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Effect of edaphic factors on root colonization and spore population of arbuscular mycorrhizal fungi

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Abstract: Arbuscular mycorrhizal (AM) fungi in agricultural crops grown under AEZ-28 (CARS, Joydebpur), AEZ-9 (RARS, Jamalpur), AEZ-11 (RARS, Ishurdi) and AEZ-23 (RARS, Hathazari) in Bangladesh were assessed during 1999 and 2000 to study the effect of edaphic factors on AM colonization and spore population. Mainly cereals, pulses, oilseeds, vegetables and spices were selected for the assessment. The average root colonization of mycorrhizal fungi in all the selected crops during two years differed with the location. Average colonization in 1999 was the highest (43.0%) at AEZ-9 (Jamalpur) and the lowest (37.0%) at AEZ-23 (Hathzari) but in 2000, the highest colonization (45.0) was found at AEZ-11 (Ishurdi) and the lowest (39.0%) at AEZ-28 (Joydebpur). Considerable variation was also observed in average spore number recorded in the 4 AEZs. Maximum average spore numbers (148.0 and 167.0 per 100g soil) were recorded at AEZ-23 (Hathazari) and the minimum (92.0 and 106.0 per 100g soil) at AEZ-28 (Joydebpur) during 1999 and 2000. The spore number varied within and between sites. Edapho-climatic factors played an important role causing variation in AM colonization and spore population. Soil moisture, pH and nutrient levels influenced colonization and spore number. Soil moisture, OM, total N and soil potassium were insignificantly and positively correlated to root colonization. A negative and insignificant correlation of root colonization was observed only with soil phosphorus. A positive but insignificant correlation existed between spore number and edaphic factors.

Keywords: Edaphic factors, AM root Colonization, AP Spore population

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