EFFECT OF RHIZOBIUM INOCULATION ON GROWTH AND YIELD OF PEANUT (*Arachis hypogaea* L.) CULTIVARS IN UGANDA

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Objectives of the Study

To determine the effect of introduced rhizobium strains on the yield performance of elite peanut cultivars in Uganda. The specific objectives are;

1. To determine the viability of the introduced strains under Ugandan conditions.
2. To compare the effectiveness and competitiveness of introduced rhizobia strains with the native strains on elite peanut cultivars.
3. To determine the effect of the selected rhizobia strains on growth and yield parameters of elite Peanut cultivars under field conditions.

Materials and Methods

The study is carried out in the laboratory, Green house and under field conditions as follows;

Laboratory Work.

Viability of the introduced rhizobia strains will be determined in the Microbiology lab located in the college of Agricultural and Environmental Sciences at Makerere University main campus. An experiment has been set up in a randomized complete block design with 10 replicates to determine the nodulation and activeness of the strains on two elite peanut cultivars. The Cultivars and rhizobia strains are listed bellow. **Table 1**

Groundnut Cultivar	Rhizobia Strains
Serenut 2T	Control
Serenut 4T	Vault
	Peanut Special
	Liquid Hi-stick
	Granular Spherical
	Liquid Lift
	Blup 1
	Blup 2
	Blup 3
	Liquid First step

Green House Study.

Three experiments has been setup in the green house to determine the effectiveness and competitiveness of the introduced rhizobia strains compared with local strains. The experiments will be carried out on three different types of media namely, washed and sterilized sand, sterilized soil and unsterilized soil. The treatment combinations will be as indicated in **table 2** below.

Cultivars studied	Medium of growth	Selected Nitrogen Source
Serenut 2T	Sand	Liquid Hi-stick
Serenut 4T	Sterilized soil	Granular Spherical
	Un sterilized soil	Liquid Lift
		Liquid First step
		150kgNha^{-1}
		Control

Expected outcome of the research

- Increase Peanut yields by using the introduced selected strain.
- The nodulation effects of the introduced strains will be understood under the Ugandan conditions
- The most effective combination of stra will be identified and the strain will be provided to Makerere University Microbiology for multiplication and made available to peanut farmers.

The results from this research are intended to help farmers to cost effectively boast their yields and reduce food shortage without causing harm to the environment.

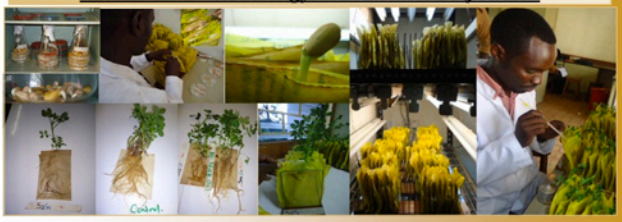
Preliminary results

From the 9 introduced strains, 4 strains have been selected for green house experiments based on effective nodule counts and nodule activity. The four strains are;

- Liquid Hi-stick
- Granular Spherical
- Liquid Lift
- Liquid First step

These strains are now being tested in the green house experiment to determine their effectiveness and competitiveness compared to the local strain.

Work in the microbiology lab to achieve objective 1



Field experiment.

An experiment has been set up in the field to determine the effect of promising rhizobia strains on growth and yield parameters of two peanut cultivars. The experiment will be a split plot in a randomized complete block design with three replicates. Treatments used are two peanut cultivars in combination with the selected promising rhizobia strains.

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