

Lentil cultivation under Conservation tillage in Rice Fallow system transform livelihood of the hill farmers under collaborative project of ICAR-ICARDA-DAC

In North Eastern India, farmers grow rice during rainy season (June–September) and land remains fallow after rice harvest in the post-rainy season (November–April) due to lack of sufficient rainfall or irrigation facilities. But in valley area of Manipur, sufficient carry-over residual soil moistures are available in rice fallow in the post-rainy season (November–March), which can be utilized for growing second crops in the region. During the post-rainy season when irrigation facilities are not available and rainfall is meager, effective utilization of carry-over residual soil moisture and conservation agriculture becomes imperative for second crop production after rice. To explore this objective, ICAR-ICARDA-DAC started the programme on “Enhancing lentil production in eastern and north-eastern states for nutritional security and sustainable rice-based production system in India” from 2013 to 2016. The study was conducted in 60 ha area for each years of 2013-14, 2014-15 and 2015-16 in the four districts of Thoubal, Imphal East, Imphal West and Senapati of Manipur.

Technological intervention

Generally farmers are keeping fallow land after rice harvesting. Those farmers are going for second crop sowing typically follow conservation agriculture. The lentil crops were sown after harvesting of rice in cluster form under different tillage practices viz., reduced tillage (one ploughing) (RT) and zero tillage (ZT) to grow second crops in rice fallow.



Demonstration of sowing of lentil with zero till and Seed treatment by the farmers



Awareness programme on zero till cultivation (Seeds and fertilizer putting by the farmers in Zero till)

Capacity building programme

We have organized capacity building programme various aspects like seed treatment through fungicide, Insecticides and *Rhizobium*, Package and practices, Importance of nutrients and liming and their application, post harvest technology and Residue mulching and their importance were organized in various clusters at the time of sowing. The demonstration of sowing through zero till has been done at farmer's field. The farmer's field organized at the reproductive stage of lentil crops at farmer's field.



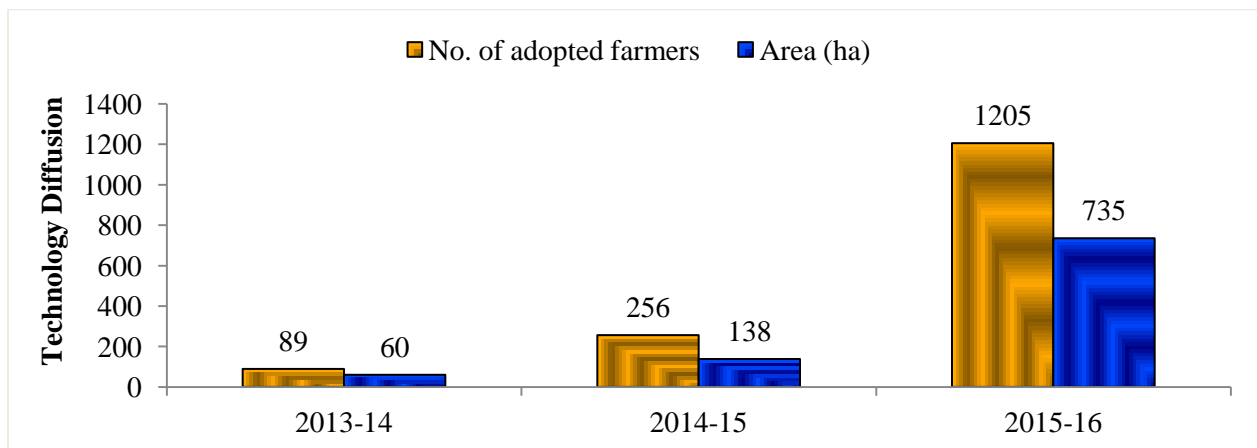
Md.Abdul Nasir, Hon'ble Minister of Agriculture and Fisheries, Govt. of Manipur, G.Shamu Kabui, Director (Agriculture) and Dr. N.Prakash, Joint Director, ICAR, Manipur centre were grace the occasion



Organized training programme in Hoakha and Ngairangbam village

Overall impact

In beginning, the farmers were very reluctant to grow the new crop, but after capacity building programme they were agree to grow. Even they have accepted to grow lentil, but due to lack of confidence they have grown as mixed cropping with pea that, if lentil will not grow they can get something from Pea. But after growing of the crops and produced they were very happy with this crop and they have understood lentil is the most suitable crops under Rice-fallow system sown under zero tillage. Farmers were also made aware about the seed treatments including with Rhizobium, importance of paddy residues for conservation agriculture. They have earned net returns from Rs 35000 to 56000/ha. They were very much thankful to the ICAR Research Complex for NEH Region, Manipur Centre, Imphal and sponsored agency ICARDA and DAC for imparting the technology which in turn raised their economic status and livelihood security as well as in improving their health condition. They are willing a heartily requested for continuing of the programme which is very much helpful for them. The diffusion of technology reported that 130% increased in second year (2014-15) and 1125% area increased in 2015-16 as compared to introduction year 2013-14.





IMPACT OF THE PROGRAMME



Demonstrated Lentil (HUL-57) under Zero tillage at Sekmai Hijam Khunou village, Thoubal and Ngairangbam village, Imphal (West)



Field day organized at Sekmai Hijam Khumou (Interaction with farmers)

Success story of Mr. Phijam Thoiba

Lentil is a new crop introduced to the farmers of the state, so it was very difficult to convince the farmers for the crop to be grown in their fields, but after giving suitable training and awareness programme they were interested to try the crop in small areas to see its profitability. Phijam Thoiba, a farmer of Sekmai Hijam Khunou village of Thoubal district cultivated the crop in 2 ha area and could produced 775 Kg



seeds/ha by which he could earned net returns Rs. 40,000/ha (Gross returns Rs 62000). After observing a huge change in his income he has developed much interest and willing to grow the crop in larger area in next season. With his income being raised up to a great extend, neighboring farmers were also influenced to cultivate the crop in their fields as they have observed that it can really help in raising their livelihood. Usually after the harvest of the paddy crop almost all the farmers left their land fallow without cultivating any crop, so it has become a very suitable crop that can give good earning.

(Source of information: ICAR Research Complex for NEH Region, Manipur Centre, Imphal-795004)