

# Exploring economic opportunities

for farmers of Kandi villages through application of  
proven rainfed technologies

**Pawan Kumar Sharma\*, R K Arora, Rajbir Singh and V P Chahal**

Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu, Jammu and Kashmir 180 009

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## Location and selection of area

The Farmer FIRST programme (FFP) of Indian Council of Agricultural Research has been implemented in 12 villages, block Nud, Samba district of Jammu and Kashmir State from *kharif* 2017. The cluster of 12 villages falls under rainfed ecosystem which receives average annual rainfall of 700-800 mm. More than 70% of rainfall is received from June to August that highlights the basic problem in respect of water availability in the region throughout the year.

## Number of farm families

Farm families (778) of 12 villages belonging to marginal and small land holding category were selected for demonstrating scientific practices to bring change in their lives. They are cultivating maize and wheat crops by traditional and conventional methods as the region falls in subtropical rainfed 'kandi' belt and farming is dependent on timely and adequate availability of rainfall. The majority of farm families own livestock, including cattle, sheep, goats and poultry etc. The productivity of livestock in terms of milk production and animal breeding is very low, owing to the non-availability of quality fodder and lack of awareness regarding use of mineral supplements.

## OBJECTIVES

- To demonstrate and popularise proven scientific agricultural practices for kandi areas.

- To augment nutritional and income sources through introduction of supplementary farm enterprises.
- To promote scientific livestock management through feeding of mineral supplements and prevention & control of parasitic infestations.
- To promote recommended Integrated Farming system model.

## INTERVENTIONS

### Crop based module

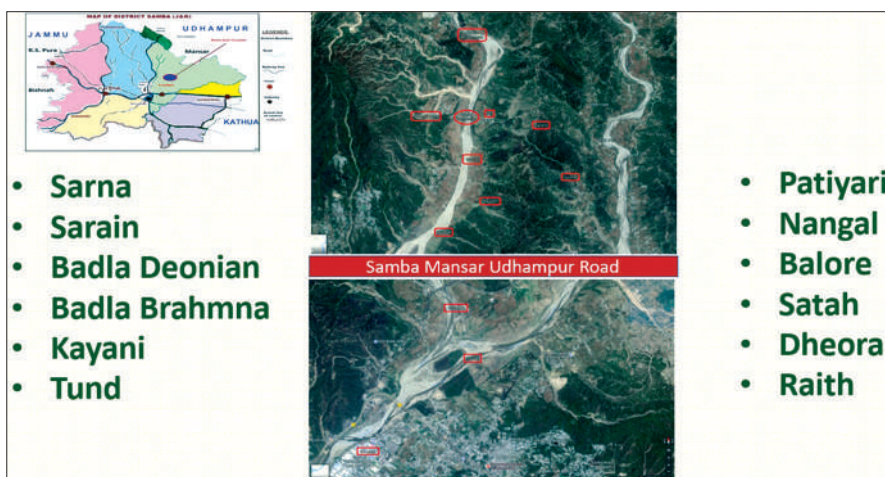
Diversification of maize-wheat cropping system through inclusion of pulses under demonstrations of scientific package of practices was achieved. Demonstrations of maize included hybrid maize varieties along with recommended doses of NPK i.e. 60:40:20 followed by line sowing technique and optimum seed rate (Table 1). The performance under demonstrations showed B:C ratio of

2.81 as compared to check (2.29). Farmers also liked performance of SJPC1 which generated net income of ₹ 58,220 with yield of 14.2 q/ha (B:C ratio 14.2). WH1080 wheat variety was also introduced with recommended doses of NPK i.e. 60:30:20 which gave net income of ₹ 12,620 with yield of 19.6 q/ha (B:C ratio 1.79) whereas the check variety had yield of 13.25 q/ha with net income of just ₹ 6,613 (B:C ratio 1.52). The farmers have accepted and appreciated the new varieties as they are tolerant to rainfed conditions.

**Marigold:** Improved marigold varieties (Pusa narangi/basanti) demonstrated on average yield of 60.2 q/ha compared to local check 38.5 q/ha. Net return from IARI varieties was ₹ 91,000 compared to ₹ 63,200 from local check.

### Backyard nutritional kitchen gardening

Backyard nutritional kitchen gardens (257) were established to



**Table 1.** Following major interventions were implemented every year in the selected area

| Module                                                    | Technology                                                                                                                                   | Villages covered | Area covered (ha)/ animal (No.) | Number of households covered |
|-----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------------------|------------------------------|
| <i>Crop</i>                                               |                                                                                                                                              |                  |                                 |                              |
| Maize                                                     | Package of Practices<br>• Variety: Double Dekalb<br>• Recommended doses of fertilizers: 60:40:20 NPK<br>• Line sowing<br>• Optimum seed rate | 12               | 150 ha                          | 756                          |
| Wheat                                                     | Package of Practices<br>• Variety: WH-1080<br>• Recommended doses of fertilizers: 60:30:20 NPK<br>• Optimum seed rate                        | 12               | 100 ha                          | 500                          |
| Marigold                                                  | Package of Practices<br>• Variety: Pusa Narangi/Basanti<br>• Recommended doses of fertilizers<br>• Proper Line spacing                       | 03               | 2 ha                            | 25                           |
| <i>Backyard nutritional kitchen garden</i>                |                                                                                                                                              |                  |                                 |                              |
| Summer (okra, bitter gourd, bottle gourd, cucumber)       | Hybrid varieties                                                                                                                             | 08               | 10 ha                           | 257                          |
| Winter (radish, fenugreek, cauliflower, cabbage, spinach) | Hybrid varieties                                                                                                                             | 07               | 10 ha                           | 120                          |
| <i>Livestock</i>                                          |                                                                                                                                              |                  |                                 |                              |
| Mineral supplements                                       | UMMB                                                                                                                                         | 06               | 500                             | 50                           |
| <i>Natural resource management</i>                        |                                                                                                                                              |                  |                                 |                              |
| Hydrogel                                                  | Pusa hydrogel                                                                                                                                | 04               | 10 ha                           | 35                           |
| <i>Integrated farming system</i>                          |                                                                                                                                              |                  |                                 |                              |
| Chicks                                                    | Naked Neck                                                                                                                                   | 06               | 2100 no.                        | 140                          |
| Mushroom                                                  | White button mushroom                                                                                                                        | 06               | 850 bags                        | 85                           |
| Neem trees                                                | Seedlings                                                                                                                                    | 06               | 100 no.                         | 10                           |

ensure income and nutritional security of marginal farm households. The crops and varieties demonstrated under nutritional gardens are as follows (Table 1).

**Summer vegetables:** Brinjal (Pusa Uttam-178 q/ha); okra (Seli Special-129 q/ha); sponge gourd (Pusa Sneha-132 q/ha); ridge gourd (Pusa Nutan- 170 q/ha); bitter gourd

(Pusa Osadhi - 65 q/ha); bottle gourd (Pusa Naveen and Pusa Santushti 172 q/ha); capsicum (625 q/ha).

**Winter vegetables:** Cauliflower

**Table 2.** Comparison of enterprises under existing and IFS model

| Model                    | Component     | Name of Component | Name of Variety/breed | Area (ha) | Net return from different components | Employment generated (Days/Unit) |
|--------------------------|---------------|-------------------|-----------------------|-----------|--------------------------------------|----------------------------------|
| Demonstrated IFS Model   | <i>Kharif</i> | Maize             | Double Dekalb         | 0.3       | 11450                                | 17                               |
|                          |               | Marigold          | Pusa Narangi/Basanti  | 0.05      | 10800                                | 14                               |
|                          |               | Fodder            | Bajra                 | 0.05      | 1900                                 | 13                               |
|                          |               | Summer Vegetables | Open pollinated       | 0.05      | 21700                                | 18                               |
|                          | <i>Rabi</i>   | Wheat             | WH-1105               | 0.3       | 12640                                | 13                               |
|                          |               | Winter Vegetables | Open pollinated       | 0.05      | 18700                                | 18                               |
|                          |               | Fodder            | Oats (Kent)           | 0.1       | 5200                                 | 27                               |
|                          | Livestock     | Cattle (Cow)      | Local Desi (2 cows)   | 0.01      | 73060                                | 91                               |
|                          |               | Backyard poultry  | Naked Neck (30 birds) | 0.01      | 18000                                | 27                               |
|                          | Mushroom      | White Button      | White Button          | 0.02      | 136400                               | 39                               |
|                          | Vermicompost  | Composting        | Lumbricus Rubellus    | 0.01      | 4300                                 | 14                               |
|                          | Total         | 0.5               | 314150                | 291       |                                      |                                  |
| Tradition Farming System | <i>Kharif</i> | Maize             | Mansar                | 0.43      | 9595                                 | 14                               |
|                          |               | Fodder (Bajra)    | Farmers selection     | 0.05      | 3020                                 | 12                               |
|                          | <i>Rabi</i>   | Wheat             | Raj 3765, 3077        | 0.43      | 11696                                | 11                               |
|                          |               | Fodder            | Sorghum/Mustard       | 0.05      | 3507                                 | 14                               |
|                          | Livestock     | Cattle (Cow)      | Local Desi (2 cows)   | 0.01      | 66636                                | 88                               |
|                          | Mushroom      | White Button      | White Button          | 0.01      | 58500                                | 22                               |
|                          | Total         |                   |                       | 0.5       | 152954                               | 161                              |

(PSBK1- 153 q/ha); cabbage (168 q/ha); knol khol (G-40 -202 q/ha); radish (Pusa Chetki-180 q/ha); Spinach (All green-188 q/ha); turnip (Pusa Sweti - 178 q/ha)

#### Livestock based module

Urea molasses multi nutrient blocks (UMMB) and location specific mineral mixture was administered to all lactating cows and buffaloes @40-60 g/animal/day to enhance milk yield/animal. Milk yield increased from 2.8 l/day/animal to 3.4 l/day/animal, indicating that physiological ability of animals is much higher if nutritional requirements are fulfilled. In second year the performance was – milk yields increased, and significant improvements in the general and reproductive health of the treated cattle and buffaloes. The milch animals came to heat at proper time, timely artificial insemination, and normal calving.

#### Integrated farming system module

The increasing cost of agricultural production is threatening the existence of marginal and small farmers. One could imagine the survival of small and marginal farmers through the adoption of Integrated Farming Systems (IFS) on scientific lines. The farmers are, however, vulnerable in selecting the right choice, owing to misunderstanding on factor-factor and product-product relationships. The demonstrated IFS model includes different enterprises, viz. cultivation of maize, wheat and marigold, establishing backyard nutritional kitchen gardening, backyard poultry and livestock, mushroom production etc., besides components of natural resource management. Ten Integrated Farming System models were established under Farmer FIRST project over an area of 0.5 ha each.

The comparison of existing and IFS model in terms of area coverage under different enterprises is presented in Table 2.

The economics of individual enterprise during *Kharif* and *Rabi* under integrated farming system demonstrated over 10 sites is

discussed below:

#### Crop module under *kharif* season

Economics of maize crop under IFS

| Area covered | Technology demonstrated                                                                 | Economics                                                                                           |
|--------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| 0.3 ha       | Hybrid Variety, Line sowing<br>Seed rate: 20 kg/ha,<br>NPK: 60:40:20,<br>Seed treatment | Cost: ₹ 4045/-<br>Gross Profit: ₹ 15495/-<br>Net Profit: ₹ 11450/-<br>Employment days generated: 17 |



Economics of marigold crop under IFS

| Area covered | Technology demonstrated                                | Economics                                                                                           |
|--------------|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| 0.5 ha       | Variety: Pusa Narangi & Pusa Basanti, NPK: 120:100:100 | Cost: ₹ 4800/-<br>Gross Profit: ₹ 15600/-<br>Net Profit: ₹ 10800/-<br>Employment days generated: 14 |



Economics of bajra crop under IFS

| Area covered | Technology demonstrated         | Economics                                                                                         |
|--------------|---------------------------------|---------------------------------------------------------------------------------------------------|
| 0.5 ha       | Variety: AVKB<br>NPK: 100:60:25 | Cost: ₹ 2400/-<br>Gross Profit: ₹ 4300/-<br>Net Profit: ₹ 1900/-<br>Employment days generated: 13 |



Economics of summer vegetables under IFS

| Area covered | Technology demonstrated                                                                              | Economics                                                                                            |
|--------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| 0.05 ha      | Improved varieties of Brinjal, Okra, Sponge Guard, Ridge Guard, Bitter Guard, Capsicum, Bottle Guard | Cost: ₹ 23600/-<br>Gross Profit: ₹ 45300/-<br>Net Profit: ₹ 21700/-<br>Employment days generated: 18 |

#### Crop module under *rabi* season

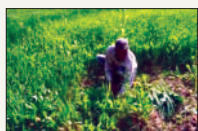
Economics of wheat crop under IFS

| Area covered | Technology demonstrated                        | Economics                                                                                           |
|--------------|------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| 0.05 ha      | Variety: WH-1080, NPK 60:30:20<br>Line showing | Cost: ₹ 3980/-<br>Gross Profit: ₹ 16620/-<br>Net Profit: ₹ 12640/-<br>Employment days generated: 13 |



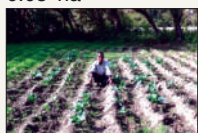
Economics of oats crop under IFS

| Area covered | Technology demonstrated                        | Economics                                                                                         |
|--------------|------------------------------------------------|---------------------------------------------------------------------------------------------------|
| 0.05 ha      | Variety: WH-1080, NPK 80:40:20<br>Line showing | Cost: ₹ 3100/-<br>Gross Profit: ₹ 8300/-<br>Net Profit: ₹ 5200/-<br>Employment days generated: 27 |



Economics of oats crop under IFS

| Area covered | Technology demonstrated                                                           | Economics                                                                                            |
|--------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| 0.05 ha      | Improved varieties of Radish, fenugreek, cauliflower, cabbage, spinach, knol-khol | Cost: ₹ 26600/-<br>Gross Profit: ₹ 45300/-<br>Net Profit: ₹ 18700/-<br>Employment days generated: 18 |



## Livestock module

### Economics of livestock under IFS

| Area covered                                                                      | Technology demonstrated                  | Economics                                                                                             |
|-----------------------------------------------------------------------------------|------------------------------------------|-------------------------------------------------------------------------------------------------------|
| 0.01 ha                                                                           | Location specific UMMB & mineral mixture | Cost: ₹ 40000/-<br>Gross Profit: ₹ 113060/-<br>Net Profit: ₹ 73060/-<br>Employment days generated: 91 |
|  |                                          |                                                                                                       |

### Economics of poultry under IFS

| Area covered                                                                      | Technology demonstrated                 | Economics                                                                                                |
|-----------------------------------------------------------------------------------|-----------------------------------------|----------------------------------------------------------------------------------------------------------|
| 0.01 ha                                                                           | Naked Neck breed under backyard poultry | Cost: ₹ 14500/-<br>Gross Profit: ₹ 32500/-<br>Net Profit: ₹ 18000/-<br><br>Employment days generated: 27 |
|  |                                         |                                                                                                          |

## Mushroom production

### Economics of mushroom production under IFS

| Area covered                                                                      | Technology demonstrated        | Economics                                                                                              |
|-----------------------------------------------------------------------------------|--------------------------------|--------------------------------------------------------------------------------------------------------|
| 0.02 ha                                                                           | Year round mushroom production | Cost: ₹ 67050/-<br>Gross Profit: ₹ 203450/-<br>Net Profit: ₹ 136400/-<br>Employment days generated: 39 |
|  |                                |                                                                                                        |

## Vermicompost production

### Economics of vermicompost production under IFS

| Area covered                                                                        | Technology demonstrated | Economics                                                                                         |
|-------------------------------------------------------------------------------------|-------------------------|---------------------------------------------------------------------------------------------------|
| 0.01 ha                                                                             | Vermibeds               | Cost: ₹ 2300/-<br>Gross Profit: ₹ 6600/-<br>Net Profit: ₹ 4300/-<br>Employment days generated: 14 |
|  |                         |                                                                                                   |

## Comparative Economics of IFS and existing system of farming

All the components had recorded higher income per unit of land under IFS as compared to the existing system among farm households due to increased productivity. Besides, profitability, the demonstrated IFS model has succeeded in achieving food and nutritional security, sustainability, recycling of unutilized resource, solving energy fuel and

fodder crisis and increased employment generation. The different enterprises have been integrated with crop activity to recycle products and waste materials of one component as input through another linked component and reduce the cost of production of the products to reduce degree of risks associated with farming.

As a part of the continuous effort to address all the relevant issues and

to make the small farms more remunerative and sustainable, the recommended Integrated Farming System Model demonstrated under 'Farmer FIRST' programme over an area of 0.5 hectares (Table 3) had resulted in raising farm productivity and households' sustainability in terms of food, feed, fodder and fuel.

## Innovations developed under the project

### Roof top water harvesting:

Marigold cultivation requires assured irrigation for watering at regular but in rainfed kandi region, it was always a challenging task for the farmers to maintain optimum farm moisture. Some of them were encouraged to store rainwater through roof top water harvesting using plastic bottle and plastic pipe of 20 m in length, for marigold and vegetable cultivation. A bottom less plastic bottle was inserted at the outlet of roof to channelize water through plastic pipe into the water tank through natural gradient.

## Water harvesting for vegetable production

Jal Kund is a small type of farm pond made up by digging out a hole in the earth, which harvests rainwater and stores it for future use. It has an inlet to regulate inflow and an outlet to discharge excess water. The pond is surrounded by a small bund, which prevents erosion on the banks of the pond. Timely irrigation is very essential for crops and it becomes more critical in case of rainfed crops.

## TRAINING

During 2017-18 to 2019-20, 58 training programmes were conducted under FARMER FIRST project in which 1779 farmer partners participated. In addition, farmer partners have been motivated to undertake seed production.

## IMPACT

### Vertical linkages: Success Story

The scientific interventions in maize enhanced its production and increasing the marketable surplus in village clusters. Considering the market dynamics of maize, development of vertical linkages was

**Table 3.** Net returns from different modules of 0.5 ha IFS model (₹/Unit)

| Component    | IFS Model |                 | Tradition Farming System |                 | Additional employment generated under IFS over existing system |                  |
|--------------|-----------|-----------------|--------------------------|-----------------|----------------------------------------------------------------|------------------|
|              | ₹         | Employment days | ₹                        | Employment days | ₹                                                              | Employment daysm |
| Crop         | 82390     | 120             | 27818                    | 51              | 54572                                                          | 69               |
| Livestock    | 91060     | 118             | 66636                    | 88              | 24424                                                          | 30               |
| Mushroom     | 136400    | 39              | 58500                    | 22              | 77900                                                          | 17               |
| Vermicompost | 4300      | 14              | 0                        | 0               | 4300                                                           | 14               |
| Total        | 314150    | 291             | 152954                   | 161             | 161196                                                         | 130              |

planned so as to maximise net social benefit. A number of agro-industries including cattle feed manufacturing units, are operating in the adjoining district of selected villages. Maize is one of the main ingredients of cattle feed, hence the cattle feed manufacturers were approached to develop market linkage which could be mutually beneficial for both farmers and private manufacturers. At the end of *khharif* 2018-19, an arrangement was made with cattle feed units and it was decided to barter maize for animal feed.

After several deliberations in a Public Private Partnership (PPP) mode, a Memorandum of Understanding (MoU) was signed under Farmer FIRST Programme in which it was agreed upon by the manufacturers to barter maize from farmers with feed. It was decided that the price of maize will be fixed at higher rate compared to price prevailing at local market, if it is lower than the Minimum Support Price (MSP). On the other hand, the feed will be provided to farmers at wholesale (industry) rate. Moreover, the manufacturers will lift maize for feed at farmers' doorstep, which would further result in economic benefit of farmers. After going into the vertical linkage with manufacturing units, several programmes were conducted to have a direct contact of farmers with manufacturing units for creating awareness about the modalities of barter system agreed upon under PPP mode. The market linkage developed under Farmer FIRST Programme provided direct relief to the farmers as it ensured remunerative price to farmers for maize. The linkage developed is lasting forever as both the parties found it mutually beneficial.

#### Marigold production: Success Story

Farmers were cultivating marigold but not satisfied with the output mainly due to the use of local

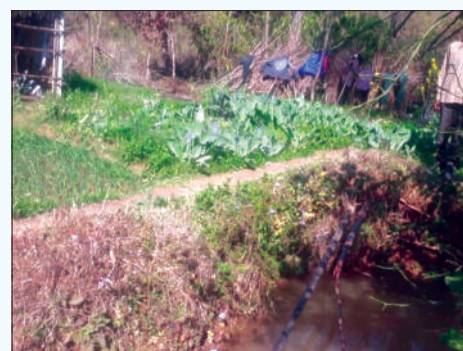


Roof top water harvesting under Farmer FIRST Project

varieties, unscientific method of cultivation and lack of marketing support. The locally available seed used by them being poor in germination resulted into low yield. Keeping the above facts into consideration, marigold farmers (25) were adopted under Farmer 'FIRST' programme and provided technical know-how on marigold cultivation along with improved varieties namely, Pusa Narangi (Red) and Pusa Basanti

### SUCCESS STORY

A farmer Rattan Lal constructed a Jal Kund (farm pond) in his field with dimension of 2 m × 2 m × 2 m for storing rainwater, which cost him nothing except few hours of his own family labour. He uses this stored water for growing vegetables on about one kanal of land. He grows different vegetables like cauliflower, cabbage, knol-khol, cucumber, radish, spinach, bitter guard and cucurbits. This intervention has eliminated the risk of crop stress due to lack of moisture.



Use of stored water of Jal Kund in vegetables

**Impact:** Rattan Lal was provided with improved/hybrid varieties of different summer and winter vegetables under Farmer FIRST Programme of SKUAST-Jammu. With the help of stored water, he was able to grow summer vegetables and earned ₹ 24,800 from 0.25 acre of land. Earlier, this much of land under wheat or maize could only brought income not more than ₹ 3,000.

**Economics:** On an average, Rattan Lal's farm is producing about okra (1 q), radish (1 q), chilli (30 kg), bottle gourd (2.5 q), and bitter gourd (50 kg) during summer with the use of stored water for irrigating these vegetable crops. The detail of financial benefits realized by him by selling the summer and winter vegetables is given below:

| Vegetable   | Production (q) | Rate/kg | Amount   |
|-------------|----------------|---------|----------|
| Okra        | 02             | 30      | 6000.00  |
| Radish      | 02             | 15      | 3000.00  |
| Chilli      | 60             | 50      | 3000.00  |
| Cucurbits   | 5.0            | 15      | 7500.00  |
| Bitterguard | 1.0            | 25      | 2500.00  |
| Cucumber    | 1.0            | 20      | 2000.00  |
| Coriander   | 20             | 40      | 800.00   |
| Total       |                |         | 24800.00 |

Thus, by constructing low-cost Jal Kund (farm pond), Rattan Lal is able to obtain a suitable water storage solution that is helping him to grow cash crops and obtaining remunerative economic benefits.

(Yellow). With the introduction of improved practices and quality seed, farmers obtained five to six pickings with yield of 1,100-1,200 kg/picking/ha. The average yield from five pickings was more than 60 q/ha. The yield of marigold increased from 31 q/ha under traditional plots to 42 q/ha under demonstration plots, representing a 35.48% increase. The increased yield had also reflected as increase in benefit-cost ratio from 1.82 under traditional plots to 2.31 under demonstration plots.

Besides popularizing marigold cultivation practices, the value addition of loose flowers was also encouraged. Marigold flowers are important inputs for making garlands etc. for decoration and use in temples. With the use of 1 kg of marigold flowers, six garlands of useable size were made. The garlands were sold by farmers themselves at the nearby religious places at Samba @ ₹ 30. Besides, the garlands were also in huge demand during festivals. Besides, sale of marigold as loose flowers, each individual farmer sold around 750 garlands in one season with a profit of ₹ 20,000-25,000. The loose flowers were also sold at ₹ 40-50/kg. Thus, the net income from marigold per farming household witnessed an increase from ₹ 165,645 under traditional plots to ₹ 222,300.

#### Integrated farming system models: Success Story

The cost of cultivation of small and marginal farms often exceeds the returns which pose a threat to the economic viability of farm. As a part of the continuous efforts to address all the relevant issues and to make the small farms more remunerative and sustainable, SKUAST-Jammu demonstrated recommended Integrated Farming System Models under IFS over an area of 0.5 ha to converge the development of

Table 4. Overall income enhancement of farmers of different categories and overall in the village over bench mark

| Category     | Farmers/Farm households involved | Income at the time of project start (₹/ha) | Income after implementation of project (₹/ha) | Income enhancement |
|--------------|----------------------------------|--------------------------------------------|-----------------------------------------------|--------------------|
|              |                                  | <b>2017-18</b>                             | <b>2019-20</b>                                |                    |
| Marginal     | 689                              | 49200                                      | 98438                                         | 49238              |
| Small        | 75                               | 53180                                      | 110379                                        | 57199              |
| Medium/large | 14                               | 57381                                      | 112649                                        | 55268              |
| Overall      | 778                              | 53253.67                                   | 107155.10                                     | 53901.42           |

recommended farm technologies for kandi areas so as to raise and sustain the total farm productivity in terms of food, feed, fodder and fuel. There was a generation of additional net income of ₹ 1.61 lakh from an area of 0.5 ha under the IFS model as compared to the existing farming system. Besides, 130 additional employment days were also generated under IFS model demonstrated under Farmer FIRST project.

#### Whole Village Analysis of Income Enhancement

The average household (farm) income in selected clusters after the implementation of Farmer FIRST Programme has been raised from ₹ 53,254-108,100 with an average increment of ₹ 54,846/farm family (Table 4).

#### DRAWBACKS AND LESSON LEARNT

**Problem of overproduction:** In order to sustain farm income under increased production, market linkages were developed to ensure remunerative price of crops for farmer partners. Vertical linkages to maximise net social benefit were developed. Agro-industries are operating in the adjoining district of selected villages which include manufacturing units of cattle feed.

**Shortage of irrigation water:** As the selected village clusters fall under rainfed ecosystem, the water conservation and harvesting practices are required to be adopted for

ensuring critical irrigation for all crops. Under the Farmer FIRST Project, efforts were made to popularise and adopt water conservation and management practices. This has resulted in diversifying farming and higher returns for farmer partners under the project.

#### WAY FORWARD

The farmers have adopted scientific practices under different modules as demonstrated under the project.

- It is planned to assess the impact of interventions in neighbouring villages. Some of the new villages will be adopted replacing the old villages under the project. The efforts will be concentrated to ensure horizontal expansion of scientific interventions across the district.
- As the selected village cluster is rainfed and there is a shortage of fodder for enhancing milk production, it is planned to install hydroponic units standardized by University so that year round supply of green fodder is ensured during the lean period.
- The farmer partners will be strengthened through organization of need based training programmes on latest scientific themes.

\*Corresponding author's email: pawanvatsya@gmail.com

#### Pradhan Mantri Krishi Sinchai Yojana

This Yojana brings

- Per Drop More Crop.
- Inputs from MoWR and DOLR received.
- Increase in agricultural production and productivity and enhance farm income.