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Arbuscular Mycorrhizal (AM) association with *Ageratum conyzoides* L. in relation to edaphic factors of Kaziranga Biosphere Reserve (KBR), Assam, India

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SUMMARY

Seasonal variation of arbuscular mycorrhizal (AM) colonization and spore density in the rhizosphere of *Ageratum conyzoides* L. in natural habited of KBR Forest was studied during the year 2007. In addition to these, the different edaphic factors of soil of KBR Assam were also determined. The present investigation measures the mycorrhizal spore population and % of colonization in relation with different edaphic factors. It has also observed that AM associations were prevailed through out the year (highest in spring and lowest in winter). *Acaulospora trappe* Ames and Lind, *Glomus fasciculatum* Gerd. and Trappe were recorded through out the year. The observation revealed a correlation exists in the abundance of AM fungal spore with pH , % of organic matter and available phosphorus. It appears that low light, low soil moisture and temperature could reduce the capacity to form mycorrhiza in plant roots in winter.

Key words : AM Fungi, Edaphic factors, KBR, Seasonal variation, *Acaulospora trappei* Ames and Lind, *Glomus fasciculatum* Gerd. and Trappe.

AM fungi constitute a group of important mutualistic symbiosis soil microorganism, are associated with the roots of angiosperms, gymnosperms, Pteridophytes and some gametophytes of mosses even also in some aquatics plants (Mosse *et al*., 1981; Pocock and Duckett, 1985; Beck-Nielson and Madsen, 2001). Now endomycorrhizal fungi improving the growth and development of the host plant in a variety of plants under different habitats. Remarkable work has been done in India on the distribution of AM fungi in forest soil, agricultural fields and many other horticultural fields (Kulkarni, 2007). AM improved the productivity of host plant in low fertility soils (Jeffries, 1987) and are particularly important for increasing the uptake of slowly diffusing ions such as PO_4^{-3} (Jacobsen *et al*., 1992), imobile nutrients such as P, Zn, Cu (Lambert *et al*., 1979; George *et al*., 1994; George *et al*., 1996; Ortas *et al*., 1996; Liu *et al*., 2002) and Cd (Guo *et al*., 1996). Mycorrhizal association under drought conditions of soil uptake the highly mobile nutrients such as NO_3 (Azcon *et al*., 1996; Subramanian and Charest, 1999). It also protects the plants from soil stress and increase disease resistance (Pozo *et al*., 1999).

AM colonization and AM fungi spore density are predominantly regulated by physico chemical properties of soil. Soil conditions such as pH, temperature, type of soil, moisture content (Ghosh *et al*., 2007), organic matter (Joner and Jakobsen, 1995), nitrogen govern the diversity of AM fungi in soil. AM association is also seasonally changed (Li Lingfei *et al*., 2005; Brundrett and Abbott, 1994). The low light level of the shaded area also shows variability of the colonization and sporulation (Brundrett and Abbott, 1994). The associations of AM fungi with number of bait plants as well as sedges have documented in India. However, the study of AM association with weeds is very meager in the North-Eastern region. Therefore, an attempt has been made to study the AM fungi association in a naturally occurring medicinally important weed *A. conyzoides* L within KBR in relation to different edaphic factors of the soil and influencing their association and spore density in four different seasons of the year 2007.

MATERIALS AND METHODS

In the present study roots and rhizospheric soil samples of *Ageratum conyzoides* L. plant were collected aseptically in sterile polythene bags in different seasons *viz*. summer, autumn, winter and spring during 2007 from KBR which is a significant conserved forest of the world. Physical and chemical properties such as pH , percentage of moisture content, organic carbon and nitrogen; available phosphorous of seasonally collected rhizospheric soil of the experimental plant were determined by standard analytical methods (Jackson, 1973). AM fungal spores of the seasonally collected soil samples were isolated by following the procedure described by Gerdemann and Nicolson (1963); spores were identified consulting with

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