1	Temporary labor cost	57.17	137.49
2	Permanent labor cost	0	555.73
3	Imputed value of family labor	1092.34	469.23
4	Sugar feeding	19.39	40.00
5	Migration charges	0	109.04
6	Miscellaneous	55.37	84.27
7	Interest on variable cost	146.91	164.01
	Total	1,371.18 (19%)	1,559.77(20%)

The results revealed that from table.2, the variable cost in beekeeping was very less when compared to any other agro-based enterprises because in honey production process, the additional land was not used, land preparation and inter cultivation practices, application of fertilizers, pesticides, irrigation, weed management, or any other intensive management activities was not involved in both migratory and stationary honey production methods. Hence, the variable cost in honey production was very less compared to other agro-based enterprises.

The total variable cost in the case of migratory honey production was higher (₹ 1559.77 per hive per year) and in the case of stationary beekeeping, it was less (₹ 1371.18 per hive per year). In the case of migratory beekeeping permanent labor was essential for loading and unloading of bee boxes, fixing hives in different places, to frequently harvesting of honey from hives and general hive management practices (cleaning, feeding, etc.). The imputed value of family labor was very less in case of migratory honey production because the average number of beehives was 104 hives, hence it distributed among large number of hives; but in stationary honey production; it was 15 hives therefore it was more and it was ₹ 1,092.34 per hive per year. The single person should need to work at least two hours per day for cleaning, honey harvesting, watch and ward and sometimes sugar feeding.

In the case of migratory honey production, migration charges (shifting charges) was incurred for the beekeeper but it was very less about 109.04 per box per year. Sugar feeding was essential in case of migratory beekeeping (₹40.00 per hive per year) during migration, the hive needs at least three days to acclimatize to new weather and environment to search floral sources and to start a honey collection; during that time, sugar feeding was essential for maintaining a healthy hive.

Comb foundation sheets were used to support bees to construct brood. As we know, that bee has to consume 8 kg of honey to produce one kg of bee wax. Once comb foundation sheets provided into frames; it reduces need of wax for brood construction and bees consume less honey and the honey yield will eventually increase. Therefore the comb foundation sheets were highly used in commercial honey production.

Table.3: Cost and returns realized from honey production from different methods in Uttara Kannada district

Sl. No.	Particulars	Stationary Honey Production(n=99)	Migratory Honey Production(n=21)
1	Yield obtained (kg/hive)	17.28	28.42
2	Average Sale price (Rs)	350.00	350.00
3	Total returns (Rs/hive)	6,049.08	10,166.60
4	Cost (Rs/hive/year)		
a	Total Fixed cost	5,722.26	6,274.12
b	Total variable cost	1,371.18	1,559.77
5	Net returns (Rs/hive/year)		
a	First year (3-(4a+4b))	-1,044.36	2,332.71
b	Second year onwards (3-4b)	4,677.90	8,606.83

The honey production was directly depend on availability of floral sources; in study area from December to April was the peak flowering season in evergreen forest. The rainy season from July to October will become dearth period for honey production, because of bees could not collect nectar during uninterrupted rains. Migratory beekeepers have been taken beekeeping as a full-time occupation and honey was produced throughout the year by shifting hives to floral potential and semi-malnad region during dearth period. Hence the average yield of honey in migratory honey production was high (28.42 kg per hive per year). But in the case of stationary beekeeping, beekeeper doesn't shift hive to floral potential areas during dearth period for additional honey production. Hence, the average yield of honey was less (17.28 kg per hive per year). When it comes to sale price it was almost the same in the case of migratory beekeepers and stationary beekeepers due to mutual understanding among buyers.

The net return in the first year was negative (₹ -1,044.36/hive/year) in case of stationary beekeeping because, the total cost (Total cost = Total variable cost + Total Fixed cost) greater than total returns due to the total fixed cost (initial investment) was included in total cost, but from second year onwards the total fixed cost was not incurred for a beekeeper so that, the net returns were positive (₹ 4,677.90/hive/year).

The net return in the case of migratory beekeeping was positive due to high yield realized from migration practice and it was ₹ 2,332.71 per hive per year. And from the second year onwards the net returns were ₹ 8,606.83 per hive per year. Hence, the migratory honey production method was highly profitable when compared to stationary honey production.

Table.4: Financial feasibility of honey production from different methods

Sl. No.	Particulars	Stationary Honey Production	Migratory Honey Production
1	Net Present Value (NPV) (Rs)	20,712.58	42,363.03
2	Benefit Cost Ratio (BCR)	3.61	6.75
3	Internal Rate of Returns (IRR)	62%	112%
4	Pay-back period	11 months	7 months and 10 days

The NPV was positive in both stationary and migratory honey production and in the case of stationary beekeeping it was ₹ 20,712.58. It indicates that the stationary beekeeping was financially feasible. In the case of migratory honey production, the NPV was almost double than the stationary method and it was ₹ 42,363.03. It clearly indicates that the migratory method was much superior and highly financially feasible than the stationary method.

The BCR indicates the returns earned per rupee of investment. In the case of honey production, it was greater than one. In honey production or beekeeping enterprise, the farmer/beekeeper need not to invest more capital for land preparation, seed material, fertilizers, pesticides, inter-cultivation, irrigation, weeding or any labor expensive harvesting activities. In honey production, the bees collect honey from different floral sources including weeds, trees, agricultural and horticultural crops. Hence, the beekeeping enterprise was yielding higher returns per rupee of investment.

In the case of stationary beekeeping, the BCR was 3.61 and it was lesser when compared to the migratory method (6.75). In migratory method beekeeping, the beekeeper produces honey for an additional three to four months during the dearth period with lesser additional investment. Therefore the migratory beekeeper earns 6.75 ₹ per rupee of investment.

The IRR indicates the rate of annualized earnings of the investment. It also called the opportunity cost of investment. It was expressed in percentage. The IRR was the discount rate at NPV becomes zero. The IRR in the case of stationary honey production method was 62 percent and in the case of migratory honey production, the IRR was 112 percent. It clearly indicated that either of honey production methods financially feasible and the migratory method of honey production earned more than the stationary method.

The pay-back period in stationary beekeeping was 11 months and it was higher when compared to migratory beekeeping and it was 7 months 10 days. This difference was due to increased honey production during dearth period generates additional income and it helps to recover initial investment in earlier stages in migratory honey production.

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