Success Stories
FEMtech
Dissertationen im
Thema Produktion

AUSTRIAN INSTITUTE OF TECHNOLOGY
TOMORROW TODAY

EndoCaps
Small scale production of bacteria encapsulated beads by extrusion and spraying

Bacteria Formulations for Seed Production

One of the strategic research areas of the AIT Austrian Institute of Technology GmbH is "Microbial Bio-Effectors for Plant Improvement" – microorganisms and compounds for sustainable plant fertilization, crop production and soil improvement. However, to apply our technique on an agricultural scale we need to further improve it and provide seed producers and plant breeders with stable and viable bacteria formulations. To do so, we will follow two approaches for the small scale production of endophyte inoculated seeds: extrusion and spraying.

Integration of the PhD Student into the Organisation

During the lifetime of the project EndoCaps the PhD candidate will gain insight into applied research as well as experimental development, she will get familiar with the organizational structure of universities, research institutes and commercial entities, visit production sites (Saatbau Linz) and have the opportunity to use both lab scale and production equipment for the successful realization of this multidisciplinary project.

She will be supported in her research work by various members of the AIT team. The PhD candidate will be integrated in AIT internal meetings and further trainings, whenever possible and needed. The field test with Saatbau Linz will help her to better understand the needs of industry and company ways of thinking.

Microbial Bio-Effectors for Plant Improvement

This is one of the strategic research areas of the AIT Austrian Institute of Technology: micro-organisms and compounds for sustainable plant fertilization, crop production and soil improvement. AIT's own work and that of many other research groups in the world proved the high potential of using bacteria as alternatives to chemicals in agriculture. Together with a steadily growing number of publications an increasing interest by the agricultural industry in bacteria with the ability to stimulate plant growth and nutrition is to be observed. Despite the enthusiastic expectations of researchers there are still hardly any products on the market.

Endophytes

In spite of limited arable land coupled with rising demand of a steadily increasing human population which could hit 9 billion by 2050, food supply is a global challenge, making production of economically attractive and high quality food, free from unacceptable levels of chemicals, a dire need. The use of micro-organisms with the aim of improving plant growth and health is an important practice and necessary for sustainable agriculture.
Endophytes are per definition microorganisms – bacteria or fungi – that colonize living plant tissue without being pathogenic to the plant. Endophytic bacteria have the potential to be even more successful than rhizosphere bacteria in promoting plant growth because they escape competition with rhizosphere microorganisms and achieve more intimate contact with the plant tissues.

Extrusion and Spraying

The main aim of the FEMtech thesis is to create stable and viable bacteria formulations that at the same time are compatible with existing production processes. Thus both microbiology aspects as well as process requirements need to be taken into consideration. To fulfill these requirements two well-established production methods were chosen: extrusion and spraying.

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Wenn auch Sie ein ähnliches Projekt umsetzen möchten, nutzen Sie die vielfältigen Angebote des Förderschwerpunkts **Talente** des BMVIT (Bundesministerium für Verkehr, Innovation und Technologie).

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