**Performance Evaluation of Commercial Wild Blueberry Harvester for Fruit Losses During Harvesting**

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**Introduction**

Wild blueberry (Vaccinium angustifolium Ait.) is an important horticultural commodity native to Northeastern North America. The mechanically harvested wild blueberry area is more than 80% of the total area in Canada and only the fields in rough terrain are still hand picked. In the last two decades, improved management practices using selective herbicides, fertilizers, pesticides and pollination have resulted in healthy and tall plants, high plant density, tall weeds and significant increase in fruit yield.

Wild blueberry industry is facing increased harvesting losses with the existing harvester due to changes in crop conditions caused by improved management practices emphasizing the need to enhance berry picking efficiency of the harvester. Therefore, the objective of this work was to evaluate the existing commercial wild blueberry harvester for fruit losses during harvesting.

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**Materials and Methods**

Three wild blueberry fields were selected in the Nova Scotia and New Brunswick provinces to evaluate the commercial blueberry harvester (Fig. 1).

- The total results of multiple means comparison using least squares method to identify the two way interaction effects on fruit losses during harvesting (Table 2).

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**Results and Discussion**

- Results suggested 182 kg ha⁻¹ (4.68%), 207 kg ha⁻¹ (7.33%) and 439 kg ha⁻¹ (7.31%) of pre-harvest fruit losses for Cooper, Small Scott and Tracadie sites, respectively (Fig. 3).

The late season harvesting (August 28 – September 10) could be the reason for higher pre-harvest losses at Small Scott and Tracadie sites.

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**Table 3: Results of pre-harvest fruit losses and fruit yield during harvesting for selected fields.**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Speed (km h⁻¹)</th>
<th>RPM</th>
<th>Unharvested Berries (kg/ha)</th>
<th>Berries on the Ground (kg/ha)</th>
<th>Loss through Blower (%)</th>
<th>Total Loss (%)</th>
<th>Total Fruit Yield (kg/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.20</td>
<td>26</td>
<td>3437</td>
<td>1899</td>
<td>5116</td>
<td>3490</td>
<td>653.8</td>
</tr>
<tr>
<td>2</td>
<td>1.60</td>
<td>26</td>
<td>653.8</td>
<td>330.7</td>
<td>411.9</td>
<td>3437</td>
<td>311.3</td>
</tr>
<tr>
<td>3</td>
<td>2.00</td>
<td>26</td>
<td>781.2</td>
<td>4575</td>
<td>5435</td>
<td>751.5</td>
<td>71.9</td>
</tr>
<tr>
<td>4</td>
<td>2.60</td>
<td>26</td>
<td>751.5</td>
<td>653.8</td>
<td>82.2</td>
<td>781.2</td>
<td>54.3</td>
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<tr>
<td>5</td>
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<td>26</td>
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<td>5435</td>
<td>121.9</td>
<td>751.5</td>
<td>38.1</td>
</tr>
</tbody>
</table>

Means with no letter shared are significantly different (p<0.05).

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**Conclusion**

- The major portion of the fruit losses during harvesting was on the ground when compared with the un-harvested berries on the plants and losses through blowers.

The results showed that a treatment combination of 1.2 km h⁻¹ and 26 rpm can result in significantly lower losses in wild blueberry fields with yield over 3500 kg ha⁻¹.

In low yielding fields (Small Scott site) there was a mixed effect of treatment combinations on the berry picking efficiency of the blueberry harvester.

In coming years the performance of harvester for berry picking will be studied in relation to mechanical, biological, environmental factors and operators skill in variable blueberry fields.

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**Acknowledgements**

Precision Agriculture Research Team
Peter Smolik and Carl Briggs