



## On Farm Value Addition in "Tomato": Technology to Boost up the Socio-Economic Status of Farm Women through Market Linkage

### KEYWORDS

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**ABSTRACT** *Krishi Vigyan Kendra (R.V.S.K.V.V) Ujjain has been working for the last three years to boost the production and productivity of tomato growers of the district by technically backstopping them with improved scientific methods of cultivation such as raised bed plantation, use of integrated nutrient management, high yielding hybrids and better water management techniques. The mandatory work also emphasizes on the value addition in fruits and vegetables for better income generation of farm women and consequently the Scientists of KVK have taken up the task of value addition by way of processing and preservation techniques so as to ensure the assured income to farm women through self help group particularly when there is a seasonal glut in the market. Due to the fluctuation of rates in the market several times the tomato cultivators do not even get the minimum cost of cultivation and the farmers are demoralized.*

*It is also true that Consumer preferences are increasing towards ready to use fruits and vegetables. Food marketplace evolves new products and changing trends, and fresh-cut products and ready to use products remain at the top of the list of products meeting the needs of busy consumers. The value of fresh-cut products lies on the primary characteristics of freshness and convenience. Operations such as peeling, cutting, shredding or slicing greatly increase tissue damage of fresh-cut fruits. These may result in several bio-chemicals deteriorations such as browning, loss of texture as well as detriment of nutritional value and microbial quality of the products. Tomato is one of the most researched of all horticultural crops and considerable progress has been achieved in all the areas. Hence, to keep the taste of tomato as such and to utilize it in the off season also, preservation techniques are the only alternatives available.*

*In this regard practically demonstrated the preparation of 'Tomato Ketchup' chutney and sauce etc to the farm women of tomato growers under the Front Line Demonstrations and On Farm Testing. The emphasis was given on attractive packing and labeling of the products also. In this regard KVK-Ujjain is rendering a helping hand to the women entrepreneurs under the brand name of ' Raj Vijay Tomato Ketchup' a brand of Rajmata Vijaya Raje Scindia Krishi V.V. as technical mentor.*

### Introduction:

A significant impact of globalization on horticulture has been an increasing demand for quality improvement and the wider adoption of quality standards for fruit, vegetable and salad commodities. Tomato (*Lycopersicon esculentum* Mill.) is a major horticultural crop with an estimated global production of over 120 million metric tons (F.A.O. 2007). Salad tomatoes must have a flavour, colour and texture that satisfy the consumer's preference. At the same time they must be suitable for post-harvest handling and marketing, even over large distances. In addition, processing tomatoes must have the rheological characteristics required by the relevant food processing industry. Fruits and vegetables play an important role in balanced diet. At present approximately 205 million tons of fruits and vegetables are produced in India. But owing to its perishable nature and due to lack of cold chain storage and processing units nearly 25-40 % of the produce worth Rs 25-30 thousand crores is gutted, which is a great national loss, Shrivastav (2004). Tomato is cultivated 200 ha in Ujjain District and its total production was 4800 tons. This entire produce harvested in a span of three to five months is sold in the market without any value addition and often during the seasonal glut the farmers are forced to sell the produce at very low rates not even comparable to their cost of cultivation.

The fruits and vegetable can be saved by adopting food preservation technique. Food preservation is the process of treating and handling food to stop or slow down food spoilage, loss of quality, edibility or nutritional value and thus allow for longer food storage. By adopting this method we can help in minimizing the malnutrition problem also. Even it could be one of the best methods of income generation of

farm women at rural area.

Hence the Krishi Vigyan Kendra (R.V.S.K.V.V) Ujjain initiated OFT and FLD to motivate the farm women for learning the preservation technique as well as adopting it as a source income generation. In the village women were unaware about the modern preservation techniques of fruits and vegetables viz murabbha, jam, jelly, sauce and ketchup, except the age-old products like Pickle Papad and Bari meant for house hold consumptions. Keeping this goal in mind some objectives were set before conducting the study viz survey by adopting PRA method, farm women's general background and other sources of income generation apart from farming.

### Methodology:

- Selection of village: Two villages from the cluster area adopted by the Krishi Vigyan Kendra, Ujjain i.e. Dewarkhedhi and Bhensoda were selected for conducting the On Farm Testing and Front Line Demonstration for preparation of tomato product. Both the villages are situated in the periphery of 15 to 18 Kms from Krishi Vigyan Kendra, Ujjain.
- Selection of sample: With the help of PRA survey the list of tomato grower was identified and then from each village 10 farm women were randomly selected for making total 20 sample size. The selected group represented the marginal and small land holding farm women's.
- Technology Demonstrated: Due to its perishable characteristic marketing was necessary after harvesting of tomato crop. Raw tomato cannot be kept in the home for more than three to four days. Hence, the practical method of preparation of tomato ketchup was taught to

the selected group.

- i. Net Income: Prepared tomato Ketchup at domestic level was compared with the branded product and its net income was also calculated in terms of money.
  - ii. Labeling of the product: Labeling of the product is very much essential from the selling point of view in the competitive world. Without label the product is worthless. Hence, the importance of labeling by giving an attractive name and packaging to the final product was also taught to the farm women.
- d. Future strategies: If the farm women prepare the Tomato Ketchup from the commercial point of view what will be the future of product as well as the economic status of the farm women was also discussed at the end of the study which was based on feedback of the farm women.

#### Result and Discussion:

- i- Selection of village and sample: Tomato is grown in Malwa region by the farmers. From the economic point of view tomato ketchup was practically taught to the farm women. On the basis of PRA survey the family background was discussed in the table no. 1. From the table it is clear that in the Dewarakhedi total 93 and in Bhesoda 65 households in the village. In case of type of family nuclear families existing more in villages also as compared to the joint family. In Dewarakhedi 70 per cent belonged to the nuclear family and 30 per cent to the joint family whereas 65 percent nuclear and 35 per cent joint families in village Bhesoda. Literacy level is not good in rural area it shows the results of the present study. Maximum no. of women (70% and 65%) comes under the illiterate category from village Dewarakhedi and Bhesoda respectively. In the primary and middle category also only 20-30 per cent was educated from both the villages. Only one farm woman was educated up to higher secondary from village Dewarakhedi. In both the villages 48 to 55 per cent farmers belong to marginal and small category and these are the peasants which require some intervention through secondary agriculture. In the farmers community rearing of live stock was still existing in case of buffalo and cow from both the villages.
- ii- Technology Demonstrated: Among the farm community preservation of Tomato Ketchup was a totally new venture. Hence, the methodology of tomato Ketchup was practically shown to the selected farm women. The details of ingredients required for preparation of Tomato Ketchup is given in Table No.2. First the tomatoes were washed out thoroughly and wiped it with clean cotton cloth and then chopped to small pieces. Big stainless steel vessel was kept on the fire and tomato pieces were meshed with the help of wooden spoon. All the spices were converted in the powder form. Paste of garlic, ginger and green chilly was made. Meanwhile the pieces were cooked smoothly. The whole batter was sieved with the help of muslin cloth. Again the sieved batter was kept on the fire. The powder and paste of spices was kept in a small piece of cloth and tied with a tight knot and dipped it with help of wooden stick in the tomato puree which was kept on the fire. It was stirred gently. Meanwhile sugar added in the puree. When the puree was left one third that time check out the end point test to observe the ketchup was finally made. Add vinegar and salt at last step. Then add the sodium benzoate in the tomato Ketchup. Check out the taste and if necessary add more salt. That was the simple method of preparing the Tomato Ketchup at domestic level from the commercial point of view.
- iii: Net Income- A details of expenditure and profit on Preparation of Tomato Ketchup is given in Table No. 3a. From the table it is clear that total expenditure Rs. 350/- for preparing 10 kg tomato ketchup (using 50 kg raw and ripe tomato) the farmer/ farm women get Rs. 600 gross income. Rs. 250 net income in hand by expending only 3 hr in a day. This final product can be sell throughout the

year without any loss. Because in tomato crop due to the perishable quality after harvesting it is deadly require to sell in the market otherwise the it will not get good amount. Table 3b and 3c depict the added advantage of value addition in 35 percent produce which is either perished or the farmer is forced to sell in loss.

The comparison of farmers practice with the branded product is given in table No. 4. Total seven points were compared with the branded products. Due to the popularity in the community the branded product gets higher rates as compare to the farmers practice and it is due to the attractive label and packaging to the finished product. Trade Mark also plays a vital in the competitive market because in urban area consumers were more conscious about the brand and trade mark of the product etc. The branded companies popular their product through wide advertisement whereas it was lacuna in farmers products. Hence, farmers products were not much popular among the consumer market. Even the branded companies capture the higher economic status consumer group viz through bakeries reputed dealers, shopping malls and big bazaars etc where the product also get an higher status. Another fact was the farmers' products were popular up to the limited area only whereas the branded products reach not only to the urban areas but also to rural community. The wide publicity was made with the help of local agents and dealers and in rural area there was no role of middle person. These are the basic reason due to which the product of the farmers/ farm women were not sells out and get the average profit though it has much quality and purity.

- iv: Labeling of the product: Labeling to the finished product is very much essential because without recognition by the particular group the product will not be get a reputation among the consumer. Hence the label to the product is very much essential. Hence, while conducting the study in OFT and FLD a special attention was given on labeling the product and the finished product 'Tomato Ketchup' was labeled with the 'Raj Vijay Tomato Ketchup'. The importance of label was discussed among the farm women and how to label the product was also showed to them. So, whenever they go for adopting it as an income generation that time they will first label the product and then proceed for the further action.

#### Conclusion:

From the present study it was crystal that in the rural area there was a big gap regarding the new technologies. In case of preservation and value addition the farm women were limited up to preparing pickles, papad and bari only. They were not much aware about the murabba, jam jelly and ketchup etc. In the OFT and FLD method of preparation of Tomato Ketchup was practically taught to the 20 farm women and the it was observed that preservation of fruits and vegetables help in up bringing the economic status of farm women. They can save the money as well as start the economy enhancement activity at domestic level and even at rural area also.

**Table No. 1: Family background of the selected farm women.**

Sr. No.	Parameters	Village	
		Dewarakhedi (mean)	Bhesoda (mean)
1	No. of household	93	65
2	Type of family		
	-Nuclear	70%	65%
	-Joint	30%	35%
3	Literacy level		
	-Illiterate	6(60.00)	7(70.0)
	-Primary	2(20.00)	3(30.00)
	-Middle	2(20.00)	2(20.00)
	-Higher Secondary	1(10.00)	-
	-Graduate	-	-
	-Post Graduate	-	-

4	Agricultural land holding (ha)	45 (48.3)	36 (55.4)
	- 1 to 3	32 (34.4)	24 (36.0)
	-3 to 5 - more than 3	16 (17.3)	05 (7.6)
5	No. of live stock	4	3
	-Buffalo	1	2
	-Cow -Any other	3	5
5	Income of the family/month	1(10.00)	-
	-less than Rs. 10,000/-	8(80.00)	7(70.00)
	-Rs.10,000-30,000/- -More than 30,000/-	1(10.00)	3(30.00)
6	Any other source of income apart from agriculture	-	-

**No. 2: Ingredients for preparing 'Tomato Ketchup'.**

S. No.	Ingredients	Quantity
1	Tomato	10 kg
2	Sugar	500gm.
3	Salt	4 table spoon
4	Clove	2gm
5	Big Cardamom	2gm
6	Cinnamon	2gm
7	Jawitri flower	3gm
8	Cumin Seed	2gm
9	Black Pepper	3gm
10	Red chili powder	3gm (as per the taste )
11	Garlic	5gm
12	Onion	10gm
13	Green Chili	3gm
14	Vinegar	10ml.
15	Sodium Benzoate	5gm
16	glacial acetic acid	1/2 tsp

**Table No.3 a: Details of profit and expenditure in 'Tomato Ketchup'.**

Sr. No.	Ingredients	Total Expenditure (Rs)	Finished product	Gross Income (Rs)	Net Income (Rs)
1	Raw tomato 50 kg.@3	150	10 kg.	Rs.600 (@60)	250/-
2	Spices.	125			
3	Fuel	75			
	Total	350	10	600	250

**Table 3b. Economics of tomato cultivation**

S.No	Yield	Cost of cultivation	Average market rate	Gross return	Net return	B:C ratio
Normal farming						
1	250	55000	650	162500	107500	2.0
Normal farming with value addition of 35 % produce						
2	163	35860	800	130400	94540	2.6
3	87	19140	250	21750	2610	0.1

**Table 3 c.Economics of value addition per hectare of perishable quantity**

Total tomato (Kg)	Production cost	Processing cost	Total cost	Finished product (Kg)	Gross return	Net return	B:C ratio
8700	19140	52200	71340	2175	141375	70035	0.98

**Table No.4: Comparison between farmers practice and branded products-**

Sr. No.	Parameters	Farmers practice	Branded
1	Price /kg	60	80-100
2	Label	No label	Label of company
3	Trade Mark	No TM	TM
4	Popularity	Unaware about Popularity	Through wide advertisement
5	Marketing	No proper guidance	Capture-bakeries, reputed dealers, shopping malls and big bazaars etc.
6	Consumer	Limited area	Wide Urban and rural population
7	Work simplification of selling product	No agent	Through agent

**REFERENCE**

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