

DETAILS OF INNOVATIVE FARMING TECHNOLOGIES (IFTs) DISSEMINATED BY KVK, SOLAPUR AND IT'S IMPACT

1. Yield improvement in Soybean by group approach in Dahitne.

Introduction:

Soybean (*Glycine max* (L.) Merrill) is economically important legume (2n=40) seed contain 40 % protein and 20 % oil and its plants enrich the soil by fixing nitrogen in symbiosis. In the international world trade markets, Soybean is ranked number one in world among the major oil crops In Solapur district of Maharashtra State Soybean is cultivated on the area of 25000 ha with district productivity of 18.91 qt ha⁻¹. KVK, Solapur adopted Dahitne village of Barshi tahsil during April 2012 and under taken FLD & OFT along with trainings on the basis of PRA survey. As the Soybean is important oilseed crop of the Dahitne village cultivated on 329.40 ha area with productivity of 10.65 qt ha⁻¹ which was very low compared to Solapur district productivity.

Problem:

In Dahitne cluster majority of the farmers were cultivating Soybean under rain fed situation. The farmers of this area were facing the problem of low productivity due the lack of knowledge about the improved varieties and improper fertilizer management. When the problem was discussed thoroughly, the KVK, Solapur identified the problems of farmer's viz. unavailability of improved seed at local level, recommended bio-fertilizer and their reliable source were the associated problems of the farmers. Among four villages of KVK operational area, village Dahitne of Barshi Tahsil of Solapur District was selected purposely for study because of having more area under soybean and higher farmer's interest level. KVK Solapur had conducted PRA survey with the help of different PRA tools. During need assessment it was found that low productivity of Soybean was due to local cultivars and negligence of proper fertilizer management. Tackling this problem Frontline demonstration were conducted on improved variety JS-93-05 and INM (kharif 2013) and use of improved variety MAUS-158 and MAUS-71 with INM during (Kharif 2014) to motivate the farmer for group approach and last but not least go through public private partnership module. Availability of improved variety seed was major problem during 2014 in whole Maharashtra as well as in Solapur district.

KVK intervention:

KVK Solapur has planned and conducted different activities which were found suitable to solve the problem of low productivity in Soybean. Conducted FLD on improved variety and INM in Soybean, Filed Day, Kisan Goshti promote the technology popular the result. Farmers were motivated through farmers club under NABARD. KVK Solapur continuously motivated to make the farmers ready to adopt new technologies. The availability of critical inputs i.e. improved variety seeds, bio-fertilizers and other issues related to agriculture production and marketing can't solved by individual farmer. Group approach is the cornerstone of the restructured extension mechanism. Here the formation of commodity interest group plays an vital role. Hence KVK, Solapur has focused on commodity interest group of Soybean & established Shivtej Farmers Club in collaboration with NABARD, Solapur. In the interest of problem solving, KVK, Solapur was found necessary to work in mission mode i.e. to use public private partnership module. KVK Solapur has made co-ordination with Maharashtra State Seed Corporation Ltd.(MSSC), Agriculture Development Officer, Zilla Parishad, Solapur & State Agriculture Department for availability of improved variety seeds (MAUS-158 & JS-93-05), Mahatma Phule Agricultural

University, Rahuri for availability of bio-fertilizers (Rhizobium and PSB), NABARD, Solapur for establishment of farmer's Club, Agriculture Technology Management Agency (ATMA) to conduct Kisan Goshti and Vasantao Naik Marathwada Agriculture University, Parbhani for technical guidance. The task of yield improvement in Soybean is very much in need of integrated approach. Beside these activities strong advisory and facilitation for application of improved technology including in situ soil moisture conservation. During year 2014 Shivtej Farmers club purchased 113 bags of improved variety (MAUS-71) seeds from KVK,Latur.Here KVK,Solapur had linkedthe Shivtej Farmers club with the KVK,Latur and helped in getting available the seed in bulk quantity though their was acute shortage of seed

Table No. 1: Technologies promoted through FLDs on Soybean.

Sr. No.	Seed/Operation	Previous Practice	Promoted technology during FLD
1	Variety	JS-335	JS-93-05, MAUS-158, MAUS-71
2.	Sowing distance	30 x 5 by tiffan	45 x 10 cm by tractor drawn seed
3.	Soil moisture conservation techniques	No	Square bunding at 10 x 10 m
4.	Seed treatment	No	Seed treatment with Thiram, Rhizobium & PSB
5.	Use of Fertilizers	DAP @ 125 kg / ha	SSP @ 500 kg / ha.
6.	Pest management	Rogor @ 2 ml / liter	Corogen @ 0.5 ml / liter
7	Harvesting and threshing	Manual harvesting	Use of harvester cum thresher

Besides conducting the FLD, KVK, Solapur has focused on the supportive activities viz. Exposure Visit at VNMAU, Parbhani, Group Discussion, Establishment of Shivtej Farmer's Club, Diagnostic Visit, Kisan Goshti & Field Day. Through these activities 455 farmers were benefitted directly from focal & satellite villages.As a result of KVK, Solapur (M.S.) intervention 552 farmers of Dahitne cluster purchased 18905 kg improved seeds of variety JS-93-05, MAUS-71 & MAUS-158 which has saved Rs. 1,86,120.00. During 2013 KVK,solapur promoted farmers to store their truthful seeds for further use during kharif 2014.

Table No. 2: Saving due to common procurement of critical inputs.

S. No.	No. of farmers	Area (ha)	Critical inputs	Variety	Quantity (Kg.)	Rate / Kg. (Rs.)	Subsidized rate (Rs.)	Total Savings (Rs.)
1.	97	45.20	Seed	MAUS-71	3390.00	80.00	-	-
2.	305	133.20	Seed	MAUS-158	9990	58.00	46.00	119880.00
3.	50	20	Seed	JS-93-05	1500	58.00	46.00	18000.00
4.	33	13.20	Seed	JS-93-05	995	58.00	46.00	11880.00
5.	67	26.80	Seed	JS-93-05	2010	58.00	46.00	24120.00
	34	13.60	Seed	JS-93-05	1020	58.00	46.00	12240.00
Sub total	552	238.40	-	-	18905	-	-	186120.00

S. No.	No. of farmers	Area (ha)	Critical inputs	Variety	Quantity (Kg.)	Rate / Kg. (Rs.)	Subsidized rate (Rs.)	Total Savings (Rs.)
1.	210*	80.0	Bio-fertilizers	Rhizobium	150	80.00	60.00	3000.00
2.	210*	80.0	Bio-fertilizers	PSB	150	80.00	60.00	3000.00
3.	42	33.30	Biofertilizers	Rhizophospo	25.00 lit	300.00	-	-
Sub total	252	113.30	-	-	325.00	-	-	6000.00

* The users of Rhizobium and PSB are same.

Another critical input viz. Rhizobium, PSB and rhizophospo were purchased for the seed treatment of Soybean on the area of 113.30 ha. This action has considered being one of the most mobilizing factors for other farmers in the area.

Yield Improvement and Economic returns:

Due to interventions made by KVK, Solapur 552 farmers from Dahitne cluster were able to increase the productivity of Soybean by 5.81 qt ha⁻¹. Maximum yield improvement was observed under FLD on improved variety JS-93-05 and use of INM which was significantly higher by 79.74% over local check. It was also observed that by making additional expenditure of Rs. 1096.06/ha getting the benefit of Rs.29497.78 /ha by adoption of new technologies.

During the year 2012-14 average yield improvement of 57.12% was observed due to interventions made by KVK, Solapur. Higher B:C ratio of 4.80 was obtained in frontline demonstrations conducted. Highest economic returns of Rs. 68,979.12 ha⁻¹ were achieved due to FLD on improved variety and INM which was followed by improved variety and soil moisture conservation (Rs.59,736.02 ha⁻¹) and improved varieties (Rs. 54,992.40 ha⁻¹) during 2014 though there was a dry spell during critical growth stage of soybean crop 55.51% yield improvement was observed with net returns of Rs.55082 per ha due to use of improved variety MAUS-71 with INM.

The KVK intervention and last year situation of shortage of seed resulted in storage of more than 32 tonnes of truthful seeds of variety MAUS-158, JS-93-05 and MAUS-71 in Dahitne cluster of Barshi tahsil. This quantity is sufficient to sow the area of more than 426 ha area which is more than sufficient to village Dahitne. This is in the real sense the seed village concept is being in operation with the help of KVK, Solapur.



Field Day organized in presence of SAU scientists, State Agril. Officials and PD, ATMA with FLD plots visit.



On spot advocacy for solving the pest problems



The scientist from NARP, Solapur interacting with farmers during Kisan Mela on farmers field at Khamgaon village.

Table No.3: Yield components of Soybean and Economics of Demonstration and local plots as influences by KVK, Intervention during 2012-2014.

Sr No	KVK Intervention	No. of Pods / Plot		Yield kg / ha		% increase in yield	Cost of cultivation		Gross returns		B. C. ratio	
		Demo	local	Demo	local		Demo	Local	Demo	Local	Demo	Local
1	Use of soil moisture conservation techniques and FLD on use of improved variety JS 93-05	99	68	2267.53	1408.39	61.00	17360	16725	77096.02	46476.87	4.60	2.77
2	FLD on use of improved variety JS 93-05 + INM	117	69	2562.18	1425.45	79.74	18135	16725	87114.12	47039.85	4.80	2.81
3	Common procurement of improved variety seed and biofertilizers MAUS 158 & JS-93-05	98	67	2075.80	1415.80	46.61	17475	16530.35	70577.20	46721.40	4.04	2.82
4	Improved varieties JS-93-05 & MAUS-158	97	70	2153.60	1508.50	42.76	18230	16835.40	73222.40	49780.50	4.01	2.95
5	Improved varieties MAUS-71	95	67	2265.86	1456.99	55.51	21956.5	18756.35	77039.16	48080.62	3.50	2.56
6	Average	101.2	68.2	2264.99	1443.02	57.12	18631.3	17114.42	77009.78	47619.85	4.19	2.78

❖ Soybean from demonstration plot sold @ 34 / kg

❖ Soybean from local plot sold @ 33 / kg.