The Secret of PULSES & BIOLOGICAL NITROGEN FIXATION Revealed

Biological nitrogen fixation is a crucial process in the nitrogen cycle that plays a pivotal role in soil fertility and sustaining agricultural productivity. Pulses, also known as legumes, are well known for their symbiotic relationship with Rhizobium.

This relationship leads to a mutually beneficial exchange of nutrients, with the rhizobium providing fixed nitrogen to the plant in exchange for carbohydrates and a conducive environment for growth. Soybeans are one of the most widely cultivated legumes. When the seeds are planted, the roots release flavonoids that attract and signal compactible rhizobium in the soil. Where the rhizobium infects the root and forms nodules, nitrogen fixation occurs through the action of nitrogenase and enzymes produced by the rhizobia. Fixed nitrogen is then transported to other parts of the plant, promoting growth and development.

Common-beans and Lentils

Common beans encompass various types, such as black beans, pinto beans, kidney beans, and navy beans. They establish a symbiotic relationship with Rhizobium species. Nodules formed in the roots host nitrogen-fixing bacteria, which convert nitrogen in the atmosphere into ammonia, which plants utilize for their nutrient needs. Lentils have a symbiotic relationship with nitrogen-fixing bacteria, where the noodles help in nitrogen fixation, enriching the soil with nitrogen and helping in the growth of the plant.

More on nitrogen-fixation

Chickpeas form nodules in association with mezarhizobium bacteria. They contain Bacteroides’ that carry nitrogen fixation.

Pea bacteria in their nodules are known for fixing atmospheric nitrogen, which supports plant growth and enriches the soil for subsequent crops. Lupins are well known for crop rotation to improve soil fertility and break pest cycles. Checkling vetch forms nodules with rhizobium bacteria. It is grown for both food and fodder purposes.