

The algorithm that suggests when and where to harvest

Mathematics, statistics, econometrics: optimizing grape harvest and quality has cost a company of Alba three years of work. Software allows savings of up to 30%

«Scene: a social winery with 800 small contributors. All harvest on Saturday and Sunday. Result: a long line of tractors is created on Monday waiting to unload the grapes. And the bunches, remaining in the open air and in the sun, quickly lose quality ». Pierluigi Riva has a long economic-mathematical background and a role of Chief Technology Officer of the ORS group, an Italian-German company specialized in software for the analysis of big data and the optimization of business processes. But he also has a passion for wine which, for two years, has led him to immerse himself in the study of everything it takes to get the most out of a harvest. "Often decisions are not the result of rational evaluations - he says - and even those who are rational often do not take into account all the variables involved". Thus, Algo-Wine was born, a software that assists winemakers and oenologists to choose the optimal time of the harvest and, above all, the best logistical organization to complete it: how many vineyard blocks to do today, how many tomorrow, where to start, how many people to employ. Mathematics, statistics, econometrics, meteorology: nothing is left to chance. The software was developed in collaboration with the American Cornell University, the University of Turin, the Umberto I Oenological Institute of Alba.



The data

The factors that come into play are numerous and many winemakers already have advanced detection systems to monitor the type of soil, its exposure to light and heat, the amount of precipitation and dew that has deposited in the morning. The information can be measured from poles on the land of the same farm giving very different results, especially if the estate is very large. By dividing the vineyard into homogeneous growth blocks, it is possible to predict when each block will mature, thanks to complex algorithms that process thousands of information in a few seconds

and, depending on the wine you want to produce, indicate the time frame within which a certain block must 'be harvested. "The objective - explains Riva - is to collect the grapes of each row at the optimal moment and thus avoid, for example, that excess harvest degrades the quality of the wine, or that the delay in the harvest goes to invalidate the chemical parameters necessary to maintain structure and aromas. Making correct estimates is very complicated, also because the parameters vary significantly every year depending on the weather conditions. The production from year to year can also change by 30% and the timing for the harvest by 10-15 days ". In other words, the computer can support and replace, on a large scale, the winegrower engaged in tasting the grapes day after day in search of the right moment to start the harvest.

Get organized among the rows

Once the optimal time frame to harvest each block has been established, the job is not finished: the most effective way to perform the job must be found. How many people do you employ? Which blocks to visit first? How to minimize staff travel, increasing effectiveness and decreasing costs? How to avoid that the settling tanks are insufficient, at a certain moment, to contain all the grapes collected? In short, pure logistical problems that do not fall within the competence of the wineries on average. The first company to use Algo-Wine was a Monferrato winery, the Noceto Michelotti. "We added the scientific management of Algo-Wine to the passion and experience of the winegrower, agronomists and winemakers - summarizes Riva - saving up to 30% in the harvest phase".

<http://corriereinnovazione.corriere.it/coverstory/2015/30-marzo-2015/algoritmo-che-suggerisce-quando-dove-vendemmiare-2301186723236.shtml>