



RHIBAC update July 2007

RHIBAC progress in research

RHIBAC is a collaborative research project supported by the FP6 programme to investigate and develop inoculation by plant growth promoting rhizobacteria (PGPR) as a means of eventually reducing reliance on chemical fertilisers in wheat cultivation. The project builds on the previous FP5 MicroNfix project and includes partners from five EU countries, Israel, Turkey, Brazil and Chile, including two companies in the agricultural sector.

The RHIBAC project commenced on January 1st 2007 and the kick-off meeting of the RHIBAC partners was held at the Institute of Plant Nutrition, University of Hohenheim, Germany, which is the coordinating institution. Partners Austrian Research Centers, Catholic University of Leuven, University Austral de Chile, Embrapa Agrobiologia and Yeditepe University are all providing access to rhizobacteria strains that are promising candidates as PGPR for wheat. These are rhizobacteria which form a close association with plant roots, and may exert a plant growth promotion effect through excretion of plant hormones to encourage root system development, through biological nitrogen fixation, or through mobilisation of bound phosphate in the soil.

Exchange of the strains was organised at the kick-off meeting. It was also decided to conduct initial greenhouse and field trials with these strains to establish overall effects on plant growth and N nutrition to the plant. The RHIBAC partners from Europe, near East and South America work with quite different growing seasons and climates, and it will be interesting to test the performance of PGPR strains at different sites in the project. The first field trials have been set up in Turkey and additional greenhouse trials commenced in Germany, Belgium, Brazil and Chile. *Azospirillum brasilense* strains are being tested as positive controls.



RHIBAC field trial in Turkey (YUDGB)

Austrian Research Centers are sequencing genes involved in plant growth promotion in some of the PGPR. This information may help understand the plant growth promotion effect of these strains and be useful as markers for identification of inoculated strains in samples from field trials. Austrian Research Centers will be collaborating with Catholic University of Leuven for the development of genetically modified PGPR strains to investigate mechanisms of plant growth promotion under controlled conditions in class 1 greenhouses. Furthermore, the partners are developing fluorescent labelled PGPR strains which will assist in the observation of root colonisation by microscope.

University of Hohenheim is profiling the compounds in root exudates of wheat when exposed to PGPR under nitrogen-rich and nitrogen-poor conditions, which are likely to be involved in signalling between plant and PGPR, and is directly observing synergistic activity in a laboratory assay.

ENITIAA are continuing their development, started in MicroNfix, of encapsulated and coated seed formulations of PGPR inocula. These will be compared with similar systems developed by University Austral de Chile and the two partners will work together closely on these aspects.

If you would like to find out more

The RHIBAC website is now available to view at <http://www.rhibac.org>, and this will have regular updates. It also includes a private section for the partners to discuss the project and exchange data. RHIBAC is to be presented at the forthcoming meeting, *RHIZOSPHERE 2*, August 2007 in Montpellier.

The RHIBAC observer group is open to anyone interested in the results of RHIBAC, including farming organisations, agricultural companies, research groups and students. Members will receive a free update every six months. This RHIBAC update may be freely distributed and copied. Anyone wishing to join the RHIBAC observer group

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