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EVALUATION OF NON-STRUCTURAL CARBOHYDRATES OF RICE STRAW CULTIVARS IN AGRO-CLIMATIC ZONES OF HARYANA

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Abstract

In most of India, rice is an important staple crop. After harvesting, the waste rice straw is frequently burned in the open fields because there is insufficient time before planting the next crop to remove and dispose of it in a more controlled manner. This can affect the regional environment as well as anthropogenic climate change. Due to its high C:N ratio, it takes time to decompose, therefore it is not suitable for direct composting. To identify their best alternative industrial uses, the present study was investigated with various biochemical parameters of 13 rice straw cultivars grown in the northern region of India. Total sugar varied from 6.16±0.29 to 8.40±0.11% with the highest value found in paddy variety PR-126, while reducing sugar ranged from 3.50±0.30 to 5.47±0.55%, and highest in CSR-47. Maximum non-reducing sugars was found in PB-1121. Total protein content ranged from 1.96±0.10 to 5.06±0.29% with the greatest value found in Pusa-1509, while soluble protein in Pusa-441. The highest amount of volatile solid found in the HB-2 variety. The PR-114 variety had the greatest total phenol content (0.31±0.07%), whereas the PR-113 variety had the lowest (0.07±0.06%). The fat level of these cultivars ranged from 5.9±0.41 to 19.8±0.44% with the variety Pusa-1509 having the highest fat percentage. Based on non-structural carbohydrates analysis of rice straw cultivars could be used for biorefinery process, hemicellulose and cellulose are decomposed to sugars for bioethanol and animal feed production and leave lignin to be recovered for further valorization of dispersants, adhesives and surfactants are the best alternative for industrial uses to cut-off the menace of straw burning.

Key words: biochemical analysis, crude protein, reducing sugar, rice straw, total phenols

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