Where can crop residue be harvested sustainably in western Ontario?
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Sustainable residue removal (SRR) harvests in western Ontario would be very localized and sustainable in only a few counties. However, it could generate a lot of SRR in these concentrated areas. For example, Perth County has the greatest potential for SRR harvest across the entire province and Huron County is a close provincial second. In Perth County annualized average yields of 705 kg/ha/yr for corn-soy rotations and 1785 kg/ha/yr for corn-soy-wheat rotations values are located in Table 1)(Kludze et al. 2010). Well over half of all county land in these respective rotations could support SRR as well (36% for corn-soy and 63% for corn-soy-wheat)(Kludze et al. 2010). Likewise, Huron County could support annualized average yields of 653 kg/ha/yr for corn-soy (on 34% of all corn-soy land) and 1541 kg/ha/yr for corn-soy-wheat rotations (on 58% of all corn-soy-wheat land)(Kludze et al. 2010).

To cover costs it's estimated that a farmer needs $57-87 per ton of residue harvested and this roughly translates into a sustainable residue removal (SRR) rate of 500 kg/ha/yr (Kludze et al. 2010) Therefore, it's unlikely that any corn-soy rotations could sustain profitable SRR outside Perth and Huron counties, but SRR under corn-soy-wheat rotations could have potential in Bruce, Waterloo, and Wellington counties as well (see Table 1).

Table 1 below shows average annualized sustainable residue removal (SRR) rates for all western Ontario counties. Corn-soy and corn-soy-wheat rotations are shown with the average SRR harvest potential and the percent of county land that could sustain these SRR harvests. These estimates are based on data gathered at the University of Guelph's Elora Research Station and serve only as a guideline. Actual farm conditions will vary depending on factors such as existing soil organic matter dynamics, and crop yields (see "**Determining how much crop residue to remove on your farm**" for more detail). Thus, these numbers are estimates and site-specific conditions may allow much more or much less SRR.

Table 1: Sustainably available crop residues in southern Ontario (*RESmin=11,126kg/ha/yr) (Kludze et al. 2010)

	Corn-Soybean		**Corn-Soybean-Wheat**		Total SRR based on land area distribution
County/Division	Average SRR (kg/ha/yr)	Qualified Land Area (%)	Average SRR (kg/ha/yr)	Qualified Land Area (%)	under rotation types (tDM/yr)
Bruce	185.6	12.8	842.5	40	35,042
Dufferin	56.0	4.6	400.2	24	4,323
Grey	47.2	4.0	293.6	19	3,174
Halton	13.5	1.3	113.7	9	1,074
Huron	653.2	33.9	1541.2	58	189,184
Peel	52.7	4.4	279.1	18	1,941
Perth County	705.1	35.8	1784.8	63	148,253
Simcoe	85.0	6.6	425.1	25	19,366
Waterloo	225.8	15.1	759.3	38	19,153
Wellington	157.4	11.2	716.3	36	37,500

* Note: Data gathered from silt loam soils at the Elora Research Station indicated that 11,126 kg/ha/yr (***RES$_{min}$***) of residue must be returned to the soil to maintain soil health.

Data and information from: Kludze, H., Deen, B., Weersink, A., van Acker, R., Janovicek, K., & De Laporte, A. (2010). *Assessment of the availability of agricultural biomass for heat and energy production in ontario*. Crop Science, University of Guelph: Ontario Ministry of Agriculture, Food and Rural Affairs