Collection of Rice Germplasm from Barak Valley, Assam

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Rice (Oryza sativa) is the staple food of the people of North-Eastern region of India. Various traditional as well as improved varieties have been cultivated by different tribes and communities. Since, there is no systematic work available on the diversity of rice and their conservation in Barak Valley (i.e. the three districts of Assam viz.-Cachar, Hailakandi and Karimganj). It was planned to carry out an investigation to record the diversity of rice and their conservation. Since time immemorial local people of Barak Valley mainly depend on rice crop of diverse type. Hence, this region has been known for the higher paddy germplasm (Das et al. 1981, 1983). Due to socio-economic compulsion, unfavourable agroclimatic conditions *i.e.* high rainfall, sometime drought, warm, humid climate, frequent floods-water logging condition and with the improvement in the Green Revolution, farmers of Barak Valley are introducing more of the hybrid varieties which are resistant to various adverse climatic conditions, as well as to diseases and thus putting pressure on the cultivation of the traditional varieties. However, still traditional varieties for their various qualities like scented, glutinous, high yield potentiality, profuse tillering, flood resistant, straw quality, fitness of grain etc. are in cultivation. These traditional varieties may serve as valuable material for future breeding work, as these are the source of many genetic information.

Cachar, Karimganj and Hailakandi districts of South Assam constitute Barak Valley with a geographical area of about 7000 sq km and a population of about 30 lakhs. Among the population of Barak Valley majority of them are Bengali (Hindu and Muslim), alongwith Manipuri, Kuki, Naga, Barman, Dimasa, Mizo, Riang, Hmar, Vaipai and Tea-garden community.

Geographically, the Barak Valley as a whole is younger than the Brahmaputra Valley and it is surrounded by North-Cachar Hills and Jaintia Hills in the North, by the hills of Manipur in the East, by Mizoram in the South and by Tripura and Sylhet district of Bangladesh in the West. The area has an altitude of 26-27 m above MSL and falls under 24°8' and 25°8' N latitude and 92°15' and 93°15' E longitude. The districts consist of small hillocks, plain areas, bheels and extreme low lying flood prone areas and the river Barak flows across the three districts and has a length of nearly 74.564 km (120 miles). Barak Valley is entirely alluvial in origin and is composed of pebbles, sand, silt, clay and sometimes a mixture of sand and clay containing decomposed matter. The climate of Barak Valley is Tropical humid type. The annual average rainfall of the valley is 670.9 mm. Rainfall increases from March to September with apprehension of flood but December and January months are generally dry. The valley experiences a humid weather with frequent rainfall. The annual range of temperature ranged from 8.5°C-36.2°C. The relative humidity remains high throughout the year in the morning hours, although it may drop to low during the afternoon hours in the months of February and April. The soil of the area is a mixture of alluvial, sandy-loam, muddy loam, loam, clay, superimposed upon stones, grands and conglomerates. The muddy soil rich in humus content is mostly confined to river bank. The tillah lands of many areas is mostly lateric (reddish colour) and the pH of the soil ranges from 4.5 to 8.5.

The collection and evaluation of traditional Ahu Sali and Boro Rice germplasms of Barak Valley were done by block wise categorization during the specific growing season of each variety through regular visits in the farmers' field (Table1 and Table 2). Interaction with old men/women farmers of the villages to get information on the cultivation practice, yield and utility were also carried out.

Specific growing seasons of rices in Barak Valley for Ahu-rices is May-October, Sali-rice is June-December and Boro-rice is from November to May. During collection and evaluation and interaction with farmers the following information was collected for

Table	1.	Details	of	the	blocks	of	Barak	Valley	for	study
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Cachar	Karimganj	Hailakandi
Silchar-01	North Karimganj–16	Hailakandi–23
Sonai-02	South Karimganj-17	South-Hailakandi-24
Salchapra-03	Patherkandi-18	Algapur–25
Norsingpur-04	Ramkrishnanagar-19	Lala-26
Palong ghat-05	Badarpur-20	Katlichera–27
Udharbond-06	Louirpua-21	
Tapang–07	Durlavchera-22	
Borjalenga-08		
Banskandi-09		
Binnakandi-10		
Borkhola-11		
Katigora-12		
Kalain-13		
Lakhipur-14		
Rajabazar-15		

The following blocks of Barak Valley are under study

The numerical values as suffix are the code of blocks

Table	2.	Details	of	the	districts	for	collection	of	rice	germpl	asm
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Cachar Distt.	Karimganj Distt.	Hailakandi Distt.
Traditional Ahu-Rice		
Germplasm collected in 2000:		
01, 02, 04, 09.		
Traditional Sali-Rice	Traditional Sali-Rice Germplasm	Traditional Sali-Rice Germplasm
Germplasm collected in	collected in 2000-2001:	collected in 2000-2001:
2000-2001:		
01, 02, 04, 05,	16, 17, 20.	23, 24, 25.
06, 09, 11.		
Traditional Boro-Rice	Traditional Boro-Rice	Traditional Boro-Rice
Germplasm collected in 2001:	Germplasm collected in 2001:	Germplasm collected in 2001:
01, 02, 03, 10, 11, 14.	17, 20.	23, 26.

The numerical values are the codes of the blocks

each specific variety (a) duration of span *i.e.* seed to seed duration (day), (b) average plant height (cm), (c) average yield (kg/ha), (d) average flag leaf length and width (cm), (e) flag leaf angle (°) (f) panicle length (cm), (g) no. of grains/panicle, (h) the weight of 100 grains, (i) seed characters *i.e.* length and width of grain (mm); length width ratio; colour of seed kernel, outer glume, inner glume, apiculus tip, grain, endosperm and pericarp colour, seeds awn character, flavour (scent) and glutinous quality of the grain (data not presented). After conducting a survey of different blocks of Barak Valley 8, 81, and 26 local varieties of Ahu, Sali and Boro-Rice were collected, respectively (Table 3).

Results reveal that there is a great variation within the different local, traditional rice varieties in respect of their yield, duration of maturity and other qualities like height, flood resistance, drought resistance, seed quality *etc.* This indicates that a very rich source of traditional rice germplasm exists in Barak Valley and it needs a thorough investigation for their future improvement, breeding and ultimately conservation.

Ahu varieties (8)	Sali varieties (81)	Boro varieties (26)				
Ahu berocin,	Agirghalberorein, Agnisail, Amuhail, Asra terabail, Badaya,	Agrical, Agnisail, Aubera, Auhuga,				
Birashi,	Badshabhug, Baluchoriasra, Bangonbitchi, Bethi, Bherapowa	Atsathi, Balambarua, Basphul,				
Golkimurali,	long awned, Bherapowa short awned, Bherapowa Finegrain,	Baruaberoein, Bangonbitchi,				
Kachal,	Bodosoyamora, Bothuasra, Borhail, Chabrasail, Chatoki, Chandmoni,	Birashi, Chatoki, Chocklat,				
Kartica,	Chandramoni, Damdiberoein, Dandaberocin, Doloo berocin,	Gopalari, Gorsibarua, Gosabarua,				
Mayamoti,	Doomasail, Dolmadhi, Dumay, Godhasail, Eri, Gondhiberocin, Guaroi,	Gusibarua, Jamilal, Kaiya, Kewla,				
Nagamurali,	Harinarayan, Hasbadalasra and Insanberocin, Jhumberoein red, White,	Koibarua, Lenzabarua, Lahai,				
Sunamuki	Jhumsoyamora, Joria, Juthaberoein, Kachalo, Kaizuri, Kakhiberoein,	Nimoria, Ratha, Sikoibarua, Tufa				
43	Kakirjaliberoein, Kalakura asra, Kalakura asra awned, Kalimakuri,					
	Kalimuki, Kalizera, Kamrang, Koimurali, Khetrasail, Lakhiasra, Lalberoein,					
	Lalpani, Lalsheet, Latha, Lathiberoein, Latma, Laoti, Lanza, Majlasoyamora,					
	Madhumala, Moinasail, Mokhajurya, Moniram, Monthathoi, Mouberoein,					
	Mulahail, Murali, Munshimurali, Mydhani, Naga beroein, Nagasail,					
	Painoili, Pakhiberoein, Paniberoein, Paninoliasra, Parichakasra awnless and					
	awned, Puthiberoein Shabail, Sunasrs, Terabail.					

Table 3. Local and traditional rice germplasm collected from Barak Valley

References

Das GR, T Ahmed, HC Bhattacharaya and BC Borthakur (1981) Evaluation of rice germplasm I. Characterization and evaluation of ahu rice for important quantitative characters in relation to yield. J. Res. Assam Agric Univ. 2: 156–164. Das GR, T Ahmed, HC Bhattacharaya and BC Borthakur (1983)
Evaluation of rice germplasm II Characterization and evaluation of traditional sali rice. J. Res. Assam Agric. Univ. 4: 92-97.

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Collection and Evaluation of Kartoli (Momordica dioica Roxb. ex. Willd.)

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Kartoli, family Cucurbitaceae, genus Momordica is also known as spine gourd, sweet gourd, kankad and kheksa. Sixty species are reported worldwide of which 7 species occur in India. Kartoli is dioecious in nature and has a wide range of adaptability. It is a rich source of protein and minerals. It possesses several medicinal and curative properties like decoction of leaves reduces fever; tuberous roots help in relieving headache, sweating, stone formation, migraine while fruit is quite helpful in controlling diabetes and blood pressure. It contains aliphatic compounds (Ali and Srivastava, 1998). This prized vegetable has its importance mainly in the areas of their occurrence due to climatic change, physiographic diversity and adaptation. In the Indian sub-continent, it has tremendous scope of acclimatization. It has not only contributed towards food but also is a rich wild gene pool for several important traits. With drastic increase in the world population and

fast depletion of natural resources, there is a great need to explore newer sources of vegetables and diversity in the vegetable cultivation to meet the present days' demand.

Kartoli is mainly grown in Orissa, Bihar and West Bengal as a crop and kitchen garden plant but occurs as wild in Punjab, Uttar Pradesh, Rajasthan, Madhya Pradesh, Kerala and Maharashtra under custody of tribals. Kartoli shows enormous diversity in shape, size of the leaf, fruit shape and colour which occurs in semidomesticated and wild types in local pockets and such types have been selected by native people as a part of their vegetable requirement. Its commercial cultivation is meagre due to unavailability of improved varieties, difficulties in propagation by seeds due to dormancy, low multiplication rate of tubers, dormancy of tubers and unpredictable sex ratio in seedling progeny (Ali *et al.* 1991). An attempt was made to collect and evaluate locally available genetic diversity of Kartoli germplasm.

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