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Lint Cleaning Performance of a Modified Cylinder Cleaner

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The objectives of these experiments were to evaluate the effectiveness of a modified cylinder cleaner in cleaning lint based on grid bars with a sharp cleaning-edge and compare the performance of one cylinder cleaner to two cylinder cleaners in series operating at one or two speeds. Overall, in comparison to the baseline, saw-type lint cleaner (SLC), cylinder cleaners in various configurations cleaned less efficiently and with less fiber damage. The cylinder cleaner with flat-square edged grid bars had the lowest cleaning efficiency, while the cylinder cleaner with a sharp cleaning edge and narrow gaps cleaned more efficiently. Its waste also contained a larger portion of fiber than that of the flat-square edged grid bars. Turnout of the cylinder cleaners was significantly higher than that of the SLC. Compared to the SLC, these cleaners generated less waste and contained less fiber in their waste.

The impact of adding another cylinder cleaner in lint cleaning was greater than the effect of changing cylinder speed. While turnout from the one cylinder or the two cylinder configuration operating at either one speed or two speeds, was not significantly different from that of the SLC, the waste they generated was much lower.

From these tests, it is concluded that the best alternative to the saw-type lint cleaner for cleaning efficiency and turnout is a configuration comprised of two cylinder cleaners in tandem operated in single speed. One cleaner has grid bars with narrowly spaced sharp cleaning edges and the other cleaner has narrowly spaced flat-square edged grid bars.

There was no interaction between cleaner treatments and cultivars.