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Association of **physical** and physiological trait with seed vigour in rice

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Abstract:

Rice is the lifesaving grain for the people of developing and poorest countries which accounts for around 23 percent of global caloric intake.To meet the challenging and eventual food demand, a quantum increase in agricultural productivity is very much essential for which production and distribution of high quality seed is becoming increasingly important. Seed is one of the efficient and economic input for agricultural development and good quality seed alone can contribute up to 25-30% increase in productivity. High seed vigour an important characteristic of seed quality, is necessary for seedling establishment and sustainable crop productivity. Seed vigour is an important characteristic of quality seed which is influenced by many physical and physiological traits in rice. 120 diverse rice genotypes were phenotyped based on 25 physical and physiological traits to identify the traits associated with seed vigour. Wide variations in the physical-physiological traits were observed in the population with highest variability was observed for rate of root growth (77.78%) followed by swelling index of seed (61.83%). Among physical traits, seed vigour index (germination value x seedling length) was found significantly positively correlated with seed breadth, thickness, L/B ratio and thousand seed weight with highest correlation value observed with seed breadth (r2=0.111).Whereas highest correlation of germination index (r2 =0.721) with seed vigour index was observed of all the physiological traits considered. The trait association with seed vigour identified will be useful for selection of trait for improvement of seed vigour and will contribute to increase in productivity in rice.