

Title Surface Water Quality as Affected by Sugarcane Residue Management Techniques
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Abstract

This study evaluated the impacts of three sugarcane residue management techniques, namely postharvest burning of residue (BR), shredding of residue (SR), and full postharvest retention of residue (RR), on the water quality of surface runoff from February 2006 to September 2007 in Iberia, LA. Total runoff volumes recorded were 58,418, 57,923, and 46,578 L for the BR, SR, and RR treatments, respectively. Except for total Kjeldahl nitrogen (TKN), which was higher for BR than RR or SR, there were no significant differences in total loads of total suspended solids (TSS), total dissolved solids (TDS), biological oxygen demand at 5 days (BOD₅), total phosphorus (TP), nitrate-N, nitrite-N, and sulfate among the three residue management techniques, although the RR treatment generally exported the lowest total loads. Regression analyses on the pollutant load and rainfall event showed that the load exported for each water quality parameter was positively correlated with precipitation, with the BR treatment being more sensitive to rainfall amount than the RR and SR treatments in TSS, TKN, TP, BOD, nitrate, and sulfate exports. Runoff TSS and turbidity were also highly correlated ($R^2 = 0.95$, $P < 0.001$). The results suggested that the two sugarcane residue retention practices (RR and SR) had limited benefit on improving surface runoff water quality over the BR practice in subtropical region such as Louisiana.

<http://www.springerlink.com/content/xkpk7220x5056630/fulltext.pdf>