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Short Communication

COLLECTING RICE GERMPLASM IN BIHAR

Arun Gupta[1] and J.B. Tomar

National Bureau of Plant Genetic Resources
Regional Station, Kilburn Colony, Hinoo, Ranchi - 834 002 (Bihar)

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Rice in Bihar is a staple food and cultivated in different ecosystems. The genetic erosion to natural plant genetic resources in rainfed ecosystem is minimal whereas landraces/primitive cultivars in irrigated ecosystem have been wiped out and replaced by the modern semi-dwarf high yielding varieties of rice. To avoid further genetic erosion, explorations were undertaken to collect in the parts of Bihar and adjoining areas. The rice germplasm was also collected from these areas alongwith other crop specific explorations. Each landrace in rice was represented by its vernacular name and was distinguishable from other landraces. It was observed during the explorations that sometimes two different landraces had the same varnacular name but were phenotypically different. Till date, a total of 452 seed samples of paddy were collected from 195 sites of Bihar but much of the areas still remain to be explored and many more genotypes are to be collected.

The genetic diversity of rice (*Oryza sativa* L.) has been shaped by its early place in human nutrition, its subsequent dispersal to the world most geographically and culturally diverse region from Nepal to Vietnam (Chang, 1976). Rice feeds the people more than any other crop in the world. Rice is grown in about 90 countries spread over six continents and has diverse agroclimatic situations ranging from upland to maximum water depth of six meters in India especially in Bihar.

In Bihar, rice is mainly cultivated under four ecosystems viz., upland, rainfed lowland, irrigated and deepwater. In rainfed areas, indigenous landraces still occur and are adapted to a particular type of ecosystem in the course of evolution. Modern rice varieties have very little impact in rainfed areas owing to their nonadaptability to such environments. Hence, genetic erosion in rainfed

[1] Present address : Vivekanand Parvatiya Krishi Anusandhan Shala, Almora (Uttar Pradesh)

ecosystem is minimum. The valuable genepool of rainfed areas could be useful source for resistance/tolerance to biotic and abiotic stresses prevalent in Bihar. According to Paroda and Malik (1990), about 50,000 landraces of rice are expected to exist in India. Considering the national and state collections together, a total of nearly 66,000 cultivars have so far been collected (Sharma and Hore, 1990) of which about 50 per cent may be duplicates. Thus, about 17,000 landraces of rice still remains to be collected in the country including from some areas of Bihar which show tremendous genetic variability in the form of landraces. In view of this, exploration and collection programmes were undertaken in Bihar.

Germplasm collection

Eight explorations (1988 to 1993) (Table 1) were conducted to collect the germplasm of paddy and its wild relatives from Bihar. During 1992, a crop-specific mission for rice was carried out jointly by NBPGR and IRRI to collect the wild relatives of *Oryza sativa*. Each landrace in rice is represented by its vernacular name and easily distinguishable from other landrace. These landraces mostly had tall plant type, lax panicles and pigmentation in different plant parts but had resistance tolerance to the different diseases and pests. The important landraces collected from each district are presented in this paper.

A total of 452 landraces of rice were collected from Bihar. Each landrace was given Accession number (NIC No.) by NBPGR and classified districtwise.

Table 1 : Details of areas explored

Period	Areas explored	No. of sites explored	No. of sample collected
October 1988	Ranchi, Vaishali and Hazaribagh	3	4
December 1989	Palamau, Ranchi, Hazaribagh, Gaya, Varanasi and Aurangabad	33	86
Dec 89-Jan 90	Lohardaga, Palamau, Gumla, Ranchi, Singhbhum and Hazaribagh	58	164
Nov.-Dec. 1990	Bhagalpur, Katihar, Purnia, Madhepura and Saharsa	38	110
Sept. - Oct. 1991	Ranchi, Santhal Pargana, Dumka, Sahibganj, Godda, Giridih, Gumla, Singhbhum and Palamau	49	68
Sept. - Oct. 1993	Ranchi, Hazaribagh, Nalanda, Muzaffarpur, Darbhanga	14	20

Ranchi - A total of 94 accessions were collected from the farmers fields. These are **Chhotagora, Badagora, Dhusari, Hathipanger, Rosedhan, Thakurprasad, Ciabir sall, Samleig, Comlei, Sikki, Kalamdanimotta, Kalamdani lal, Barkadhan, Chhotadhan, Jasar, Jaidhan, Dahiya, RaniKajal, Karhani, Serikell, Damur, Tilasar, Doriah, Chota Dahiya, Bara Dahiya, Shyamjeera, Laxmibilai, Kalamdani, Bhogni, Aujani, Pangerbhag, Nata, Bhudhan, Charak, Tulsimohan, Gopalbhog, Laldhan, Blackgora, Kanau, Sathi, Goradhan, Locura, Dhanigora, Tandlaka, Blackgora, Karhani, Browngora, Konnai, Dhanigora, Kanigora, Charkagora, Dhudhigora, Chaingora, Bachakarmi and Asanloiya.**

Gaya - From the 4 villages of the district, 6 accessions were collected which include **Shermar, 458, Ambagoudi, Dudhibilas.**

Hazaribagh - Fifty one accessions collected included **Deiou, Laldhan, Harkolia, Lakhansal, Dhusari, Lakhanpal, Jonga, Pathri, Syamjeera, Devata bhog, Kairasal, Balbhog, Oudhkari, Ranikajal, Chandrakanda, Kalamalaui, Jonga, Beshphoo, Hastkalma, Chandragahi, Rasgol, Karikakochi, Dudhkalma, Nardha, Dutwa, Jhuna, Bangla, Raigoli, Askalma, Karanga, Bhura, Karanga kala, Laldulara, Badrash, Sidwa, Ketka, Shyam jeera, Nandhi, Jhingasar, Kardhani, Jonga, Kalam dhan, Satal chini, Gora dhan, Browngora, Karhani dhan, Chhotagora and Badka gora.**

Palamau - Forty six accessions were collected which include **Chaingora, Baberi dhan, Kabirwa, Kawari, Pandi, Lalka, Tilasar, Karhani, Kalamdani, Karhani(Red), Ceajpatti, Jhingasaar, Haldigudi, Tasnamarba, Jarhan, Bhatuasain, Hardiphool, Jhungisaal, kalagora, Danigora, China gora, Minustwo, Sonachur, Lohasingh, Kalajeera, Bhurakabeer, Basfool, Badshah Bhog** and **Shyamjeera.**

Lohardaga - **Dehia, Bhangani, Gora dhan, Kalamdhani, Katuki, Thosar, Tamriya** and **Dhani.**

Gumla - **Bhajani, Kabhiphool, Baccha, Kalamdani, Dusari, Karmusain, Laldhan, Gordhan, Biyagora, Ponnaigora, Karangagora, Choottadhan** and **Dudhi gora.**

Singhbhum - Ninety four accessions collected included **Bhogna, Lakhansali, Dudhkalma, Gayaballi, Kalabhagha, Laloughisari, Birada, Ramsaal, Gahudhah, Salldhan, Laldhan, Sitasall, Satbhuiya, Goyan, Juguri, Budadhan, Basmati, Jarli, Satboil, Kakri, Rajamai, Nanika, Marto, Bhogna, Bhari, Gora, Gora, Malti, Halka, Bhogna, Bara Bhogha, Tabur Rai, Ajon dholi, Asbhonga, Jhingersall, Kasiphool, Baramalta, Billmalta, Deepti sall, Dhoba Bhogna, Billdhan, Dudhmalai, Manjhidhan, Assamloya, Bibisall, Goya balli, Radhakanka, Dhanijeera, Sonakate, Azam dulla, Bilaity Bhonga, Manik kalam, Dudhsar, Malti, Chingrichopa, Maghi, Patny, Samunderdhan, Chanderkanti,**

Bheemsall, Makerkand, Jhingasall, Bhungi (Red), Malta, Motta Phusani, Thuppisel, Sutalsall, Bhomar malli, Surumalli, Badna mal Kalam Kadhi, Kashiphool, Nahnhigora, Alsangagora and **Chigurigora.**

Bhagalpur - **Singhara, Baraber** and **Panikala.**

Katihar - **Karkaamon, Kajargora, Bhatni, Pansera, Khera dhan, Chanan chur, Kari kamod, Kaniyal, Panjhali, Bhorwa, Kusumsar, Paghli, Amachhor, Kanak jeera, 436, Basphool, Salmot, Masuri yaman, Kamod, Barogar, Bhatni, Pansera, Uttwa, Risal dhan, Kerma, Kejargur, 26 no., Katiksar, Dama Kanjal, Ballore, Singhra, Ajgara, Changul, Sugapankhi, Sonakari, Deba, Bhatindi, Amad** and **Dossa.**

Purnia - **Vishwamania, Bhorwa, Desi Basmati, Bhattu, Panjhali, Kajargaur, Bhatingri, Sukhapankhi, Jaswah, Malida, Lalsateria, Gahuva, Ramdulari, Bolkianazir, Dhussehera, Lalsir, Nazir, Shukla, Ratnananjuri, Basmati, Khera,** 26 no., **Gotta, Bhesa lottan, Motta, Kalam, Bachi, Simda, Purndha, Aggadda, Sanjeera, Sonapuri, Hadiford, Mahim Kerma, Malbhagia, Gakhulsar, Balam, Parva pankhi, Hathsaal, Marwadangi, Mausera, Lohagarh, Aman, Chamanchur, Harda, Bacchi, Pansera, Beshalotan, Rajwa, Kasandhan, Jayaaghani** and **Sureba.**

Madhepura - **Chanachur, Bakka, Pakher, Satkarma, Sobha, Babbe, Maheshlot** and **Manipuri.**

Dumka - **Sania, Karhani, Savania, Lungibhai** and **Charkhadhan.**

Godda - Three accessions included **Lalka bhadai, Asna bhadai** and **Bodhdu.**

Giridih - Three accessions were **Bhadai dhan, Sathi** and **Bhadoia.**

Darbhanga - From one village, three accession were collected. These were 1626, **Lalka** and **Chunadhatli.**

Sahibganj - Two accessions were collected.

Besides these, **Bhadvi,** 458, **Sathidhan, Hadifore, Sawan dhan** were also collected from district Munger, Nalanda, Muzzaffarpur, Saharsa, Santhal Pargana, respectively.

The maturity period of rice landraces varies from 60 days (**Sathi**) to more than 250 days (Photosensitive, deep water rices). Based on maturity period, these landraces were classified as very early (upto 100 days), early (101 to 115 days), medium (116 to 150 days) and late maturing types (more than 150 days). It is extremely difficult to collect all the landraces at a time because of varied maturity period. All the available landraces of rice could not be collected and most of the areas in Bihar remained unexplored. The areas thoroughly explored included north eastern parts of Bihar. More explorations at different time intervals are required to be taken to collect the existing landraces especially in central and western Bihar. The explorations

for medium to late maturing landraces are also to be taken up in the plateau region. Further, a systematic evaluation is needed to characterize these germplasm collections to differentiate between accessions with identical names; identifying accessions having the desired characteristics like resistance/tolerance to the biotic and abiotic factors and to develop the interrelationships between or among traits and between geographic groups of cultivars for an efficient use of germplasm on crop improvement programmes.

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