

Influence of *Glomus* species I: growth, N₂ fixation, nodulation and root colonization of peanut

ABSTRACT

Peanut (*Arachis hypogea* L.) var. Matjam grown in an Ultisol obtained from peanut field, was respectively inoculated with *Glomus mosseae* and *G. velum*. Responses of the host plant to treatments was estimated by periodic measurements from the fourth to twelfth weeks, for dry shoot and root weight, nodulation, N₂ fixation (C₂H₂ reduction activity), per cent root colonization and vesicle formation cm⁻¹ root. A proportionate increase in dry weight of root and shoot was observed with increase in sampling time up to the eighth and tenth weeks, respectively. This increase was only significant only in the 10th week for shoot and 8th week for dry weights when compared to that of uninoculated control plants (indigenous species only present). However, the difference between the two *Glomus* species was not a significant for all the samplings. The nodule number plant⁻¹ and N₂ fixation was maximum and significant in the 8th week when compared to uninoculated controls. However, there was a sharp decline in nodulation and N₂ fixation in both the treated and uninoculated plants after this week. This decrease was significant ($P < 0.05$) in *G. mosseae* treatment (at the 12th week for nodulation and 10th - 12th week for N₂ fixation). The difference between *G. mosseae* and *G. velum* was not significant (except, in the 8th and 12th week) for N₂ fixation. Percentage root colonization and formation of vesicle cm⁻¹ root system was significantly higher in *G. mosseae* and *G. velum* plants compared to controls. However, the formation of vesicle was not significantly different at 12th week of observation. Plant responded positively to *G. mosseae* by forming more vesicle than in *G. velum* or indigenously colonized plants.

Keyword: *Glomus* species; Peanut; Nodulation; Root colonization; N₂ fixation