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Title: GENETIC DIVERGENCE STUDIES OF RICEBEAN [Vigna umbellata (L) Thumb.]

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Abstract: The present investigation was carried out in 50 germplasms of rice bean maintained in research plot of Department of Plant Breeding and Genetics at Birsa Agricultural University, Kanke to collect information on the extant of variability, degree of association of different yield components, their direct and indirect effect on seed yield and extant of genetic diversity among the genotypes. The experiment was conducted in the research plot of Ranchi Agriculture College farm during kharif 2015. Ricebean (*Vigna umbellata* (L) Thumb) is an important kharif, warm season annual vine legume with yellow flowers small edible beans. To date, it is little known, little researched and little exploited. It is regarded as a minor food and fodder crop and is often grown as intercrop or mixed crop with maize (*Zea mays*), sorghum (*Sorghum bicolor*) or cowpea (*V. unguiculata*), as well as a sole crop in the uplands, on a very limited area. It is also important as a fodder, a green manure and a vegetable. The cultivated Asiatic *Vigna* species belong to the *su* –genus *Ceratotropis*, a fairly distinct and homogeneous group, largely restricted to Asia, which has a chromosome number of $2n = 22$ (except *V. glabrescens*, $2n = 44$). Ricebean as adapted to sub-humid regions with 1000–1500 mm precipitation, although they noted that other factors were also involved in adaptation. Ricebean is valuable for its ability to fix nitrogen in depleted soils and in mixed cropping with local varieties of maize, as well as for its beneficial role in preventing soil erosion. Fifty germplasm of rice bean along with four checks were grown in a randomized block design during kharif season of 2015-16 and data were recorded for fourteen quantitative characters and thirteen qualitative characters. Data were analysed to find out the estimate of variability, heritability (broad sense), genetic advance, correlation coefficient and path coefficient. The analysis of variance revealed highly significant differences among germplasm for eleven characters and significant for remaining two characters studied. This indicated the inherent genetic differences among the genotypes for all the fourteen quantitative characters and thirteen qualitative characters under the present study. A wide range of phenotypic variability observed for plant height, seed yield per plant, insect infestation, days to maturity and days to 50% flowering. The estimates of phenotypic as well as genotypic coefficient of variation were maximum for plant height, seed yield per plant, insect infestation and days to maturity. Plant height, seed yield per plant, insect infestation and protein content gave the highest value of heritability (broad sense). These characters also gave the higher value of genetic advance as percent of mean. Correlation study revealed that seed yield per plant had a strong positive association with number of pods per plant, number of clusters per plant, plant height, 100 seed weight, days to maturity. Plant height had highest positive direct effect followed by pod length, number of seeds per pod and number of clusters per plant. Thus our present investigation indicated that The genotypes namely, RRB-12 (53.50) for days to 50% Flowering, RRB-17 for maximum number of branches per plant, RRB-19 for plant height, RRB-17 for pod length, number of pods per plant, LRB-543 for days to maturity, RRB-19 for number of cluster per plant, RRB-112, LRB-554, LRB-545 and LRB-567 for number of pods per clusters, LRB-127 and LRB-111 for number of seeds per pod, LRB-111 for 100 seed weight, RRB-17 for seed yield per plant, LRB-228 for insect infestation and RRB-14 for protein content were identified as most divergent genotypes for the trait concerned, based on phenotypic traits and quality components studies considering together which may be used in future breeding programme of ricebean to get transgressive recombinants in segregating generation and high heterotic F1's with respect to maturity and yield as well as improved oil quality.

Description: GENETIC DIVERGENCE STUDIES OF RICEBEAN [*Vigna umbellata* (L) Thumb.]

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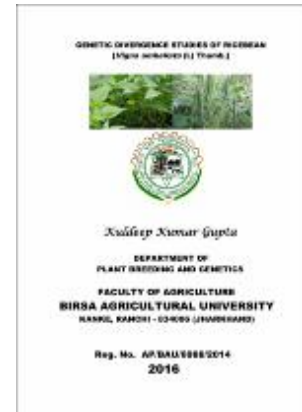
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