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Spotting 5000 trees and their genetic diversity

Research in leaves and wood to promote sustainable forests better resisting to climate change

The Challenge

The GenTree project runs for four years and covers tree species across 10 different sites in Europe. At each site, 50 trees from two different groups will be measured, their DNA analysed and a core taken to show their growth history. This monumental task will see over 5,000 individual trees sampled, with 100 plus researchers trekking through forests from the United Kingdom to Lithuania, and from Norway down to Spain and across to Greece.

Trees cannot simply relocate their home. GenTree will predict how climate change will affect the different and most important forest tree species of Europe.

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Our story

European forests are valued as a source of wood, a place for outdoor pursuits and as a habitat for wildlife. One-third of Europe is covered in woodland. But there is a treasure in the woods that has not yet been collected. This is the genetic variability in the trees.

To open this treasure chest, scientists are hiking into forests to collect measurements, fresh leaves and wood cores from 12 different tree species. Back in the lab, they count tree rings and extract DNA from leaves to shine a light into the genetics that lies behind individual differences. For instance, how and why oak trees growing beside one another and far apart vary in shape, growth and drought resistance.

The 12 species are both economically and ecologically important. The collections will identify species vulnerable to climate change and discover individuals valuable for creating varieties for growing in Europe in future.

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The solution

Areas with especially interesting genetic diversity in a tree species will be pinpointed and then trees conserved or their seeds collected. GenTree researchers will recommend strategies for creating new varieties, such as those able to cope better with drought, predicted due to climate change. Since they are so long lived, it is essential that trees planted today are varied enough; it is the life insurance of forests for coping with environmental change in future decades. Moreover, the research will provide insights in wood chemistry to boost the green chemicals markets.

What's it for?

- The scientific knowledge generated by GenTree on gene diversity and adaptation patterns will make monitoring of trees and forests easier for their conservation, which is especially important during times of environmental change
- Foresters will gain insight into which tree varieties they should breed for future conditions. For example, GenTree will reveal where to find new genetic resources for drought tolerance
- To ensure that public policy help forest tree nurseries stock enough variability in tree types for future conditions
- More than wood can be harvested from trees. Future uses of wood chemicals will be boosted once the genetics behind variation in tree characteristics across habitats is revealed

Contact us

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