

Clip #3 Transcript: Research Process & Methods

First, I collected the leaves from Oregon, because in Oregon there is the sites which has both drought and non-drought sites and I use these two plots for my study and these trees are the clones of the trees from BC and Oregon. And in this fieldwork, I collected more than one thousand leaves—more than one thousand **genotypes** actually because genotypes means here each individual, like humans, they all are humans but they all are different individuals, so it's the same in the trees; they all are poplar trees but they all are different individuals they have different genes/different genotypes. And in those samples I collected the specific leaf because this leaf is completed its growth and so we can say like adult leaf, so its wax composition is completed.

After I collected these leaves I kept them in freezer to keep them fresh, I'm keeping them in the freezer to use them any time I want, and after this I do wax extraction. So the wax extraction is done with some chemicals, for example I am using **chloroform** for this and chloroform dissolves the wax from the leaves. And after I extract the wax from the leaves I put them in very, very small bottles to make **gas chromatography**. In the gas chromatography it shows which chemicals is in these waxes. So, for example, it can be **fatty acids** like **aldehydes**, **primary** or **secondary alcohol**, or **alkanes**, **alkenes**, **ketones** or **wax esters**. There are different types of waxes/**cuticular waxes** and I'm comparing these drought and non-drought clones to see which chemical is different in these waxes. For example, in drought conditions which chemical is more [present] than the non-drought one. And then when I find the specific difference between all clones, like all pairs I can look at [and say] 'this is important in drought conditions, this wax is important to keep my plant fresh in drought conditions to keep its growth in this condition'. So, I can work on this phenotype and I can find the gene related to this phenotype.

When we find this gene related to drought and to improve our plants against drought, first, it should be checked in a research if it really affects this plant. So we are going to find a gene, but we have to check if this finding is true. And then when we are sure, we can use it in governmental areas or in more research.

