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Influence of environmental conditions on the performance of cluster bean genotypes

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Cluster Bean (*Cyamopsis tetragonoloba* (L.) Taub.) is a nitrogen-fixing arid legume with enormous industrial applications. Cluster bean tolerates high temperatures and dry conditions and is adapted to arid and semi-arid climates. With growing international demand for the guar gum, identification/ development of suitable varieties for different agro climatic conditions is the pressing need of the hour, as most of the varieties currently being grown were developed under arid conditions. To address these issues, five cluster bean varieties were evaluated for their yield potential during summer and kharif (monsoon) seasons with varying temperature and relative humidity. All the selected genotypes performed better for seed yield during summer than kharif season. Among the five genotypes, the total biomass at harvest ranged from 45.11 g/pl (RGC-936) to 32.96 g/pl (HGS-365) and 54.56 g/pl (HGS-365) to 18.64 g/pl (RGC-986), whereas seed yield ranged from 15.11 g/pl (RGC-936) to 11.24 g/pl (HGS-365) and 9.53 g/pl (RGC-1025) to 2.47 g/pl (RGC-986) during summer and kharif respectively, with reduced performance in kharif. The genotype HGS-365 produced highest biomass as well as registered lowest reduction in seed yield during kharif as compared with summer. The genotype RGC-986 with moderate seed yield (12.6 g/pl) in summer registered highest reduction in total biomass, vegetative & fodder biomass, pod & seed weight and HI during kharif. The biomass and seed yield of RGC-1025 was found to be best in both the seasons though moderate reduction was observed in humid kharif season. The genotype RGC-1017 maintained similar biomass and pod weight in both seasons, however seed filling was affected in kharif season resulting a 40% reduction in seed yield. These results clearly indicating that cluster bean genotypes response is varying at different degree to arid to semi arid/humid condition and kharif season is impacting their growth and productivity.

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