# Resin tapping modifications may yield greater production

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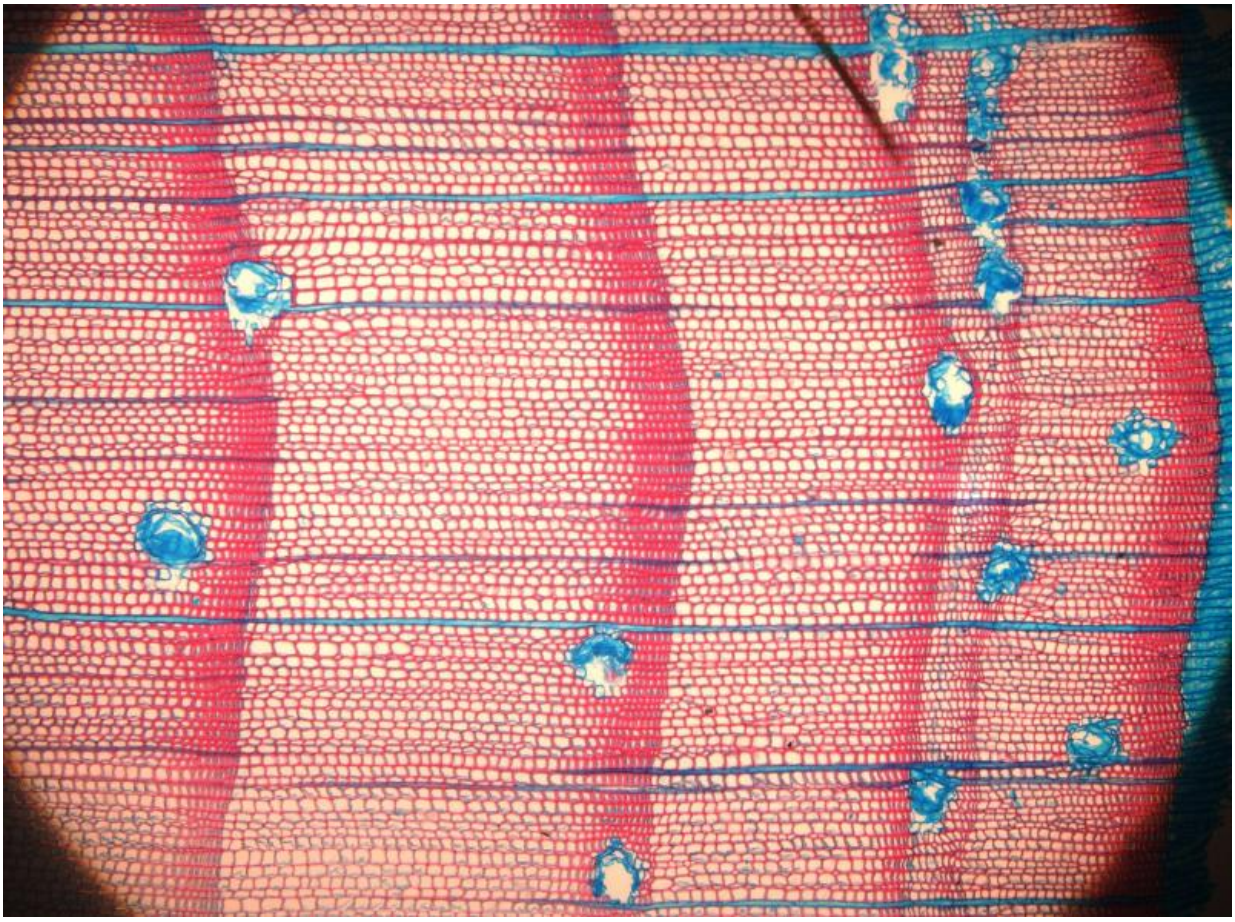

Optical microscope photo of a cross section of wood Pinus pinaster. Resin canals in blue color. Credit: Aída Rodríguez

After assessing the effects of climate on resin production, researchers

from UPM suggest new techniques to optimize the results of this traditional industry and boost its development.

Decades of resin tapping has enabled us to adjust the resin seasons during the most productive months. However, as a result of a study carried out by the School of Forestry of Universidad Politécnica de Madrid (UPM), researchers suggest modifications of traditional methods that could mean improvements in the average annual production during benign years and cost optimization in adverse years. The development of this sector could be essential to preserve ecosystems in Spain and avoid rural exodus.

Resin tapping has been an important strategic activity in Spain for centuries, providing a natural and renewable product, development in rural areas, and a unique culture. Over the last five years, due to price increases of natural resins in the international market along with technological advances towards mechanization, resin tapping has become an essential activity to promote preservation and rural development.

Likewise, the resin industry in southern Europe requires more efficient processes and management plans of pinewoods to increase the production. The aim of researchers from UPM carried out a study to assess the effect of climate on resin tapping, since this knowledge is essential to improve the techniques and planning of the resin industry. The study was completed with an analysis of changes in wood anatomy, mainly from resin canals, in order to establish links among these variables.

Resin secretion is the main defense mechanism of diverse conifers against fungi and insects. The flow is induced by abiotic stresses, injuries and chemical stimulants. Thanks to this characteristic, resin tapping activity has been carried out since a century and half ago by opening a systematic and regular wound that causes the secretion of resin

and its subsequent collection.

Wound of resin tapping, sheet metal and collecting pot. Credit: Rosana López

This wound is open in successive years at different heights (grooves) and orientations (faces) of the pine over 25 years, and it does not require tree death, unlike previous methods that devastated many pinewoods. The general strategy of the pine defense consists of, amongst other elements, producing and collecting resin in the canals. This resin is created every year and is distributed in all plant tissues.

From these results, researchers suggest extending the seasons when there are dry spring years and rainfall throughout summer that would result in higher production. And researchers suggest lessening the production season when there are very dry summers, thus assuming only small losses of total production.

The features of the Mediterranean climate combined with the expected effects of climate change, including extreme droughts and atypical heavy summer rains, are limiting conditions for other soil usages. However, these features present a good opportunity for a multiple-purpose forestry activity like resin tapping as a way to offset potential scenarios of financial loss. Additionally, it could be a sustainable alternative for rural development in this areas and the conservation of ecosystem services.

**More information:** "Influence of climate variables on resin yield and secretory structures in tapped Pinus pinaster Ait. in central Spain". *Agricultural and Forest Meteorology* 202 (83-93). DOI: 10.1016/j.agrformet.2014.11.023

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