

Success Story of Rice-Based Cropping System

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Kumbi village is situated at 24°25'29.1"N and longitude of 93°48'13.3" with an altitude of 2502 ft from mean sea level in Moirang Sub-Division of Bishnupur district, Manipur. It receives a total annual rainfall of 1146.9 mm in *kharif* and 366.5 mm during *rabi* season. Though the total amount of rainfall received could be utilized for double cropping, farmers lack technical know-how of cultivating pulse crops during the *rabi* season and as such most of the land remain fallow during *rabi* season. After assessing the problems in the village, Krishi Vigyan Kendra, Bishnupur District, Manipur made interventions by introducing low water requirement pulse crop such as chickpea and lentil under cluster demonstration programme of *rabi* pulses under National Food Security Mission to follow rice-chickpea and rice-lentil cropping system so as to increase the cropping intensity of the farmers as well as to earn more income in a year.

KVK intervention

- In order to enhance the cropping intensity of the village by introducing cropping system of rice-chickpea and rice-lentil
- Advising the villagers to harvest the crops as soon as it matures so that the residual soil moisture could be utilised for the *rabi* crops in time.
- Double cropping instead of mono cropping as there is no profit in rice cultivation.
- Use of short duration rice variety.
- Use of low water requirement of pulse crop.

Front line demonstrations were organized in this area during *rabi* 2015-16 with the aim of increasing the cropping intensity of the farmers by promoting low water requirement pulse crops viz. Chickpea and lentil in the system. As a precursor to organizing the FLDs, a training programmes related to the technology with major focus on cropping system of rice-chickpea and rice-lentil was organized for the farmers of village Kumbi, Oinam, Ithai, Tronglaobi and Kabowakching. During the training, farmers were advised to harvest the rice crop as soon as it matures so that the residual soil moisture could be utilized for the *rabi* crops in time. Also use of short duration rice variety in order to practice double cropping as there is no profit in monocropping of rice only. This was followed by hands-on training on growing of chickpea var. JG-16 & lentil var. HUL-57 after rice in the field of Shri Wahengbam Panchamani of Kumbi village (one of the selected farmers for conducting cluster demonstration of *rabi* pulses under NFSM) having 1 ha area (0.5ha for each of the crops) and ten other farmers of these villages in the month of November, 2015 and laying out of demonstration of in rice-chickpea and rice-lentil cropping system in 10 ha area in the village cluster.

Impact of intervention

Mr. Wahengbam Panchamani of Kumbi Village, Moirang Sub division of Bishnupur district, Manipur practice only mono-cropping of rice and his land remain fallow during *rabi* season due to uncertainty of rain, lack of irrigation facility and moreover the field was occupied with paddy up to the month of November. He could earn Rs. 63000/- only in a year with net profit of Rs. 35500/- only, sometimes no profit at all. So with the introduction

of low water requirement pulse crops such as chickpea and lentil having water requirement of 400 mm only during the cropping season of each in the system, he could now earn a net income of Rs. 54889/- to 80,784 i.e. total Rs. 1,03,005 to 1,29,000 in a year. Moreover cropping intensity increases upto 150% in each system. Mr. Panchami is now a successful progressing farmer showing paths to his neighbouring and other farmers of the district. Only mono-cropping of rice gives benefit cost ratio of Rs. 2.29:1 but with the introduction of the rice-chickpea cropping system, benefit cost ratio increases to 2.67:1 although B:C ratio of rice-lentil cropping system is low to monocropping of rice.



Fig 1: Training and Visiting the field of Rabi Pulses Demonstration under NFSM by former Director, ATARI, ZONE-III, Umiam.

Before the technology, the gross income of the farmer was 63000/- only with net profit of Rs. 35500/- but with the introduction of the technology he could earn gross income of 103005 to 129000/- with net profit of 54889/- to 80784/-.



Fig 2: CFLD on Chickpea var. JG-16 & HUL-57 after rice crop (rice-chickpea) at W. Panchamani's field.

Conclusion

Mr. Wahengbam Panchamani earned a net income of Rs. 80784/- in a year through rice-chickpea cropping system introduced by SMS Agronomy of KVK-Bishnupur. Thus introducing low water requirement pulse crop (chickpea and lentil) in the system, better utilized the residual soil moisture after rice harvest which could have been wasted. Also it is one of the Resource Conservation Technology which could be taken up by other farmers having situation specific of double cropping.

Table 1: Economics

Crop	Production n in terms of Rice Equivalent yield (kg/ha)	Gross expenditure (Rs./ha)	Gross income (Rs./ha)	Net income (Rs./ha)	B: C ratio	Cropping intensity
Monocropping of rice only	4200	27,500	63000	35500	2.29:1	100%
Rice-chickpea	8600 (Rice yield- 4200 kg/ha; price of rice- Rs. 15/kg; chickpea yield- 1100 kg/ha; price of chickpea – Rs. 60/kg)	48216	129000	80784	2.67:1	150%
Rice-lentil	6867 (Rice yield- 4200 kg/ha; price of rice- Rs. 15/kg; lentil yield- 400 kg/ha; price of chickpea – Rs. 100/kg)	48116	103005	54889	2.14:1	150%

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