STUDY ON THE AZOLLA PRODUCTION

EP No:50/2007-08,;**Research centre:**Kalamavoor Modern Nursery Centre,
Range: Dindigul Modern Nursery Range, Modern Nursery Division, Dharmapuri;
Scheme:-JA Research

Introduction

Azolla, a fast-growing aquatic fern, is widely recognized for its role in sustainable agriculture, particularly as a biofertilizer and livestock feed. Its ability to fix atmospheric nitrogen through its symbiotic relationship with *Anabaena azollae* makes it a valuable resource for improving soil fertility and crop productivity. The experiment, titled *"Study on the Azolla Production,"* aimed to evaluate the efficiency of *Azolla* (a nitrogen-fixing aquatic fern) as a feed for earthworms and assess its impact on vermicasting production. The study focused on optimizing the growth medium for *Azolla* and analyzing the nutritive value of the resulting vermicasting. The experiment also explored earthworm multiplication rates under different feed conditions, providing insights into sustainable agricultural practices.

Objective

- Evaluate *Azolla* production across different growth media.
- Determine the optimal medium for *Azolla* cultivation.
- Analyze the nutritive value of vermicast produced from *Azolla*-fed earthworms.

Materials and Methods

Materials

The experiment was conducted at Kalamavoor Modern Nursery Centre(EP NO 50/2007-08) of Dindigul Modern Nursery Range during the year 2007-08. Totally five treatments applied in this study to evaluate the production of azolla. Five azolla beds for each treatment (1m × 1m × 0.30m) with different growth media formed. Five

Vermicasting tubs filled with FYM (Farm Yard Manure), press mud, and dried *Azolla*.*Eisenia fetida* (100 worms per tub) earthworm spread in the beds along with Super phosphate, rock phosphate, azomite, and Effective Microorganism Solution (EMS) have been applied. Treatment details have been given below.

- Soil testing for nutrient analysis (N, P, K, Fe, Mn, Cu, Zn) analyzed separately.

Methods

- *Azolla* was harvested, dried, and mixed with EMS before feeding earthworms.
- Vermicast quantity and earthworm counts were recorded periodically.
- Nutrient analysis was conducted at the Soil Testing Lab, SFRI, Chennai.

Azollla production in different treatments

Treatment	Growth Medium Composition	Azolla Yield (Kg)
T1	FYM + Super phosphate + Rock phosphate (150kg+50g+50g)	74
T2	Cow dung + Super phosphate + Rock phosphate + Azomite(150Kg+75g+75g+75g)	104
T3	FYM + Red earth + Super phosphate + Rock phosphate + Azomite (75kg+75kg+50g+50g+50g)	208
T4	Cow dung + Red earth + Super phosphate + Rock phosphate(75Kg+75Kg+50g+50g)	216
T5	Top soil + Super phosphate + Rock phosphate + Azomite(75Kg+100g+100g+100g).	12

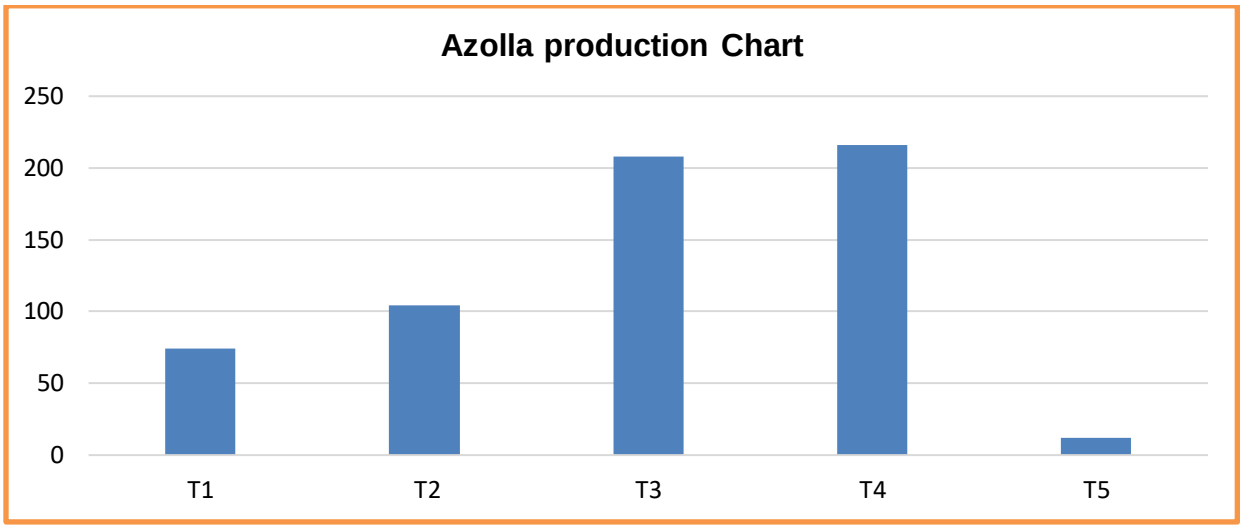
Results and Discussion

The production data shows that, Highest production of Azolla had registered in T4 (216 kg) followed by T3 (208 kg and Lowest yield of Azolla had registered in T5 (12 kg).With respect toVermicastings production all the tubs produced 25–28 kg of vermicastings, with Tub 4 showing the highest production of 28 kg.Earthworm populations have been increased from 100 to 210–350 in the Vermicastings tubs with

Vermicastings tub 3 had registered highest number of populations and Vermicastings tub 5 had registered lowest earthworm population and also low number of earthworm populations tub had shows low production of Vermicastings.Hence the study revealed that, Azolla as feed increased the earthworm populations and also increased the productivity of the Vermicastings which conforms that Azolla is one of the feed for earthworm for Vermicastings production and also azolla non- toxcity feed.

Table1: Vermicastings production and earthworm multiplication

S.No.	Sample	Total Vermicastings production (Kg)	No of earthworms at end of the experiment
1	VC Tub1	26	330
2	VC Tub 2	27	330
3	VC Tub 3	27	350
4	VC Tub 4	28	320
5	VC Tub 5	25	210



The chart represents the Vermicastings production and earthworm multiplication

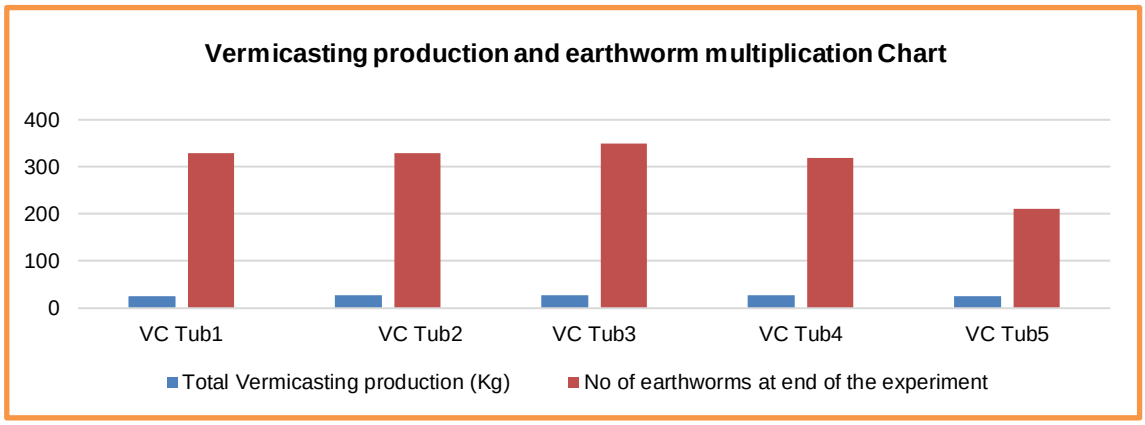
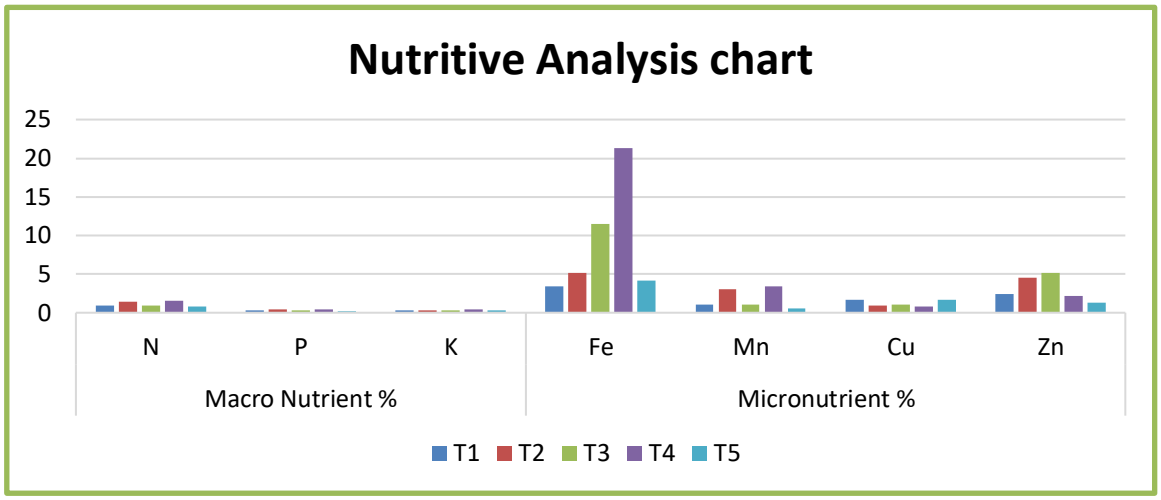


Table Showing nutritive values of samples

Sl. No	Sample	Macro Nutrient %			Micronutrient %			
		N	P	K	Fe	Mn	Cu	Zn
1	T1	0.98	0.36	0.34	3.41	1.01	1.72	2.39
2	T2	1.45	0.46	0.32	5.19	3.02	0.96	4.47
3	T3	0.99	0.32	0.33	11.45	1.02	1.10	5.21
3	T4	1.59	0.46	0.46	21.32	3.36	0.86	2.15
3	T5	0.83	0.21	0.35	4.19	0.51	1.68	1.33

Chart showing nutritive values of sample



With respect to Nutritive ValueHighest N (1.59%) and Fe (21.32%) had exhibited in T4 these two nutrients are essential for plant growth.T2 showed highest amount of Zn (4.47%) and Mn (3.02%), compared to other treatments these two nutrients are important for soil health. Quality analysis report shows most of nutritive values are higher in sample from FYM and dried azolla mixture with some exemptions.

Recommendations

1. The present study concluded that, T4 (Cow dung + Red earth + Super phosphate + Rock phosphate) had recommended for Azolla production also Azolla has been recommended for feed of earthworms for Vermicastings production and application of azolla has increased population growth of earthworms in the all the tubs.
2. The experiment demonstrated that *Azolla* grown in cow dung-enriched media (T4) significantly enhances vermicasting quality and earthworm productivity.