GRAPEGROWING

Mechanized shoot trimming.

Mechanization and Terroir: Are they compatible?

BY Stefano Poni
Istituto di Frutti-viticoltura,
Università Cattolica del Sacro Cuore
di Piacenza, Italy

Vineyard mechanization is increasingly important to grapegrowers around the world, but the question remains whether fully mechanized vineyards can produce top-quality grapes. In some Old World countries, such as Italy, for example, prevalent opinion persists that pruning and harvesting by machine cannot produce the grape quality attained by hand labor.

No one would argue that mechanization is more efficient than hand labor and that production costs are much lower as a result, but can mechanization truly be counted as delivering maximum efficiency if grape quality suffers?

Since mechanization clearly interacts with many of the key factors identified with terroir, and since terroir today is associated with the general concept of recognizable grape quality, an analysis of the interaction between vineyard mechanization and terroir can help us answer these questions.

To illustrate how mechanization interacts with "terroir," a rigorous definition of the latter term is needed. We believe that "terroir is the ecology of a wine — the total, inter-related environment wherein a grapevine is cultivated for the purpose of making wine. Key factors include, but are not limited to, cultivar type, soil, climate, vineyard location, planting density, training system, pruning philosophy, and the cultural and social milieu wherein the whole enterprise takes place."

Although Richard Smart (1996) stated that it is almost impossible to establish a direct relationship between wine quality and soil composition or content of any nutritive element, there is evidence that the soil physical properties that regulate water supply to the vine are a key factor for a great terroir.[41]

Light soils, which drain freely and are associated with deep vine roots reaching a not too deep water table, produce those conditions likely to lead to the ideal state of mild water stress with vine growth stopping, on schedule, around veraison. This is a nice example of naturally regulated vine balance, leading, in turn, to good to excellent grape quality.

However, if the above definition of "terroir" holds, even the lowest priced wine can be representative of a terroir. Figure I (page 47) shows the fractional distribution (year 2003) of exported Italian wine as a function of price per litre.[26] The narrow pyramid shows that only 2.9% of the total value is sold at prices higher than €6/L, whereas more than 65% of the value goes to prices lower than €3/L. Therefore, restricting the term terroir to the top price would basically eliminate the need to investigate the interaction between "terroir" and "mechanization," since those highest priced bottles are quite likely coming from prestigious sites where labor cost is not, at least not yet, a priority.

Note that we have asserted that choices of vine spacing or training system also help define a terroir. If we

A view of the COMBI training system, featuring split canopy and upright shoot growth. The trellis is adapted to vertical mechanical harvesting.