Exploring potential benefits of biostimulant treatments in lupin cultivation

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Lupin is a valuable alternative protein source for both human food and animal feed. White- and narrow-leafed lupins are cultivated in Germany alongside traditional protein crops such as broad bean and pea and represent an attractive alternative to (GMO-) soybean from national- and international markets. Our project “P³roLucas” (Optimization of plant performance and products for lupin cascade use) aims at promoting and improving lupin cultivation in Germany and encompasses a wide range of research topics ranging from exploration of lupin alkaloids for industrial use to sequencing of the Andean lupin genome as a resource for future breeding programmes [1].

Central topic is the smart use of so called biostimulants as (partial) alternatives to traditional plant protection products which are increasingly being phased out under European and national regulatory policies. Therefore, we are exploring effects of commercially available biostimulants in narrow-leafed lupin (*Lupinus angustifolius*) on plant growth and protection against biotic- and abiotic stresses. Products based on *Bacillus* spec. were identified as the most promising candidates. We implemented a combined approach of seed treatments including the so-called seed-priming strategy, which is close to agricultural practice. In addition, the localisation of bacteria after seed treatments and their influence on plant development and induction of resistance to lupin anthracnose, were investigated. We present results from lab-scale experiments, currently being validated in field experiments and analyses at the metabolic- and transcriptomic level, using consolidated and newly generated genomic resources within this project.

***References:***

[1] https://www.biosc.de/p3roLucas\_en