Title Reduced tillage alternatives for machine-harvested cucumbers.

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Abstract

Cucumber is grown using intensive tillage practices, which increase the cost of production and may lead to an increase in soil and water erosion. Research on alternative tillage practices for cucumber production has been limited primarily to exploring the benefits of no tillage. Alternative tillage practices, such as discing (one pass with a tandem disc) and zone tillage (one pass with a Trans-till) have not been investigated. This study was conducted in Ontario, Canada, during 2000 and 2001 to compare the effect of reduced tillage practices on the growth, development, and yield of cucumbers. Seedling emergence varied between years, but was unaffected by a reduction in tillage, while leaf number, leaf area index and vine growth were reduced by no tillage (Pless than or equal to 0.05). Total dry matter accumulation and days to 50% open flower varied with tillage. No-tillage plots produced an average of 34 g/m2 of dry matter compared to 47 g/m2 for conventional tillage plots and took one day longer to reach 50% flower. Although growth differences were observed under all reduced tillage treatments, no reduction in total yield was observed when compared with conventional tillage yields. Alternative reduced tillage practices, such as discing or zone tillage, were found to be viable options for successful cucumber production. These alternative practices will reduce the cost of production, provide growers with greater time flexibility and ease of land preparation, and reduce the potential for water and wind erosion.