Special Issue

Recent Developments in Biological Nitrogen Fixation in Plants

Message from the Guest Editors

Nitrogen is the nutrient most required by plants, and it is frequently provided at unsatisfactory levels, limiting crop yields. However, the limitation in N supply is due to its scarce elemental abundance. On the contrary, nitrogen in the free state is one of the most abundant elements, accounting for almost 80% of the atmosphere, but most organisms cannot access atmospheric dinitrogen for metabolic purposes. Until the industrial synthesis of ammonia became possible at the beginning of the 20th century, BNF represented the main input of N in agriculture. Afterwards, the importance of BNF as a primary source of N for agriculture diminished. However, there is currently a growing concern about environmental issues. Agriculture is being focused on not only crop productivity but also on environmentally sustainable ways of production. Consequently, BNF has gained renewed relevance as an environmentally friendly technology able to supply N for agriculture. In addition to the rhizobial–legume symbiosis, other associations, with different levels of interaction between microorganisms and plants and different fixed N rates, have been studied and used in agriculture.

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