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Income generation for women farmers through integrated farming systems:

A successful case from Mandora village

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Empowerment of women has emerged as an imperative issue for Indian economy. Social and economic empowerment through entrepreneurial skill of women is the key factor for overall development of any country. Women play substantial role in farming systems but are recognized only as invisible workers. To empower the women farmers economically viable, environmentally sound and a sustainable, holistic all round approach through integrated farming system is the way forward.

Key words: Income generation, Integrated farming system, Progressive women farmer

INTEGRATED Farming Systems (IFS) approach satisfies maximum objectives of sustainability, viz. food security, resource utilization, poverty reduction etc. and stabilizes income through natural resource management and livelihood diversification.

Mrs Santosh Kumari, a progressive women farmer having a family of seven members including her husband who takes care of a petty shop, a son, a daughter in law and their 3 children, hails from Mandora village which is located in Sardhana Tehsil of Meerut district in Uttar Pradesh, India. It is situated 16 km away from sub-district headquarter Sardhana and 22 km away from district headquarter Meerut. Mandora village is also a gram panchayat. The total geographical area of village is 494.54 ha. Mandora has a total population of 2,836 people. There are about 496 houses in Mandora village. Sugarcane-ratoon-wheat + Dairy was found to be the major farming system found in the village (50%) followed by Sugarcane-wheat-Sorghum + Dairy (40%).

Mrs. Santosh Kumari, having a farm size of 1 ha, is actively involved in Sugarcane-wheat-sorghum/paddy + Dairy (2 cows) farming system. She has been engaged in sugarcane production for around 0.8 ha of land, wheat for 0.4 ha of land, paddy from 0.1 hectares of land. She is also producing fodder for her animals (two crossbread cows and one he buffalo) from 0.13 ha of land. She used to produce wheat and paddy for home consumption, whereas sugarcane production and animal husbandry for income generation of her family. She is not a land owner but working actively in her farm, taking care of livestock, taking the decisions regarding farm and livestock. She is a very active women farmer due to her keenness to learn and develop skills in farm related enterprise. She is directly involved in various crop production activities viz. sett cutting in sugarcane, sett planting and covering, compost application in fields, pest management using indigenous technical knowledge in sugarcane weeding and harvesting (all crops), uprooting and transplanting (paddy), winnowing, post-harvest management etc. and managing rest of the field activities through hired laborers. She is directly involved in almost all the livestock management activities, viz. fodder collection, chopping of fodder/straw, preparation of ration for animals, feeding and watering of animals, identification of sick animals, treating the animals using indigenous knowledge, care of new born calves, cleaning of animals, milking, making of cow dung, disposal of dung, cleaning of cattle shed, selling of milk etc.

Under ICAR funded network project "Integrated farming system for improvement of nutrition and livelihood of farm women under different agro–ecosystems women farmers from Mandora village were selected. Women who hosted the demonstrations were selected on the basis of strong interest, relatively

Training of women farmer for vermicomposting

Intervention of trichocard in sugarcane field.

poor, school drop outs/illiterate, women headed household, small landholders etc. Ten women were selected and each village were given the interventions related to integrated farming systems. Mrs Santosh Kumari being an illiterate women farmer was found to be very innovative, having very strong interest, putting all her efforts in the interventions. She was very efficient in observing the technological/ varietal difference for every intervention.

Introduction of Trichocards

To begin with the sugarcane crop production, she is already practicing the indigenous technical knowledge (ITK) regarding integrated pest management. She used to prepare the spray material by taking different ingredients: {Cow urine (15 litre) + Dhatura (*Datura stramonium*) + hemp (*Cannabis sativa*) + Neem leaves + salt (0.5 kg) + surf (1 kg)}. Afterwards she used to store the prepared material for 15 days then spray the material on sugarcane. She adopted trichocard for sugarcane crop protection as different insect-pests viz. sugarcane top borer, white grub etc. are the major problems in the sugarcane crop. In order to control these problems, farmers apply different chemical measures which not only increase the cost of cultivation but also add up pesticides residue in the crop. In order to minimize the pest incidence and cost incurred in insecticide and pesticides the trichocard were introduced in the villages. Her sugarcane yield increased from 981 q/ha to 1341.0 q/ha. The cost of chemical for one hectare amounts to ₹ 5000 whereas cost of application of trichocard per hectare is ₹ 1000 which means a net reduction of ₹ 4000/ha and gain of 24 q/ha sugarcane yield too. She gained a yield with a net gain of ₹ 73,760 from 0.80 ha area which includes the price of 252 quintal sugarcane sold @ ₹ 280/q and ₹ 3,200 saved from the input cost. Before the intervention of trichocards her net income from sugarcane was ₹ 1,53,000 and after the intervetion the net income increased to ₹ 2,33,000.

Vermicomposting

She was very keen to learn the vermicomposting as she already knows the benefits of eco-friendly cultivation practices. Under the project she was trained in vermicomposting technique. She used her cattle shed for vermicomposting of area 30 m^2 (6 m×5 m). She initiated the vermicomposting enterprise by using around 9 q of cow dung. She has been provided 3 kgs of red worm (*Eisenia foetida*). During one crop season she has produced around 15 q of Vermicompost out of which she utilized 5 q at her farm and sold remaining for ₹ 4000

Vermicompost production = 15 q

Amount consumed at own farm = 5.0 q

Amount sold = 10.0 q

Profit realized = ₹ 4000 (@ 400 q).

Now she has a full- fledged business and since the initiation of vermicomposting, she sold around 75 q of vermicompost during a period of (one and half years) and earned around ₹ 30,000 from vermicomposting alongwith the organic production of field as well as vegetable crops by using around 20 q of vermicompost at her own farm. Mrs Santosh Kumari is taking annual net gain of ₹ 20,000 from vermicomposting enterprise.

Introduction of improved varieties of pulses along with ITK for control of Blue bull menace

Spurious seed and blue bull was the major problem for growing pulse crop in Mandora village. In order to improve the situation, demonstration trials on introduction of pulse crop along with sesamum as border crop were conducted at the identified farmers' field. Border crop of sesamum served the dual purpose. It repealed the blue bull, oil was produced for family consumption and soil conditions improve due to nitrogen fixing capabilities of legumes. She integrated those crops in her cropping system and cultivated those crops organically. She has been obtaining around 4.5 q/ha urd bean with an average ₹ 8,000 per annum of net profit along with 4.0 q/ha sesamum seed with on an average ₹ 20,000 per annum of net profit. Therefore, she is getting the net profit of ₹ 1,840 per annum by integrating the pulse crop (0.13 ha) with a border of (0.04 ha) area as

Mrs Santosh Kumari showing a bumper yield from improved variety of Urad (PU-31)

Adoption of mineral mixture by women farmers for improving diet of their animals

sesamum crop.

Promotion of kitchen gardening/roof top gardening

She utilized the space available for cultivation of vegetable crops for home consumption as well as roof of the house for cultivation by adopting kitchen gardening and roof top gardening respectively. She cultivates nutritious vegetables like spinach, bottlegaurd, faba bean, fenugreek, amaranthus, raddish etc. by utilizing these spaces of economic value worth ₹ 1,000.

She adopted guava plantation in her house for enhancing family nutrition.

Mineral mixture for animal health

She also adopted mineral mixture for the diets of animals and reported that there was an increase in milk yield of animal from 2-2.5 litres. Milk quality also improved as indicated by SNF content, it increased from 80 to 85% consequently increase in price of milk was also reported @4 to 7 ₹ per litre. She used to earn around ₹ 25 per/litre per day by selling around 5 litres of milk per day earlier. Annual net income from animal husbandry was ₹ 15,000. Now after adopting the mineral mixture in the diets of their animals the net income was found to increase by ₹ 30,900. She realized the gain of almost ₹ 15,000 by adding the mineral mixture into the diets of the animals.

Capacity Building

Fig. 8. Training of women farmers on processing of sugarcane into value added jaggary

She has shown her strong interest in all the capacity building programmes organized under the project. She was the first women farmer to show keen interest in the exposure visit of Krishi Unnati Mela, IARI, New Delhi She learnt various processing and value addition techniques for various fruits, vegetables, flowers, grains etc. She gained the knowledge regarding farming systems approach through integrated farming systems model, gender friendly farm, dairy and post-harvest equipments, new varieties of different grains, vegetable seeds, quality planting materials etc. She has taken training on value addition and processing of fruits/vegetables and sugarcane into value added jaggary. Now she is developing the value added products for her home consumption. She has been honoured by the Director of the Institute as a progressive women farmer in *Krish Kumbh* held at Muzaffarnagar w.e.f. 28-30 November, 2016.

SUMMARY

In this context, the net income of the family from their existing farming system was ₹ 1,68,000 per/annum. But after intervention of the project and also due to the keen interest of Mrs Santosh Kumari, now she is realizing the net income of ₹ 2,86,740 per/annum. The family income of Mrs Santosh Kumari has increased by ₹ 1,18,740 per/annum (more than 1.5 times) due to her efforts and commitment towards increasing her family income. Now she is a role model for the other women farmers of her village in increasing the family income of farmers.

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