



CLIMATE DETECTIVES 2020 – 2021

THE EFFECT OF CLIMATE CHANGE ON WINE PRODUCTION

CLOUD'S WATCHERS
IES CARDENAL PARDO DE TAVERA

RESEARCH QUESTION

IS CLIMATE CHANGE AFFECTING THE WINE PRODUCTION IN TORO?

SUMMARY OF PROJECT

Our project tries to demonstrate the relationship that a problem as global as climate change has, with a local aspect, such as viticulture in our region, since Toro consists of a large number of wineries and, of course, a world-renowned wine that gives the hallmark of the region and whose production is essential for the economy of the area.

Based on an extensive contribution of data, as well as the experience of several winegrowers in the area or the extensive knowledge of various oenologists, we have been able to observe some indicators, both climatic (such as the Winkler Index, the Active Thermal Integral or the Branas Hydrothermal Index, which increase over time) and related to the characteristics of the grape (pH, amount of sugar or alcohol content, which also rise) point towards a progressive decrease in the quality of the fruit. For example, the complete ripening each year is earlier (currently, one month earlier than it was fifteen years ago), which means that the grapes need to be treated with chemicals and even tannins must be artificially added.

Finally, we would like to say that this is not a project that provides a solution but proves that climate change affects us day by day and only if we all become aware can we stop it.

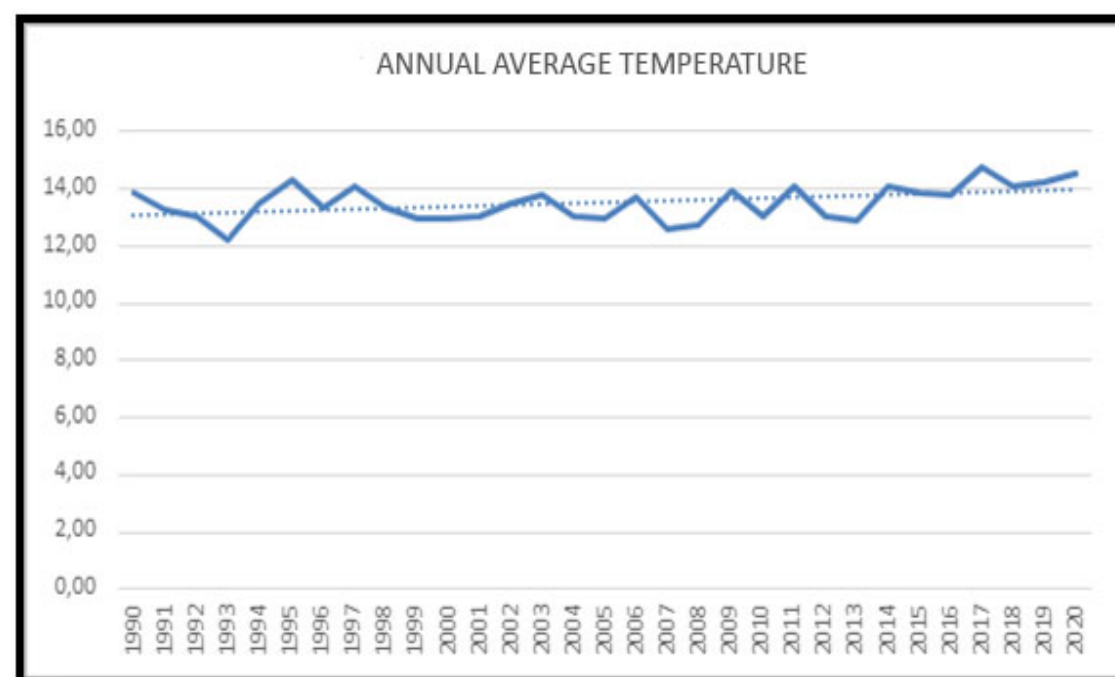


Figure 1: Annual average temperature in Toro in the last 30 years

MAIN RESULTS

The Winkler Index (mentioned previously) is related to wine quality, as studies show that better quality wine has a lower Winkler Index, and it is increasing over time.

We have also found that bud break and, therefore, ripening are increasingly earlier, due to the increase in temperatures during the winter period, as well as the Active Thermal Integral. The main consequence is the subsequent increase in the difficulty of the wine production, as the low acidity level of the grapes, which leads to a high pH, must be regulated. In addition, the sugar is rising because of rising temperatures. This forces the winegrower to harvest the grapes before ripening is complete, so sometimes he does not obtain some aromas.

On the other hand, we have been able to appreciate that the Branas Hydrothermal Index exceeds two thousand units and is progressively increasing. When it exceeds 1,500, the appearance of mildew (a fungus that causes a degeneration in the quality and production of the plant) is more favorable. Therefore, climate change also contributes to the fact that the vine is more prone to certain diseases and that the quality of the grape may be reduced.

From all this we can conclude that the climate change that is taking place on our planet is affecting one of the most important sectors in our town: The wine production. Climate change is not, therefore, an abstract problem that we should not worry about, but something that affects us every day.

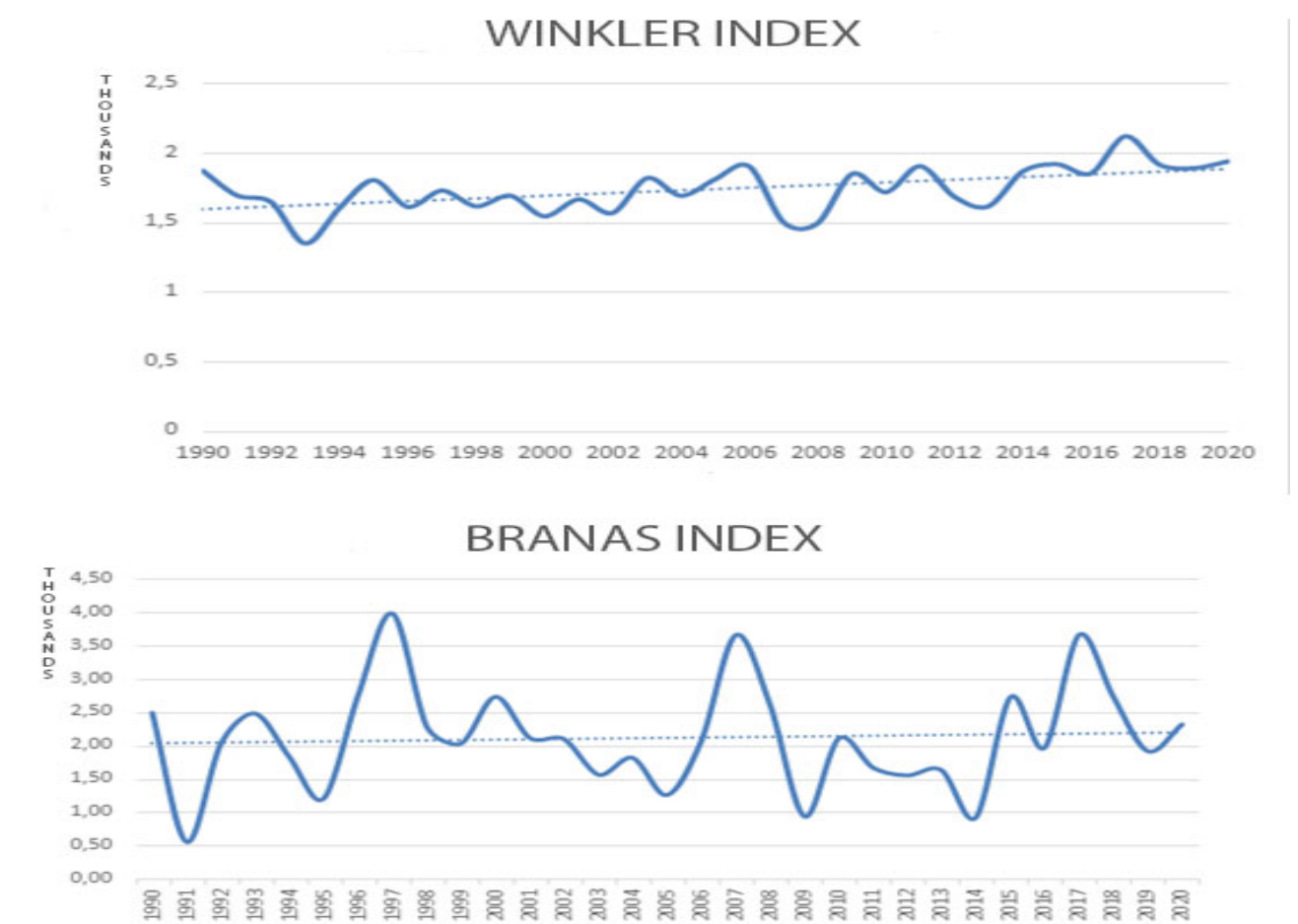


Figure 2: Graphs obtained in our investigation

ACTIONS TO HELP LESSEN TO THE PROBLEM



Figure 3: Vineyards are very important in our town's economy

We believe that the most important thing to solve this problem is to make people aware of the importance of taking care of our planet to stop climate change. It is a fight in which we all must participate and in which we must act as soon as possible, because if we do nothing, in a few years it will cause irreparable problems. People must take action to stop climate change, even if they are small. Companies must also participate in the fight, reducing their emissions and looking for new sustainable ways to carry out their activity. That's why we have created a report that we are going to send to different organizations in our town (for example to the Consejo Regulador de la Denominación de Origen) to make our work public and aware people of the effects of climate change in our city.