



# A successful model for socio-economic upliftment of tribal farmers of Chhattisgarh

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*The Farmer FIRST programme (FFP) has been implemented in the year of 2016 by ICAR-NIBSM, Raipur, at a cluster of five tribal villages in the Kasdol block of Baloda Bazar district, to improve the livelihood of tribal farmers through implementing agricultural enterprise integration in rice fallow. Under this, a set of five modules- crop-based, livestock-based, enterprise-based, horticulture-based and NRM-based were identified and implemented. Total 634 tribal farm families got benefitted under this programme. In economic terms, an additional income of ₹12,054 per farm family has been generated and as a social impact, nearly 36% of the seasonal migration of farmers was reduced. In addition, total, 347 capacity-building programmes were organized and 8417 tribal farmers were benefitted under this FFP initiative.*

**Keywords:** Agricultural technologies, Chhattisgarh, Socio-economic upliftment, Tribal farmer

**F**ARMER FIRST programme has been implemented in the year of 2016 by ICAR-NIBSM, Raipur, to improve the livelihood of tribal farmers through implementing agricultural enterprises integration in rice fallow. A cluster of five tribal villages namely Bakla, Kharaha, Bamhani, Kurraha and Kharri in the Kasdol block of Baloda Bazar district, Chhattisgarh, were adopted for this programme. Interventions were selected based on matrix ranking and agro-ecosystem analysis. Based on the results obtained, various interventions such as goat farming using breeds such as Sirohi, Jamnapari and Barbari, backyard poultry farming with Kadaknath breed, oyster mushroom production, Farmer Communication Centre (FCCs), low cost Azolla production, nutritional home garden, drudgery reduction equipment for women farmers through Custom Hiring Centers (CHCs), Agro Processing Centers (APCs), low-cost polyhouse with drip and poly-mulching for vegetables production and eco-friendly pest management technologies were adopted to generate additional income and have brought tangible changes in the socio-economic condition of tribal farming community.

In economic terms, additional income of ₹12,054 per farm family has been generated through the introduction of crop, livestock, horticulture, enterprise and NRM based modules, respectively. In 2022, sum of ₹118.75 lakhs was generated by the farming community

from different enterprises. FFP initiatives attracted 34% of farm women and 20% of rural youth in agricultural activities in the adopted villages.

Overall, 24–30% increase in knowledge was observed among tribal farmers in the selected technologies through the intervention of FCCs, agricultural film shows, capacity building programs and social media groups. A significant increase in skill and knowledge acquisition was observed in the adopted technologies such as scientific vegetables production, zero tillage, livestock production and eco-friendly plant protection measures. Drudgery of women farmers was reduced through village level CHCs. Meanwhile, nutritional level of farm families was enhanced through nutritional home gardening. A total of 54 agricultural interventions were introduced and sustained in the farmer's field. Cropping intensity has been increased by 120% in the adopted villages. Backward and forwarded production linkages were established for crop, livestock and horticulture enterprises. Market linkages were established for different commodities produced under this project for the sustainability of the disseminated technologies. It is evident from the above results that Farmer FIRST approach proved to be a successful role model programme in the socio-economic upliftment of tribal farmers through suitable agricultural enterprise integration in rice fallow pulse cropping system (Table 1).

**Table 1.** Major technological changes after implementation of the project

| Particular                             | Before                                                      | After                                                                                                                                                                                                                                                                                               |
|----------------------------------------|-------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Cropping intensity</i>              | 100%                                                        | 120%                                                                                                                                                                                                                                                                                                |
| <i>Major agricultural technologies</i> |                                                             |                                                                                                                                                                                                                                                                                                     |
| Goat                                   | Desi breed                                                  | Sirohi, Jamunapari, Barbari breed with scientific farming practices                                                                                                                                                                                                                                 |
| Poultry farming                        | Desi breed, household consumption                           | Kadakhnath breed, with scientific farming technology, Pucca shade, Hatchery units                                                                                                                                                                                                                   |
| Vegetable cultivation                  | Local varieties, Traditional Practices                      | Improved varieties from IIHR, TNAU, NSC, Beej Nigam, IGKV, and KVKs, Scientific practice, Polyhouse, Drip irrigation, poly mulching and post-harvest technology                                                                                                                                     |
| Pulses and oilseed crops               | Local variables, very less area through Utera cropping only | Improved variety like- Lathyrus (Prateek and Mahateoda), Chick pea (Vaibhav, JAKI 9218 and JG-11,12), Black gram (Azad- 03), Mustard (Indira Sarson, Pusa Jay Kisan and Pant Pili Sarson), Lentil (KLS- 218) and Linseed (RLC-92) in rice fallow, using with Happy Seeder and Aqua-Ferti Seed Drill |
| Rice cultivation                       | Local Varieties, Traditional cultivation practices          | Improved varieties such as- Chandrasasini, IGKV R-1, IGKV R-2, Indira Aerobic, Swarna, HMT, Mahamaya and Indira Barani with SRI technology and scientific package of practices                                                                                                                      |
| Agro-based enterprise                  | Nil                                                         | Established- 04 Agro-processing Centers, 05 Custom Hiring Centers, 05 Kadakhnath Hatchery units                                                                                                                                                                                                     |
| Availability of Farm machinery         | Limited availability from nearby farmers and villages       | Established- 05 Custom Hiring Centers (CHCs) with variety of drudgery reduction equipments and highly useful farm machinery                                                                                                                                                                         |
| Plant protection practices             | Only chemical methods                                       | Introduced trichocard, Pheromone trap, Light trap, Sticky traps, Bio-control agents and Demonstrated IPM practices                                                                                                                                                                                  |
| Source of information                  | TV, Radio, Mobile, Local leaders                            | Farmer Communication Centers (FCCs), Farmers Scientist Interface, Agricultural Film Shows (AFSSs), Mobile App, WhatsApp group, Facebook page, YouTube Channel,                                                                                                                                      |
| Additional income                      | Only farm (rice) income                                     | ₹12054 additional income generated per farm family                                                                                                                                                                                                                                                  |

**General agricultural issues found in the study area**

- Rice fallow lands (82% of land left fallow after rainy (kharif) season);
- Low production and productivity;
- Low level adoption of high yielding varieties;
- Unawareness of GAPs and modern management strategies;
- Lack of knowledge in plant protection measures & technical know-how;
- Lack of marketing network, shortage of skilled labour;
- Mono-cropping (Rice-Rice-Rice);

- Lack of awareness on conservation of biodiversity and importance of sustainability of homestead system and subsistence nature of farming.

Seasonal migration posed a major problem in the adopted villages. During the implementation of FFP (2016) 915 farm families migrated outside Chhattisgarh for their livelihood. Under the farmer FIRST project, many farmers-friendly and region-specific technologies such as rice fallow pulses, Kadakhnath farming, goat farming, mushroom production, agro-processing centers, and high-tech horticulture for income generation were introduced at the village level. Due to these efforts,



Kadakhnath farming cum hatchery unit



Agro-Processing Center (APCs)

Only 580 farmers migrated in the year 2021–22, which is about 36% reduction in the seasonal migration.

### Desired socio-psychological changes of tribal farmers after the project implementation (N=500)

A baseline survey to assess the socio-psychological status of tribal farmers was conducted, and it was found that farmers had low social participation, risk-taking ability, achievement motivation, innovativeness, scientific orientation, mass media exposure, and less contact with extension agencies. Between the year 2016 and 2022, more than 350 capacity-building programs were organized to empower the tribal farming community. Farmers improved their social participation by 31.20%, risk-taking ability by 33.00%, achievement motivation by 31.00%, innovativeness by 62.00%, scientific orientation by 37.60%, contact with extension agencies by 29.20%, and mass media exposure by 30.00%, due to the project initiatives.

### Income generation from the major FFP intervention

Promoting the application of scientific production technology with quality inputs in agriculture is the foundation to improve the productivity, quality, efficiency, and competitiveness in agriculture sector. This intervention contributed to the transformation of agriculture and rural areas, ensuring food security, social security, and income enhancement among farm families. Under the FFP, introduced agricultural technologies had a remarkable impact on the income generated at the village level. Farmers are getting a higher income in the Kadaknath farming followed by scientific turmeric production, scientific rice cultivation, rice fallow pulses, mushroom cultivation, agro-processing centers, vegetable production, and Azolla production respectively.

### Economic impact of FFP interventions- B:C ratio of farmer's practice and scientific interventions

The benefit-cost (B:C) ratio is an indicator showing the relationship between the relative costs and benefits of a

**Table 2.** Economic impact of FFP Interventions

| Technology/<br>Intervention | B:C ratio         |                     |
|-----------------------------|-------------------|---------------------|
|                             | Farmer's Practice | Due to intervention |
| Kadaknath                   | 2.38              | 3.94                |
| Goat                        | 2.51              | 3.60                |
| SRI                         | 2.02              | 3.49                |
| Chickpea                    | 2.54              | 4.05                |
| Lathyrus                    | 1.53              | 3.39                |
| Vegetable                   | 1.80              | 2.61                |
| Turmeric                    | 3.16              | 5.33                |
| Mushroom                    | 3.61              | 4.28                |
| Azolla                      | 4.20              | 6.22                |

proposed project, expressed in monetary or qualitative terms. Under the Farmer FIRST project, more than 54 promising technologies with quality inputs and a scientific package of practices under crop, horticulture, livestock, enterprise, and NRM-based module were introduced as well as demonstrated. In each module, some major technologies had a wider adoption among the tribal farmers and they have been practicing them for the past six years. As a result of scientific technology and technical support from the project team, farmers achieved increased production and were able to decrease the input cost (Table 2).

### Achievements of Farmer FIRST Programme

- Farmer Communication Centers (FCCs)–02
- Crop varieties introduced–35
- Alternate crops introduced–12
- Area covered under horticulture –38 ha
- Rice fallow covered with pulse–122 ha
- Animal breeds introduced–04
- ICT agro advisory delivered–1650
- Farmer Interest Groups (FIGs)–08
- Quail farming cum hatchery units–02
- Goat Farming Unit (GFUs)–01



Low-cost shade net house



Mushroom production

- Village soil testing unit-01
- Low-cost Azolla production unit-01
- Model Mushroom production unit-02
- Low-cost shade net and polyhouse-04
- Modern nutritional terrace gardening units-02

### SUMMARY

Farmer FIRST programme was implemented with an aim to improve the tribal farmer's livelihood and socio-economic status through promising agricultural enterprises integration in rice fallow. Based on 6 years of experience on the Farmer FIRST, it was learnt that the group approach is highly suitable under resource-poor conditions, small-scale technologies are more suitable to generate additional income of tribal farmers, involvement of local/farmers resources creates more involvement of farmers in the project activities and low-cost technologies are having more acceptance and

adoption rate. With these lessons, we can upscale this FFP model by promoting rural entrepreneurship to sustain the farm income, scaling-up of the small-scale agro-processing units to reduce the seasonal migration of the farmers, increased capital accumulation with low-cost innovations to empower the small and marginal farmers in the resource-poor rural settings. Particularly, the rural development projects should combine with infrastructure development, education, investment in agriculture and the promotion of rural non-farm activities where rural women and youths can engage themselves.

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