Delta (Δ) yield is a better input to understand site-specific response of rice crop

D.V.K. Nageswara Rao*, K. Surekha, L. Aruna and R. M. Sundaram

ICAR – Indian Institute of Rice Research, Hyderabad - 500030
a: PJNCOA & RI, Karaikal – 609603
*DVKN.Rao@icar.gov.in

ABSTRACT

Large yield gap, the difference between potential and farmer yield imply more scope for improvement. Potential yield is location-specific making it necessary to aggregate local estimates spatially and temporally to produce average estimates for larger areas.

AICRIP conducts multi-location trials to identify genotypes of high yield potential along with appropriate crop management practices. Spatial variability of production factors in multiple locations lead to differential crop responses. ‘Delta (Δ) Yield’, the difference between average potential and realised yield, described the variability better than yield in an earlier instance and same was applied now to another dataset to test the repeatability.

Triplicated yield maximisation trial with varieties, BPT 5204, ADT 46 and CO 50 with treatments; Farmer Fertiliser Practice (T₁), recommended dose of fertiliser (T₂) and software, Nutrient Expert based recommendations (T₃) was conducted in Karaikal (2019-20). The recorded yield and calculated Δyield (using average potential is 6000, 6656 and 6338 kg ha⁻¹ of the varieties, respectively) were analysed.

Analysis indicated sites showed significant differences in yield and Δyield. Mean difference in yield and Δyield of Site 1 and 3 were 1176 and 1832 kg ha⁻¹, respectively. Similarly, the significant difference between Site 5 and 3 was 1585 and 1903 kg ha⁻¹, respectively. Both attributes were significantly influenced by treatments and T₃ was superior to T₁ and T₂. CO 50 was superior to BPT 5204 and ADT 46 in both forms of expression however, with more difference between CO 50 and ADT 46 in Δyield. Analysis of individual treatments indicated that both T₁ and T₂ did not show any significant difference in yield and Δyield. T₂, which was a blanket recommendation irrespective of local variance in the supply potential of soil, showed the variance was more in Δyield by 8% (adjusted R²) that needed attention. Summarily Δyield appeared to have more sensitivity to site differences and treatments when compared to yield.