

Title Harvesting Damage to Potato Tubers by Analysis of Impacts recorded with an Instrumented Sphere
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Citation Biosystems Engineering, Volume 94, Issue 1 , May 2006, Pages 75-85
Keywords potato; harvesting damage

Abstract

The susceptibility of potato tubers to damage depends on factors such as cultivar, cropping and harvesting techniques, but the contribution of each of these variables is not easily quantifiable. Harvesting, in particular, causes tuber damage due to impacts with the mechanical components of the machine, the extent of which depends mostly on impact intensity.

To study and characterise these aspects, an experiment was conducted in a potato growing area of the Po Valley (Italy).

The first phase of the experiment consisted of field trials with the use of an instrumented sphere while harvesting in different soils and working conditions. Comparative trials differed in relation to parameters, such as forward speed of the potato harvester and soil moisture content, to verify if correlations exist between these factors and the extent of the recorded impacts.

The second phase involved laboratory tests on the biological product, to determine the tuber damage and verify any correlations between the measurements taken with the instrumented sphere and the measured damage.

The results demonstrate the influence of the forward speed of the potato harvester and soil moisture content on impact intensity and the damage suffered by the tubers. In conditions of wet soil the increased flow of soil in the machine, deriving from the higher forward speed, reduced impact intensity and extent of the damage. Harvesting in dry soil led to greater impact intensity and damage to the tubers. Pre-harvest irrigation of dry soils to increase the soil moisture content can be used to reduce tuber damage.