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Evaluation of local land races for yield and component traits in rice (*Oryza sativa* L.) suited to eastern zone of Uttar Pradesh

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Abstract
The present investigation consist of 18 local land races rice genotypes provided from local farmers of Patna district. The genotypes were evaluated during Kharif 2012. The exeperinments was conducted in randomized block design having three replications. The data were recorded on 13 characters to study the analysis of variance, heritability, genetic.

Advance, coefficient of variation based on the mean performance genotype 'SANGAM' was identified as best genotypes for seed yield per hill; High phenotypic and genotypic coefficient of variation was observed for number of fillers per plant, flag leaf width number of panicles per hill, flag leaf length and seed yield per plant, suggesting the possibility of yield improvement through selection for these characters. High heritability coupled with genetic advance was observed for days to 50% flowering, number of panicles per hill, flag leaf width, harvest index flag leaf width, harvest index flag leaf length indicating that these characters predominantly governed by additive gene action and these characters may be helpful for yield improvement in rice.

Land races harbor a great genetic potential for race improvement. Whereas genetic varability (GCV and PCV) helps to choose the potential genotypes. Heritability along with genetic advance would be move useful tool in predicting the resultant effect from selection of the best genotypes for yield and some of its components in rice.

Keywords: Evaluation of local land, component traits in rice, Uttar Pradesh

Introduction
The genus Oryza originated at least 130 million years ago and spread as a wild grass in Gondwanaland, the super continent that eventually broke up to become Asia, Africa, Australia and Antarctica. India is the second largest rice producing country in the world after China.Indica are grown throughout the tropical and subtropical and region japonica varieties are grown throughout the temperature zone. Traditional land races are important reservoirs of valuable traits and need special attention for future conservation. It posses valuable traits viz medicinal properties, aroma, tolerance to drought submergence and other special uses. Land races harbor a great genetic potential for race improvement. Unlike high yielding races land races maintained by farmers are endowed with tremendous genetic variability as they are not subjected to subtle selection over a long period of time in rice breeding a large number of local germplasm including wild varieties have served are reservoirs for many unique genes. The protection and preservation of local rice varieties need to discuss phenomenon of terminal extinction as well as strategies policies for the conservation and assessment of genetic diversity. Need for new gene and genetic diversity in crop species is essential to sustained levels of high productive rice.

The study of genetic variability in any crop would help in the genetic improvement of yield and desirable characters. It will facilitate the identification of proper genotype for a particular agro-genotype for a particular agro-climate zone. Whereas genetic variability (GCV and PCV) helps to choose the potential genotypes. The use of correlation coefficient is to eastablish the extent of association between yield and yield component and other character, which are having decisive role in influencing the yield. The success of breeding programme depends upon the quantum of genetic variability available for exploitation and extent to which the desirable characters are heritable. The existence of variability is essential for improving of genetic material. Selection is also effective when there is significant amount of genetic variability.

In view of the gap, the present study 'Evaluation of Local Land Races for Yield and Component Traits in Rice (*Oryza sativa* L.)

Suited to Eastern Zone of Uttar Pradesh was undertake to investigate the genetic variability, heritability, genetic advance and association between grain yield and yield releated traits as a basic for selection of high yeild rice genotypes in Aerobics system, in a set of set 30 rice genotypes with the following objectives.

Evaluation of local land races for yield and yield attributing characters.

1. To access genetic variability among 18 local land races.
2. Identification of early mature rice genotypes suited to Allahabad agro-climatic condition.

Material and Method

Eighteen genotypes were grown in Randomized block design Kharif 2012.the experinment was conducted at the field experinments was conducted at the field experimentation centre, department of Genetics and plant breeding, Sam Higginbottom Institute of Agriculture, technology and science deemed university, Allahabad. Each entry was sown in 5 rows plot of 5m length with 20cm row spacing. Five plants from each replication were selected at random and observation were recorded on 13 characters viz, days to 50% flowering, plant height (cm), number of tillers per plant, panicles per plant, panicle length (cm), number of spikelets per panicles, flag leaf length (cm) flag leaf width (cm), days to maturity, biological yield per plant (g), seed yield per test weight (g) was computed on plot basis. The phenotype, genotypic coefficient of variability (PCV, GCV), broad sense heritability, and genetic advance as % of mean at 5% selection intensity where computed by using formulae suggested by Johnson et.al (1995).

Results and Discussion

The analysis of variance for different characters was revealed significant differences among all the 13 characters studied indicating the presence of considerable amount of variability. Days to 50% flowering varied from 74.00 (panna manshuri) to 89.00(NDR-359). Plant height varied from 132.00cm (NDR-359) to 134.73cm (Rupali). Flag leaf length varied from 30.86cm (sangam) to 40.33cm (chandan) while flag leaf width varied from 1.05cm (sangam) to 1.45cm (chandan). Number of tillers per plant varied from 6.86

(Rajendra manshuri) to 9.53 (chandan),panicle length varied from 24.00cm(Narendra) to 25.46cm(Ganga kaveri). Days to maturity varied from 104.33(Rajendra manshuri) to 106.33(panna maushuri).Number of spikelet's per panicle varies from 227.33cm (Krishna) to 233.33cm (NDR-359). Number of panicles per hill varied from 7.30cm (Rupali) to 10.30cm (Sangam).Biological yield per hill (g) varied from 30.47g (Lal Sita) to 34.17g (Rupali).

Harvest index varied from 30.70 (Ganga Kaveri) to 38.44 (Lal Sita). Mean value of test weight (g) varied from 20.60g (Kranti) to 23.86g (NDR-359). Seed yield per plant varied from 10.31g (Ganga Kaveri) to 12.72g (Basmati).

Table 1: Range, Mean, Phenotypic and Genotypic Coefficient of Variation (PCV, GCV %), Heritability (h2%) and genetic advance (GA) for grain and associated characters in local land races of rice genotype

Character	Range	Mean	PCV	GCV	h 2%	G.A
Days to 50% Flowering	74.00-92.00	75.74	4.49	3.39	95	6.68
Plant height (cm)	132-134	133.72	0.68	0.40	35	0.65
Flag leaf length (cm)	30.86-40.33	36.44	8.05	6.35	62	3.76
Flag leaf width (cm)	1.05-1.45	1.33	10.45	9.74	87	0.25
Tiller/Plant	6.86-9.53	8.14	11.84	8.68	54	1.07
Panicle length(cm)	24-25.46	24.63	2.42	1.45	36	0.44
Days to maturity	104.33-106	105.18	0.76	0.46	36	0.60
Spikelets/ panicle	227.33-233.33	229.48	0.83	0.55	43	1.69
Panicles/ hill	7.3-10.3	8.01	10.30	10.20	89	5.49
Biological yield	3.47-34.17	33.12	3.46	2.25	44	1.02
Harvest index (%)	30.70-38.44	34.65	6.86	5.63	67	3.30
Test weight (g)	20.60-23.86	22.04	4.96	3.06	38	0.86
Seed yield /Plant (g)	10.31-12.72	11.50	7.32	4.48	38	0.65

Table 2: On the basis of mean performance these 5 genotypes were identified as the best genotype for seed yield per hill.

Character/ Genotype	Seed yield per plant (g)	Number of tillers per hill	Number of panicles per plant	Flag leaf width	Days to 50% flowing	Harvest index (%)
Sangam	21.11	7.26	10.3	1.05	75.33	36.47
Vasmati	12.72	8.80	9.0	1.06	74.66	36.47
Kranti	12.62	8.13	8.5	1.36	74.66	36.31
Lal sita	11.72	8.20	9.5	1.42	75.00	38.44
Seerhinti	11.72	8.13	8.5	1.37	89.00	36.92
Ndr-359 (check)	12.10	6.93	8.5	1.40	89.00	36.79
Mean	11.50	8.14	8.01	1.33	75.74	34.65
C.d 5%	1.10	1.08	0.24	0.08	1.21	2.25
Range lowest	10.31	6.86	7.3	1.05	74.00	30.70
Range highest	12.72	9.53	10.3	1.45	89.00	38.44

High estimation of heritability coupled with high genetic advanced were observed for plant height, spikelets per panicle, flag leaf length and number of tiller per plant. This indicate the performance of additive gene action.

Conclusion

The present study concluded that there was adequate genetic variability present in the material studied and on the basis of neon performance the genotype Sangam was identified as best genotype for seed yield. Number of tillers per plant, Flag leaf width, number of panicles per hill and seed yield per plant

showed high GCV and PCV. Days to 50% flowering, number of panicles per hill, flag leaf width and harvest index depicted high heritability and genetic advance, therefore these characters should be given priority during selection.

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