

Correlation and path coefficient analysis of yield and yield attributing characters of wheat genotypes under heat stress and drought conditions

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Wheat covers the most important food crops in the world and in Nepal in terms of area coverage and productivity. Heat stress and drought stress are the most important limiting abiotic factors for wheat production. The field research was conducted at Bhairahawa, Nepal on December 26, 2021, at the Institute of Agriculture and Animal Science (IAAS), Paklihawa under heat stress and drought conditions to identify traits that highly contribute to grain yield and are suitable for further improvement. The research was conducted in an alpha-lattice design with two replications under heat stress and drought environments. Each replication consists of 5 blocks and 4 plots. The measurement of each plot was 4 m by 2.5 m whereas each plot consists of 10 rows with a spacing of 25 cm between the rows and there was continuous sowing in a row. The correlation of grain yield with each of seven parameters i.e., plant height, number of grains per spike, number of spikelets per spike, spike length, spike weight, test weight and spike per m² was found to be positive. Yield attributing characters spike per m² ($r = 0.365$) showed highly significant correlation with yield; followed by number of spikelets per spike ($r = 0.318$), plant height ($r = 0.317$), test weight ($r = 0.310$), spike length ($r = 0.244$), spike weight ($r = 0.233$) and number of grains per spike ($r = 0.130$). Path coefficient analysis revealed that the magnitude of the positive direct effect on grain yield was the highest for spike per m² (0.61267) followed by test weight (0.3228), number of spikelets per spike (0.27009), plant height (0.21373), spike length (0.18794) and number of grains per spike (0.1365). It shows that only spike weight contributes for a negative direct effect on grain yield. Hence, it is clear from the study the number of spikes per m² is the trait that needs to be selected for high yield under heat stress and drought conditions.

Biography

Mukti Ram Poudel is affiliated to Tribhuvan University, Nepal. He is a recipient of many awards and grants for his valuable contributions and discoveries in major area of subject research. His international experience includes various programs, contributions and participation in different countries for diverse fields of study. His research interests reflect in his wide range of publications in various national and international journals.

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