

Third Laureate, Research & Development

- **Research Work Title:** Role of lichens and cyanobacteria in biological soil crusts
- **Researcher:** Prof. Dr. Burkhard Büdel
- **Country:** Germany
- **Field:** Plant Ecology and Systematics
- **Scientific Affiliation:** Head of department, University of Kaiserslautern, Germany



Abstract:

Biological Soil Crusts (BSC) are soil surface inhabiting communities composed of lichens, bryophytes, algae, fungi and heterotrophic bacteria in varying configurations living on top and in the upper few millimeters or, more rarely, centimeter of the soil. They initiate the colonization of freshly exposed soils and contribute carbon and nitrogen into the soil. Depending on the climatic zone, they are either the final stage of vegetation or preparing the ground for further succession of vegetation. Biological soil crusts occur in all climatic zones of the Earth but dominate vegetation in hot and cold arid regions. Biological soil crusts are normally initiated by cyanobacteria, only in the temperate zones they might be initiated by green algae. Under moderate disturbance regimes BSCs achieve a more complex vegetation composition, including lichens and bryophytes. So they considerably stabilize soils and prevent soil erosion. Lichens play an immense important role in the stabilization process and also contribute a major part of the carbon gain of a biological soil crust. Besides nutrient enrichment and soil stabilization they also can contribute considerably to the species diversity of arid and semi-arid regions. So far more than 1600 different species of different organizational and taxonomic levels are known from BSCs of the world. Research on BSCs of the Iran just starts and little is known about their presence, distribution and composition.

Biography:

Prof. Burkhard Büdel received his Ph. D. in Botany from University of Marburg during the period of 1986. Currently, he is working as a Professor of Botany in Department of Biology, University of Kaiserslautern. His research has included Ecology and ecophysiology of pro- and eucaryotic algae and lichens; systematics, phylogeny and phylogeography of lichens and algae; diversity, ecology and ecophysiology of biological crusts and films on rocks and soils in arid and semiarid regions and microenvironments of the world; functional morphology and anatomy of lower plants. Their current project is 'Polar crust project.'

