

# WOMEN EMPOWERMENT

A Comprehensive Development Approach



Sailabala Dei  
Arbind Kumar Sinha



**Women Empowerment**  
**A**  
**Comprehensive**  
**Development Approach**

**Dr. Sailabala Dei**  
**Dr. Arbind Kumar Sinha**



**Imperial Edusystems (P) Ltd.**  
**Bhubaneswar-751002, Odisha, India**



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Published in India by

**Imperial Edusystems Pvt. Ltd**

594/3850, Ebaranga, Sundarpada, Bhubaneswar-751002, Odisha  
☎ 9776040400 ● 7873040400

e-mail- [imperialedusystems@gmail.com](mailto:imperialedusystems@gmail.com)

website- [www.indiabookbazar.com](http://www.indiabookbazar.com), [www.imedsys.in](http://www.imedsys.in)

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**First Published in India 2018**

**ISBN : 9788193421451**

**Price : Rs. 375/-**

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Published in India by Dr. Pragatika Mishra for Imperial Edusystems Private Limited, and printed at IndiaBookBazar.Com, Bhubaneswar, Odisha



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## PROBLEMS FACED BY RURAL WOMEN OF BIHAR IN ADOPTION OF AGRO-BASED TECHNOLOGIES

**Dr. Veenita Kumari, Dr. R. Vasantha & Dr. Maya Kumari**

### **Abstract**

The research systems have though generated highly useful and appropriate technologies for rural women; most of these have either been not adopted or adopted partially by them. There are quite a few no. of rural women who falls into 'early adopters' category but due to several social, economic, situational or technological problems they tend to reject the technology, discontinue it or partially adopt it. Hence, a study was conducted to find out the various possible problems faced by them in adoption of these agro-based technologies. A study was conducted on 225 rural women from three districts of Bihar, including 25 respondents from the nine selected villages (three from each district). Data was collected through interview schedule in 2013. The major problems expressed by majority of the respondents were- less number of trainings conducted,



too short duration of training, lack of awareness among people, raw materials not available, poor family income, dual responsibility, difficulty to acquire perfect skill etc.

Most of the farm women are marginal or small farmers, landless tenant farm women and farm labourer. They don't have enough land to cultivate, less knowledge, limited access to innovative technologies, low capital and less credit facilities.

Empirical studies show that although women farmers play a vital role in agricultural development in a country, they are comparatively less informative than male farmers due to certain socio-economic and cultural constraints. They need more accurate, reliable and quick information along with male farmers for agricultural development as a whole. Rural women received most of the agricultural information from interpersonal sources rather than mass media sources. (Das, 2012 and Kalash *et al.* 2011)

"Lack of resources and inputs", "Specialists are being used more as journalist than extension personnel" and "Lack of motivation" were the constraints documented from majority of women in adoption of Home Science technologies disseminated by the scientists of KVK, unit of CAZRI, Jodhpur. ( Gupta and Verma, 2013) .

The main economic constraints faced by rural women in adopting agro-based technologies are scattered holdings, limited resources for purchase of inputs, unavailability of labour to carry out work, small size of holding, non-availability



of loans at the proper time, costly inputs, finance problem, difficult to arrange initial investment, tough competition, lack of marketing skills.

The social problems which the farm women face in adoption of agro-based technologies are caste, customs, tradition, religious beliefs, family ties, male dominant society, lack of education, social barriers, lack of managerial ability, limited mobility and lack of self confidence. Other problems are non-availability of technical knowledge, lack of skill in technical knowledge and non-availability of information on various topics resulting in a negative attitude (Sharma, 1992).

The technological constraints are lack of viable and compatible technology for rural women, technological skills not developed through special training programs and lack of access to technology and inputs (Tiwari, 2001 and Chandel *et al.* 2008).

Adoption of technologies in rural areas is affected by many factors like farming situation, resource availability, needs and aspirations of the rural women having different socio-economic and cultural backgrounds, etc. Further, inadequate extension services, high illiteracy among rural women, socio-cultural background, low paying-capacity, lack of skill, etc. may be the barriers for non-adoption or low adoption of various improved agro-based technologies. With these points in view, the study was conducted with the following specific objectives- to find out the problems faced by rural women in adoption of agro-based technologies and solutions to overcome such problems as suggested by the farm women.

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## **Material and Methods**

An interview schedule was prepared to unearth problems faced by rural women in adoption of agro-based technologies along with their appropriate solutions as expressed by them. The respondents were asked to state the problems separately for the selected agro-based technologies and suggest suitable solutions for them from their perspective. The responses were tabulated individually for all the six technologies and the problems and solutions were listed down and then expressed in terms of frequency and percentage.

## **Results and Discussion**

### **Problems encountered by respondents in adoption of agro-based technologies and solutions to overcome them**

The problems encountered by the respondents in adoption of agro-based technologies of RAU and the solutions to overcome those problems are discussed in this section. The findings are presented technology –wise to facilitate easy comprehension of the problem.

### **Problems encountered by respondents in adoption of Fruit & Vegetable Preservation technology and solutions to overcome them**

**Problems-** Among the fruit and vegetable preservation technologies listed down in the adoption schedule, it was observed that 'sun drying of vegetables' was the most adopted technology by the respondents. The respondents had various

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problems in the adoption of other fruit and vegetable preservation technologies as detailed below in table 1-

1. **Less number of trainings conducted-** Very few numbers of training on fruit and vegetable preservation was conducted hence the learnt skill was not retained for long and it was difficult to practice the skill later on.
2. **Too short duration of training-** The duration of training was very short according to the number and nature of skill involved in the training. Hence, it was difficult to acquire all the skill and retain it.
3. **Lack of awareness among people-** There is lack of awareness among people about jam, jelly, squash etc. This was supported by the researcher's own experience when dealing with the respondents. This fact is also supported by low level of the knowledge level of the respondents and consequently low level of its adoption by them.
4. **Raw materials not available-** The preservatives required for these products were unavailable in the village market. Since the preservatives were not available so they used to prepare it in small quantity which could last 1-2 days only. Only seasonal fruits are available in the village market.
5. **Poor family income-** Low income of the family was also a barrier in adoption of these technologies. It was very difficult for the family even to manage two times meal



hence they cannot afford to adopt such costly technologies.

6. **Difficulty to acquire perfect skill-** It was very difficult to get the desired consistency and texture of jam, jelly etc. even after several trials hence cannot get perfection in the skill.
7. **Taste not liked by family members-** Taste of jam, sauce etc. was not liked by the family members so do not like to prepare it at home. There is less demand for these products in rural markets and hence it was not a suitable enterprise for rural areas.

### **Solutions**

The solutions that were provided by the respondents to overcome these problems were-

1. **More numbers of training to be organised-** The institutions should conduct more numbers of training on fruit and vegetable preservation so that more number of rural women could benefit from it and can help them to retain the technology.
2. **Duration of training should be adequate-** Duration of training should be sufficient according to the number and complexity of skills involved in the technology. Sufficient time and opportunity should be given to the participants so that they could practice the skill during the training and get confidence in its use later on.



3. **Regular follow-up-** Regular follow-up action should be carried out to ensure that the participants acquire correct procedure of the skill. This will also help in correcting their mistakes and reinforce the learnt skill. Pamphlets or leaflets should be distributed to the participants for their ready reference.
4. **Awareness generation-** There is a need to generate awareness among rural people about these fruit and vegetable preserved products in order to popularize them and encourage rural women to adopt them.
5. **Raw material availability-** The preservatives required for preparation of these products should be made available in the local village market so that they could prepare it in large quantities and take up as an enterprise.

**Table 1 Distribution of respondents based on problems encountered by the respondents in adoption of Fruit & Vegetable Preservation technology and solutions to overcome them (N=225)**

Sl. No.	Problems	Solutions	Frequency (f)	Percentage (%)
1	Less number of trainings conducted	More trainings should be conducted	56	24.89
2	Too short duration of training	Adequate training duration	123	54.67
3	Lack of awareness among people	Awareness generation among people	120	53.33
4	Unavailability of raw materials	Inputs to be accessible within the village	38	16.89
5	Poor family income	—	147	65.33
6	Difficult to acquire skill	Consult Scientists to bring perfection in skill	124	55.11
7	Taste not liked by family members	—	96	42.67



**Problems encountered by the respondents in adoption of Value Added Products from Cereals & Pulses technology and solutions to overcome them**

**Problems-** The problems reported by the respondents about value added products from cereals and pulses were mainly related to the extruded products (pasta, noodles and vermicelli). The respondents didn't had any problem with badi and papad making. The problems listed by them are presented in table 2 along with appropriate solutions.

1. **Very few trainings organised-** The institutions conduct very few numbers of training on value addition to cereals & pulses products, especially extruded products. As such the respondents did not possess the skill for these technologies and hence poor adoption of the technology was observed.
2. **Difficult to acquire skill-** The extruded products were difficult to learn and adopt.
3. **Not feasible to adopt for family consumption-** Preparation of extruded products required use of machine and other costly equipments which was beyond the scope of the respondents. Hence it was not feasible to adopt for home consumption. It can be profitable if taken up as an enterprise.
4. **Some of the technologies are familiar-** The basic method of preparation of the value added products like badi and papad making were known to the rural women



and prepared by most of them. Hence these did not have much entrepreneurial value in the village.

5. **Difficult to locate market** – Some of the respondents were interested in taking it up as an enterprise but they didn't know where to sell the product as there was less market for them in the village.
6. **Product quality not competitive**- It was difficult to get the desired quality of extruded products. The prepared products could not compete with the market products.

**Table 2 Distribution of respondents based on problems encountered by the respondents in adoption of Value Added Products from Cereals & Pulses technology and solutions to overcome them (N=225)**

Sl. No.	Problems	Solutions	Frequency (f)	Percentage (%)
1	Very few training organised	More trainings should be conducted	72	32
2	Difficult to acquire skill for some products	Consult Scientists to bring perfection in skill and follow-up action	84	37.33
3	Not feasible technology for adoption for family consumption	-----	136	60.44
4	Some of the technologies are already familiar	-----	37	16.44
5	Difficult to locate market	Training on marketing	115	51.11
6	Product quality not competitive	-----	20	8.89



## **Solutions**

The solutions given by the respondents to overcome the problems encountered in adoption of value added products from cereals and pulses were-

1. **Duration and frequency of training to be increased-**  
The respondents expressed that more number of trainings with adequate time duration should be organised so that the trainees get sufficient time and opportunity to acquire the skill and get perfection in it especially for extruded products.
2. **Follow-up action** – The institutions organising training should take follow-up action to ensure that the participants acquire proper skill and any lacunae or mistakes could be corrected thereof. Follow-up action will reinforce the learnt skill.
3. **Dissemination of location needed technologies-**  
There was very less demand and acceptance for the extruded products in rural areas. Hence rural women would benefit more if the institutions develop and disseminate such other products that are suitable to rural areas and could be easily taken up as an enterprise.
4. **Training on marketing** – The institutions should also conduct trainings on marketing of the produce as part of the training program. Identification of market, marketing channels and marketing strategies to sell the product should be an integral part of the training program so that the trainees can easily take it up as an enterprise.



**Problems encountered by the respondents in adoption of Mushroom production technology and solutions to overcome them**

**Problems-** The problems that were encountered by the mushroom growers in the adoption of this technology were discussed below and presented in table 3-

1. **Highly perishable produce-** Shelf-life of mushrooms is not more than 1 day after harvesting, when stored at room temperature. So it is difficult to store the produce for long once harvested.
  2. **Buyers not available at the right time-** Buyers are not available when the harvest is ready. Due to its high perishability, it could not be stored for more than 1 day at room temperature. Hence it is either consumed by the family or distributed to relatives and neighbours.
  3. **Suffers heavy loss-** The mushroom growers have to suffer heavy loss at times due to spoilage as it is a highly perishable produce.
  4. **Fear of infection-** There is fear of infection to the mushroom crop if proper hygiene and sanitation is not maintained in the mushroom room. It causes spoilage of the whole lot of mushroom.
  5. **Lack of awareness-** There is lack of awareness about mushroom recipes in rural areas. Hence, there is low consumption and less demand for mushroom in rural areas.
-



6. **Storage and packaging problem-** There is no proper training on storage and packaging technique. Mushroom being a highly perishable produce, it is difficult to sell the produce in distant markets.
7. **Food labelling and quality standardisation certificate-** The mushrooms are sold without any food labelling or quality certification. So the products don't have quality assurance.
8. **Finance problem-** Due to poor income, the respondents could not invest more money for mushroom production. They grow only few bags of mushroom which is just sufficient to meet their family requirements.
9. **Difficult to sell in the market-** It is very difficult to sell small quantity of the produce in the market because it involves additional transportation cost to take the produce to market for selling, hence not an economic practice.
10. **Varietal preference-** The two varieties of mushroom that are grown by the respondents are button mushroom and oyster mushroom. White milky mushroom is very rarely grown by them. Between these two varieties also, oyster mushroom cultivation is more popular in rural areas, whereas button mushroom is preferred in urban areas.
11. **Button mushroom cultivation is costly-** Button mushroom cultivation requires more investment than oyster mushroom. Button mushroom has short cultivation period from November to February whereas oyster



mushroom is grown from July to April. Hence, it is more profitable to grow oyster mushroom than button mushroom.

12. **Difficulty in getting inputs and seeds at the right time-** The respondents of Vaishali and Muzaffarpur district of Bihar reported that since the University is located far from their homes and the inputs are not always readily available at the KVKs, it was difficult to get the inputs and seeds for mushroom production at the right time. Sometimes it results in delayed cultivation or missing out of the season.
13. **Fear of rodent and lizard attack-** There is fear of rodent and lizard attack to the mushroom bags. They cause damage to the mushroom.
14. **Do not get good price for the produce-** The mushrooms do not fetch good price in rural market and the quantity of produce is so less that it is not economical to sell in the urban market.
15. **Bad smell of oyster mushroom –** Bad smell of oyster mushroom discourages people to buy it.
16. **Unfavourable attitude of people towards mushroom-** Rural people have unfavourable mind set towards mushroom. They call it as "gobar chhatta" i.e. "roof coming out of cow dung". This thinking of rural people discourages mushroom consumption and hence there was low demand in rural areas. Mushroom growers



cannot sell it in the weekly market i.e. 'haat' because of lack of awareness about it and low esteem attached to mushroom as food.

17. **Low production-** The yield of mushroom per bag is low. Low production gives less profit and also difficulty in selling the produce.
18. **Requires optimum temperature and humidity-** Oyster mushroom requires a temperature of 20°C – 30°C and a humidity of 80-85 per cent. Button mushroom requires a temperature of 22°C- 25°C and a humidity of 80-85 per cent. Sometimes, weather fluctuations affects mushroom crop and damages it. It is difficult to maintain the optimum temperature and humidity. One year the mushroom growers had to suffer total loss due to excessive cold and untimely supply of labour for button mushroom.
19. **Middlemen exploitation-** Due to low production, the respondents are not able to go to distant market for sale and its high perishability compels the growers to sell at a low price to the middlemen.

### **Solutions**

The solutions provided by the respondents to overcome the problems faced by them in mushroom production were the following-

1. **Proper market channel-** There should be proper market channel for selling mushroom directly to the buyers with the assistance of the University.



2. **Maintenance of hygiene and sanitation in the mushroom room** – There should be complete hygiene and sanitation in the room where mushroom is grown. Outside foot wears should not be taken inside the mushroom room.
3. **Value addition to mushroom-** Surplus produce or unsold quantity can be used for preparing value added mushroom products like, pickle, sauce, badi etc. to reduce loss due to spoilage.
4. **Popularization of mushroom** – The University and KVKs should popularize mushroom recipes. They should educate people about the nutritional benefits of mushroom so that demand is created for mushroom in rural areas.
5. **Training on storage and packaging-** The Scientists should conduct training programs on storage and packaging of mushroom to enhance its shelf life.
6. **Labelling and certification-** The University should collaborate with other organisations to procure food labelling and quality certification for mushroom. This will enhance the value and credibility of the produce.
7. **Loan and subsidy-** The Govt. should provide loan at interest free rate and or extend subsidy for mushroom production so that it can be taken up on large scale to maximize profit.



8. **Easy availability of inputs-** The raw materials such as seeds, spawn etc. required for mushroom cultivation should be made readily available in the University and KVKs during the cultivation season to avoid delay in cultivation.

**Table 3 Distribution of respondents based on problems encountered by the respondents in adoption of Mushroom Production technology and solutions to overcome them (N=225)**

Sl. No.	Problems	Solutions	Frequency (f)	Percentage (%)
1	Highly perishable produce	Preparation of value added products; creating awareness on proper storage and packaging techniques	157	69.78
2	Buyers not available at the right time	Assistance in marketing of produce	73	32.44
3	Suffers heavy loss due to spoilage	Organising training programs on proper storage and packaging technique	67	29.78
4	Contamination	Awareness program on maintenance of hygiene and sanitation in mushroom room	28	12.44
5	Lack of awareness on production process	Organising training programs for awareness generation among people	127	56.44
6	Storage and packaging problem	Organising training programs on proper storage and packaging techniques	105	46.67
7	Obtaining food labelling and quality standardisation certificate is difficult.	RAU should assist in obtaining food label and quality assurance certificate	15	6.67
8	Finance problem		132	58.67
9	Difficult to sell in the market	Training on marketing; Assistance in marketing of produce	154	68.44



10	Button mushroom less preferred variety		26	11.56
11	Button mushroom production is costly	Adoption of oyster mushroom production	17	7.56
12	Difficulty in getting inputs and seeds at the right time	Inputs should be made accessible within the village	37	16.44
13	Rodent and lizard attack	Training programs on use of rodenticides	20	8.89
14	Produce do not fetch good price in market	Assistance in marketing of produce	103	45.78
15	Bad smell of oyster mushroom		43	19.11
16	Unfavourable attitude of people towards mushroom consumption	Awareness generation among people	95	42.22
17	Low production	Improving production through adoption of scientific recommendations	110	48.89
18	Difficult to maintain optimum temperature and humidity	Establishment of community poly house in the adopted village	5	2.22
19	Middlemen exploitation	Direct selling of produce to the wholesaler	84	37.33

**9. Rodent control-** Rodenticides should be used in the mushroom rooms. Any hole or gaps in the room should be sealed to prevent rats entering into the room.

**10. Community poly house room in the adopted village-**  
The University under AICRP project, should construct temperature and humidity controlled community mushroom room in the adopted village to keep mushroom bags during weather fluctuations to reduce loss due to spoilage.



Patnaik & Mishra (2008) in their study carried out in Kendrapara district of Orissa on adoption of mushroom cultivation technology by rural women reported certain constraints such as high perishability of mushroom, lack of marketing facility, infected spawn, non-possession of technical knowledge, low risk bearing capacity, non availability of spawn on time, non availability of quality straw, lack of Government subsidy and lack of transport facility.

**Problems encountered by respondents in adoption of Value Added Mushroom Products technology and Solutions to overcome them**

**Problems** – The problems faced by the respondents in adoption of value added mushroom products were the following as given in table 4-

1. **Low public demand-** There is demand only for mushroom pickle and mushroom powder among the people. The other value added products like mushroom sauce and mushroom murrabba does not have any demand whereas mushroom badi is in demand to a little extent.
2. **High cost of these products-** The value added products are costlier than the fresh mushrooms. The cost of pickle and badi is approximately Rs. 300 to Rs. 350 per kg. The cost of mushroom powder is approximately Rs. 3000 per kg. So people cannot afford to buy.



3. **No labelling and certification** – The products are sold in polythene covers without any labelling and certification information. Hence it lacks quality assurance and cannot be sold easily in exhibitions, melas etc.
4. **Lack of awareness** – There is lack of awareness among people about these value added products. Hence these products are not much popular in the region.
5. **Lack of knowledge and skill**- The respondents had poor knowledge and skill for preparation of these value added products. Hence they find difficult to adopt the technology.
6. **Low production of mushroom**- Most of the respondents had low production of mushroom which is just enough to meet their family requirements. Any surplus amount, if any, is either sold fresh or distributed to relatives, friends or neighbours. So there is no surplus produce for its value addition or preserved products of mushroom.

### **Solutions**

The solutions to overcome these problems as reported by the respondents were the following-

1. **Awareness generation**- The University should organise awareness generation program on value added products of mushroom. They should educate people about nutritional benefits of mushroom and its products and encourage consumption of these products.
-



2. **Development of other low cost value added products-** The Scientists should develop other value added products from mushroom that are low cost and tasty to rural people.
3. **More number of trainings** – More training should be conducted to impart knowledge and skill to people on value added mushroom products.
4. **Labelling and certification-** The University should assist people in obtaining food labels and certification from authorised departments so that their product gets quality assurance and is valued in the market.

**Table 4. Distribution of respondents based on problems encountered by the respondents in adoption of Value Added Mushroom Products technology and Solutions to overcome them (N=225)**

Sl. No.	Problems	Solutions	Frequency (f)	Percentage (%)
1	Low public demand	Popularization of the products in rural areas	32	14.22
2	High cost of these products	Developing other low cost value added products	20	8.89
3	No labelling and certification	Obtaining food label and quality assurance certificate with the help of University	15	6.67
4	Lack of knowledge	Educating and imparting training	167	74.22
5	Lack of skill	Conducting more number of trainings	87	38.67
6	Low production of mushroom	Increasing production through adoption of scientific recommendations	110	48.89



### **Problems encountered in by the respondents adoption of Vermicompost technology and solutions to overcome them**

#### **Problems –**

The problems encountered by the respondents in vermicompost technology were discussed below and presented in table 5-

1. **Lack of subsidy-** The respondents of vermicompost technology expressed that lack of subsidy for vermicompost enterprise was the major problem. The State Government do not provide subsidy equally to all farmers of vermicompost enterprise.
2. **Lack of Govt. encouragement-** The respondents reported that there is lack of encouragement from the State Government for vermicompost enterprise. The benefits of Rashtriya Krishi Vikas Yojna (RKVY) implemented by the State do not reach all the farmers equally.
3. **Lack of finance-** Due to poor family income, it cannot be carried out on large scale. It is practiced just for use in own field and if any surplus quantity then it is sold.
4. **Inadequate buy-back policy –** There is inadequate buy-back policy of the State Government for vermicompost. Only few farmers benefit from this policy. Hence majority of the farmers get less return from sale of vermicompost.



5. **Grading and labelling problem** – There was no standards for grading and labelling of vermicompost. Packaging standards are also not fixed to check the nutrient composition of the vermicompost.
6. **Lack of credibility among other farmers**- Since there is no standard or guideline for grading and labelling of vermicompost, so other farmers who buy vermicompost doubt the quality of the product. There is no credibility to the quality. Also there is chance of selling inferior or adulterated quality of vermicompost.
7. **No pricing policy**- No definite pricing policy exists at present for vermicompost. It results in very poor quality vermicompost having variation in prices and the nutrient composition as well. In general the farmers sell vermicompost at Rs. 500/Tonne.

### **Solutions**

The solutions provided by the farmers to overcome the above mentioned problems were the following-

1. **Providing subsidy** – The Government should provide subsidy on raw materials, inputs and infrastructure required for vermicompost so that the farmers can expand the enterprise and carry it on large scale.
  2. **Government support & encouragement**- Government should support and encourage vermicompost technology as an enterprise. The incentives of RKVY program of the Government should be extended to the farmers for a
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minimum period of 5 years to promote and sustain the enterprise.

3. **Buy-back policy-** The Government should provide buy-back policy to the farmers for vermicompost so that they get fair price for the compost.

**Table 5 Distribution of respondents based on problems encountered by the respondents in adoption of Vermicompost technology and solutions to overcome them (N=225)**

Sl. No.	Problems	Solutions	Frequency (f)	Percentage (%)
1	Lack of subsidy	Loan and subsidy from Government.	54	24
2	Lack of Government. encouragement	Promotion of vermicompost technology by the Government.	12	5.33
3	Lack of finance	Loan and subsidy from Government.	94	41.78
4	No proper buy-back	Buy-back from the Government.	15	6.67
5	Grading and labelling problem	Proper grading and labelling measures	27	12
6	Lack of credibility among other farmers	Quality assurance of the compost	85	37.78
7	No pricing policy	Standard pricing policy	18	8

4. **Standard pricing policy-** The Government should fix guidelines and implement standard pricing policy for vermicompost.
5. **Proper grading and labelling measures-** The University should facilitate in proper grading and labelling of the compost to ensure quality of the compost and in packaging and selling the produce.



6. **Training** – The University should not only provide training in vermicompost but also assist in grading and labelling techniques, packaging and marketing of the produce.

Saxena and Singh (2000) reported that lack of knowledge and skill about improved methods of compost making (63.0%) was one of the constraints in adoption of this technology.

### **Problems encountered by the respondents in adoption of Apiculture technology and solutions to overcome them**

**Problems-** The respondents expressed the following problems that they face in adoption of apiculture technology which has been depicted in table 6-

1. **Not suitable enterprise for women-** Majority of the respondents reported that apiculture is not suited for women. It involves risk of bee attack and the traditional dress of women i.e. sari is not appropriate for this enterprise. The body should be fully covered and protected against bee attack which is not possible by wearing of sari.
2. **Exploitation by buyers and middlemen-** The respondent's male family members go to distant market for sale of honey. They load their produce in vehicle and when they reach the market, the buyers deny paying the price for which the deal was fixed complaining that the quality of honey is not up to the mark and also its sweetness is less. Hence they pay less than the fixed



price. The producers at this stage are not in a position to take back their goods as they have already incurred payment for transportation of goods and may have to bear heavy loss by returning the goods back. Hence they are compelled to sell it off at a lower price. The same situation recurs when the transaction is through middlemen. The producers get only Rs. 70- Rs. 80 per kg for the raw honey whereas it is sold in the market to the consumers at Rs. 300 to Rs. 350 per kg.

3. **Migratory beekeeping and seasonal management-**

These two practices require involvement of male members of the family for moving the honeybee boxes to different locations in order to make pollens available to the bees round the season. It is a tedious job. Also the male members have to stay away from home for days until the season is over. During migration, beekeepers have to use others land in different places for which they have to pay money to the owners. Also they have to make sure that their trade secret is not revealed to the owners of the land or other local people.

4. **Not a profitable enterprise-** Apiculture is not a profitable enterprise as a large share of the profit is enjoyed by the middlemen and the buyers of honey.

5. **Costly enterprise-** The total investment required to maintain an apiary of 10 colonies is approximately Rs. 33,000 in the first year. Thereafter a recurring expense of Rs. 8,000 approximately is required every year. The net profit increases from second year onwards.

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6. **Risk of bee attack** – It requires careful handling of the bee colonies otherwise there is risk of bee attack. This discourages rural people to take it up as an enterprise.
  7. **Risky enterprise** – There is a fear of failure of the enterprise due to even slightest negligence and improper monitoring of the bee colonies. It will lead to total loss when the bees flee away from the colonies or when there is an occurrence of disease or pest attack.
  8. **Difficulty in selling the produce**- The loads of honey is to be carried to distant market for selling. Because of this, the beekeepers are exploited by the buyers and middlemen.
  9. **Difficult for women to go to market for selling**- It is not feasible for women to travel to distant market for selling the produce. Hence they have to depend on male members of the family.
  10. **Risk of insect, moth and lizard attack**- There is a danger of the bee colonies to be attacked by insect, moth or lizard. This weakens the bee colonies and reduces the production of honey. The quality of honey produced is also of inferior quality.
  11. **Suffers loss due to fermentation of honey**- The honey has to be stored in air tight and dark coloured containers until it is sold in the market. Prolonged storage of honey leads to fermentation of the produce. The fermented honey has no market value and hence has to suffer heavy loss if it does not get buyers at the right time.
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- 12. Difficult to control pest and disease-** The bee hives or colonies are intruded by various species of ants, mites, wax moth, bacteria, fungi, virus and birds. Lack of knowledge about spread and control of these diseases robs and ruins the entire bee hive.

### **Solutions**

The following solutions were provided by the respondents to overcome the above stated problems-

- 1. Change in the dress code of women-** The respondents suggested that if they wear shirts and trousers instead of the traditional attire sari, then their body will be fully covered and protected against bee attack.
  - 2. Institution's assistance in selling the produce –** The University should assist the beekeepers in selling their produce directly to the wholesalers or honey manufacturers so that they could be saved from being exploited at the hands of middlemen. They could also provide an outlet through its ATIC centre to sell their produce directly to the consumers.
  - 3. Involvement of male members-** Some of the practices like migratory beekeeping, seasonal management of bee colonies and marketing of the produce should be carried out by male members of the family.
  - 4. Regular monitoring-** The bee colonies should be regularly monitored to check whether the bees are in the colonies or ran away. It is also requires to have a
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control on pest and disease attack though it is a tedious job.

5. **Education on marketing skill-** The beekeepers should be given proper education and training on marketing skill to protect them from being getting exploited at the hands of the middlemen. They should also be educated on when, where and how to sell their produce in order to increase the profit margin.
6. **Produce sold from the doorstep-** It was suggested by most of the respondents that raw honey should be sold from the doorstep of the beekeepers or through the village cooperatives so that they do not have to face the inconvenience of taking the produce to market and then selling it to the buyers at their decided price. This solution will give an upper hand to the beekeepers in getting the price for their produce.
7. **Proper storage and packaging-** The raw honey should be stored in dark coloured containers at moderate temperature to prevent fermentation. The University should educate beekeepers on proper storage and packaging of raw honey so that it remains in good condition until it reaches market.
8. **Use of pesticides and chemicals-** Pesticides and chemicals should be used to protect bee colonies from attack of pests and disease. Beekeepers should have knowledge about these chemicals and pesticides.



9. **Proper measures to keep away lizards, ants etc.** -  
Proper measures should be taken to keep away lizards, ants, mites etc. away from the bee colonies.

**Table 6 Distribution of respondents based on problems encountered by the respondents in adoption of Apiculture technology and solutions to overcome them (N=225)**

Sl. No.	Problems	Solutions	Frequency (f)	Percentage (%)
1	Not suitable enterprise for women	-----	73	32.44
2	Exploitation by buyers and middlemen	Direct selling of produce in the market	48	21.33
3	Migratory beekeeping and seasonal management	-----	32	14.22
4	Not a profitable enterprise	Should get good return for the produce	62	27.56
5	Costly enterprise	Modification in the technology for lowering the cost	124	55.11
6	Risk of bee attack	Proper dress and veil to be used	135	60
7	Risk of failure of the enterprise	-----	22	9.78
8	Difficulty in selling the produce	Marketing channels to be explored	106	47.11
9	Difficult for women to go to market for selling	Male members go for selling the produce	78	34.67
10	Risk of insect, moth and lizard attack	Organising awareness programs on use of insecticides	65	28.89
11	Losses due to fermentation of honey	Proper storage and packaging of honey	38	16.89
12	Difficult to control pest and disease	Organise training programs on usage of pesticides and disease control measures	54	24



Antwal and Bharaswadker (1990) reported that 77.7 per cent rural women expressed lack of personal contact with extension worker as the major constraint in adoption of Home Science technology followed by 53.33 per cent women who were ignorant of new technology, 44.0 per cent of them expressed lack of money as the difficulty in adoption of technology, 32.0 per cent of rural women expressed habit of traditional practice as the difficulty, while 22.22 per cent of them had stated non-availability of the devices as the problem in adoption of new technology. Only 13.33 per cent of rural women expressed complexity in its use as the constraints in adoption of Home Science technology.

### **Conclusion**

The main problem expressed by the respondents in adoption of Fruit & Vegetable preservation technology was poor family income of the respondents (65.33%) and Value Added Products from Cereals & Pulses technology was that it is not a feasible technology (extruded products- pasta, noodles etc.) for adoption for family consumption (60.44%).

The main problem expressed by the respondents in adoption of mushroom production technology was that it is a highly perishable produce (69.78%) for which they suggested value addition of mushroom and creating awareness on proper storage and packaging techniques, Value Added Products from Mushroom technology was lack of knowledge about these technologies (74.22%) for which educating and imparting training to rural people was suggested by them,

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Vermicompost technology was lack of finance to adopt on a large scale (41.78%) for which they suggested that loan and subsidy should be provided by the Government and Apiculture technology was that there is risk of bee attack (60.0%) for which they suggested that proper dress code (covered and protected against bee attack) and veil should be used.

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