Adaptive Signal Processing for Removal of Impulse Noise from Yield Monitor Signals

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The use of precision agriculture has driven the need for yield monitors. Yield monitors used for research require more rigorous standards of measurement in order to provide spatial data at a finer grid size than typically used in an on-farm application. The objective of this study was to develop a method for load-yield monitors to correct for impulse noise that occurs whenever a harvester drives over a hole, ditch, or large rocks. Removing such artifacts of the instrument will improve the quality of the data obtained over a shorter grid size, which is more appropriate for research requirements than are the typical large grid sizes of commercial yield monitors currently in use. The system developed demonstrated a reduction in impulse noise through the use of an accelerometer to obtain the impulse noise response, which was then used in an adaptive noise-cancellation signal processing technique to reduce impulse noise in the yield signal.