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VESICULAR ARBSCULAR MYCORRHIZAL INFLUENCE ON GROWTH AND DEVELOPMENT OF *MORINGA OLEIFERA* UNDER PLANTING DENSITY STRESS

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Figure 1: Moringa plants

Background



- Moringa, also known as the 'drumstick tree,' is an indigenous tree belonging to the Moringaceae family (Khwaja *et al.*, 2010).
- Native to the Himalayan regions of South Asia.
 - India, Pakistan, and Nepal.
- Vesicular Arbuscular Mycorrhizae (VAM), a type of soil fungi that forms a symbiotic relationship with plant roots (Johansson *et al.*, 2004).
- Moringa in high planting densities = improves yield/area (Mabapa *et al.*, 2017).



Methodology

Experimental design

- 5 x 4 complete factorial experiment (RCBD).
- Five Planting densities (1, 2, 3, 4, 5).
- Four VAM levels (0, 10g, 20g, and 30g).
- Each treatment had three replicates.



Figure 2: Experimental layout

Cultivation Practices



- All seedlings were watered with 250ml of water every two days.
- Each plant was fertilized with 2.5g of NPK at (2:3:2).
- VAM treatment was applied every four days.



Figure 5: Weeding



Figure 7: Scouting and monitoring of pest



Figure 6: Spraying pesticides



Results & Discussion

Table 1: Source of variation affecting the Number of branches, Stem diameter and plant height of moringa at 60 days after initiation of treatment application under microplot conditions.

Source	DF	Stem diameter		Plant height		No. of Branches	
		MS	TTV	MS	TTV	MS	TTV
Reps	2	5.41	29.05 ^{ns}	51.96	10.89 ^{ns}	3.02	23.61 ^{ns}
PD	4	11.30	60.96 ^{***}	353.19	74.04 ^{***}	3.13	24.47 ^{**}
Myco	3	0.69	3.70 ^{ns}	29.39	6.16 ^{ns}	2.03	15.87 ^{ns}
Myco×PD	12	0.52	2.79 ^{ns}	27.57	5.78 ^{ns}	3.57	27.91 ^{***}
Error	38	0.70	3.76 ^{ns}	14.88	3.12 ^{ns}	1.04	8.31 ^{ns}
Total	59	18.62	100	476.99	100	12.79	100

*** Highly significant at $P \leq 0.05$, ns= not significant, TTV (%) = Total Treatment Variation.

Conclusion and Recommendations



- VAM interaction was able to increase the number of branches.
- VAM had a positive effect on the growth and development of moringa.
- However, when plant density was more than two VAM was unable to help alleviate stress.
- Planting density should be kept at a maximum of two.
- Results need to be validated over another season for definitive assessment.