PAK. J. SOIL SCI., VOL. 12 (3-4), 1996

GROWTH AND NODULATION OF GROUNDNUT INOCULATION WITH RHIZOBIUM STRAINS BASED ON DIFFERENT CARRIERS

Azra Shaheen and Rahmatullah[1]

ABSTRACT

Growth and nodulation of Banki and ICGS-44 varieties of groundnut was studied on Shujabad loam (Typic Camborthid) in a greenhouse pot experiment. The groundnut varieties were inoculated with indigenous as well as NC-92 strains of rhizobium based either on peat or local carrier material. The two rhizobium strains based on either of the carrier had a strong interactive effect on growth as well as nodulation of two groundnut varieties. For Banki variety indigenous rhizobium strain based on local carrier proved better. Whereas ICGS-44 variety performed better when inoculated with indigenous strain of rhizobium based on peat. However, before adoption validation of these results under field situation is suggested.

INTRODUCTION

Groundnut is an important cash crop in rainfed areas of Potohar (Chaudhary, 1986). For better yields as well as to curtail its fertilizer input cost, Rhizobium inoculation of groundnut is recommended (Shaheen *et al.*, 1988). Previously foreign strains of Rhizobium were available on imported peat. Recently National Agricultural Research Centre, Islamabad, has started mass production of Rhizobium inoculum available on local carrier to common growers. Local peat material used as a carrier is collected from

with sterilized distilled water. They were then crushed with aseptic forceps and the fluid was streaked on yeast extract manitol agar (YMA) plates (Vincent, 1970). Single colony, picked up after five days, was further purified by its repeated transfer four times on YMA plates. Examination of the population under microscope revealed gram negative, rod-shaped micro organisms.

Pot Study for Symbiotic Effectiveness

A bulk surface sample (0-15 cm) for Shujabad loam (Typic Camborthids) with 18.0 % clay, 29.8% silt and 52.2 % sand was collected from experimental farms of National Agricultural Research Centre, Islamabad. Other physical and-chemical characteristics estimated for the air dried, ground soil (passed through a 2-mm sieve) sample were pH_s = 7.3 , EC_e = 0.89 dS/m , organic matter =1.2 %, total-N = 0.05% , $NaHCO_3$-P = 18 mg kg^{-1} and NH_4OAc extractable K = 114 mg kg^{-1} (Richards, 1954). Ten kg of prepared soil was taken each in a total of 24 pots. Banki and ICGS-44 varieties of groundnut inoculated with NC-92 and indigenous (local) Rhizobium strain based on local as well as peat carrier were tested in all possible combinations. The eight different treatments were imposed in triplicate according to completely randomized design. All pots received a uniform dose of 75 mg