

Identification of villages for Small Farmers, Large Field pilot in Bihar

Rapid rural appraisal report

Research Note 1, Work Package 3
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ABOUT THIS NOTE

This research note presents the process and criteria for identification of treatment and control villages for implementing Small Farmers, Large Field (SFLF) pilot through a Rapid Rural Appraisal (RRA) conducted in Nalanda, Bihar, India.

BACKGROUND

Agriculture is the backbone of Bihar's economy, providing employment to about 53.6 percent of the workforce, which is higher than the national average, whereas around 89% population lives in rural areas (Agriculture Census, 2015-16). Land holding in Bihar predominately consists of small farms and holdings with a high degree of fragmentation. Small and marginal farmers account for almost 97 percent of landholdings and 75.98 percent of the area. Bihar is the third highest potato-producing state after Uttar Pradesh and West Bengal, but average productivity is below 19-20 t per ha compared to the national average of 22 t per hectare (DoH, 2017-18). Nalanda district is the highest potato producer in the state with a volume of 0.692 tons in an area of 0.024 million hectares, followed by Patna and Muzaffarpur. Low productivity is the most critical issue affecting the profitability associated with crop production. This is mainly due to the non-availability of new and improved, high-yielding and stress-

resistant varieties, lack of mechanization and equipment, and inadequate knowledge of good agronomic practices. Small and marginal farmers therefore need a model initiative to improve farmers' livelihoods and sustainable healthy diets through potato production in cereal-based cropping system.



Above: RRA being conducted at Kairi village, Nalanda, Bihar, India, 11th September 2022. Photo Credit: Bidhyadhar Rout (CIP)

OBJECTIVES

The primary objective of this Rapid Rural Appraisal (RRA) was to identify treatment and control villages for implementing SFLF pilots under Transforming Agrifood Systems in South Asia (TAFSSA) in Nalanda district of Bihar.

"The SFLF model is a participatory and bottoms up, informal model where the farmers organize themselves into groups and synchronize their operations by virtually converting their small landholdings into a large field."(Baruah, et al., 2022). It is founded upon the principle of aggregation of small and marginal farmers to achieve bargaining power by strengthening backward and forward integration, to reduce the per unit cost of production, improve yields, and improve efficiency by synchronizing selected key operations.

DATA AND METHODS

To select treatment and control villages in Nalanda district, the TAFSSA team applied a Rapid Rural Appraisal (RRA) method using semi-structured interview schedules to collect relevant information on past and present practices of potato

production in the region.

Criteria for selection of treatment and control villages :

Initially, RRAs were conducted in eight villages of two blocks (**Figure 1, Table 1**) where potato is grown as a cash crop and for home consumption. Thereafter the treatment and control villages were selected based on the following criteria:

1. Existing cropping patterns in the villages.
2. Each village represents potato production within the district/block,.
3. The village is located near the main road for ease of transportation.
4. The village comprise large, medium and small potato growers.
5. A source of seed, variety and quality are available.
6. Supply, demand and availability of agricultural inputs/machinery.
7. Major constraints in potato production.
8. Whether potato cultivation is mechanized or manual.
9. Whether there is cold storage in the vicinity.
10. Distance of the nearest wholesale market from the villages.



Figure 1: Locations where Rapid rural Appraisal (RRA) were carried out in Nalana, Bihar. Nalanda is the highest potato-producing belt in Bihar where the crop is grown in almost all the villages during the rabi season.

Table 1: List and descriptions of villages where RRA has been conducted in Nalanda district, Bihar.

District	Block	Gram panchayat	Name of village	Total no. of households	Population
Nalanda	Harnout	Basniyawan	Ganagta	150	2000
			Basniyawan	800	4500
		Dihiri	Birjumilki	1000	4500
		Chausiya	Bhathiyar	150	1500
		Sartha	Porei	450	3500
	Noorsarai	Khewan Bigha	Khewan Bigha	300	4000
		Meyar	Meyar	800	5000
			Kairi	350	3000

Table 2: Farmer type, major cropping systems, percentage of potato cultivation and most cultivated potato varieties in the respective villages where RRA have been conducted in Nalanda district, Bihar.

Name of village	Farmer type	Major cropping systems	Potato cultivation (%)	Most cultivated potato variety
Ganagta	small	rice/maize/bhindi/pumpkin-wheat/lentil/lesari/chickpea/potato	20-25%	Kufri Pukhraj
Basniyawan	small	rice/maize/bhindi-wheat/mustard/lentil/potato/Kesari/chickpea	35-40%	K. Pukhraj
Birjumilki	small, medium	rice-wheat/chickpea/lentil mustard/maize/coriander/potato	20-25%	Kufri Pukhraj
Bhathiyar	small	rice-wheat/chickpea/mustard/linseed /lentil/potato	45-50%	K. Jyoti, K.Pukhraj
Porei	small, medium	rice-wheat/chickpea/lentil/mustard/maize/coriander/potato	70-80%	K. Pukhraj
Khewan Bigha	small, medium	rice/vegetables/maize-wheat/vegetables/potato/mungbean	35-40%	K. Pukhraj
Meyar	small, medium	rice/vegetable-potato/pumpkin/mustard/wheat	90-95%	K. Jyoti, K.Pukhraj
Kairi	small	rice-wheat/potato/lentil/mustard/chickpea/vegetable	85-90%	K. Jyoti, K.Pukhraj

Further the project conducted group discussions in all the listed villages, using an RRA tool. Respondents were selected based on their long experience in agriculture and particularly in potato cultivation in the respective villages. Based on the information collected during the group discussions, the data were critically analyzed against the questionnaires that the RRA used.

STUDY FINDINGS

The results show that 90 percent of the farmers in Meyar and Kairi villages grow potato during the *rabi* season; the remaining farmers cultivate crops such as chickpea, vegetables, wheat and mustard (Table 2, Table 3). The RRA also allowed to conclude that potato cultivation is lucrative but has its share

Table 3: Details of potato cultivation in villages where RRA were conducted in Nalanda, Bihar

Detail	Remarks
Purpose of potato cultivation	Household consumption; Business purpose (Meyar village, only)
Planting time	Last week of October to December
Sources of seed/quality	Local trader
Quality of seed	low grade seed potato
Marketing	Traders come to the village purchase potatoes at a low price, then sell at MASP through PACKS



Above: RRA in Brijumilki village, Nalanda, Bihar, India, 10th September 2022. Photo credit: Bidhyadhar Rout and S K Kakraliya (CIP)

of challenges. The major issues are:

1. Non-availability of good quality seed in nearby markets.
2. Lack of knowledge about good quality seed, and pesticides.
3. Potato cultivation requires expensive pesticides and chemical fertilizers.
4. Lower net return due to higher production costs.
5. Climate favorable for potato disease development.
6. Incidence of early and late blight diseases.
7. Lack of cold storage in the district.
8. Poor market prices at the time of harvest.



Above: Farmers interacting with TAFSSA team as part of RRA, Bhatiyar village, Nalanda district, Bihar, India. 11th September 2022. Photo credit: Bidhyadhar Rout (CIP)

CONCLUSION

To address these constraints, the implementation of SFLF, a model of group farming, has high potential wherein, the potato farmers will have

access to good quality seed of desired varieties at an affordable price, the establishment of backward and forward linkage for inputs purchase and output sale will be facilitated through the collective action approach, and capacity enhancement of farmers on potato pests and diseases identification and management will be undertaken. These activities collectively are expected to increase income of small and marginal farmers in the pilot villages.

After RRA data analysis it was concluded that Meyar and Kairi villages are representative of potato production in Noorsarai block, Nalanda district, where the SFLF model can be implemented. These two villages were selected as the treatment cohort for the SFLF pilot. Jamunapur and Pariaunna villages of Noorsarai block are also commercial potato producing villages located close by, with farmers distributed in terms of landholding and well-connected to transport services; these were selected as control.

Way forward:

In the selected treatment villages, the SFLF model will be implemented, and comparative impact assessments will be undertaken in treated and control villages, in order to understand the socio-economic impact of the intervention. In the treated villages, data will be collected from selected beneficiaries; and similar data will be collected from randomly selected farmers in control villages.

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ABOUT TAFSSA

TAFSSA is a CGIAR regional integrated initiative to support actions that improve equitable access to sustainable healthy diets, improve farmers' livelihoods and resilience, and conserve land, air, and water resources in South Asia.

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