

System of Rice Intensification for Organic Rice Production- An experience of Samdrup Jongkhar Initiative

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The Samdrup Jongkhar Initiative (SJI), a community-based organization that operates under the auspices of the Lhomon Society; a registered Civil Society Organization (CSO) in Bhutan is committed to contribute towards the national vision of going fully organic. As rice is the most important and preferred cereals of the Bhutanese, SJI community decided to focus on organic rice production. The community's vision was indeed highly relevant as the country is only 50% self-sufficient in rice. Visioning was easy but putting the vision into action was a formidable challenge.

When the SJI community was in quest of technologies on organic rice production, a visiting consultant Dr. Julian Gonsalves, who is an Indian environmentalist well known for his work on Sustainable Agriculture and Rural Development, visited Samdrup Jongkhar-Bhutan for project evaluation suggested the System Rice Intensification (SRI) as a potential alternative. Thus from 2014, SJI farmers started adapting the SRI method for organic rice production.

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The International Rice Research Institute (IRRI) defines SRI as an evolving set of practices, principles, and philosophies aimed at increasing the productivity of irrigated rice by changing the management of plants, soil, water and nutrients. While SRI is proven elsewhere as one of the crop management practice to increase rice production, Bhutanese farmers are yet to adopt.



Despite the foreseen challenges of high requirement of farm labour for SRI, the SJI initiated the promotion of SRI with few farmers in Phuntshothang, Pemathang and Langchenphu with support from the Bhutan Foundation. The results from these Gewogs were very encouraging. As SRI was a new practice for the farmers, they needed regular monitoring and advice. For this reason, the SJI decided to work at

Rekhay village under Dewathang Geog. Rekhay is close to the SJI office at Dewathang.

Rekhay village has 64 households and farmers depend on agriculture and livestock for their food security and livelihood. The community has both rain fed dry land and irrigated wet land for crop cultivation. The total rice area in Rekhay village is about 76 acres but only 31 acres of land is being utilized for rice cultivation due to insufficient irrigation water.

The SRI initiative at Rekhay was started with 13 farmers in 2016. Farmers were advised to use 15 days old seedlings and transplant only one seedling as compared to their existing practice of transplanting 2-3 seedlings which are 45 days old. Farmer's transplanted



the seedling at a spacing of 25 cm between two seedlings. After transplanting farmers were asked to management water through alternate wetting and drying of the fields. Weeds, a major challenge in rice production were managed by using simple hand tools like rotary weeder.

Despite many apprehensions and challenges, the outcome of SRI was encouraging. When participatory yield assessment was done at harvest, farmers were excited to record 60% yield increase under SRI system as compared to the farmer's conventional system. Yield comparison of farmer's method and SRI are presented in Table 1. SRI did not use any chemical fertilizers and pesticides.



The most notable advantages of SRI according to Rekhay farmers are saving of rice seed as less seed is required for SRI nursery since only one seedling is used with wider spacing between plants; less water is required for rice crop as alternate wetting and drying is followed as against the normal practice of continuously ponding water in rice terraces.

Mr. Sangay Dorji, who is one of the SRI adopter of Rekhay, says that he saved 88% seed in SRI method. "Initially when single seedlings were transplanted, I was really worried because we have always been transplanting 2-3 seedlings". He requires 24 Kgs of seed to raise nursery when he practiced his conventional rice cultivation but for SRI he only needed 4 kgs. Another farmer, Aum Seldon, who is the first adopter of SRI and now in the second year of practicing SRI in Rekhay says "When I started SRI last year, I found it labor intensive but this year I don't feel it'. This could be perhaps due to the familiarization of the SRI techniques.



Currently, 13 farmers are practicing SRI at Rekhay village with funding from Bhutan Foundation. SJI plans to further up-scale SRI with more farmers for accomplishing its vision of organic rice production. It also plans to adopt SRI and promote the most preferred traditional rice varieties like Khamti that is in huge demand, commands a much higher price and fetches higher returns for the farmers. SJI is also collaborating with the Jigme Namgyel Engineering College at Dewathang for developing small tools for rice weed management through a participatory dialogue with the users. SJI has also sent SRI farmers of Rekhay village as resource persons to train farmers of Toktokha village in Chhukha and Phajogoenpa in Lauri Gewog of Samdrup

Jongkhar Dzongkhag as part of projects under Austrian Coordination Office and HELVESTAS, Bhutan. The long-term vision of SJI is to make Rekhay the first SRI and organic rice producing village in Bhutan. Further, SJI also plans to adapt SRI for upland rice.

In line with this, SJI is also incorporating SRI component in Lead Farmers training supported by Commercial Agriculture Resilient Livelihoods Enhancement Program (CARLEP) through Agriculture and Research Development Centre- Wengkhar.

Table1. Grain Yield comparison between Farmers Traditional Rice cultivation and SRI at SJI sites.

| Year | Location | Grain Yield Kg/acre | | |
|------|------------------|------------------------------|---------|------------------|
| | | Traditional Farmers Practice | SRI | % Yield Increase |
| 2015 | Pemathang | 1219.50 | 1850.00 | 52 |
| 2015 | Phuntshothang | 1080.00 | 1282.50 | 19 |
| 2016 | Rekhay/Dewathang | 910.58 | 2023.58 | 122 |
| 2017 | Rekey/Dewathang | 2023.5 | 3237.60 | 60 |

Data Source: Crop cut day observed.