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Marker assisted gene pyramiding for durable disease resistance in Rice

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Rice is one of the pillars of worldwide food security. Ever increasing global population, predicted water scarcity, decrease in arable land, the constant battle against new emerging pathogens and pests and possible adverse effects from climate change will present great challenges for rice breeders and agricultural scientists. Rice productivity is adversely impacted by numerous biotic and abiotic factors. Approximately ~52% of the world's rice production is lost annually owing to the damage caused by biotic factors, of which ~30% is attributable to the attack of diseases. As chemical control of pests and diseases is known to maximize the cost of rice production, the host-plant resistance is considered to be an effective, economical and environmentally friendly strategy to control the disease.

The rapid changes that occur in the virulence characteristics of pathogen population raise a continuous threat to the effectiveness of existing blast resistant varieties. However, cultivars carrying a single resistance gene can only retain their resistance for a short period of time after deployment in the field because of the instability of the avirulance genes. Consequently, the stacking of broad-spectrum resistance genes to different pathotypes (races) of the pathogen or the pyramiding of different resistance genes into a single cultivar are the two effective strategies in rice breeding programs.

The development of molecular genetics and associated technology like Marker Assisted Selection has led to the emergence of a new field in plant breeding-Gene pyramiding. Pyramiding entails stacking multiple genes/QTL leading to the simultaneous expression of more than one gene in a genotype and develops durable resistance expression. Gene pyramiding holds greater prospects to attain durable resistance against biotic and abiotic stresses in crops. In general, the development of pyramid lines is a long and costly affair in addition to the epistatic effect. However, MAS based gene pyramiding could facilitate in pyramiding of genes effectively into a single genetic background and identify the combined effects.

Biography

Parashuram Patroti has completed his graduation in Agriculture from UAS, Dharwad and Master's degree in Genetics and Plant breeding from UAS, GKVK, Bengaluru. He is presently receiving ICAR-SRF and Rajiv Gandhi National Fellowship for pursuing his Ph.D. degree in Acharya N. G. Ranga Agricultural University, Hyderabad since 2011.

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Performance of kalmegh (*Andrographis paniculata* Nees.) influenced by time of planting and harvesting

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Kalmegh (*Andrographis paniculata* Nees.) belonging to family Acanthaceae is an important medicinal plant and has wide range of medicinal and pharmacological applications. The present investigation "Performance of kalmegh (*Andrographispaniculata*Nees.)" influenced by time of planting and harvesting." was carried out at Vegetable Research Station, Rajendranagar, Hyderabad during kharif 2012-13. The experiment was laid out in FRBD with two factors viz., Dates of planting (1st July-D_1, 15th July- D_2, 1st August-D_3 and 15th August-D_4) and stages of harvesting (pre-flowering stage-H_1, flowering stage-H_2 and pod setting stage-H_3) and replicated thrice. The results of the experiment revealed that among different planting treatments, the crop planted on 1st August recorded maximum values for plant height, number of branches per plant, number of leaves per plant, leaf area, LAI, fresh and dry herb weight and dry herbage yield. Among harvesting treatments, the crop harvested at pod setting stage recorded maximum values for plant height, number of branches per plant, fresh and dry herb weight and dry herbage yield. The present study clearly indicated that planting on 1st August and harvesting at pod setting stage were superior to other planting and harvesting treatments with better performance in kalmegh.

Biography

Himabindu Tanguturi has completed her M.Sc. (Horticulture) at College of Horticulture, Rajendranagar, Dr Y S R Horticultural University, India. She is working as Senior Research Fellow at Central Research Institute for Dryland Agriculture, Hyderabad.

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