CHAPTER VI

SUMMARY AND CONCLUSION

Rose, amongst the flowers, is perfect combination of the factors stirring imagination of mankind, i.e. form, colour and fragrance. It is spatially distributed and widely referred flower in Scriptures, literatures and lyrics. There are references of this important creation of nature in almost all types of ancient literature ranging from vedas to Vatsayana Kamsutra. Besides, its aromatic applications, it has been used in medicines since the early days of human civilisation. Rose flowers and products are most commonly used in offerings on all occasions and rites and rituals of all types. In India and other ancient and
In modern countries of the world it has been and still continues to be the most widely cultivated flowering plant. Species of rose number into thousands with continuing increase in the hybrids every year, *Rosa centifolia* Linn., *Rosa moschata* Hook, *Rosa barboniana* Desp and *Rosa damascena* Mill are the important species of rose from perfumery point of view. Amongst these, *Rosa barboniana* Desp popularly known as Edward rose and *Rosa damascena* Mill known as Damask rose are commonly cultivated, species in India. Damask rose is commercially cultivated in the area under this study.

Empirical investigation of the area under rose cultivation in the country was for the first time conducted by HBTI Kanpur in the year 1960. Prior to it Narayanaswami and Biswas (1957) identified important rose cultivation tracts in the country. Jaumpur, Ghazipur and Sikandarpur (Ballia) were identified as important centres in East U.P. where rose was cultivated at commercial scale. In these areas rose is cultivated in about 200 hectares of land and industries producing rose based products flourish in large numbers. Cultivation of rose, production of rose based products and their marketing provides gainful employment to thousands of workers in these areas. Despite development of synthetic perfumes and their price advantages, rose base products of the area find pride place and class-customership throughout the country. Sikandarpur is particularly famous for rose base products and rose cultivation.
In view of the recent changes in the cultivation of crop enterprises, despite encouragement of ICAR for cultivation of flower crops and export of perfume based products, there has been strain on the cultivation of rose in the area under this study. This may be on account of lower yields or higher prices of the finish products or lack of efficient production and marketing techniques. This strain and the declining trend needs empirical investigation which this study proposed to undertake. This study, though is confined to the cultivation of rose in Sikanderpur region of Ballia district is an small step in the direction of empirically examining various issues concerned with the cultivation of rose. The present study was conducted in Sikanderpur area of Nawanagar block in Ballia district in East U.P. with specific objectives as follows:

1. To study the different cultivars of rose growing in the region.

2. To identify them botanically and horticulturally.

3. To study the cultivation trends of different cultivars in the region.

4. To analyse the economics of production of various rose products.

5. To examine the modes and methods of disposal of rose and rose based products in the region.
6. To examine the resource productivity in rose cultivation.

7. To study future prospects of rose based products in eastern U.P.

Studies undertaken by a galaxy of scientists establish that while the Edward rose is suitable as root stock, Damask rose is most suitable for production of perfume based products. Pal (1972), Narayanaswami and Biswas (1957) observed that Damask rose is cultivated in all important centres of rose cultivation in India in general and perfume based product manufacturing area in particular, Kannauj, Jaunpur, Ghazipur and Sikandarpur were identified as important rose products manufacturing areas in U.P. A large number of studies related to economic management of rose, production of volatile oil, yield of essential oil the price of rose and rose based products etc. have been conducted in country. Swarup (1970), Prabhu (1986) have examined the possibility of propagation of rose cultivation in the country and export of flowers and flower based products.

In view of the facts that Sikandarpur has been recognised as an important cultivation and rose based products manufacturing centre in the country and in the light of the developing strains on cultivation of this commercial flower due to recent changes in agriculture, this study basically aims at identification of the different cultivars in the area and at empirical investigation into the economics of its cultivation and manufacture of important products.
The conclusions of this study are based on observations recorded from 100 sample rose growers selected adopting stratified random sampling procedure from the population of the rose cultivating households having more than 0.075 hect. of area under rose. The observations on rose product manufacturing are based on the informations collected from 23 randomly selected manufacturing units of different rose based products. The inferences are based on cost return analysis, cross sectional analysis applying cobb douglas production function model besides tabular analysis based on sample average coefficient of variation and test of significance etc. Marginal physical productivity of input factors have been estimated with the objective of drawing conclusions leading to maximization of production and profit to the cultivators.

It was observed in the course of the study that cultivation of rose is an important economic activity in the area. Examination of the cropping pattern of the sample households revealed that the flower occupies 4.52 per cent of the total cropped area which lower to only that of Paddy, wheat and gram at the aggregate level and 12.10, 4.64, 4.04 and 2.37 per-cent respectively in Marginal, small, medium and large holdings. The comparatively higher area occupied by the flower in cropping pattern of the sample rose cultivators is clear indication of the popularity of its cultivation in area and importance accorded to the enterprise.
Damask rose, commonly known in the area as FASALI or CHAITI GULAB is cultivated at commercial scale. The hardy nature of the cultivar is evident from the fact that there were plants as old as 20 years in the rose fields. The average plant size measures around 2.5 to 3 metres at the peak period of its vegetative growth after 3 to 4 years of its plantation. It was observed that the leaf of this cultivar was stipulate with moderately large size of leaflets. Besides, distinct characteristics of the cultivar in the region the most important aspect of our observation was with regards to the blooming period of the crop which lasted 30-40 days in the months of March and April. Mild burst of flowering in the months of September and October besides sporadic flowering throughout the year was observed. The months of March and April were observed as the most important period in the annual life cycle of the plant. The pruning of the plant to eliminate dead wood is done in the area after October and lasts up to middle December. On the basis of our observations on cultivation practices and botanical and horticultural characteristics and management practices of the enterprise in the area it can be concluded that the possibility of development of rose cultivation in the area revolves around Damask rose in view of its distinct characteristics and importance to perfume based industries which is popular in the area.
Besides, the objective of botanical and horticultural objective on the rose cultivation in the Sikandarpur region this study end at economic analysis of cultivation of this enterprise in the area under study. Under this aspect of the study we have examined the cost components, yield, cost and return, trend of area under rose cultivation, contribution and productivity of input factors. The average cost of cultivation per hectare was estimated to be Rs. 2192.90. The per hectare cost of cultivation was observed to be positively associated with the size of operational holdings. The main components of the cost were rental value of land (37.62%), human labour (26.50%), manures and fertilizers (16.47%) and irrigation (12.28%). It must be explained here that the higher share of rental value of land is on account of high pressure of population in the area under study. The analysis of cost indicates that cost A constitutes 42.76% of cost C and cost B constitutes 82.38% of cost C. It was also observed that cost A ranged between 42.48 to 48.14% in different operational size groups. Similarity cost B ranges between 81.45% to 85.25% of cost C in different size group of operational holdings.

Variability of cost with in a particular operational holding group and at aggregate level is a common phenomenon in agriculture. It was observed in this study that manure and fertilizer cost showed highest variability (± 57.51%) followed by irrigation showing (± 48.49%). The minimum
variability (± 6.10%) was in the case of rental value of land. Variability analysis of cost components leads to two very important conclusions. It is clear from the very low variability in the rental value of land that rose is cultivated in the region in similar soil conditions. It is also evident from the very high variability of irrigation, manure and fertilizer costs that there is heterogeneity in the application of technical inputs and economic management of the crop by different farmers. The average yield of the rose in the area was estimated to be 6.43 quintals per hectare and the gross return was estimated to be Rs. 4066.64 per hectare. The net gain over cost A worked out to Rs. 3085.15 per hectare, over cost B Rs. 2260.20 per hectare and over cost C Rs. 1873.74 per hectare. Lower yield supported by lower price per kg of flower due to lack of alternative marketing outlet and forced sales to the established manufacturers of rose products are the main reasons behind the low profitability of commercial cultivation of the rose in the area. The cost of production per kg. of rose flower was estimated to be Rs. 3.41 and the input-output ratio 1:1.85. It is evident from the input-output ratio estimates that the profitability of the rose in the region is comparatively poor. Cross sectional analysis to estimate contribution of different factors on yield and to examine factor productivity was performed using Cobb-Douglas production function model. At the overall level the coefficient
multiple determination ($R^2$) was 0.8064 which indicated that 80.64 percent variation in the yield was jointly explained by the selected independent variables. The estimates of elasticities were positive for all independent variables at the overall level and statistically significant for Area under Rose cultivation, Human labour units and irrigation cost. It can thus be concluded that there is possibility of increasing per hectare yield of Rose by bringing more area under rose cultivation besides applying more units of labour and irrigation. To examine possibility of development of rose cultivation in the area through rational allocation of resources marginal productivity in physical terms were estimated for land under rose cultivation and different inputs. It indicated that there is significant possibility of increasing rose production and productivity by bringing more area under rose cultivation besides increasing application of Human labour units, irrigation cost, Manure and fertilizer cost and plant production cost. However the rationale of applying additional inputs have to be considered in the light of price mechanism and value of the additional produce.

The impact of the changing pattern of agriculture due to changed priorities on account of the changes in technology was examined through over time changes in area under rose, output of rose and per hectare productivity of rose between 1975 and 1985. At the aggregate
level over time trend in area under rose, output of rose and productivity of rose shows 10.73, 12.19 and 1.68 percent decline respectively. The decline in area indicates fall in importance of enterprise and the decline in productivity indicates the cultivator's lack of interest in improvement of the technology. At the present rate of decline in area under rose cultivation, Sikanderpur may be wiped off from the map of rose cultivation centres, if measures to check the decline are not undertaken. To check the decline of rose cultivation in the area attempt was made by us to find out the cause of decline from the actual cultivators as part of this study. Three factors viz. lower price of rose flowers, competitive advantage and better prospects of other commodities and non-availability of labour regularly, in the same priority, emerged as main causes of decline in view of the cultivators in Sikanderpur region. An attempt in this study was made to examine the directions of flow of flower from cultivator and its disposal. It was observed that 90% flowers are disposed to 'Sattidars' who control the marketing of flowers. This traditional middleman in the marketing of rose in the region acts as monopoly purchaser of the flower. Sattidars control the marketing mechanism of rose in Sikanderpur and cultivators of the area have failed in breaking their tentacles because of their close link with the processors. Any attempt to provide better price to the cultivators shall require creation of alternate agency which can provide better marketing finance to the cultivator & should ha
capacity to develop alternate processing units. Monthly disposal of flowers was examined to study the nature of supply of flower. It was observed that about 50 percent of the total disposal is made in the months of April and March, followed by about 20% in the months of October and September. Seasonal nature of supply is probably the main constraint in development of alternate marketing agency.

Though a large number of products are produced from rose as the part of rose based processing industry, we have confined our study to only those products which are processed locally. The purpose of the exercise of the examination of economics of rose products is to study the potentiality of raising price of the flower to check the decline in area and production. This part of the study consisted of calculation of cost of production of the processed product, estimation of input-output ratio and examination of the marketing channel. Per litre cost of production of Rose water has been estimated to be Rs.1337 against per litre return of Rs.24.72. The input-output ratio worked out to 1:1.84 and the main channel of its disposal were consumers (39.29%), retailers (38.07%) and wholesalers (22.64%). The cost of production of Gulkand was estimated to be Rs.15.14 per kg against return of Rs.21.50 per kg. It is disposed to consumers and local doctors of Unani Medicine. The cost of production of
Gulabsakari was estimated to be Rs.10.55 per kg. against return of Rs.13.00 per kg. It was observed that this product is also disposed to consumers. The cost of production of rose oil was estimated to be Rs.62.55 per kg. against Gross return of Rs.82.00 per kg., 53.17 percent of the rose oil is disposed to consumers and Rs.34.65 percent to wholesellers. In view of the economics of production of rose based products there are evidences of ensuring better price to cultivators through development of processing of rose water and rose oil in view of favourable input-output ratio and better marketing prospects.

This study has led to identification of certain important problems and tendencies in respect of the cultivation of rose in Sikanderpur region, its marketing and processing. In brief, the identified problems were the decline in area, production and productivity, heterogeneity in input management, low price and lower producer's share, erratic nature of production and disposal and influence of Sattidars in marketing of rose. Assuming that the purpose of this study is to restore glory of this traditional trade of the area certain measures need to be undertaken at the earliest. The decline in the area is probably on account of comparative disadvantage of the crop so far as its productivity and net return to the cultivators is concerned this declining trend can be arrested either
by measures to enhance productivity or by measures to increase price of the flower. In our view a combination of both measures ensuring better yields and higher profits is required to be undertaken. Lower yields are probably due to the heterogeneity in input application in general and irrigation, manure and fertilizers in particular. Proper training to the cultivators in agronomic management of the enterprise and subsidised credit for optimum input application is required. We have observed that the production of the flower is centralised to the months of moderate temperature. Plant breeder's attention need to be drawn for evolution of varieties or variations on the present rose Demask under cultivation in the area to suit higher variation in temperature of the region. The control of Sattidars, who influence the cultivation as well as processing can be loosen with the help of alternative marketing and processing machinery. In our view cooperative institution of the cultivator can be organised for disbursement and monitoring of subsidised credit, processing and marketing of rose and rose-based products. Such an agency in our view shall be helpful in raising the yield of rose, price of rose and shall ultimately lead to enhancement of producer's share. Cooperative marketing agency shall be helpful in increasing the approach area of rose based products of the region. The present marketing machinery suited the class consumers, only the cooperative marketing can
suit the mass consumers. A mass support of the rose based products is prerequisite for drawing attention of the scientists, economists and administration and restore the traditional glory of the rose cultivators of Sikanderpur region.