

**RESEARCH ARTICLE :**

Integrated farming for sustainable development

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SUMMARY : Economic development of the country like India depends upon the development of the farmers. Several emerging challenges confront Indian farmers. These include limited land and water availability, which is further exacerbated by degradation of natural resources; climate changes; changes in demand and consumption patterns, moving toward high-value agriculture; increasing population pressure and liberalization of trade (Lele *et al.*, 2010). The most effective way of sustainable development of the target group is implementation of the schemes in a proper manner. Agricultural researchers widely recognise the importance of sustainable agricultural production systems and the need to develop appropriate methods to measure sustainability (Casare *et al.*, 2003). Krishi Vigyan Kendra (KVK) is an innovative science-based institution, which undertakes vocational trainings of farmers, farm women and rural youths, conducts on-farm research for technology refinement and frontline demonstrations to promptly demonstrate the latest agricultural technologies to the farmers as well as the extension workers (ICAR, 1999). Integrated farming is today's emerging need for economic development of the farmers. The Krishi Vigyan Kendra, Kota of the Rajasthan district imparts trainings and making farmers and farm women efficient in integrated farming. Therefore, conducting vocational trainings on different aspects like processing and value addition of food products, fruits and vegetables preservation, establishment of vermin compost unit, handicrafts, nursery management, bee keeping, garment construction and designing and fish production etc. The impact of trainings conducted were judged in the year 2013-14 according to the performance and earnings of the farmers. Out of 6000 efficient farmers of the district 2320 have started adopting integrated farming *viz.*, crop production with processing, horticulture, dairy etc. Data revealed that rural communities were deeply motivated through the agriculture technologies transferred during all the trainings and they have started integrated farming to improve their economic status. Majority of farmers and farm women were found engaged in processing of food products through its grading, splitting, polishing and different products like squash, pickle, powder, jam, murabba, soya paneer, soya milk, and soya nuts. Value addition of food products along with preservation of fruits AND vegetable were started by 82 % of women farmers resulted in good earning. Similarly 79 % of farmers started dairy with vermi compost unit. Progressive farmers of them established orchard of of Amla, guava, mango, papaya and orange with dairy, poultry farm, nursery and beekeeping unit together. Marginal farmers were found highly interested to develop herbal garden/ medicinal plant with its processing and ornamental plant cultivation with beekeeping.

KEY WORDS :

Integrated farming,
Sustainable, Amla,
Guava, Mango,
Papaya

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BACKGROUND AND OBJECTIVES

The agriculture is the back bone of the

country and more than 65 per cent population
of country directly or indirectly depends on

agriculture for their livelihood (Shah *et al.*, 2013). In India, the extension efforts have been largely taken up by the state departments of agriculture and allied departments, state agricultural universities (Sharma *et al.*, 2013).

With the increasing pressure on land for more production per unit area through adoption of modern technologies and use of capital inputs, marginal and small farmers are unable to keep pace with the rapid technological advances in crop production. Therefore, extension endeavours are directed towards net income increase from agricultural and allied activities (Rachna *et al.*, 2013).

The long-term vocation-based and skill-oriented training for farmers, farm-women, rural youths and school drop-outs are conducted by the KVKs, so that they could adopt new methods of farming and increase farm income. Endeley-Joyee (1989) indicated technological investment in farm activities was very low at camroon, traditional technologies predominate. For the convenience of KVKs, a list of possible on-farm and off-farm vocations is being suggested by Shukla (1994) in his booklet "Organizing vocational training programme in Krishi Vigyan Kendra". A few more vocations may be added. Depending upon the prevailing agro-climatic conditions, socio-economic and cultural fabric and also their suitability, relevance and potentiality, vocations may be identified and training programmes be organized. Further, these courses may vary in nature and duration in accordance with the needs of the participants and training objectives. These on-Farm vocations are crop production, fruit production, off-season and seasonal vegetable production, ornamental flower production, mushroom production, dairy production, poultry production, duckery, sheep production, goat production, piggery, rabbit production, aromatic and medicinal plant production, seed production technology, nursery production, maintenance and repair of pumps, electric motors, gardening, processing, packaging and marketing and formulation and preparation of cheap animal feed. There are different methods of training or teaching are involved for better learning such as lecture, interactive lecturette, reading, demonstrations, interactive demonstrations, field trips, panel discussion, group discussions, question answer panel, case studies, small group tasks, workshop and role playing (Dugan Laird, 1985).

They are given the basic knowledge about various aspects of scientific practices and then specific training

is given according to their preference and need. Women experience practical difficulties in the field whereas the trained women start practicing their newly acquired practices. Rural women can be empowered through dissemination of relevant information and development of skill on recent and viable vocation, which can be an aid to rural development and can provide opportunities towards entrepreneurship development among them.

It is essential that whatever technical information and skills were given to farmers, farm women, rural youth and school drop-outs through trainings, should be technically sound, culturally compatible and economically profitable. Singh *et al.* (2005) suggested that effective and stronger approach of transfer of technology is the training, and, therefore, it should be conducted only after the total feedback about the trainees. India has huge potential in producing processed food by preserving and processing. Agro processing has become the chief source of income generation in rural areas.

RESOURCES AND METHODS

The study was conducted in the year 2013-14 purposively on KVKs of ten districts in Rajasthan comes under MPUAT Udaipur on the basis of trainings conducted in the year 2011-12. Farmers and farm women had attended trainings from whole district of their respective KVK of the state. In the year 2011-12 more than 5000 farmers were attending trainings on improved agriculture technologies from one KVK and, therefore, through ten KVKs more than 50,000 farmers got agriculture technology out of which 10000 were became efficient. Out of 10000 efficient farmers of the ten different of KVKs of Rajasthan 5329 started integrated farming *viz.*, crop production with processing, horticulture, poultry, nursery, dairy etc. within a year.

OBSERVATIONS AND ANALYSIS

Data (Table 1) showed that out of 5329 skilled entrepreneur who adopted integrated farming 40 per cent of them have started processing and value addition along with crop production and increased their average family income 15000 to 30000. As far as the processing and value addition of food products 34 per cent women adopted it as source of their living. Self-help groups of women were ordered to supply amla candy to primary schools to fulfil their nutritional requirement. They were

Table 1 : Integrated farming for entrepreneurship among rural communities through vocational trainings (n= 5329)

Sr. No.	Integrated farming /Vocation	No. of Entrepreneur	Average Income Increased / month
1.	Crop Production + Processing and value addition	2167 (40.66)	15000 – 30000
2.	Crop Production + Seed Production	93 (1.74)	20000 – 30000
3.	Medicinal Plant + Processing	98 (1.80)	5000 – 10000
4.	Crop Production + orchard + Vegetable Production	182 (3.41)	7000 – 12000
5.	Flower culture + Beekeeping	157 (2.94)	10000 – 15000
6.	Backyard Poultry + Marketing	1200 (22.52)	5000 – 10000
7.	Fisheries + marketing	127 (2.38)	5000 – 10000
8.	Processing + Preservation + Vermi composting	280 (5.25)	5000 – 10000
9.	Dairy + Gobar gas Plant + Urea molasses mixer	163 (3.05)	10000 – 15000 (Saving included)
10.	Crop production + Goat rearing	153 (2.87)	5000 – 10000
11.	Orchard + Vermi composing	292 (5.47)	20000 – 25000
12.	Ornamental Plants + marketing	142 (2.66)	5000 – 10000
13.	Nursery raising + Orchard + Ornamental + Flowericulture	275 (5.16)	8000 – 20000
	Total	5329 (100)	

Note: Figures in parenthesis indicate percentage.

getting advance order of preparing Amla murabba in tones. This made children resistible for diseases caused by malnutrition. Sharma *et al.* (2007) suggested the strategies that for establishing a marketing network for selling the product of SHGs direct marketing could be a fruitful solution. They were engaged in the marketing of preserved food products like amla murabba, varieties of pickle and squashes of rose, lemon, amla and pineapple. According to Shailaja (2006) the best way to make a best use of neutral and potential capabilities of farm women is to provide them with the opportunities for self development through training which helps in getting the assured income from the enterprises.

Similarly 22 per cent of farming community increased their family income 5000 to 10000 through backyard poultry and its marketing. It has also been found out that along with dairy farmers established gobar gas plant, which ultimately made saving in fuel consumption of the family. Tiwari and Vashishth (2007) concluded that majority of women 90.6% have found three areas most suitable to take up for vocation and, therefore, maximum knowledge gain and improvement in their skill were found in preparing urea molasses mixture, vermin compost and value addition through processing of food products to improve its perishable life.

More than 5 per cent of farmers started integrated farming by establishing food processing unit and preservation of fruits and vegetables with vermi compost unit to utilize the wastage of fruits, vegetables and other food products. Similarly crop production with goat farming

and marketing of ornamental plants were found beneficial for the farmers.

Flower cultivation and orchard along with nursery of grafted fruit plants were also preferred by the farmers. Although integrated farming is a new concept among the rural communities but it was getting popularized very fastly and found a easiest source of increasing family income.

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