Cultural Practices, Water Relations, and Productivity in the Rice-Wheat System of the Kathmandu Valley. (A06mcdonald162216-Poster)

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Abstract:

Degraded edaphic conditions following paddy rice may hinder the performance of subsequent crops. Alternative rice cultural techniques have been advocated for improving the soil physical environment and productivity of rice-based systems. Experiments were conducted in Nepal over two cycles of the rice-wheat rotation to investigate the comparative outcomes of novel tillage and establishment techniques. Establishment method and landscape position had substantial consequences for the rice water budget, whereas tillage had no impact. In the 1st year, flood duration was positively associated with rice yield. Conversely, water potentials in the vadose zone suggested factors other than water stress as limiting. N rates were increased in 2nd year and greatly reduced between-treatment variability. Rice cultural practices did promote significant shifts in bulk density, penetration resistance, and surface structure. For the wheat, stand establishment, total water acquisition, and water uptake at depth were positively correlated with yield. Rice practices, however, were weak predictors of these factors and do not appear to be a sound basis for improving total productivity at this site.

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