Bachelor-/Master thesis at FiBL

**Titel**
Evaluation of plant extracts («Botanicals») as alternatives to copper-based fungicides

**Background and Research questions**
Copper-based fungicides have been used in organic as well as conventional agriculture against a broad spectrum of diseases for more than hundred years. Since copper can accumulate in the soil after repeated applications, substantial efforts have been made for years to reduce or completely avoid the use of copper fungicides. In addition to applying all available indirect measures (e.g. cultivation techniques, choice of varieties), alternative, sustainable products have to be developed for certain crops in order to avoid major yield losses and resistance breakdown. Plant extracts ("botanicals") can contain many active substances which are often rapidly degraded in nature, which makes them promising candidates for copper substitution. By-products from forestry, e.g. resins, are particularly suitable as a source of botanicals, as they contain many bioactive substances, are often produced sustainably and are available in large quantities and at low cost.

**Research questions**
In this project, the potential of various tree resins against different pathogens in different cultures will be investigated. For promising candidates, the feasibility of developing them as plant protection products will be assessed. Optionally (depending on the field of study, e.g. chemistry), identification and characterisation of the (active) ingredients is also feasible.

**Methods**
Various tree resins will be formulated for better applicability and then tested in pot experiments in the greenhouse and/or in field trials for plant compatibility and efficacy against various pathogens.

For promising candidates, a literature study will then be conducted to assess the feasibility of developing them as sustainable plant protection products.

Optionally (depending on the background of the student), the active ingredients can be identified, for example, by means of HPLC-based activity screening.

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**Time schedule**
To be determined
Literature

