

## Licensing Opportunity

# A Plant-Inspired Nanofertilizer for Sustainable Agriculture



**Medicago sativa (alfalfa) laboratory tests showed that the nanofertilizer performed equally well or better than a conventional pesticide on overall plant viability.**

### Summary

We have developed a patented, environmentally benign nanofertilizer and delivery system based on silica. The basic silica technology is inspired by the way plants deal with stress naturally and can also be used as a nanodelivery system for other active ingredients.

### Background

The nanofertilizer reliably delivers beneficial orthosilicic acid to seeds and plants, thereby strengthening the plant through a variety of different mechanisms. At the same time, the nanofertilizer can deliver other active ingredients (including pesticides), reducing the amount of the active ingredient needed for plant protection purposes.

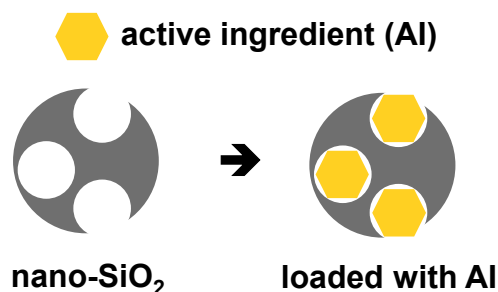
At the end of its life cycle, the nanofertilizer degrades tracelessly in the environment.

Based on initial interviews with farmers and distributors, we expect that farmers using our nanofertilizer and delivery system can save approximately 150 CHF per hectare, and will reduce the general input of pesticides on their fields by a potential factor of up to five.

### Invention

A silica-based nanodelivery system was designed. The resulting silica nanoparticles allow for the functionalization with other active ingredients and timely degradation in environment.

In laboratory trials, the silica nanofertilizer strongly enhanced plants' robustness against bacterial infection, and in a first field trial we found more wheat grain yield.



### Fields of Application

- Silica-based active ingredient delivery system
- Reduces amount of pesticide needed
- Safe by design: traceless degradation in soil
- Increases robustness of plants against pathogens and extreme weather

### Patent Status

Patent pending

### Publication

Publications in preparation

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