INTRODUCTION

Vermiwash is a liquid that is collected after the passage of water through earthworm biomass. It is advantageous as a foliar spray to induce higher growth. vermiwash is an effective plant growth hormone, thus helps in growth and yield enhancement. It is considered as a valuable foliar spray and a bio-pesticide. Plant growth hormones such as auxins and cytokinin apart from nitrogen, phosphorus, potash, and other micro nutrients are present in the vermiwash, apart from the hormones, nitrogen fixing bacteria like Azotobacter sp., Arobacterium sp., Rhizobium sp., and some phosphate solubilizing bacteria are present in it. Probiotics are used in growth of plants due to its multidimensional performance in enhancing the nutritional property. The \textit{Trichoderma strains} are capable of increasing growth parameters, maximizing the uptake of nutrients through adaptive reprogramming of its own as well as host transcriptome. Probiotics additionally is useful in increasing the shelf life of vermiwash.

Objectives Achieved during the project:

- Vermiwash wash was extracted from \textit{Eudrilus euginiae}
- Probiotic microorganism \textit{Trichoderma harzianum} was cultivated in the laboratory
- Probiotic vermiiformulation was developed by addition of \textit{T.harzianum} with vermiwash.
- Seed germination test was performed to check the efficiency of the prepared Probiotic vermiiformulation and compare with standard IAA and Water.
- Evaluated the growth efficiency of Probiotic vermiiformulation on \textit{S.rebaudiana} in pot cultures.
- Standardised the phyto chemical Extraction procedure for the Plant biomass.
- Phytochemical analysis of the plant extract for bioactive components was carried out in the laboratory
- Screening for hypoglycemic properties was carried out:In vitro - Alpha amylase inhibition assay

Methodology:
Vermiwash was extracted from earthworm biomass using cold and heat shock method.

Probiotic Vermiformulation was developed using *Trichoderma harzianum* as additive to the collected vermiwash.

Germination studies were performed to check the efficiency of Probiotic vermiformulation, IAA, and Water.

Pot culture experiment was setup.

Growth Index & Vigor Index were estimated by morphometric method.

Plant material was extracted using reflux condenser using water.

Preliminary phytochemical analysis using biochemical tests

*Thin Layer Chromatography* studies were performed.

In-vitro alpha amylase inhibition assay to screen the hypoglycemic properties of the plant extract.

**RESULTS AND CONCLUSION:**

1. The method of extraction of the vermiwash was slightly modified during this experiment with reference to other methods. The extracted vermiwash when mixed with the secondary metabolites produced from the *Trichoderma harzianum* serves as a better foliar spray enhancing the growth regulatory properties.

2. The Vermiwash extracted is not in its purest form, and has some impurities in them. However, the growth regulatory activities shown by the Vermiwash extract has been better compared to the water and synthetic growth regulator. It shows that the Vermiwash can be extracted easily and used as a foliar spray to organically get a better yield. The growth regulatory activities of probiotic vermiformulation has certainly been proved positive when we see the growth index of the plants sprayed by PV, IAA, and Water. This helps in concluding that the Vermiwash can definitely be used as a foliar spray and is economically more feasible. It yields a better quality of plants and products organically.

3. *In-vitro* alpha amylase inhibition assay shows maximum inhibition of the enzyme in aqueous extracts probiotic vermiformulation sprayed plants compared to synthetic regulator sprayed plants and water sprayed plants. Henceforth, it can be concluded that probiotic vermiformulation sprayed *Stevia rebaudiana* plants can be used as an effective supplement in treating diabetes.

**SCOPE FOR FUTURE WORK:**
Probiotic vermiformulation can be used as an effective foliar spray since it helps promoting the growth indices of the plant compared to synthetic regulator and water. The aqueous extracts of the probiotic vermiformulation sprayed plants can be used as an effective dietary supplement in treating diabetes, since it shows maximum alpha amylase enzyme inhibitory potential compared to synthetic regulator IAA and water sprayed plants aqueous extracts.