



## **Empowerment of Rural Women through Production of Value Added Products from Mango Fruits**

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### **ABSTRACT**

*The economic empowerment of women is being regarded these days as a sign of progress for a country. The Self Help Groups have paved the way for economic independence of rural women and hopefully the future will bring more opportunities for them. About 10,000 hectare land of Unnao district is under cultivation of Mango orchards and 5 blocks of the district are nominated as Mango belt area. On an average 25-30 percent of Mango Fruits are lost due to wind storm and other reasons in immaturity stage and further the growers do not get good price for their produce when there is glut in the season. So Pre and Post harvest management is of immense importance to check these losses, to increase the hidden produce and to generate self employment. So the project was planned with the objective of reduction in pre and post harvest losses in Mango Fruit through processing, preservation and value addition and to generate rural employment by linking women to market. For this various awareness programmes and skill based training programmes were conducted under which 495 rural girls/ women were trained, 30 Demonstration cum production units of Mango Products were established and processing and marketing facility to the beneficiaries was provided by KVK, Unnao. This intervention has given a powerful tool to women to prove themselves, to empower themselves and they started production and marketing of different value added products from Mango fruits.*

**KEY WORDS:** Empowerment; Preservation and value addition; Self Help Group.

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### **INTRODUCTION**

Fruits and Vegetables are an important nutritional requirement of human beings as these foods not only meet the quantitative needs to some extent but also supply vitamins and minerals, which improve the quality of the diet and maintain health. It is therefore, necessary to make them available for consumption throughout the year in fresh or processed/preserved form.

Though India is the second largest producer of fruits and vegetables in the world but our per capita consumption of fruits and vegetables for over one billion populations is very low. More than 25 % of fruits and vegetables production is unfortunately wasted due to inadequate facilities for processing, preservation and transport to various places. Only about 2% of the total fruits and vegetables produced are processed into various products. Due to low level of processing and poor purchasing power of the masses, the large no of population is usually deprived of these nutritious products round the year.

Fruits and vegetables processing was first started in an organized manner in 1857, mainly to make pickle and chutneys. The introduction of modern techniques of processing and preservation by addition of chemical preservatives could also be said to have been started around the same time.

The main objective of fruit and vegetable processing is to supply wholesome, safe and nutritious food to consumers throughout the year. Apart, processing helps in reducing the losses, generate employment and alleviate poverty.

Literacy rate of Unnao district in rural areas is very low. According to 2001 census it is only 53.04% literacy rate among rural women is only 38.63% that is quiet low. Most of the farmers residing in this area are either landless or having only 0.25 to 0.75 ha land which is usually sodic in nature. These women are mostly engaged in Goat and Buffalo farming, vegetable cultivation and various production and post harvest management issues related to agriculture and allied enterprises.

Five Blocks of the district Unnao are Mango Belt area and around 10,000 hectare land of this district is under cultivation of Mango orchards. Mango is called as the King of Fruits, but Mango growers face lots of problems due to several unfavorable conditions like- high wind strokes, glut in the season, lack of proper marketing facilities etc.

Rural women have many skills, they are the actual workers in the field because more than 70% of the agricultural and allied work is being performed by women only. They are also familiar with fruit and vegetable processing but they are rarely exposed to various agricultural information and orientation agencies. Due to which they are not aware of the innovative technologies related to agriculture and processing.

**Identification of the problems:** The sodic land and employment scarcity in these areas keeps the rural women under pressure for earning their livelihood. They work hard to grow crops to feed their families. In spite of the hard work, they have weak economic status. They do not have enough money to pay even for their children's education. In the selected area cultivation of different fruits especially Mango and Vegetables is very popular but they do not get proper market and ultimately they have to bear losses. The rural women are doing preservation of few fruits at household level by traditional method but they are not familiar with the technology of production of value added products from Mango fruit at large scale which can make them an entrepreneur and can raise their socio-economic status.

**Solution Suggested:** To solve the above mentioned problem skill based training, demonstration, farmers scientist research are required to improve the livelihood of the target population by which rural women can utilize their surplus produce as well as local resources to empower themselves.

#### **Objectives**

- To reduce pre and post harvest losses in Mango fruits through skill development among women for processing and preservation.
- To generate rural employment by linking women to market.
- To make the women of SHG economically independent.

#### **METHODOLOGY**

**Target area and beneficiaries:** Unnao district is divided in Six Tehsil namely Hasanganj, Safipur, Unnao Sadar, Purwa, Bighapur and Bangarmau. Out of Six, Hasanganj Tehsil was selected for implementing the project. In Hasanganj Tehsil, there are 514 villages out of which five villages namely Ahmadpurvade, Sultanapur, Dhaura, Ahirankhera and Matariya were selected which are situated 5-15 km. away from the implementing agency.

For selection of beneficiaries PRA survey was done. After this, purposive sampling was done and member of self-help group were also included in the training.

**Nature of Intervention:** Increasing the self-employment opportunities through production and marketing of value added product from Mango fruit was the major objective of this project that directly leads to income generation. For this purpose various activities and programmes were implemented in the selected villages.

The intervention of the project involved method and result demonstration, training and various extension activities like field day, exposure visit, distribution of leaflet, pamphlet, booklet, development of CD at KVK as well as at village level.

**Awareness Programme for motivation:** During the implementation of project, awareness programmes on different aspects were conducted to motivate the rural women/girls. For this purpose group discussion, exposure visits, Mahila Mela, field days, exhibitions, farmwomen's rallies were conducted. Similarly, literature made/prepare for circulation among the rural women/girls so that their attitude influenced favorably. These awareness programmes mainly helped to rural women/girls for adopting innovative practices of various activities of this project.

**Training Programmes:** After the PRA and motivational programmes, rural women/girls were selected for various training programmes as per their need and demand. For giving the knowledge and information, off campus (in the village) training programmes were conducted preferably in the farmer's field. For imparting the skills of various technologies, long duration on campus training programmes were conducted. These training programmes were of more practical in nature and mostly useful for self-employment generation besides improving the productivity and economic status of rural women/girls.

Under raw mango products, trainings were given on preparation of pickle with oil and oil less pickle, chutney, raw mango squash (pana), raw mango slices and powder where as under ripe mango products training were given on preparation of mango pulp, mango jam, mango squash, and mango leather. Marketing part was also covered during the training programme.

**Establishment of Demonstration & Production units in village:** For a sustainable growth in terms of demonstration, input supply and technical back up was provided under the project. For this purpose,

well-educated, hard working and motivated rural women/girls were selected. To establish production and demonstration units, the financial help was provided from the project sponsored by DBT, New Delhi. Packing and processing facility was provided at Krishi Vigyan Kendra.

**Other extension activities:** For mass communication of message, creating awareness, conviction and getting the confidence of any technology, other extension activities were conducted like Mahila Mela, field day, exposure visits, publication of literature, radio talk and Doordarshan broadcasting, article publication in newspaper, preparation of various teaching material etc.

Besides these extension activities other mass media like News paper, AIR, Doordarshan, Articles in magazines were used for extension of the programmes as well as giving information to the other areas.

**Parameters used for evaluation of the impact:** Pre intervention benchmark survey was done to assess the socio-economic status, cultural practices and to study knowledge and attitude of the rural girls/women. The adoption of fruit processing techniques by the women/ beneficiaries was assessed by interviewing them before and after intervention through a questionnaire. The resultant economic empowerment of the beneficiaries was assessed through the following indicator.

- 1- Cost benefit ratio.
- 2- Employment generation.
- 3- Skill up-gradation etc.

## RESULT AND DISCUSSION

### Achievements/Progress vis-a-vis above objectives.

**Training through demonstration on preparation of different value added products from Mango fruit:** For the dissemination of the technology to the beneficiaries On Campus as well as Off Campus (in the villages of the selected beneficiaries) training programmes were conducted.

The Off Campus training programmes were mostly of 2 days duration and out of five selected villages, three were selected each year as per need for conducting Off Campus training. In each selected village at least one course was conducted which was more convenient to the weaker rural women/girl section.

For imparting the skills of various technologies, long duration On Campus training programme were conducted at Krishi Vigyan Kendra. To make these training programmes more practical in nature demonstration and production unit was setup at the KVK, because these trainings are mostly useful for self employment generation besides improving the productivity and economic status of rural women/girls. All the training programmes involved method as well as result demonstration.

Both On Campus and Off Campus training were given in three broad heads, these were preparation of raw mango products, handling and storages of mango fruits, preparation of ripe mango products. Under preparation of raw mango products technical knowledge on preparation of pickle with oil, oil less pickle, chutney, raw mango squash, raw mango slices and powder has been given where as under ripe mango products technical knowledge and skill have been given on preparation of mango pulp, mango squash, mango jam etc. Quality standards, packing, storage and marketing of products was also covered during the training programme. Training on methods of harvesting of mango, its proper handling and storage was also given. The aim behind this was to minimize post harvest losses and provide uniform quality products to achieve higher prize.

**On Campus Training Programme:-** On Campus trainings were conducted at Krishi Vigyan Kendra of 2-5 days for providing skill in preparation of mango products. Total 270 beneficiaries have participated during training programme from selected five villages.

**Table 1(a): Beneficiaries of On Campus Training Programme**

Sl. No.	Training Programme	Duration (Days)	No. of programmes per year			Total
			I	II	III	
On KVK Campus Courses						
1	Raw Mango products	05	02 (30)	02 (30)	02 (30)	06 (90)
2	Handling and storage of Mangos	02	02 (30)	02 (30)	02 (30)	06 (90)
3	Ripe Mango Products	05	02 (30)	02 (30)	02 (30)	06 (90)
Total no of training programmes (Total no of trainees in parenthesis)		12	06 (90)	06 (90)	06 (90)	18 (270)

**Off Campus Training Programmes:** Like On Campus training short duration (1-2 days) Off Campus training programmes were organized at village level. Total 225 rural women/girls have participated in this training programme from selected villages.

**Table 1(b): Beneficiaries of Off Campus Training Programme**

Sl. No.	Training Programme	Duration (Days)	No. of programmes per year			Total
			I	II	III	
Off Campus Training Programme						
1	Raw Mango products	02	01 (25)	01 (25)	01 (25)	03 (75)
2	Handling and storage of Mangos	01	01 (25)	01 (25)	01 (25)	03 (75)
3	Ripe Mango Products	02	01 (25)	01 (25)	01 (25)	03 (75)
	Total no of training programmes (Total no of trainees in parenthesis)	05	03 (75)	03 (75)	03 (75)	09 (225)

**Table 1(C): Year wise no of beneficiaries trained through the project:-**

Village	Beneficiaries								
	On Campus Training			Off Campus Training			Total		
	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	On Campus	Off Campus	Grand Total
Ahmadpurvade	17	16	21	-	25	29	54	54	108
Sultanapur	17	17	22	25	-	-	55	25	80
Dhaura	22	26	24	25	25	27	72	77	149
Matariya	17	16	22	25	-	28	55	53	108
Ahirankhera	17	15	16	-	25	-	48	25	73
<b>Total</b>	<b>90</b>	<b>90</b>	<b>105</b>	<b>75</b>	<b>75</b>	<b>84</b>	<b>270</b>	<b>225</b>	<b>495</b>

**Establishment of demonstration and production units at farmers field to generate rural employment:** Before establishment of demonstration and production unit, KVK organized On campus and Off campus short and long duration training programmes on preparation of raw and ripe mango products and then selection of beneficiaries was done from selected five villages for establishment of demonstration and production unit in their village at their home. Only those participants were selected who were hard working and interested for self employment by processing of fruits and vegetables. For establishment of demonstration and production units' critical inputs like food grade carboys to store pulp, plastic drum to store pickle, crates to carry fruits and preservatives were provided to beneficiaries by the KVK under the sponsorship of DBT, New Delhi. Detail of demonstration cum production units is listed below:-

**Table 2 (a): Summary of demonstration Units Established under the project:-**

S. N.	Production cum demonstrations Units	No. of beneficiaries per year			Total
		I	II	III	
1	Production of mango pickle	05	05	05	15
2	Production of mango pulp	01	02	02	05
3	Production of mango leather	01	02	02	05
4	Production of raw mango powder and slices	01	02	02	05
<b>Total</b>		<b>08</b>	<b>11</b>	<b>11</b>	<b>30</b>

**Techno-economic viability/cost benefit analysis:** Based on the cost benefit analysis, the proposed technology disseminated to the women/girl was found very much viable. The detailed economical analysis of this venture is as given below:

**Table 2 (b):- Economics of the Intervention**

Name of the Product	No of beneficiaries	Total Production (Kg)	Total Cost of Production(Rs)	Cost of Production / Kg(Rs)	Selling Rate Rs./kg	Net Income (Rs)	Net Income per Beneficiary (Rs)	B:CRatio
Mango Pickle	15	1500	48000.00	32.00	65.00	49500.00	3300.00	1:2.03
Mango Pulp	05	750	17500.00	23.33	65.00	31250.00	6250.00	1:2.78
Mango Leather	05	250	26000.00	104.00	250.00	36500.00	7300.00	1:2.4
Mango slices	03	600	27000.00	45.00	100.00	33000.00	11000.00	1:2.22
Mango Powder	02	200	16800.00	84.00	170.00	17200.00	8600.00	1:2.02
<b>Total</b>	<b>30</b>	<b>3300</b>	<b>135300.00</b>	-	-	<b>157450.00</b>	-	-

The above table shows that each beneficiary involved in Mango Pickle making earned Rs. 3300.00 as profit by producing 100 kg. Pickle of mango and C:B ratio was 1:2.03 and earning by selling of 150 kg. Mango pulp was Rs. 6250.00 as profit and C:B ratio comes to 1:2.7. For production of 150 kg mango pulp 270 kg. ripe, mature, sound, mango fruit was required which was obtained @ Rs. 11.00 per kg. Whereas by selling of 50 kg. mango leather beneficiaries earned Rs. 7300.00 as profit and C:B ratio comes to 1:2.4. For preparation of 50 kg. Mango leather 250 kg. Mango pulp was required it means 5 kg. Mango pulp was required to produce 1 kg. Mango leather.

Beneficiaries involved in mango slice making and mango powder making earned Rs. 11000.00 and Rs. 8600.00 as profit by selling of 200 kg. mango slices and 100 kg. Mango powder respectively. The C:B ratio comes to 1:2.2 for mango slices and where as for mango powder C:B ratio comes to 1:1.2. For preparing 1 kg. Mango slices 5 kg. raw mango was required where as for preparing 1 kg. Mango powder 10 kg. raw mango was required.

**Development of viable alternate option for the village people for employment generation:** In the selected 5 villages viz., Ahmadpurvade, Sultanapur, Dhaura, Matariya and Ahirankhera from first year of the project to till date, rural youth and other interested progressive SC/ST persons have adopted this technology by supporting the technical back up from project to generate self employment. The women who have mango orchards, are preserving a huge amount of raw mango in brine solution as the procedure given by the KVK under this project & are supplying it @ Rs. 22-25/kg. to the factories running to the adjacent cities like Kanpur, Lucknow & Unnao. Some people engaged in selling of pet bottles and jars of different size and caps for packing of pickle etc., glass jar and bottles for packing of pulp and squash etc. and earned Rs. 3000.00 to 4000.00 in a year. Some people engaged in preparation of Mango squash (ripe and raw) and found a very good market at local level because a person likes its taste and cost of product is less. Some people engaged in nursery production and utilized the seed stone of ripe mango obtained after extracting the pulp from pulpar. Development of processing units at village level has been found good alternate options to village people for generation of self employment.

**3. Marketing Support to beneficiaries with established agencies to market their produce:** The products prepared from mango fruit by selected beneficiaries were marketed by direct selling, through established Self Help Groups, through KVK marketing centre and through exhibitions organized by District Rural Development Authority at Unnao.. However, KVK has an agreement with Sapna Gramodyog Sewa Sansthan and Shakti Gromodyog Sewa Sansthan, Bakshi Ka Talab, Lucknow for purchasing of products being prepared by rural girls/women. We have got FSSAI Licence and KVK is providing Licence & packing facility to the beneficiaries at the center, by this way, the products being prepared by beneficiaries are getting very good market.

## CONCLUSION

Significant Achievements made under The Project:

- Under the project total 495 rural women/girls from five selected villages have been trained for preparing different value added products from Mango fruit.
- Total 30 demonstrations cum production units of Mango fruit products have been developed at five selected villages and each beneficiary earned Rs. 3300 to 11000 per year.
- Marketing of products being prepared by beneficiaries, under the project have been done through KVK Marketing centre, Kisan Mela, Saras Mela, Lucknow Mahotsav and by established Self Help Groups. Thus good market has been provided to the beneficiaries.
- Processing of Raw and ripe mango and utilization of the waste generated during processing have been found as an alternate option to village people especially rural women for employment generation.
- This project given an opportunity to rural as well as urban consumer to purchase good quality mango products at reasonable price.
- KVK Unnao has been selected as a study centre by IGNOU for Diploma in Value Added Products under which every year 12 to 15 students of rural sector are taking diploma and have engaged themselves as instructor in schools and some started their own enterprise. Till today 3 students got Gold Medal from IGNOU for securing highest marks.

## RECOMMENDATIONS

On the basis of above findings following recommendations are made:

- In rural sector there is need to give emphasis on processing, preservation and value addition of the locally available fruits and vegetables to reduce post harvest losses as well as for nutritional security. It is possible only through need based skill training programmes, in which opportunity should be given to learners to learn by doing.

- Utilization of waste generated during processing, preservation and value addition of the fruits and vegetables is another very important component which should be considered. It will further generate income, save the environment from pollution and give a healthy life to society.
- Proper marketing strategy is required for success of any enterprise, which is lacking in U.P. especially rural sector. Initiatives must be taken by State and Central government for marketing of processed products prepared by rural people. For this there must be establishment of one marketing center at block level where the population of that particular block has the freedom to put their material for sale with nominal charges or membership basis. In addition to this arrangements should be made so that processing factories working in urban sector can purchase semi processed products from rural population, it is possible by giving some initiatives or relaxation to factories that are purchasing semi processed products from rural sector.
- The facility of processing, packing and quality testing must be made available to rural population in which sophisticated machinery is required and cannot be procured at individual level. For this Krishi Vigyan Kendras established in each district can play an important role.
- For entrepreneurship development of rural women formation of Self Help Group can be an approach by which woman will be grouped, financial support can achieve from banks and can take the benefit and other support of state and central Government programmes.

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