

Variability Assessment of Rice Landraces from Sikkim Himalayas using Grain Morphometric, Cooking Qualities and Proximate Composition Studies

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Abstract—The study was undertaken to collect and characterize the rice genetic resource of Sikkim Himalayan region. Totally 65 local landraces collected from diverse elevations were used for the characterization. The analysis of variance showed significant differences among the nine grain quality characters used for the study such as seed length (10.64 to 5.87mm), seed breadth (3.54 to 2.20 mm), kernel length (8.43 to 3.61mm), kernel breadth (3.30 to 1.92 mm) and 100 seed weight (29.05to 15.16gm).

Similar observation were also recorded for kernel length after cooking (10.71 to 5.92mm), kernel breadth after cooking (4.96 to 2.99mm), length-breadth ratio after cooking (2.85 to 1.41) as compared to L/B before cooking (3.79 to 1.38) and elongation ratio ranged from 1.11 to 2.00. Standard methods of Association of Analytical Chemist (AOAC) guidelines were used to obtain the proximate composition of all the germplasm accessions. The crude protein content ranged from 5.64 to 11.32%. The moisture content ranged from 14.23 % -7.89 %. In relation to crude fiber content, Panbhara had the highest percentage (1%), while the lowest (0.65 %) was recorded for Masule. Crude fat content ranged from 3.8 % - 0.67 %. Bagey Tulashi had the highest crude fat content which signifies its taste attributes. In order to establish the relationship among the seed characters and cooking quality attributes, data were measured using Pearson's simple correlation coefficient which showed significant results among the traits under study. These studies revealed that germplasm Doodhkatey, Japani and Basmati have good grain quality and cooking properties indicating their potential for consumer preferences. The present study indicated that morphological traits were useful for preliminary evaluation for crop improvement program and can be used for assessing genetic diversity among morphologically distinguishable rice landraces.