Journal of Plant Development Sciences

(An International Monthly Peer Reviewed Journal)

Volume 16 **Number 11** **November 2024**

Content

Journal of Plant Development Sciences Vol. 16(11)

STUDY THE GENERATED VARIATION ARRISED IN M_2 GENERATION OF KODO MILLET (*PASPALUM SCROBICULATUM* L.)

Chanchal Garhewal[1]*, Prafull Kumar[2], R.R. Kanwar[3] and D.P. Singh[4]

[1,2,3]*Department of Genetics and Plant Breeding, S. G. Collage of Agriculture and Research Station, Kumhrawand, Jagdalpur, Bastar - 494001 (C.G.)*
[4]*Department of Agricultural Statistics, S. G. Collage of Agriculture and Research Station, Kumhrawand, Jagdalpur, Bastar - 494001 (C.G.)*
Email: chanchalgarhewal6@gmail.com

Received-28.09.2024, Revised-08.11.2024, Accepted-25.11.2024

Abstract: The experiment was conducted at the Research cum Instructional Farm of S. G. Collage of Agriculture and Research Station Kumhrawand, Jagdalpur, Bastar, IGKV, Raipur. The experiment was conducted during *Rabi* 2022-23 by using Augmented Randomized Block Design with 10 blocks in which 500 mutant lines including three check varieties. The results of the analysis of variance showed that all the characters that was studied had an average amount of variability. PCV values were found to be slightly higher than GCV values showing the influence of environment on character expression. The highest heritability was found by flag leaf length (20.80%) and the lowest heritability was found by test weight (1.20%). The correlation among traits towards yield revealed the significant positive correlation with number of grains per raceme, test weight and flag leaf width. Number of grains per raceme (0.8437), exhibited positive direct effect on grain yield. Therefore, these traits could be effective for the improvement of yield in successive generations and other breeding programes.

Keywords: Kodo millet, GCV, PCV, Genetic parameters, Association analysis

Journal of Plant Development Sciences Vol. 16(11)

STUDY OF GENETIC DIVERSITY AND ASSOCIATION BETWEEN YIELD AND YIELD ATTRIBUTING TRAITS OF RICE (ORYZA SATIVA L.) FOR BASTAR PLATEAU

Geetu Thakur[1]*, Khushboo Gupta[2], Minakshi Rathiya[3] and R.R. Kanwar[4]

[1,2,3,4]*Department of Genetics and Plant Breeding, S.G. College of Agriculture and Research Station, Kumhrawand, Jagdalpur, Bastar 494001 (C.G.)*

Email: geetuthakur1285@gmail.com

Received-27.09.2024, Revised-17.10.2024, Accepted-22.11.2024

Abstract: The present investigation was conducted with 50 genotypes including 4 checks *viz*. Swarna ©, NDR 8002 ©, Pooja, CG. Dhan 1919 during *Kharif*, 2023 in RBD with two replications. at Research cum Instructional Farm of S. G. College of Agriculture and Research Station Kumhrawand, Jagdalpur in *Kharif* 2023.High heritability was observed in flag leaf width, Moderate GCV and PCV values was observed for character like number of effective tillers per plant, Genetic advance as percent of mean was high for flag leaf width, association analysis revealed that grain yield showed high positive significant association with characters like biological yield, harvest index, test weight. showed positive significant association while, positive non significants corelation was recorded character like days to 50% flowering, number of effective tillers, panicle length, grain L/B ratio, kernel length, kernel L/B ratiodistributed the 50 genotypes into six clusters, of which cluster I was the largest with 15 genotypes. Cluster II had maximum intra-cluster values of 5.16 and the maximum inter-cluster distance was observed between the clusters III and V (40.51) followed by cluster IV and V (28.39) indicating the importance of the genotypes present in these clusters for exploiting heterosis for the desirable traits of these clusters.

Keywords: Bastar, Genetic diversity, *Oryza sativa*

Journal of Plant Development Sciences Vol. 16(11)

EFFECT OF PRUNING REGIMES AND FERTILIZER LEVELS ON PLANT GROWTH, FLOWER YIELD AND QUALITY OF NINE BUDED CLONE OF *JASMINUM SAMBAC*

S. Padmapriya* and K. Rajamani

Tamil Nadu Agricultural University, Coimbatore - 641 003

Received-29.09.2024, Revised-19.10.2024, Accepted-26.11.2024

Abstract: The current investigation was carried out at the Department of Floriculture and Landscape architecture during 2022-24 to assess the plant growth, flower yield and flower quality of nine budded clone of *Jasminum sambac* under two pruning regimes (two and three pruning per year) with different levels of NPK fertilizers (eight treatments). The experiment was laid out in FRBD and replicated thrice. The results revealed that the highest plant height (98.45cm) , no. of primary branches (22.00), no. of secondary branches (45.77), maximum plant spread (80.54 cm2 (EW),78.54 cm2 (NS)), increased number of leaves per plant (1196.11), earliest days taken for flowering (28 days), increased no. of cymes per plant (2715.70), number of flower bud per cyme (7.92), 100 flower weight (34.30 g) and flower yield per plant (1105.00 g) was obtained from the treatment P3F2 with three prunings per year along with 75:150:150 g of Urea, SSP, MOP/plant/year. Likewise the treatment P3F2 (Three pruning + 75:150:150 g of Urea, SSP, MOP/plant/year) and P3F3 (Three pruning + 75:180:150 g of Urea, SSP, MOP / plant/year) resulted in superior value for concrete content (0.26%).

Keywords: Jasmine, Nine budded clones, Pruning regimes, Fertilizer levels, Yield

Journal of Plant Development Sciences Vol. 16(11)

GENETIC VARIABILITY STUDIES FOR YIELD AND QUALITY TRAITS IN RICE (*ORYZA SATIVA* L.)

Falguni Yadav[1]*, Sonali Kar[2], Prafull Kumar[3] and D.P. Singh[4]

[1,2,3]*Department of Genetics and Plant Breeding, S.G. College of Agriculture and Research Station, Kumhrawand, Jagdalpur, Bastar 494001 (C.G.)*
[4]*Department of Agricultural Statistics, S. G. College of Agriculture and Research Station Kumhrawand, Jagdalpur, Bastar 494001 (C.G.)*
Email: falguniy377@gmail.com

Received-20.09.2024, Revised-10.10.2024, Accepted-26.11.2024

Abstract: This study was conducted to evaluate the genetic variability and relationship among 17 yield and yield-related traits in 40 rice genotypes, including 4 standard check varieties at S.G. College of Agriculture and Research Station, Jagdalpur, C.G. The analysis of genetic variability revealed that PCV values were found to be slightly higher than the GCV values, moderate PCV and GCV values were observed in number of effective tillers, number of filled grains per panicle and grain yield. Traits like number of effective tillers per plant and number of filled grains per panicle showed high heritability coupled with high genetic advance as percent of mean. In cluster analysis, 40 genotypes were grouped into 5 clusters in which the maximum intra-cluster distance was recorded for cluster V and maximum inter-cluster distance was found between I & II. The maximum value for inter-cluster distance indicates high divergence of genotypes from these clusters. Hence these yield-related traits could be used for selection to improve the genetic potential for rice yield improvement.

Keywords: Rice, Genetic variability, GCV, PCV, Cluster analysis

Journal of Plant Development Sciences Vol. 16(11)

GENETIC VARIABILITY AND CORRELATION STUDIES FOR SEEDLING VIGOUR TRAITS IN RICE (*ORYZA SATIVA* L.) GENOTYPES

Minakshi Rathia[1]*, Sonali Kar[2], R.R. Kanwar[3], N.C. Mandavi[4], Vinay Dansena[5] and Geetu Thakur[6]

[1,2,3]*Department of Genetics and Plant Breeding, S.G. College of Agriculture and Research Station, Kumharawand, Jagdalpur, Bastar 494001 (C.G.)*
[4]*Department of Entomology S.G. College of Agriculture and Research Station Kumharawand, Jagdalpur, Bastar 494001 (C.G.)*
[5]*Department of Floriculture and Landscape, Krantikari Debridhur College of Horticulture and Research Station, Jagdalpur, Bastar 494001 (C.G.)*
[6]*Department of Genetics and Plant Breeding, S.G. College of Agriculture and Research Station, Kumharawand, Jagdalpur, Bastar 494001 (C.G.)*
Email- rathiaminakshi05@gmail.com

Received-25.09.2024, Revised-13.10.2024, Accepted-21.11.2024

Abstract: Seedling vigour is important agronomical traits and contributer to subsequent tillering quality and yield of rice. Crop stand is dependent on the seedling vigour. For higher grain yield, good crop stand is equally important along with high yield potential. Therefore the present study was carried out to explore the genetic variability and correlation among 11 seedling vigour related traits in 33 rice genotypes including 3 checks *viz*. Narendra 359, Karma mahsuri and IGKVR 1244, at S.G. College of Agriculture and Research Station, Jagdalpur (C.G.). High heritability was found for all the 11 seedling vigour traits. Highest seedling vigour-I at 14th day was recorded for Narendra 359 followed by R2699-31-1, R2326-108-1-61-1 and R2737-25-1. High heritability coupled with high GAM was recorded for root/shoot ratio at 7th day, shoot length at 14th day, shoot length at 7th day and root/shoot ratio at 14th day. The findings from the character association analysis revealed that seedling vigour index-I at 14th day showed high positive significant association with characters like germination percentage, shoot length at 14th day, root length at 14th day and seedling height at 14th day. Further, these promising genotypes can be used in future breeding programme.

Keywords: Rice, Seedling vigour, Genetic Variability, Heritability, Correlation analysis

Journal of Plant Development Sciences Vol. 16(11)

EFFECT OF PLANT GROWTH REGULATORS ON VEGETATIVE GROWTH, FLOWERING & YIELD PARAMETERS OF TOMATO (SOLANUM LYCOPERSICUM L.) CV. HEEMSHIKHAR UNDER POLYHOUSE CONDITIONS

Shabnum Aziz,* Rahat Ashraf and Aamir Sadiq Wani

School of Agricultural sciences and technology, RIMT University Mandi Gobingarh, Punjab, India, 147301
Email: rahatwani78@gmail.com

Received-02.11.2024, Revised-14.11.2024, Accepted-29.11.2024

Abstract: In the Rabi season, we experimented on Tomato cv. Heemshikhar on 180 plants in a Poly-house at the School of Agricultural Sciences and Technology of RIMT University in Mandi Gobindgarh, Punjab, India, in 2022-2023. The experiment was layout in CRD (Completely Randomized Design) with three replications and ten treatments i.e. T_1 (control), T_2 (GA_3 @50ppm), T_3 (GA_3 @75ppm), T_4 (GA_3 @100ppm), T_5 (IAA @50ppm), T_6 (IAA @75ppm), T_7 (IAA @100ppm), T_8 (NAA @50ppm), T_9 (NAA @75ppm) and T_{10} (NAA @100ppm) under Protected conditions. The results revealed that at 20 days interval, maximum plant height (39.86, 64.35, and 117.33cm) and Number of branches/Plant (7.86, 13.00 and 19.66) we have recorded in treatment T_{10} (NAA@100ppm). However, the maximum number of flowers/Plant (26.50) and clusters/Plant (11.60), Days to first fruit set (51.66 days), days to first fruit picking (36.00 days), number of fruits/plant (25.00), fruits/cluster (4.66), Fruit weight (56.33g), Fruit length (12.66cm), Yield/plant (1.40kg), Yield/acre (16.90Tons), TSS (3.96^{0}Brix), Ascorbic acid (17.23%) and highest BC ratio (2.65) were recorded in T_3 GA_3 @75ppm whereas, lower value of most of the parameters were recorded in T_1 control under poly-house conditions.

Keywords: Growth regulators, Poly house, Tomato, Yield

Journal of Plant Development Sciences Vol. 16(11)

HOST RANGE OF CHILLI LEAF CURL VIRUS

N. Rajinimala[1]*, Muthamil Kumaran[1], K. Elanchezhyan[2], D. Lenin Raja[3] and J. Sheela[1]

[1] Department of Plant Pathology, Tamil Nadu Agricultural University, V.O. Chidambaranar Agricultural College and Research Institute, Killikulam
[2] Department of Agricultural Entomology, Tamil Nadu Agricultural University, V.O. Chidambaranar Agricultural College and Research Institute, Killikulam
[3] Department of Natural Resource Management, Horticultural College and Research Institute, TNAU, Periyakulam 625 604, Tamil Nadu, India
Email: rajinimala@tnau.ac.in

Received-24.10.2024, Revised-11.11.2024, Accepted-28.11.2024

Abstract: Chilli *(Capsicum annum)* is the important vegetable cum spice crop belongs to the family Solanaceae. Chilli crop is prone to many viral diseases, among them Chilli leaf curl disease (ChiLCD) caused by Chilli leaf curl virus (ChiLCV) is one of the most devasting disease and it causes more yield loss. To study the host range of ChiLCV, 12 crop and five weed species were tested. Among the plants tested for host range, three crop species *viz*., *Solanum lycopersicum*, *Amaranthus tuberculatus* and *Nicotiana tabacum* were exhibited leaf curl symptom whereas three weed species *viz., Parthenium hysterophorus, Agricatum conyzoides* and *Euphorbia geniculate* were exhibited bushy plants, leaf curl and reduced leaf size symptoms respectively for ChiLCV.

Keywords: ChiLCV, host range, *Solanum lycopersicum*