

Application of VAM Fungi to increase Groundnut (*Arachis hypogea* L.) production

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ABSTRACT

The purpose of this research was to investigate the use of VAM (Vesicular Arbuscular Mycorrhiza) fungi species to increase Groundnut production. A pot culture experiment using sterile, potassium deficient soil was conducted to the study with VAM fungi *Acaulospora laevis*, *Glomus fasciculatum* and *Glomus mossae* individually as well as their combination and control in respect to groundnut production. It was observed from result that combination of all VAM fungi shows significant increase in yield followed by *Glomus mossae* treatment. It was also observed that all individual and combination treatments shows more production as compared to control.

Keywords VAM fungi, *Acaulospora laevis*, *Glomus mossae* and *G. fasciculatum*, *Arachis Hypogea*.

INTRODUCTION

Groundnut is one of the important oilseed crops of India, growing in the semi-arid tropic region. VAM fungi forms symbiotic relationship with roots of higher plants and beneficial to both fungi and host plant [1,2]. AM fungi enhance plant growth mainly through nutrient uptake. In mycorrhizal colonization, there are reports of increased uptake of Phosphorous and other micro and macro - nutrients which are available in less quantities in the soil [3,4,5]. The increased plant growth has been observed by some workers due to VAM [6,7,8]. The present study was undertaken to evaluate role of VAM fungi in the growth of groundnut crop plants.

METHODOLOGY

The culture of *Acaulospora laevis*, *Glomus fasciculatum* and *Glomus mossae* was procured from 'Center for Natural Biological Resources and Community Development, Bangalore'. The seeds of groundnut were obtained from Mahatma Phule Krishi Vidyapeeth (MPKV), Rahuri, District- Ahmednagar. The culture was mass multiplied on root stock of the Guinea pig grass and maize as a host plant. The seeds of uniform size and free from visible defects were selected for the study. The three VAM fungi *Acaulospora laevis*, *Glomus fasciculatum* and *Glomus mossae* were used for mycorrhizal treatment as individual and in combination as shown in the table. The soil selected for experiment with p^H 8.24 was oven sterilized. The earthen pots with size 25 centimeter diameter, sufficient depth and proper drainage were selected for the experiment. Pots were filled with 7 kg of sterilized mixture of soil sand and farm yard manure (FYM). Nonsterile soil, sand and FYM were filled in the earthen pot as a control. Every mycorrhizal treatment was carried out in 10 pots separately and control was with 5 pots. In each pot 15 gramm soil containing VAM spores were placed below the groundnut seed. The plants were sufficiently irrigated and grown for further

observation. The observations was recorded for production of the crop after harvesting.

RESULTS AND DISCUSSION

The influence of VA mycorrhizal fungi on yield (production) of groundnut was significant in combination and also in individual treatment as compared to control. The results in respect to Table - 1 revealed that combine treatment of *Acaulospora laevis*, *Glomus fasciculatum* and *Glomus mossae* shows maximum yield 19.9 gm (40.14%) followed by *Glomus mossae* 18.9 gm (33.09%), combination of *Acaulospora laevis*, and *Glomus mossae* 18.6gm (30.98%) , *Acaulospora laevis* 18.4 gm (29.57%), *Acaulospora laevis*, *Glomus fasciculatum* 18.2gm (28.16%), *Glomus fasciculatum* and *Glomus mossae* 18 gm (26.76%) and *Glomus fasciculatum* 17.3 gm (21.83) as compared to control having 14.2 gm weight of the pod at the time of harvesting.

Results of the experiment confirms various reports on enhanced plant growth due to AM inoculation to medicinal plants [9,10,11] and forest tree species [12] Similar observations were noted by Patterson *et al* [13] and on *Vigna unguiculata* (L) Walp varieties Pusa 51 by Arumugam *et al* [14].

Table 1

Sr. No.	Parameter	
	Weight of the pod (gm)	Percentage
Control	14.2	
<i>Acaulospora laevis</i>	18.4	29.57
<i>Glomus fasciculatum</i>	17.3	21.83
<i>Glomus mossae</i>	18.9	33.09
<i>Acaulospora laevis</i> + <i>Glomus fasciculatum</i>	18.2	28.16
<i>Acaulospora laevis</i> + <i>Glomus mossae</i>	17.2	30.98
<i>Glomus Fasciculatum</i> + <i>Glomus mossae</i>	18	26.76
<i>Acaulospora laevis</i> + <i>Glomus fasciculatum</i> + <i>Glomus mossae</i>	19.9	40.14

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