

The Challenges and Opportunities of Crop Establishment in the Char Lands of Northern Bangladesh

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Introduction

Bangladesh has about one million hectare of char lands, which are formed due to accretion of 30% of about 2.5 billion of Himalayan sediments flowing through the mighty rivers Brahmaputra-Jamuna, Padma and Meghna. There are 222 chars with 23,000 ha cultivated land in the northern District Kurigram. The crop production of Kurigram is vulnerable to frequent natural hazards due to its unique eco-geography. The soils are mostly sandy with poor water holding capacity and poor nutrient status. Almost every year the chars are inundated by flood or flash flood. The floodwater recedes in a week or two or even more causing much damage of crops. The farmers are not well trained with the modern technologies. Water shortage also threatens crop production especially in pre-monsoon cropping season. This study was initiated involving 1000 farmers of 8 chars of 3 Upazillas of Kurigram District to understand the challenges of establishing mungbean and short duration summer aman rice, and also to find solutions to overcome the crop production problems prevailed therein due to serious water shortage and flood as well.

Materials and Methods

One thousands farmers having 1000 bighas (7.5 bighas= one hectare) of Dharla and Dudhkumar River chars of three Upazillas of Kurigram district, namely Kurigram Sadar, Nageshwari and Bhurungamari were selected. Mungbean varieties, BARI mug 6 and BUMug 4, and rice varieties BRRIdhan 56 and BUdhan 1 were grown with standard crop management practices.

Results and Discussion

Severe drought and high temperature damaged mungbean in most of the sites. The average rainfall in April 2014 was only 11 mm compared to that of 72 mm in 2013 and 211 mm in 2012 (Fig.1). The average maximum temperature in April 2014 was 37°C compared to 35°C in 2013 and 31°C in 2012, respectively (Fig. 2). The air, soil surface and root zone temperatures, measured on 24-25 April 2014, were 41, 49 and 33 °C at BSMRAU, while 39, 59 and 33°C at Char Rasulpur (Fig. 3). The extreme high temperature at the soil surface burnt the stem base and killed the plants. However, the damage was low in the chars of Bhurungamari presumably due to having older chars vis a vis higher organic matter content in soils. Only 30% farmers could harvest the mungbean with an extent of 250-700 kg/ha yield as against 1500 kg/ha in 2012. Flood appeared in the mid-August and lasted up to 24 days. The duration of flood was shorter in Bhurungamari than that in Kurigram Sadar and Nageshwary due to its different eco-geography. The plants which were established earlier and began tillering were less affected than the plants faced flood before the establishment. The maturity of flood affected plants was delayed by 7-10 days. Rice in about 290 bighas in Bhurungamari, 80 bighas in Nageshwary and 140 bighas in Kurigram Sadar could be harvested. The extent of rice yield was 2.5-3.8 t/ha (Table 1) as against 4.5 t/ha in 2013.

Conclusion

Mungbean and short duration aman rice were new in the concerned chars, and the farmers experienced to manage their crops under difficult situations, especially under drought and flood conditions. With short duration aman rice and mungbean char farmers can grow three crops in a year.

Table 1. Yield of mungbean and rice in ten chars of three Upazillas of Kurigram district, Bangladesh in 2014

Upazilla and Chars	Mungbean			Rice			Yield (t/ha)	
	Planted (Bigha)*	Harvested (Bigha)	% drought damage	Planted (Bigha)	Harvested (Bigha)	% flood damage	Mungbean	Rice
Kurigram sadar								
Char Nidhiram	100	30	70	100	30	70	0.30	3.0
Char Krishnapur	100	25	75	100	10	90	0.25	2.5
Char Rasulpur	200	90	55	200	100	50	0.70	3.2
Nageshwary								
Char Berubari	100	30	70	100	30	70	0.25	2.5
Natun char	100	30	70	100	50	50	0.45	3.4
Bhurungamari								
Char Islampur	200	150	25	200	170	15	0.70	3.8
Pikedangar char	100	40	60	100	60	40	0.45	3.8
Sit Pikerchora	100	45	55	100	60	40	0.35	3.3

*: 7.5 bighas= 1 hectare

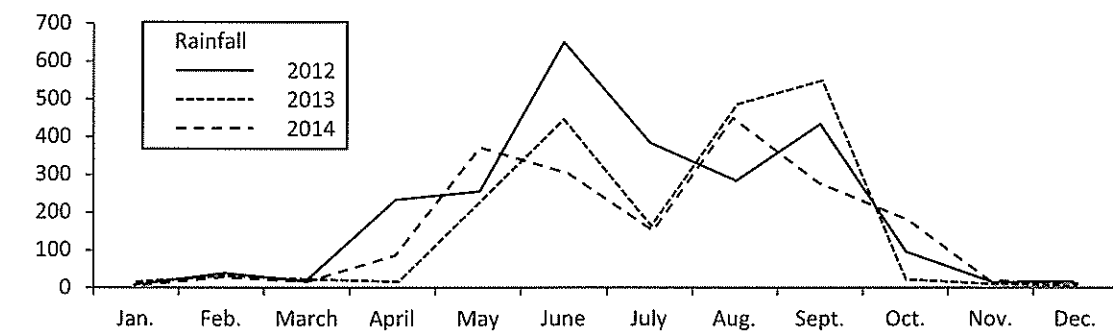


Fig. 1. Monthly average rainfall in Kurigram

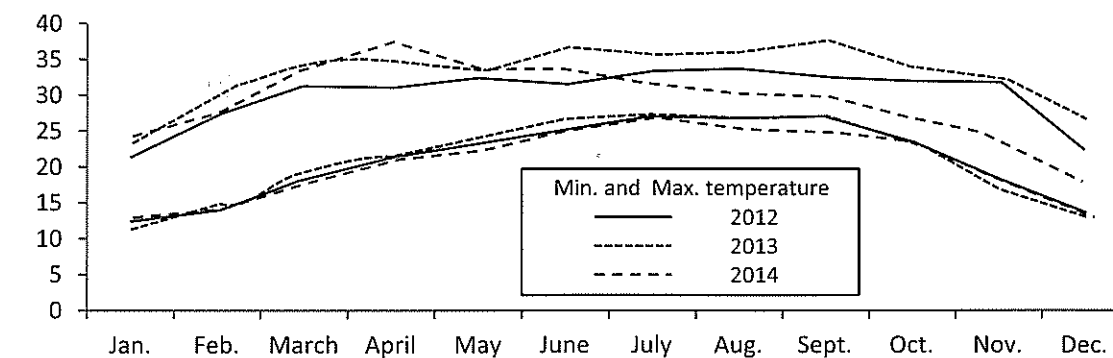


Fig. 2. Monthly average min. and max. temperatures

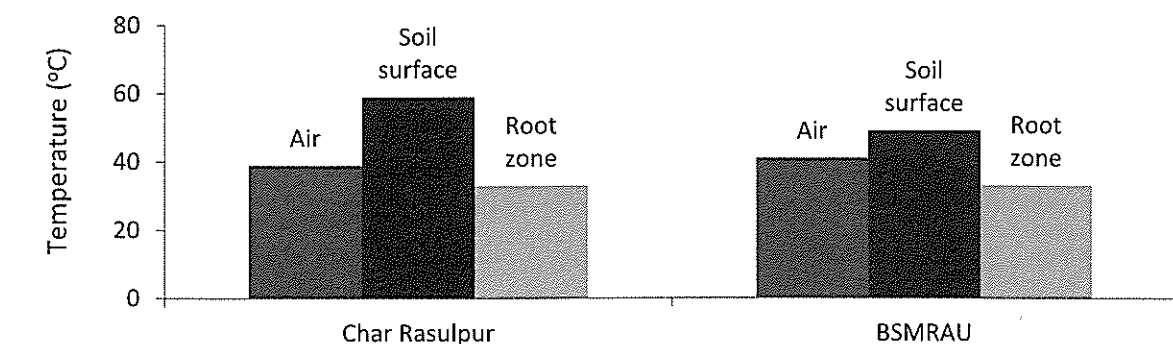


Fig. 3. Air, soil surface and root zone temperatures on 24 April'14 at Char Rasulpur and BSMRAU

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