Wheat is the major staple crop in India besides rice. Important areas are cultivated under rainfed and/or nutrient-limited conditions and provide a low income to the farmers. The use of intensive cropping systems (high input of chemical fertilizers and pesticides and use of heavy machinery) provokes the degradation of soil structure, which is accompanied by a loss of soil organic matter in the medium term. The use of biofertilizers, particularly bioinoculants such as arbuscular mycorrhizal fungi (AMF) and plant growth promoting rhizobacteria (PGPR), in combination with good agricultural practices, such as the use of manure and legumes for inter- and intracropping, allows to increase yields at lower costs and contribute to the maintenance of soil structure and fertility. This method is intended for application in marginal farming systems, but may also prove useful under high yield conditions.

The biofertilizer network originates from the former ISCB projects SA6 and SA7, which were joined in phase II by FiBL, a world leading research institute in the field of organic agriculture. Together, they presented an integrated project on the development of biofertilizers in wheat cropping systems. The network aims to progress from applied research towards product development.

A pool of potentially active AMF and PGPR from phase I was further developed in phase II. Particular attention was given to the identification of promising synergetic consortia of AMF and PGPR. Tests were performed in *in vitro* assays, at greenhouse level and at field level. Mass cultivation and bioinocula preparation were established to reach field plot production level. Monitoring tools were optimized for testing the identity, viability, genetic stability and functional quality of the bioinoculants, and for following their survival and possible acclimatization under field conditions, as well as their effect on indigenous microflora.

India has a wide variety of climates and cropping systems. The performance of the developed bioinoculants needed to be tested in a comparative way at different locations. Over the last 2½ years, intensive field assays were performed under well contrasted field conditions, paying particular attention to wheat-legume and wheat-rice rotations.

Highly significant yield increases of up to 40% were identified in the wheat crop; in the legume crop *Vigna mungo*, yield increased by 20% compared to the uninoculated treatment. Variable results were measured in rice, which is explicable because the isolates of AMFs and PGPRs originated from a wheat crop. The average yield levels for all 3 crops were low in these experiments, e.g. 2.2 - 3.5 tons/ha of grain for wheat. This reflects the low input level, which is typical for the marginal areas targeted by the research in this network. No research has been conducted yet at higher fertility levels and under long term conditions.

The content of major and trace elements (e.g. zinc and iron) in the harvested grain was also improved by the treatment with bioinoculants. This finding, which needs to be confirmed and further investigated, could have a positive effect on the nutritional value of crops and, consequently on the health of children in India.