

Participatory agricultural development for livelihood security and economic

empowerment of farmers in semi-arid region of Rajasthan

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Location

The project was initiated in October, 2016 in the selected villages of Chosla, Denchwas, Arnia and Bassi which are a part of gram panchayat-Chainpur, tehsil- Malpura, district-Tonk, Rajasthan. The major cropping systems of the area are given in Table 1.

Number of farm families

A total of 847 households (350 marginal, 400 small, 97 large) were

Table 1. Major cropping systems of project location

Cropping systems	
Kharif	Rabi
Bajra	Mustard
Bajra	Gram
Jawar	Mustard
Jawar	Gram
Moong	Mustard
Moong	Wheat
Groundnut	Mustard
Groundnut	Wheat
Tinda	Mustard
Tinda	Wheat

selected for the project.

OBJECTIVE

Participatory agricultural development for livelihood security and economic empowerment of farmers in semi-arid region of Rajasthan.

INTERVENTIONS

Main interventions adopted to achieve the objectives are given in Table 2.

SUCCESS STORY

DRMRIJ-31 Mustard variety

In project area, four mustard varieties were introduced from DRMR Bharatpur for replacement of low yielding local seeds of mustard. Among four varieties DMRRIJ-31 performed better in both irrigated and rain-fed conditions. It yielded 19.10 q/ha grain which was 29% higher than local varieties. This variety was introduced in project area during 2017-18 in 16 ha area and adopted by 31 farmers and in 2019-20 it covered 300 ha area in project villages and was adopted by 200 farmers in project area.



DRMRIJ-31 Mustard variety demonstration in project village.

SUCCESS STORY

Kasuri type fenugreek

Kasuri type fenugreek was introduced in project area for diversifying existing cropping systems to improve profitability of mustard based cropping systems. Kasuri type fenugreek replaced mustard in irrigated areas and gave 2 times more income than mustard. In irrigated condition, mustard resulted in net return 48,125 ₹/ha and Kasuri type fenugreek resulted net return of 96,000 ₹/ha. During 2017-18, Kasuri type fenugreek was introduced in 3 ha area and adopted by 5 farmers and in 2019-20 it covered 30 ha area in project villages and was adopted by 30 farmers in project area.



Kasuri type fenugreek demonstration in project villages.

Table 2. Performance on different modules as per project guidelines issued by ICAR

Module	Problem identified	Intervention	Performance
Crop based	Low crop yield	Mustard local varietal replacement through improved variety (DRMRIJ-31, NRCHB-101, NRCDR-2 and RH-406).	DRMRIJ-31 resulted in 29% higher yield over local varieties and was adopted by 200 farmers in 300 ha area of project villages.
	Low productivity and profit from major cropping systems crops	Diversified low productive and low profitable cropping systems with high profitable crops like <i>Kasuri</i> type fenugreek.	<i>Kasuri</i> type fenugreek resulted in net return of ₹ 96,000/ha which was double of net return received from mustard and covered 30 ha area of project villages.
Horticulture based	Lack of improved planting material of fruit and vegetable crops and low awareness about fruit crops.	Established five orchard of lemon and karonda, one orchard of ber; For ensuring nutritional security at household level of farmers fruit plants of lemon, karonda, ber, drumstick and veritable kits of Spinach, mustard sag, turnip, pea, radish for Kitchen garden were provided.	Established 5 orchard of lemon, ber and karonda. 1150 fruit plants of lemon, ber, karonda, drumstick planted at farmers home and 60 vegetable kits provided for Kitchen gardening.
Animal based	Low milk yield buffaloes	Breed improvement of buffaloes by using semen straws of elite bull through AI technique. For this, semen straws of Murrah bulls (M-29) of ICAR-CIRB, Hisar were used for AI technique.	250 AI done for buffaloes belonging to 200 farmers with 51% success rate.
	Low body weight and milk yield of goat	To improve livelihood of marginal farmers, 30 kids (20 female + 10 male) of Sirohi goat breed were provided to 10 farmers.	30 kids were provided to 10 farmers with ₹ 3,000/kid whose value now reached ₹ 6,000/kid.
	Low body weight of sheep	Five elite ram (3 Malpura + 2 Patanwadi) of improved breed of sheep were provided to sheep farmers for genetic improvement of local sheep.	Farmers used these elite ram for breed improvement.
NRM based	Low fertility status of soils of major cropping systems	Prepared soil fertility maps of mustard and wheat based cropping systems.	60 soil samples of major cropping systems were analysed for macro and micro nutrients, organic carbon, etc. and soil fertility map were prepared.
	Lack of awareness of composting	20 vermicompost units were installed in project villages; 54 compost pits were dug for proper composting of agricultural waste.	Each vermicompost unit produced 900 kg compost every year. Compost pits were used for safe storage of FYM and agriculture waste.

Table 3. Income enhancement details in project villages

Farmer categories	Major cropping system	Benchmark net income (₹/ha)	Intervention			
			Seed replacement (DRMRIJ-31)		Diversification of cropping systems with <i>Kasuri</i> type fenugreek	
			Without Net income (₹/ha)	With Net income (₹/ha)	Diversification Net income (₹/ha)	Intercropping Net income (₹/ha)
Marginal	Moong “ Mustard	40,675	70,740	89,768	128,350	119,150
Small	Moong “ Mustard	40,675	70,740	89,768	128,350	119,150
Large farmers	Moong “ Mustard	40,675	70,740	89,768	128,350	119,150

Major changes in the existing cropping/ farming system

In mustard based cropping systems mustard was gradually replaced by *Kasuri* type fenugreek under insured irrigated conditions due to high profit from *Kasuri* type fenugreek and under limited irrigation conditions, *Kasuri* type fenugreek was intercropped with mustard crop due to its compatibility

with mustard crop.

TRAINING

In the year 2017-18, 1 course was conducted with 25 participants and 4 demonstrations covering an area of 110 ha were organised. Similarly, 4 demonstrations each were organised in 2018-19 and 2019-20, covering an area of 150 ha and 180 ha, respectively.

IMPACT

Overall income enhancement of farmers of different categories and overall in the village over benchmark are given in Table 3.

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