

**Title** The distribution of mechanical resistance in potato tuber tissues  
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#### **Abstract**

The distribution of mechanical resistance in relation to the type of tissue for potato cultivars of different technological uses (cooking, French fries and potato chip production) was examined. A puncture test performed both perpendicularly and parallel to the long axis of the tubers was used and the mechanical resistance expressed by puncture force (N) and puncture energy (mJ). The results showed statistically significant differences in mechanical resistance between the cultivars, with those designed for potato chip production having the highest mechanical resistance. The mechanical resistance of the morphological elements of all examined cultivars could be ordered as follows (according to increasing values): (1) perimedullary zone, (2) pith and (3) cortex. Distribution of puncture resistance within the tuber volume was not uniform—puncture force and energy values were usually higher near the stem end of the tuber for all morphological elements. The values of puncture forces measured perpendicularly to the length of the tuber axis were always lower than those measured parallel to the long axis. The opposite was true for puncture energy.