

RHIZOBIA

Rhizobia are composed of specific groups of bacteria that have the ability to induce symbiotic nitrogen-fixing nodules on the roots or stems of leguminous plants. In the presence of available nitrogen, they can exist as free-living soil saprophytes. At a particular condition (in the absence of available nitrogen), these bacteria interact with the roots or stems of leguminous plants, inducing the formation of nodules in which the fixation of atmospheric nitrogen occurs [1]. The intracellular bacteria, termed as "bacteroids", they have a physiological state that is different from the free-living state. Bacteroids convert atmospheric nitrogen into ammonia, providing the nitrogen requirements of both rhizobia and their host plants. In return, rhizobia receive a carbon source, typically dicarboxylates and other nutrients from the plants [2, 3]. This biological nitrogen fixation (BNF) represents the major source of nitrogen input in agricultural soils. The major nitrogen-fixing systems are the symbiotic systems which can play a significant role in improving the fertility and productivity of low-nitrogen soils [4]. Consequently, rhizobia are of enormous agricultural and economic values [5]. The host plants of rhizobia, leguminous tree species, are classified in the family *Fabaceae* which is the third largest of *angiosperms* with approximately 650 genera and 20,000 species [6]. These plants are both abundant and diverse in tropical forests [7]. It was once believed that rhizobia-legume symbioses had a stringent host specificity. This means that only closely related legumes can be nodulated by a particular rhizobial strain. Up to the present time, many legumes have been found to be nodulated by several rhizobial species which belong to different taxonomic groups.

Exercise; Study and understanding of proposed text (observe, analyze, summarize using note-taking method (written expression) and extract scientific terminologies.