



Adaptation to Drought

A Case of Sukha 3 Variety in Siraha



Since rice accounts for 50 percent of total food grains in Nepal, it is one of the important cereal crops and staple foods (D. Gauchan, et al, 2014) . The rising temperature, erratic rainfall and changing weather patterns are negatively affecting agriculture production and productivity. As two-third of rice area in Nepal is rainfed and most of them are stress-prone (drought and flood prone) where, low production and high variability occur in rice production due to uncertain weather conditions resulting from drought and/or flooding during monsoon season (Gauchan et al, 2012) . Agriculture census report of CSB 2013 found that 6% of rice field is decreased in last 10 years mostly because of the climate change impacts.

Siraha is one of the most vulnerable districts of Nepal affected by climate change. National Adaptation Programme of Action (NAPA) 2010 has also classified Siraha district in a 'very high vulnerable' category in terms of drought risk. According to the Department of Hydrology and Meteorology, monsoon rainfall in Siraha

is decreasing at an annual rate of 4.9 mm from 1971 to 2006, which means occurrence of drought is in increasing trend. This in turn has affected the agriculture and rice production. According to United Nations Food and Agriculture Organization (FAO) and the World Food Programme (WFP), 38 southern and western VDCs in Siraha were severely affected with most paddy land remaining fallow in 2006. The farmers of the district also expressed that the rice productivity is highly affected by drought and they are spending more resources in ground water pumping.

The farmers in Malhaniya Gamhariya VDC of South-West Siraha face similar challenge as in other parts of the district. They are noticeably affected by the climate change which is affecting their production and quality of crops especially paddy. Farmers report that since last 10 years they have been observing delayed rainfall. As a consequence of delayed rain, they have not been able to plant and harvest rice on time, severely impacting winter season's vegetables production. The commonly grown paddy varieties, namely Lalsari, Basmati and Kutria are less tolerant to drought. Farmers had no choice but to leave their land fallow or even if they planted rice on limited rainfall, the production was suppressed directly impacting their food security and livelihood at large.

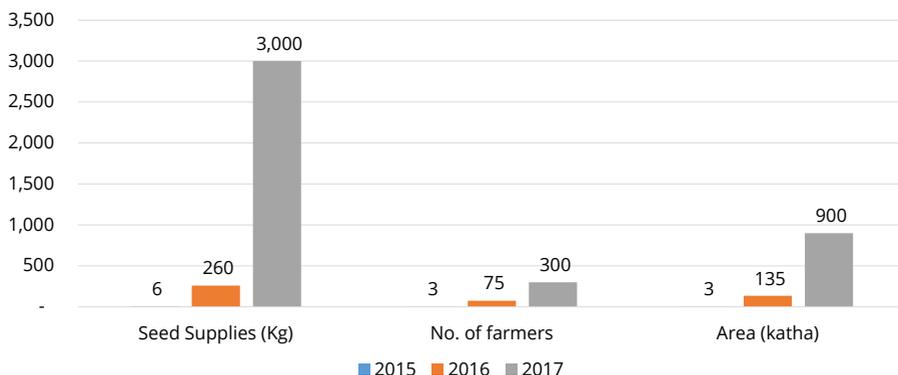
In order to address the plight of the drought affected farmers of Siraha district, the CARE Nepal funded Right to Food (Rtf) project implemented by LI-BIRD in coordination with local partner National Farmers' Group Federation (NFGF) conducted participatory variety selection of six recently released rice varieties on-farm and identified the drought tolerance paddy variety, i.e. Sukha 3 for the farmers of Siraha. Though the Nepal Agricultural Research Council (NARC) released varieties of Sukha 1 to 6 are drought tolerant, Sukha 3 was the most preferred by the farmers for drought tolerance, early maturity, disease resistant and grain quality traits. The variety was released by NARC in 2011 as drought tolerant variety and is resistant to blast and bacterial leaf blight.

In 2015, LI-BIRD through NFGF, provided 6 kg of Sukha 3 variety to Mr. Raj Lal Mahato (Kusbaha), Mr. Ayodhi Mahato (Kusbaha) and Mr. Birendra Prasad Singh (Kusbaha) of Malhaniya Gamhariya VDC. Mr. Mahato and 24 other farmers of his community are the members of Gauri Shankar Mishrit Krishak Samuha, a farmers' group formed by the NFGF in 2014. The Federation has supported them in conducting their group activities regularly and also identifying their challenges and seeking for solution by linking with relevant service providers through their policy advocacy work. The farmers had shared their challenges to grow rice with NFGF which was then relayed to LI-BIRD.

In the following year, NFGF affiliated farmer's group played a major role in further spread of Sukha 3 because of farmers preferring and requesting this variety due to its drought adaptive characteristics. Thanks to constant lobbying from NFGF affiliated farmer's groups, DADO in Siraha provided 140 kg of seeds to 50 farmers in the VDC (now, Ward 13 of Siraha Municipality). Meanwhile, 25 farmers also collected 120 kgs of seeds through farmers to farmers exchange. With this access to seeds, 75 farmers were able to harvest paddy in 4.6 ha of land. In 2017, Sukha 3 was rapidly spread across 300 farmers of the VDC who were able to receive 2 ton of seeds through farmer to farmer exchange resulting in the cultivation of Sukha 3 in 30 ha of land.

Recalling the first year of growing Sukha 3, Mr. Ayodhi Mahato said, "We very much prefer this variety. It relatively did not get disease and so we didn't have to use pesticides. Most importantly, we needed very

Expansion of paddy variety Sukha 3 in Malhaniya Ghamaria VDC



little water for growing it. At our harsh condition, this was really a good variety for us. We could harvest it within Kartik [October-November] [115 days] whereas other varieties could only be harvested till Mangsir [November-December] [135 days].” The late harvest of previously used varieties resulted in them not being able to grow vegetables in time. But now, thanks to Sukha 3, these farmers have grown potatoes, bottle gourd, pumpkin, sponge gourd and onion in the same land where rice was grown. Sukha 3 also produced 150-200 kg per katha instead of maximum 100 kg per katha of earlier grown varieties. Many of the neighbours had come to observe the fields of the three farmers and inquired and taken seeds of the rice with them. Now, Sukha 3 variety is grown by the members of their group as well other eight farmers’ group of Malhaniya Ghamaria with 30 Ha land being covered with this variety. Because of its traits, they demanded the seed of this variety with DADO instead of other varieties. With word of mouth, it is growing popular in Siraha as hot cake with approximately 300 households already growing it.

Since the farmers in Malhaniya have increased the area of vegetable cultivation after cultivating Sukha 3, each farmer are cultivating vegetables at 6 katha land in an average when before they cultivated vegetables at mere 1-2 katha land. The DADO visited the area in 2015 and have declared the area as ‘pocket area’ for vegetable cultivation further encouraging the farmers to produce vegetables, earning about Rs. 70,000 per year. The farmers in Malhaniya want to further increase the production and diversify crops year round. However, irrigation has been a major challenge for them to cultivate vegetables. With proper irrigation facilities, they will be able to enhance further their production of vegetables and increase their income.

Since the farmers are depending on farmers to farmers exchange for seed, there is a realization of need of quality seed in their locality. For that, it is necessary to build the capacity of farmers in seed production and establish a formal seed business institution like Community Seed Bank (CSB) so that the farmers can get access to quality seeds of Sukha 3, and further improve their production even in such harsh climate stress condition.

Reference

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