Entrepreneurship Development through Anthurium Flower – A Case Study of Mizoram, North-East India

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ABSTRACT

Anthurium is one of the most popular of the tropical cut flowers which are being grown commercially for export as well as for the local market. The average life span of a shade house and Hi-tech structure is about seven years and ten years respectively. A large percentage of the anthurium is marketed sold outside Mizoram to states like Kolkata, Bangalore, Mumbai and Delhi through Bangalore based exporter, ZOPAR Export Ltd. After proper packing, the flowers are first flown to Kolkata and then to Bangalore, Mumbai or Delhi. Total marketing expenses incurred by farmer is worked out to be Rs.0.79 per stem, of which cleaning and sorting consumed highest share of the marketing cost incurred by producer. The average price spread was found Rs.14.43 per stem. The anthurium growers get good return if they sell their produce through ZOPAR (wholesaler) instead of selling to the retailer in the state as there is fluctuation of demand in the state. Gender plays an important role in entrepreneurship development through anthurium cultivation in Mizoram. Education of the female household head (FHEDU), project assistance (ASSIST) in the form of costs, technological information, net and seedlings; income of the households (INCOME) and availability of credit facilities (CREDIT) exert positive impact whereas age of the female head (FHAGE) have negative impact.

Keywords: *Anthurium; Entrepreneurship; Marketing; ZAGS; ZOPAR;*

In the last few years the aims of the National Agricultural Policy (NAP) have moved towards a more market orientated framework, coupled with a shift in the associated policy instruments from price support to direct payments. Furthermore, the role of agriculture is no longer limited to the production of food and fibre; it also contributes actively towards sustainable and rural development. As a result of these changes, farmers have the chance to benefit from market opportunities and to take greater responsibility for the success of their businesses; in other words, farmers theoretically have more freedom to farm as they wish. As a consequence, the demands placed on farmers with regard to required skills have also changed. Some years ago, the skills a farmer needed were related in the first instance to the production of good quality food and operational management. Today, with the changes in the political and market environment, farmers need additional skills in the fields of marketing and selling, strategic management, networking and, above all, skills in finding and realizing new business opportunities – in other words: in addition to production skills, farmers nowadays need entrepreneurial skills. Unfortunately, decades of payments under the NAP have encouraged farmers to look to the state to give them guidance on farm management rather than helping them to anticipate or to innovate as individual farm entrepreneurs. In addition, farm associations and other collective bodies have focused on administering and lobbying for NAP payments rather than on developing the capacities of their members in terms of entrepreneurialism. In the last few years there have been changes in farmers' awareness, in the agricultural business and within government towards an entrepreneurial culture in the farming business in Mizoram state, north-east India. One of the important reasons being the national funded project on Technology Mission for Development of Horticulture in Northeastern Region which was implemented in the state since 2000. One of the successful models in entrepreneurship development in

the state is through commercialization of anthurium flower. Cultivation of anthurium has not only brought about a change in the Horticulture scenarios of Mizoram, but also uplifts the living condition of the growers to a great extent. This paper studies the nature of entrepreneurship development in the state, impact on income and employment generation and to ascertain the factors which facilitate the establishment and development of the enterprise.

Entrepreneurship development through cultivation of anthurium has not only brought about a change in the Horticulture scenarios of Mizoram, but also uplifts the living condition of the growers to a great extent. It provides employment and regular income to the growers and other unskilled labour. The anthurium growers in Mizoram grow the flower in either shade house or in Hi-tech depending upon their financial status. Although the establishment cost is more in Hi-tech than in shade house, the quality of flower grown in Hi-tech is much superior to that grown in ordinary shade house.

METHODOLOGY

Aizawl district of Mizoram was purposively selected for the study since 90 per cent of the anthurium growers in the state is concentrated in the district. Altogether 120 adopter and non-adopter farm households were selected from the list of growers and non-growers distributed in 12 villages using simple random sampling technique. Data were collected from the farmers, grower association and market intermediaries by personal interview method using pre-tested interview schedule. Data pertain to the year 2009-10. Secondary information on list of anthurium growers, freight charges, wholesale and retail prices in Calcutta, Bangalore and New Delhi were collected from Zopar Export Pvt, Ltd.

Simple tabular analysis was used to ascertain the first objective. Financial viability and income generation of anthurium cultivation vis-à-vis vegetable system was examined using net present value (NPV), benefit-cost ratio (B/C) and Internal Rate of Return (IRR). To achieve the third objective, logit model. The logit model in this study postulates that Pi , the probability that farmer i develop entrepreneurship through anthurium cultivation is a function of an index variable Zi summarizing a set of his individual attributes:

$$P_i = F(Z_i) = F(\beta'X_i) = \frac{1}{1+e^{-zi}} = \frac{1}{1+e^{-(\beta'X_i}}$$

where β is a (k $\times$ 1) vector of co-efficients, Xi is a (k $\times$ 1) vector of the farmer 'i's attributes, and e is the base of natural logarithm. The index variable Z_i is a dichotomous variable i.e., it takes the value of one if a farmer adopts anthurium cultivation (Z_i =1) and takes the value zero otherwise (Z_i = 0). Zi has been shown to be the logarithm of the odds ratio (*Kennedy, 1985*)

$$Z_i = \log\left[\frac{P_i}{1-P_i}\right] = \beta'X_i$$

RESULTS AND DISCUSSION

Nature of Entrepreneurship Development : Taking into account the ideal climatic condition of Mizoram, the Department of Horticulture, and Government of Mizoram started encouraging farmers for commercial cultivation of Anthurium in the month of November, 2002 under Technology Mission for Integrated Development of Horticulture in North East States. At first 24 potential grower's were identified for taking up anthurium cultivation by providing quality planting materials along with shade nets and other required inputs like cocopeat, sprinkler irrigation etc. and the first batch of export to neighboring states was achieved in the month of October, 2003 i.e. within a short span of time 11 months from planting to production of cut flowers.

Selected farmers are provided basic training in cultivation and maintenance of their gardens by field officers of the department. It is worth mentioning that most of the selected growers are women, which is the fulfillment of the aim to uplift women in the state. The success of the initial growers has inspired other so much in the capital and also in other towns of the state. The area possessed by these individual farmers ranges from 300 sq.m. to 500 sq.m. accommodating about 3000–5000 plants, with a production of 5,000-10,000 cut flowers in a year depending on the area of their cultivation. The area possessed by these individual farmers may be small, but the farmers bring their products at one collection centre and create large volume as little drops of water makes a mighty ocean.

The anthurium growers of Mizoram formed a society called 'ZO- Anthurium Grower's Society', which helps in communicating the hardship faced by the farmers in prices, markets, inputs, expansion and acquiring skills etc. In brief, the role of ZAGS is to act as an intermediary among the state government, anthurium growers and ZOPAR in skill development,

price fixation, financial support and production of quality products. All the growers of the state are members of ZAGS.

Recognizing the quantum of the produce, the state government invited the Bangalore based exporter, Zopar Export Ltd. to establish its office in Mizoram for marketing of the product. The first consignment of Anthurium cut flowers from Mizoram was sent off on 23rd August, 2006 to UAE through ZOPAR Exports Pvt. Ltd. Other than marketing, ZOPAR is actively promoting production of quality anthurium in Mizoram through providing technological skills in production and post harvest handling. More than 1,000 families are engaged in cultivation of the flower in Mizoram, out of which 275 were hi-tech producers.

Marketing : Table 1 shows that 99 per cent of the sample anthurium growers in Mizoram are members of ZO- Anthurium Grower's Society (ZAGS) and they market their produce through Bangalore based exporter, ZOPAR Export Ltd. A large volume of the cut flower is sold to wholesalers in other states like Kolkata, Delhi, Mumbai and Bangalore and a very small quantity of flowers are sold in state itself.

Table 1. Marketing channel of Anthurium in Mizoram

Particulars	Supply chain	No.	%
Channel 1	Producer – ZOPAR (Wholesaler) – Wholesaler /Retailer in other states	717480	98.91
Channel 2	Producer - Retailer - Consumer	7890	1.09
	Total	725370	100

The number of stem purchased by ZOPAR Export Ltd. from ZO- Anthurium Grower's Society (ZAGS) and sold to other states during the study period is 717480 stems (98.91%) worth Rs.5089475.50. The number of stems sold within Mizoram is only 7890 (1.09%), worth Rs.31560. The marketing cost incurred by the anthurium growers was found to be Rs.0.79 per stem, of which cleaning and sorting consumed the highest share (70.34%), followed by losses (17.73%), packing material (9.59%) and transportation (2.34%). ZAGS (ZO-Anthurium Grower's Society) selling price is Rs.5, Rs.7, Rs.12, Rs.13 and Rs.14 per stem for small, medium, large, extra large and jumbo respectively. The farmer's share has been found to be 45.42 per cent, 37.31 per cent, 37.38 per cent and 38.33 per cent in Kolkata, Bangalore, Mumbai and Delhi respectively. The producer, on an average receives Rs.10.20 per stem. It is observed from the table 2 that anthurium producer fetches Rs.9.41 per stem as his net margin.

The ZOPAR has to incur a total marketing cost of Rs.7.82 (37.72 %), Rs.11.90 (47.19%), Rs.11.70 (47.08%) and Rs.11.12 (45.28%) to market one stem of anthurium flower in Kolkata, Bangalore, Mumbai and Delhi respectively. This cost included packing cost, air-freight from Aizawl and marketing cost at destination. The marketing cost incurred by ZOPAR at the destination is found to be Rs.1.90 per stem, of which spoilage occupy the highest share, followed by transportation, sorting, carrying charge and loading/ unloading. About 20 per cent of the flower is damage when they reach the destination. The cost of transportation is Rs.1500 per 30 boxes (1 box contains 140 flowers), loading/unloading is Rs.2 per box and carrying charge is Rs.5 per box. The ZOPAR's selling price of one stem of anthurium flower is found to be Rs.20.72, Rs.25.22, Rs.24.86 and Rs.24.55 in Kolkata, Bangalore, Mumbai and Delhi respectively. However, ZOPAR fetches Rs.2.70 (13.05%), Rs.3.12 (12.36%), Rs.2.96 (11.89%) and Rs.3.32 (13.17%) as profit or margin. In this channel, the producers incur less marketing cost than ZOPAR. The average price spread was found to be Rs.14.43 per stem.

Table 2. Price spread of Anthurium (Rs./stem)

Particulars	Kolkata	Bangalore	Mumbai	Delhi	Average
Price received by the farmer	10.20	10.20	10.20	10.20	10.20
Cost incurred	0.79	0.79	0.79	0.79	0.79
Margin	9.41	9.41	9.41	9.41	9.41
ZOPAR's purchase price	10.20	10.20	10.20	10.20	10.20
Cost incurred	7.82	11.90	11.70	11.12	10.63
Margin	2.70	3.12	2.96	3.23	3.00
ZOPAR selling price	20.72	25.22	24.86	24.55	23.84
Price spread	11.31	15.81	15.45	15.14	14.43

The price spreads in Kolkata, Bangalore, Mumbai and Delhi were found to be Rs.11.31, Rs.15.81, Rs.15.45 and Rs.15.14 respectively. The price spread was found be highest in Bangalore because of higher transportation cost.

Income and Employment Generation : Table 3 shows the financial analysis of anthurium cultivation vis-à-vis french bean cultivation. French bean cultivation was widely practiced in the district prior to anthurium cultivation as a new venture. The cost of cultivation of anthurium is the highest in the first year as establishment cost (Rs.5,28,140) on land development, seedling cost and others are done in first year only (*Shulka and Srivastava, 2009*). The highest cost was incurred in seedlings, which is imported from Holland @ Rs.110 per one month old seedling. About 4000 seedlings are planted in an area of 400sq.m. The investment analysis considering the economic life of seven years under shed house indicated a Net Per cent Value (NPV) of Rs. 611268 with Benefit Cost (B/C) ratio of 1.86 and Internal Rate of Return (IRR) of 46 per cent as compared to Rs.253.82, 1.13 and 33 per cent in French bean cultivation. The above findings indicate that anthurium cultivation is 2408 times profitable than vegetable cultivation as shown by NPV. Besides earning average net income of Rs. 272140 per household from the second year onwards, it generates employment of 312 man days per household. It is revealed from the Table 4 that the per hectare employment level has been significantly increased by 170 times after the adoption of anthurium cultivation. In other words, the per hectare employment which was 448 man days has been increased to 76,000 mandays after anthurium cultivation. The reason behind may be due to labour intensive nature of the enterprise. Per family employment pattern also increased 112 to 304 man days considering average farm size of anthurium and French bean cultivation be 400 sq. meter and 2500 sq. meter respectively. This is a green-signal to the working forces wherein the opportunities of income generation can be made. Similarly, the level of employment in terms of per worker or working force has made significant changed of 2.98 times vis-à-vis French bean cultivation.

Table 4.Annual employment generation in anthurium cultivation vis-à-vis French bean in Mizoram

Particular	Anthurium	French bean
Per household	304	112
Per ha	76000	448
Per worker	152	51

Factors affecting entrepreneurship development: If the entrepreneurship development through anthurium cultivation is seen as an important aspect of a movement towards a more sustainable agriculture, then an understanding of the factors that lead farmer to adopt is a key component of policy design. The results of the logit analysis for anthurium adoption are presented in Table 4. The dependent variable is the probability of entrepreneurship development through anthurium cultivation. The specified logit model fits the data very well as indicated by the likelihood ratio test (λ), which is significant at 1 per cent level. The high level of McFadden ρ^2, obtained attests to the good predictive ability of the model.

Table 3. Financial evaluation of Anthurium cultivation vis-à-vis French bean in Mizoram (Rs/per 400 sq.m)

Year	Anthurium					French bean				
	Esttblishment cost	Operational cost	Total cost	Total return	Net return	Esttblishment cost	Operational cost	Total cost	Total return	Net return
1	503020	25120	528140	0	-528140	600	305	905	478	-427
2	0	38060	38060	310200	272140	0	305	305	478	173
3	0	38060	38060	310200	272140	0	305	305	478	173
4	0	38060	38060	310200	272140	0	305	305	478	173
5	0	38060	38060	310200	272140	0	305	305	478	173
6	0	38060	38060	310200	272140	0	305	305	478	173
7	0	38060	38060	310200	272140	0	305	305	478	173
Total	503020	253480	756500	1861200	1104700	600	2135	2735	3346	784
Net Present Value (NPV)		611268	1138713	527445			1928	2181	253.82	
Discounted Benefit Cost ratio		1.86						1.13		
Internal Rate of Return (IRR)		46%						33%		

Table 5. Parameter estimates for logit model.

Variable	Co-efficient	"t" ratio
Intercept	-1.991 **	2.081
FHAGE	-0.229*	2.280
FHEDU	0.232**	2.917
ASSIST	9.424***	4.12
KNOW	0.602	1.188
INCOME	1.985 ***	2.629
CREDIT	1.213**	1.997
TENANT	-0.452	1.001
FSIZE	0.012	1.110
-2 log (λ)[b]	53.134***	-
McFadden ρ^2	0.621	-
Sample size	120	-

Note: ***, ** and * indicate significance at 1%, 5% and 10% probability levels respectively. b. The likelihood ratio tests are significant at 1 % probability level.

The results show that farmers' decision to adopt anthurium cultivation are positively and significantly related to education of the female household head (FHEDU), project assistance (ASSIST) in the form of costs, technological information, net and seedlings; income of the households (INCOME) and availability of credit facilities (CREDIT). Similarly, negative significant influence for retention of anthurium technology includes age of the female head (FHAGE). The farm size (FSIZE) and partial knowledge of anthurium cultivation (KNOW) although insignificant variables have positive relationship whereas tenant (TENANT) have negative relationship (Table 5). However, gender plays an important role in entrepreneurship development through anthurium cultivation in Mizoram. Surprisingly, 100 per cent of the anthurium growers in Mizoram are females. Education of the female household head have positive relationship with the adoption of anthurium technology. The significant negative sign of age of the female head (FHAGE) shows that young female farmers are most likely to initiate entrepreneurship development activities as compared to old farmers.

CONCLUSION

Entrepreneurship Development through Anthurium Flower was undertaken in Aizwal district of Mizoram to study the nature of entrepreneurship development in the state, impact on income and employment generation and to ascertain the factors which facilitate the establishment and development of the enterprise. Findings of this study revealed that entrepreneurship development through anthurium cultivation in the state can be viewed as a successful model of Public-Private Partnership in which the roles of Mizoram Government, ZOPAR, ZACS and anthurium farmers are significant and effective. It resulted into anthurium cultivation as 2408 times more profitable than vegetable cultivation as shown by NPV. The per hectare employment level also has been significantly increased by 170 times after the adoption of anthurium cultivation. The farmers' decision to adopt anthurium cultivation are positively and significantly related to education of the female household head (FHEDU), project assistance (ASSIST) in the form of costs, technological information, net and seedlings; income of the households (INCOME) and availability of credit facilities (CREDIT). Similarly, negative significant influence for retention of anthurium technology includes age of the female head (FHAGE). Gender plays an important role in entrepreneurship development through anthurium cultivation in Mizoram. Surprisingly, 100 per cent of the anthurium growers in Mizoram are females. The result shows that young female farmers are most likely to initiate entrepreneurship development activities as compared to old farmers. Provision of incentives to poor and small farmers and extension of institutional credit would result in expansion of anthurium cultivation in the state and made Mizoram state the flower ball of the country.

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