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EFFECT OF ENRICHED VERMICOMPOST ON GROWTH AND YIELD OF BABY CORN (*ZEA MAYS* L.)

Mahammad Riyaz*, Ramesha Y. M., Krishnamurthy D., Vishwanatha S., Chandranaik M.,
Ajayakumar M. Y. and Mahadeva Swamy

Department of Agronomy, College of Agriculture, Raichur, University of Agricultural Sciences,
Raichur-584104, Karnataka, India

*Corresponding author E-mail: mdriyazriyaz688@gmail.com

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ABSTRACT

A field experiment was conducted at Agricultural Research Station, Dhadesugur during *kharif*, 2024 to study the effect of enriched vermicompost on growth and yield of baby corn (*Zea mays* L.). An experiment was laid in RBD design with eight treatments and replicated thrice. The results revealed that application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + FeSO₄ @ 10 kg ha⁻¹ + ZnSO₄ @ 25 kg ha⁻¹ + foliar spray of ZnSO₄ and FeSO₄ @ 0.5% at 45 DAS recorded significantly higher growth parameters viz., plant height, number of green leaves per plant, leaf area per plant, leaf area index, dry matter production and its accumulation in different plant parts, yield parameters viz., number of cobs per plant, cob length, weight of cob, green cob yield (12570 kg ha⁻¹) and green fodder yield (29010 kg ha⁻¹). However, application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + ZnSO₄ @ 25 kg ha⁻¹ + foliar spray of ZnSO₄ @ 0.5% at 45 DAS and application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + FeSO₄ @ 10 kg ha⁻¹ + foliar spray of FeSO₄ @ 0.5% at 45 DAS which were found on par with each other with respect to growth, yield and yield parameters. Further, lower growth parameters and yield parameters were noticed in control treatment.

Keywords : Baby corn, Enriched Vermicompost, Green cob yield.

Introduction

Maize (*Zea mays* L.) is emerging as the third most important cereal crop in the world after wheat and rice. It is called as “Queen of Cereals”, due to high productive potential, easy to process, low cost than other cereals (Jaliya *et al.*, 2008), besides serving as human food and animal feed, it has wide industrial application. Maize is classified into different groups or types based on the endosperm of kernels among which baby corn is grown for vegetable purpose. Importance of maize as vegetable is little known to the Indian farmers in spite of the fact that it fetches very lucrative price in national and international markets.

Baby corn is one of the most important dual-purpose crops grown round the year in India (Singh *et al.*, 2015), the earliness facilitates crop diversification, increase overall cropping intensity in a year and

increases profitability. Baby corn is becoming popular in domestic and foreign markets and has enormous processing and export potential. Baby corn has the good nutritive potential therefore it has got wide demand as vegetable. Dass *et al.* (2008) found that 100 g of baby corn contained 89.1 per cent moisture, 0.2 mg fat, 1.9 g protein, 8.2 mg carbohydrate, 0.06 g ash, 28.0 mg calcium, 86.0 mg phosphorus and 11.0 mg of ascorbic acid.

Biofertilizers significantly contribute to soil fertility by converting atmospheric nitrogen through symbiotic associations with plant roots or as free-living organisms, dissolving unavailable phosphates, and releasing plant growth-promoting substances. They are widely promoted for utilizing natural biological mechanisms to enhance nutrient availability. As a renewable, eco-friendly, and economical input, biofertilizers ensure a sustainable nutrient source.

Moreover, they improve soil organic matter content, which plays a key role in maintaining soil health and preventing degradation.

Azospirillum is a type of biofertilizer that contains nitrogen-fixing bacteria. These bacteria form a symbiotic relationship with plant roots, enhancing nutrient uptake and promoting plant growth. Phosphorus solubilizing bacteria (PSB) are crucial for converting chemically fixed and applied phosphorus into a plant-accessible form, leading to improved crop yields. Depending on their phosphorus-solubilizing abilities, PSB can make up 1 to 50 per cent of the total microbial population in the soil.

Most of the organic manures are very low in nutrient contents, which are not sufficient to meet the nutritional requirement of the crops, especially when inorganic fertilizers are not applied. Vermicompost not only adds microbial organisms and nutrients that have long lasting residual effects, it also modulates structure to the existing soil, increases water retention capacity. It improves the availability of air and water, thus encouraging seedling emergence and root growth.

The integration of beneficial microbes with micronutrients like zinc (Zn) and iron (Fe) into organic manures such as vermicompost, neem cake and compost, along with biofertilizers, is more effective than using organic manures alone. This synergy improves nutrient availability through processes like nitrogen fixation, phosphate solubilization, and enhanced uptake of Zn and Fe. Therefore, combining organic inputs with microbial inoculants, micronutrients and biofertilizers provides an eco-friendly, economical and sustainable strategy for efficient nutrient management and better crop productivity.

Materials and Methods

A field experiment was conducted during *kharif*-2024 at Agricultural Research Station, Dhadesugur, UAS, Raichur Karnataka (15° 69' N, 76° 89' E, altitude 358 m). The soil of the experimental site belongs to *Vertisols* (medium black soil). Regarding chemical properties, the soil was alkaline in reaction (pH-8.13), low in EC (0.30 dS m⁻¹) and low in organic carbon content (0.41%). The soil was low in available nitrogen (274.2 kg ha⁻¹), high in available phosphorus (29.42 kg ha⁻¹) and high in available potassium (345.6 kg ha⁻¹).

The experiment was laid out in Randomized Complete Block Design (RCBD) with three replications and eight treatments comprising of different biofertilizers and micronutrients. The treatments consisting of T₁ : Control, T₂ : EVC with

Azospirillum @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹, T₃ : EVC with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + ZnSO₄ @ 25 kg ha⁻¹, T₄ : EVC with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + FeSO₄ @ 10 kg ha⁻¹, T₅ : EVC with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + ZnSO₄ @ 25 kg ha⁻¹ + FeSO₄ @ 10 kg ha⁻¹, T₆ : EVC with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + ZnSO₄ @ 25 kg ha⁻¹ + Foliar spray of ZnSO₄ @ 0.5% at 45 DAS, T₇ : EVC with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + FeSO₄ @ 10 kg ha⁻¹ + Foliar spray of FeSO₄ @ 0.5% at 45 DAS and T₈ : EVC with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + FeSO₄ @ 10 kg ha⁻¹ + ZnSO₄ @ 25 kg ha⁻¹ + Foliar spray of ZnSO₄ and FeSO₄ @ 0.5% at 45 DAS. The baby corn hybrid G-5417 was selected for the study. Seeds were sown by adopting line sowing method at spacing of 45 cm x 25 cm on 12th July, 2024.

From randomly tagged five plants, plant height was measured on the five tagged plants individually from ground level to the base of fully opened top leaf. Biometric observations were recorded at 15 days interval. At the time of harvest, the cobs from the five randomly selected plants were used to record the yield components. Length of cob with husk and without husk was measured from base to the tip of the cob and was expressed in centimetre (cm). The width of the cob was measured using vernier callipers and average was recorded as the cob girth with husk and without husk and expressed in centimetre. The cob weight with husk and without husk was recorded from the samples drawn from the produce obtained in each of the net plot and is expressed in grams per plant. The cobs of all the plants from net plot were harvested and the total fresh cob yield per plot was recorded and expressed in kilogram per hectare (kg ha⁻¹). The green fodder yield was recorded after harvest of the cobs and expressed in kilogram per hectare (kg ha⁻¹). Data analysis and interpretation was done using Fisher's method of analysis of variance (ANOVA) technique as given by Panse and Sukhatme (1967).

Results and Discussion

Growth parameters

Plant height (cm)

Results revealed that, taller plants were observed at 15, 30, 45 DAS and at harvest due to application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + FeSO₄ @ 10 kg ha⁻¹ + ZnSO₄ @ 25 kg ha⁻¹ + foliar spray of ZnSO₄ and FeSO₄ @ 0.5% at 45 DAS (29.8, 69.1, 156.2 and 190.2 cm, respectively) as compared to other treatments (Table

1). It was followed by the treatment receiving the application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + ZnSO₄ @ 25 kg ha⁻¹ + foliar spray of ZnSO₄ @ 0.5% at 45 DAS (28.8, 67.0, 152.3 and 185.3 cm, respectively) and was found on par with the application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + FeSO₄ @ 10 kg ha⁻¹ + foliar spray of FeSO₄ @ 0.5% at 45 DAS (28.6, 65.9, 151.1 and 183.4 cm, respectively). Whereas, control treatment recorded significantly shorter plant height at different growth stages (24.1, 57.8, 134.5 and 163.3 cm, respectively).

The significant improvement in plant height across all growth stages may be attributed to a synergistic effect of organic, biological and micronutrient inputs. *Azospirillum* likely contributed to atmospheric nitrogen fixation and auxin production, while PSB enhanced phosphorus availability. Additionally, the presence of zinc and iron in both soil and foliar forms might have facilitated enhanced enzymatic activity, chlorophyll synthesis and overall metabolic efficiency. These physiological improvements could have contributed to increased cell elongation and better plant vigour. Similar findings on plant height were also reported by Kumar and Mehera (2022) in maize and Bhardwaj *et al.* (2023).

Number of green leaves per plant

Results indicated that, application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + FeSO₄ @ 10 kg ha⁻¹ + ZnSO₄ @ 25 kg ha⁻¹ + foliar spray of ZnSO₄ and FeSO₄ @ 0.5% at 45 DAS recorded significantly a greater number of green leaves per plant at 15, 30, 45 DAS and at harvest (5.6, 7.3, 11.1 and 14.8, respectively). This treatment was followed by the application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + ZnSO₄ @ 25 kg ha⁻¹ + foliar spray of ZnSO₄ @ 0.5% at 45 DAS at 15, 30, 45 DAS and at harvest (5.4, 7.1, 10.8 and 14.3, respectively) and application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + FeSO₄ @ 10 kg ha⁻¹ + foliar spray of FeSO₄ @ 0.5% at 45 DAS at 15, 30, 45 DAS and at harvest (5.3, 7.0, 10.7 and 14.2, respectively) which were on par with each other. Whereas, control treatment recorded significantly lower number of green leaves per plant at different growth stages at 15, 30, 45 DAS and at harvest (4.6, 6.0, 9.3 and 12.2, respectively) (Table 1).

The consistent increase in the number of green leaves per plant across growth stages may be attributed to the cumulative influence of organic amendments and

micronutrients on plant metabolism and vegetative development. The improved availability of nitrogen from *Azospirillum* and solubilized phosphorus from PSB likely enhanced meristematic activity, contributing to greater leaf initiation. Moreover, zinc and iron, being essential cofactors for photosynthetic and enzymatic processes, could have promoted cell division and leaf expansion. These outcomes corroborate the findings of Nirphal *et al.* (2010) in maize, Thamam and Mehera (2022) in sweet corn.

Leaf area (cm² plant⁻¹)

Among different treatments, results revealed that, application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + FeSO₄ @ 10 kg ha⁻¹ + ZnSO₄ @ 25 kg ha⁻¹ + foliar spray of ZnSO₄ and FeSO₄ @ 0.5% at 45 DAS recorded significantly higher leaf area at 15, 30, 45 DAS and at harvest (551.3, 1723.7, 2892.1 and 5208.5 cm² plant⁻¹, respectively). Further, application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + ZnSO₄ @ 25 kg ha⁻¹ + foliar spray of ZnSO₄ @ 0.5% at 45 DAS at 15, 30, 45 DAS and at harvest (517.2, 1678.5, 2820.6 and 5080.7 cm² plant⁻¹, respectively) and application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + FeSO₄ @ 10 kg ha⁻¹ + foliar spray of FeSO₄ @ 0.5% at 45 DAS (516.0, 1677.4, 2787.5, 5018.3 cm² plant⁻¹, respectively) were on par with each other. Whereas, control treatment recorded significantly lower leaf area at different growth stages (360.0, 1494.5, 2457.2 and 4450.2 cm² plant⁻¹, respectively) (Fig 1.).

The substantial increase in leaf area can be ascribed to the synergistic effect of organic, biological and micronutrient components enhancing both nutrient availability and physiological activity. Leaf expansion is directly influenced by nitrogen and phosphorus availability, both of which were likely supported by the microbial activity of *Azospirillum* and PSB. Moreover, zinc and iron play vital role in auxin synthesis and chlorophyll biosynthesis, respectively, which facilitate cell division and expansion in foliage. Enhanced photosynthetic surface area is a likely outcome of this nutrient synergy. These findings are consistent with those of Chand *et al.* (2017) and Ganesha *et al.* (2020) in baby corn.

Total dry matter production

Results observed that, significantly higher total dry matter production at 15, 30, 45 DAS and harvest was noticed with the application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10

kg ha⁻¹ + FeSO₄ @ 10 kg ha⁻¹ + ZnSO₄ @ 25 kg ha⁻¹ + foliar spray of ZnSO₄ and FeSO₄ @ 0.5% at 45 DAS (5.34, 34.3, 72.9 and 137.1 g plant⁻¹, respectively). Application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + ZnSO₄ @ 25 kg ha⁻¹ + foliar spray of ZnSO₄ @ 0.5% at 45 DAS (5.14, 33.3, 70.8 and 133.2 g plant⁻¹, respectively) was on par with the application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + FeSO₄ @ 10 kg ha⁻¹ + foliar spray of FeSO₄ @ 0.5% at 45 DAS (5.06, 33.1, 70.6 and 132.4 g plant⁻¹, respectively). Whereas significantly least total dry matter production was recorded in the control treatment at different growth

stages (4.09, 28.9, 61.9 and 116.8 g plant⁻¹, respectively) (Fig. 2).

The progressive increase in total dry matter production across growth stages under the enriched vermicompost treatment may be attributed to improved nutrient dynamics, root proliferation and enhanced photosynthetic efficiency. The synergistic effect of *Azospirillum* and PSB likely promoted early root colonization and nutrient uptake, while zinc and iron played crucial roles in chlorophyll synthesis, energy transfer and hormonal regulation. The consistent superiority of this integrated treatment aligns with the findings of Meena *et al.* (2020) in sweet sorghum and Barde *et al.* (2021) in sweet corn.

Table 1 : Plant height and number of green leaves of baby corn at different crop growth stages as influenced by the application of vermicompost enriched with biofertilizers and micronutrients

Treatments	Plant height (cm)				Number of green leaves			
	15 DAS	30 DAS	45 DAS	At Harvest	15 DAS	30 DAS	45 DAS	At Harvest
T ₁	24.1	57.8	134.5	163.3	4.6	6.0	9.3	12.2
T ₂	25.2	59.3	138.3	168.0	4.8	6.2	9.6	12.6
T ₃	26.5	61.6	143.2	174.3	5.0	6.5	10.1	13.2
T ₄	26.3	61.5	142.5	173.2	5.0	6.4	9.9	13.1
T ₅	27.5	63.8	147.2	179.2	5.2	6.8	10.4	13.7
T ₆	28.8	67.0	152.3	185.3	5.4	7.1	10.8	14.3
T ₇	28.6	65.9	151.1	183.4	5.3	7.0	10.7	14.2
T ₈	29.8	69.1	156.2	190.2	5.6	7.3	11.1	14.8
S.Em. ±	0.2	0.7	1.0	0.9	0.05	0.04	0.10	0.15
C.D. (P=0.05)	0.8	2.0	3.2	2.6	0.15	0.14	0.30	0.45

Note: RDF: (150:75:40 - N: P₂O₅: K₂O kg ha⁻¹) is common for all the treatments

EVC- Enriched vermicompost, PSB- Phosphate solubilizing bacteria,

DAS- Days after sowing

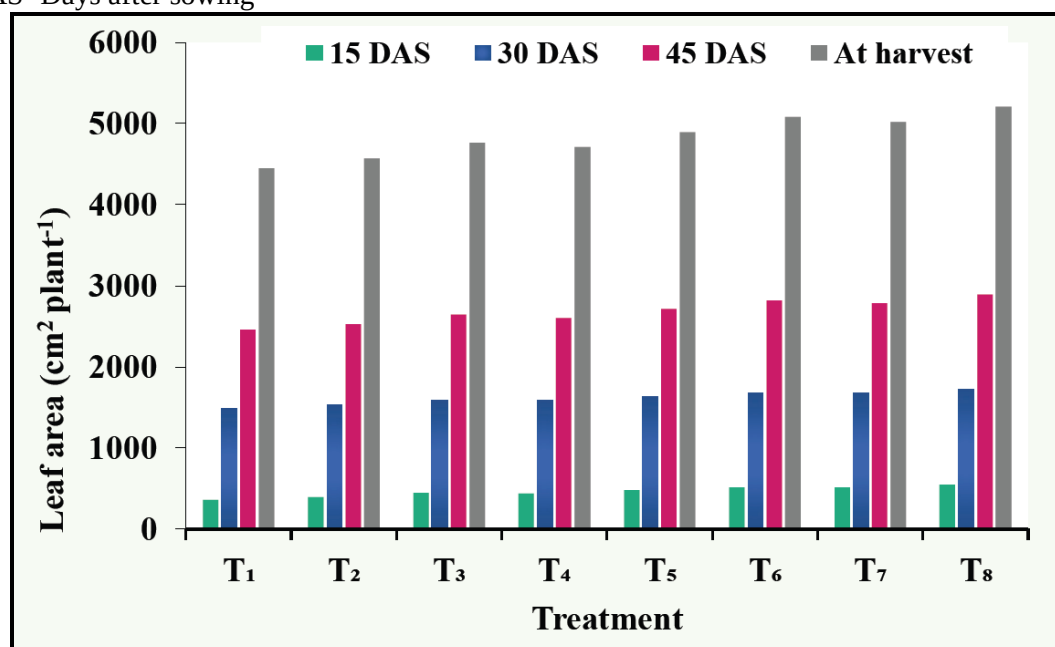


Fig. 1: Leaf area at different growth stages of baby corn as influenced by the application of vermicompost enriched with biofertilizers and micronutrients

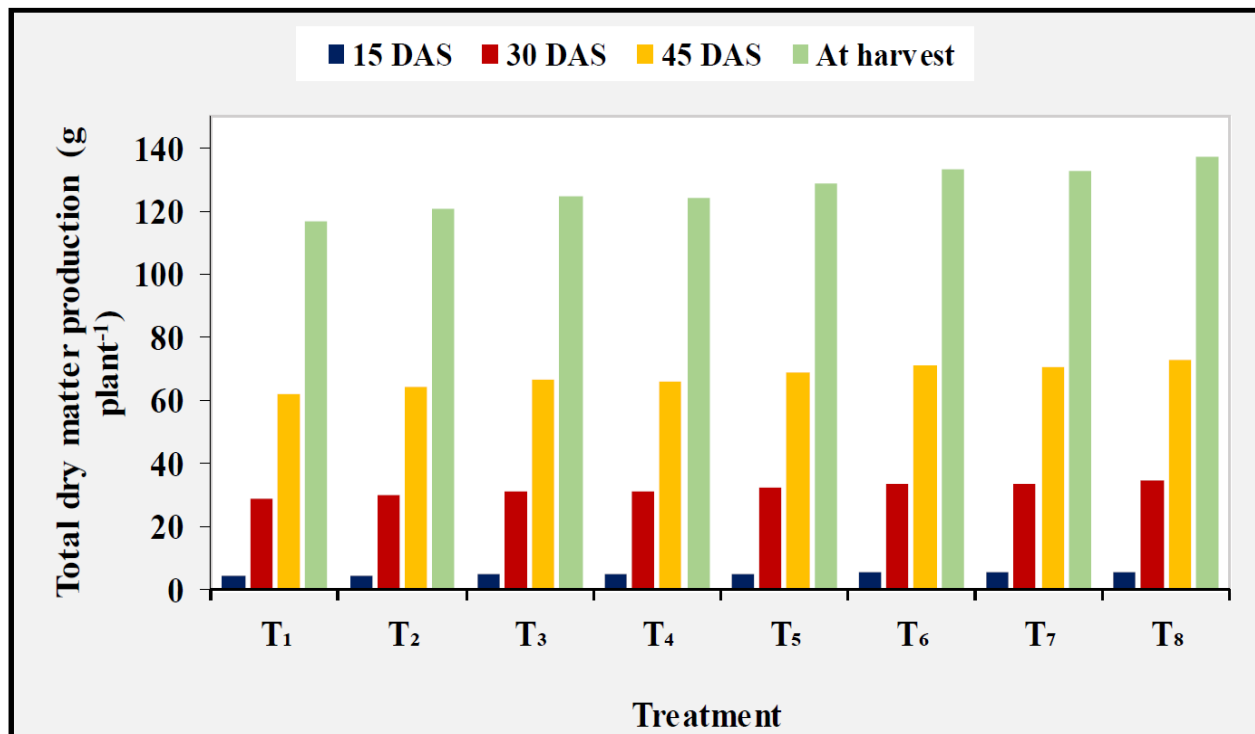


Fig. 2 : Total dry matter production (g plant⁻¹) at different growth stages of baby corn as influenced by the application of vermicompost enriched with biofertilizers and micronutrients

Yield parameters

Number of cobs per plant

Results revealed that, application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + FeSO₄ @ 10 kg ha⁻¹ + ZnSO₄ @ 25 kg ha⁻¹ + foliar spray of ZnSO₄ and FeSO₄ @ 0.5% at 45 DAS produced significantly higher number of cobs per plant (3.65) as compared to other treatments. However, application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + ZnSO₄ @ 25 kg ha⁻¹ + foliar spray of ZnSO₄ @ 0.5% at 45 DAS (3.53) and application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + FeSO₄ @ 10 kg ha⁻¹ + foliar spray of FeSO₄ @ 0.5% at 45 DAS (3.48) were on par with each other. Significantly lower number of cobs per plant were recorded in control treatment (2.97) (Table 3).

Girth of cob with husk and without husk (cm)

There was no significant difference with respect to girth of cob with husk and without husk of baby corn as influenced by the application of vermicompost enriched with biofertilizers, micronutrients and foliar application of FeSO₄ and ZnSO₄. However, application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + FeSO₄ @ 10 kg ha⁻¹ + ZnSO₄ @ 25 kg ha⁻¹ + Foliar spray of ZnSO₄ and FeSO₄ @ 0.5% at 45 DAS produced numerically

higher girth of cob with husk and without husk (12.4 and 9.18 cm, respectively). Significantly lower girth of cob with husk and without husk was noticed in control treatment (10.5 and 6.41 cm, respectively) (Table 3).

Length of cob with husk and without husk (cm)

Results noticed that, significantly higher length of cob with husk and without husk was recorded in the treatment with the application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + FeSO₄ @ 10 kg ha⁻¹ + ZnSO₄ @ 25 kg ha⁻¹ + foliar spray of ZnSO₄ and FeSO₄ @ 0.5% at 45 DAS (24.4 and 19.4 cm, respectively) compared with other treatments. Further, application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + ZnSO₄ @ 25 kg ha⁻¹ + foliar spray of ZnSO₄ @ 0.5% at 45 DAS (23.7 and 18.9 cm, respectively) and application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + FeSO₄ @ 10 kg ha⁻¹ + foliar spray of FeSO₄ @ 0.5% at 45 DAS (23.6 and 18.7 cm, respectively) were on par with each other. Significantly lower cob length with husk and without husk was observed in the control treatment (20.7 and 16.4 cm, respectively) (Table 3).

Cob weight with husk and without husk

Significantly lower cob weight with husk and without husk was recorded with control treatment (103.9 and 40.4 g plant⁻¹, respectively). However,

application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + FeSO₄ @ 10 kg ha⁻¹ + ZnSO₄ @ 25 kg ha⁻¹ + foliar spray of ZnSO₄ and FeSO₄ @ 0.5% at 45 DAS produced significantly higher cob weight with husk and without husk (121.2 and 47.1 g plant⁻¹, respectively). Moreover, application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + ZnSO₄ @ 25 kg ha⁻¹ + foliar spray of ZnSO₄ @ 0.5% at 45 DAS (118.0 and 45.8 g plant⁻¹, respectively) and application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + FeSO₄ @ 10 kg ha⁻¹ + foliar spray of FeSO₄ @ 0.5% at 45 DAS (117.5 and 45.7 g plant⁻¹, respectively) were on par with each other (Table 3).

The enhanced yield parameters like number of cobs per plant, length of cob with and without husk, cob weight with and without husk was observed with the application of enriched vermicompost and biofertilizers can be attributed to the synergistic effects of organic nutrient supply and microbial activity, which together improve nutrient mineralization and uptake. Zinc and iron are critical for enzymatic functions and reproductive tissue development. Their foliar application at the critical growth stage (45 DAS) likely ensured optimal nutrient availability during cob formation, contributing to increased dry matter allocation to reproductive structures. The results are in agreement with those of Fakeerappa and Hulihalli (2017) in sweet corn, Nagarjuna and Debbarma (2023) and Reddy *et al.* (2023b) in maize, Namitha *et al.* (2019), Ganesha *et al.* (2020), Longchar *et al.* (2021) and Tejaswi (2021) in baby corn.

Yield

Green cob yield

Among the different treatments, vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + FeSO₄ @ 10 kg ha⁻¹ + ZnSO₄ @ 25 kg ha⁻¹ + foliar spray of ZnSO₄ and FeSO₄ @ 0.5% at 45 DAS registered the higher green cob yield (12570 kg ha⁻¹) which was found to be significantly superior over the rest of the treatments (Fig 3.). Further, application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + ZnSO₄ @ 25 kg ha⁻¹ + foliar spray of ZnSO₄ @ 0.5% at 45 DAS (12080 kg ha⁻¹) and application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + FeSO₄ @ 10 kg ha⁻¹ + foliar spray of FeSO₄ @ 0.5% at 45 DAS (11690 kg ha⁻¹) were found to be on par with each other. While, significantly lower green cob yield was observed in the control treatment (9670 kg ha⁻¹).

The increase in green cob yield of baby corn under the enriched vermicompost treatment can be attributed to the combined impact of balanced nutrition, microbial enhancement and timely foliar application of essential micronutrients. *Azospirillum* contributes to biological nitrogen fixation, while PSB enhances phosphorus solubilization, improving nutrient availability in the rhizosphere. The inclusion of Zn and Fe, both through soil and foliar routes, likely played a pivotal role in green cob development by supporting enzymatic activity, protein synthesis and photosynthetic efficiency. These physiological enhancements collectively improved reproductive success, leading to increased green cob yield. Similar findings have been reported by Bhardwaj *et al.* (2023), Goud and Debbarma (2023) and Varsha *et al.* (2024) in baby corn.

Green fodder yield

Among the different treatments, application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + FeSO₄ @ 10 kg ha⁻¹ + ZnSO₄ @ 25 kg ha⁻¹ + foliar spray of ZnSO₄ and FeSO₄ @ 0.5% at 45 DAS resulted in the significantly higher green fodder yield (29010 kg ha⁻¹) compared to all other treatments (Fig 3.). Application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + ZnSO₄ @ 25 kg ha⁻¹ + foliar spray of ZnSO₄ @ 0.5% at 45 DAS (28410 kg ha⁻¹), application of vermicompost enriched with *Azospirillum* @ 10 kg ha⁻¹ + PSB @ 10 kg ha⁻¹ + FeSO₄ @ 10 kg ha⁻¹ + foliar spray of FeSO₄ @ 0.5% at 45 DAS (28060 kg ha⁻¹) were on par with each other with respect to green fodder yield. Further, significantly lower green fodder yield was recorded in the control treatment (22010 kg ha⁻¹).

The superior green fodder yield was recorded under the synergistic effect of enriched vermicompost and biofertilizers coupled with micronutrient foliar sprays application. *Azospirillum* and PSB enhance root proliferation and nutrient uptake by improving soil microbial activity, which leads to better vegetative growth and biomass accumulation. The addition of Zn and Fe, known to enhance chlorophyll synthesis and enzymatic function, may have contributed to more efficient photosynthesis, thereby increasing dry matter production and green fodder yield. This integrated approach creates a more balanced soil environment conducive to sustained plant growth. Supporting results were reported by Rao *et al.* (2021) in maize, Ganesha *et al.* (2020) and Sri *et al.* (2023) in baby corn.

Harvest index

The data related to harvest index of baby corn was found non-significant as influenced by application of enriched vermicompost with biofertilizers as well as the soil application and foliar spray of FeSO_4 and ZnSO_4 . However, numerically higher harvest index

was recorded in vermicompost enriched with *Azospirillum* @ 10 kg ha^{-1} + PSB @ 10 kg ha^{-1} + FeSO_4 @ 10 kg ha^{-1} + ZnSO_4 @ 25 kg ha^{-1} + Foliar spray of ZnSO_4 and FeSO_4 @ 0.5% at 45 DAS (0.30) and numerically lower harvest index was noticed in control treatment (0.27). (Fig 3.).

Table 2 : Yield parameters of baby corn as influenced by the application of vermicompost enriched with biofertilizers and micronutrients

Treatment	No. of cobs plant ⁻¹	Girth of cob (cm)		Length of cob (cm)		Cob weight (g plant ⁻¹)	
		With husk	Without husk	With husk	Without husk	With husk	Without husk
T ₁	2.97	10.5	6.41	20.7	16.4	103.9	40.4
T ₂	3.08	10.8	8.52	21.4	17.0	107.1	41.6
T ₃	3.24	11.3	8.70	22.3	17.7	111.1	43.1
T ₄	3.21	11.1	8.69	22.1	17.5	110.6	43.0
T ₅	3.36	11.6	8.82	22.9	18.2	114.3	44.4
T ₆	3.53	12.1	9.01	23.7	18.9	118.0	45.8
T ₇	3.48	11.9	8.98	23.6	18.7	117.5	45.7
T ₈	3.65	12.4	9.18	24.4	19.4	121.2	47.1
S.Em. ±	0.03	0.1	0.06	0.21	0.15	0.52	0.42
C.D. (P=0.05)	0.09	NS	NS	0.65	0.47	1.58	1.28

Note: RDF: (150:75:40 - N: P_2O_5 : K_2O kg ha^{-1}) is common for all the treatments

EVC- Enriched vermicompost, PSB- Phosphate solubilizing bacteria,

DAS- Days after sowing, NS- Non significant

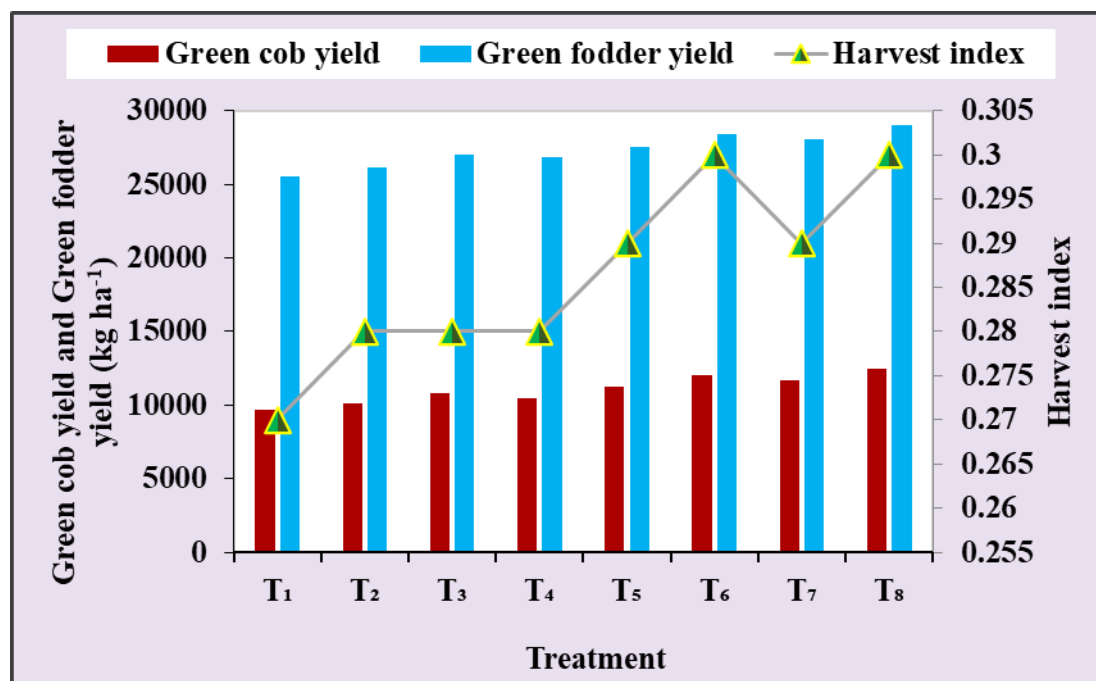


Fig. 3 : Yield and harvest index of baby corn as influenced by the application of vermicompost enriched with biofertilizers and micronutrients

Conclusion

The treatment received vermicompost enriched with *Azospirillum* @ 10 kg ha^{-1} + PSB @ 10 kg ha^{-1} + FeSO_4 @ 10 kg ha^{-1} + ZnSO_4 @ 25 kg ha^{-1} + foliar spray of ZnSO_4 and FeSO_4 @ 0.5% at 45 DAS

recorded significantly higher growth parameters, yield parameters and superior green cob yield and green fodder yield over the rest of the treatments. Further, control treatment recorded significantly lower green cob yield and green fodder yield.

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