E-ISSN: 2618-0618
P-ISSN: 2618-060X

www.agronomyjournals.com
2024; 7(10): 344-348
Received: 17-08-2024
Accepted: 23-09-2024

Anusha T
Department of Agronomy, College of Agriculture, University of Agricultural Sciences, Raichur, Karnataka, India

Ramesha YM
Associate Professor, Department of Agronomy, Agricultural Research Station, University of Agricultural Sciences, Raichur, Karnataka, India

Krishnamurthy D
Agronomist, AICRP for Sorghum, Agricultural Research Station, Hagari, University of Agricultural Sciences, Raichur, Karnataka, India

Kamble Anand Shankar
Associate Professor, Department of Agronomy, OFRI, University of Agricultural Sciences, Raichur, Karnataka, India

Chandra Naik M
Associate Professor, Department of Crop Physiology, Agricultural Research Station, University of Agricultural Sciences, Raichur, Karnataka, India

Corresponding Author:
Anusha T
Department of Agronomy, College of Agriculture, University of Agricultural Sciences, Raichur, Karnataka, India

Effect of enriched farm yard manure on yield and nutrient uptake of sweet corn (*Zea mays* var. *saccharata*)

Anusha T, Ramesha YM, Krishnamurthy D, Kamble Anand Shankar and Chandra Naik M

DOI: https://doi.org/10.33545/2618060X.2024.v7.i10e.1821

Abstract
A field experiment was conducted during *kharif*-2023 at Agricultural Research Station, Dhadesugur to study the effect of enriched farm yard manure on growth and yield of sweet corn. The experiment consisted of seven treatments *viz.*, T_1: 100% RDF T_2: 50% RDF + Enriched FYM with *Azospirillum* + PSB T_3: 50 % RDF + Enriched FYM with *Glucenobacter* + PSB T_4: 75% RDF + Enriched FYM with *Azospirillum* + PSB T_5: 75 % RDF + Enriched FYM with *Glucenobacter* + PSB T_6: 100 % RDF + Enriched FYM with *Azospirillum* + PSB T_7: 100 % RDF + Enriched FYM with *Glucenobacter* + PSB. The results revealed that among different treatments, cob length (cm), cob girth (cm), number of grain rows cob^{-1}, number of grains per row, number of grains per cob, cob weight (g cob^{-1}), were significantly higher with application of 100% RDF + enriched FYM with *Gluconobacter* + PSB which in turn resulted in significantly higher fresh cob yield (175.6 q ha^{-1}) and green fodder yield (224.8 q ha^{-1}). Further, the same treatment recorded significantly higher N, P and K content and uptake by sweet corn at harvest.

Keywords: Sweet corn, RDF, *Gluconobacter*, *Azospirillum*, PSB

1. Introduction

Sweet corn (*Zea mays* var. *Saccharata*) is a modern variety of maize, widely recognized for its popularity as a food crop for humans. Originally hailing from Peru, it is now extensively grown throughout America. This type of maize has been selectively bred to boost its sugar content, earning it the name "sugar corn."

Biofertilizers are essential in improving soil fertility by fixing atmospheric nitrogen, either in partnership with plant roots or independently, dissolving insoluble phosphates, and generating substances that promote plant growth. They are increasingly advocated as a means to harness natural biological processes for nutrient mobilization. These fertilizers offer a cost-effective, environment friendly, and renewable nutrient supply. Beyond nutrient provision, biofertilizers add organic matter to the soil, which helps to protect against soil degradation.

Gluconobacter, a genus of Gram-negative, rod-shaped bacteria from the Acetobacteraceae family, is known for its capability to oxidize alcohols and sugars into acids. In agriculture, these bacteria enhance nutrient availability and uptake by solubilizing phosphorus and other essential nutrients in the soil, which supports plant growth and boosts crop yield. Organic fertilizers, like farm yard manure (FYM), enriched with *Gluconobacter*, greatly improve soil fertility and health by increasing the availability of vital nutrients such as nitrogen, phosphorus, and potassium (NPK), ultimately leading to higher plant productivity.

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. The positive effect of co-inoculating *Gluconobacter* and PSB forms the synergistic interactions between phosphate-solubilizing microbes and free-living organisms, which leads to the enhanced nutrient availability (Khatkar *et al.*, 2007) [5].

Enriching manures with beneficial microbial inoculants, such as free-living nitrogen fixers and phosphate solubilizers, improves their nutritional value. Fortifying farm yard manure with zinc sulphate and beneficial microbial cultures not only increases its nutrient content but also enhances crop growth and yields. Microbial enrichment of organic manures further promotes phosphate solubilization, nitrogen fixation, and overall plant development. Commonly recommended organisms for this process include *Azospirillum*, phosphorus-solubilizing bacteria (PSB), *Azotobacter*, and *Gluconobacter*.

Integrating these microbes into organic manures such as vermicompost, neem cake, and compost produces better outcomes than using organic manure by itself. Adding beneficial microbial cultures to organic manures boosts nitrogen and phosphorus levels through nitrogen fixation and phosphate solubilization. As a result, combining organic matter with microbial inoculants offers an efficient, cost-effective, and environment friendly nutrient management strategy for crop production.

2. Materials and Methods

A field experiment was conducted during *kharif*-2023 at Agricultural Research Station, Dhadesugur, UAS, Raichur Karnataka (15º 6´ N, 76º 8´ 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-8.15), low in EC (0.30 dS m^{-1}) and low in organic carbon content (0.47%). The soil was low in available nitrogen (275.2 kg ha^{-1}), high in available phosphorus (28.31 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. There were seven treatments consisting of T_1: 100% RDF T_2: 50% RDF + Enriched FYM with *Azospirillum* + PSB T_3: 50% RDF + Enriched FYM with *Glucenobacter* + PSB T_4: 75% RDF + Enriched FYM with *Azospirillum* + PSB T_5: 75% RDF + Enriched FYM with *Glucenobacter* + PSB T_6: 100% RDF + Enriched FYM with *Azospirillum* + PSB T_7: 100% RDF + Enriched FYM with *Glucenobacter* + PSB. The sweet corn variety Sugar-75 was selected for the study. Seeds were sown by adopting line sowing method at spacing of 60 ×20 cm on 19th July, 2023 and harvested on 28th September, 2023.

The cobs from the five randomly selected plants at the time of harvest were used to record the yield components. Length of cob was measured from base to the tip of the cob and was expressed in centimetre (cm). Largest width of the cob was measured using vernier callipers and average was recorded as the cob girth and expressed in centimetre. The cob weight was recorded from the samples drawn from the produce obtained in each of the net plot and is expressed in gram (g cob^{-1}). Number of seed kernels per cob were counted to the total number of kernels present per cob from five cobs and averaged to find out total number of seed kernels per cob. The cobs were removed from net plot of all the plants and taken the total fresh cob yield per plot and expressed in kg per plot and using this, fresh cob yield was worked out and expressed in quintal per hectare (q ha^{-1}). The green fodder yield per plot was used to calculate green fodder yield per hectare and expressed in quintal per hectare (q ha^{-1}). The grain and straw sample collected from each plot at harvest were dried in oven at 65 ℃ till a constant weight. These samples were grounded in laboratory mill, passed through 40 mm mesh sieve and used for estimating of N, P and K contents. Data analysis and interpretation was done using Fisher’s method of analysis of variance (ANOVA) technique as given by Panse and Sukhatme (1967) [7].

3. Results and Discussion

3.1 Effect of enriched FYM on yield and yield parameters of sweet corn

3.1.1 Cob length (cm)

Results noticed that, the highest cob length of 23.3 cm was recorded in the treatment received 100% RDF + Enriched FYM with *Gluconobacter* + PSB compared with other treatments. Further, application of 100% RDF + Enriched FYM with *Azospirillum* + PSB (21.8 cm), 75% RDF + Enriched FYM with *Gluconobacter* + PSB (21.7 cm) and 75% RDF + Enriched FYM with *Azospirillum* + PSB (21.6 cm) were on par with each other. Significantly lowest cob length was observed in the treatment received 50% RDF + Enriched FYM with *Azospirillum* + PSB (18.3 cm) compared to other treatments.

3.1.2 Cob girth (cm)

Results indicated that, among different treatments application of 100% RDF + Enriched FYM with *Gluconobacter* + PSB recorded significantly higher cob girth (19.8 cm). Application of 50% RDF + Enriched FYM with *Azospirillum* + PSB recorded significantly lowest cob girth (14.7 cm).

3.1.3 Green cob weight

Results revealed that, application of 100% RDF + Enriched FYM with *Gluconobacter* + PSB produced higher cob weight per plant (396.6 g $plant^{-1}$) as compared to other treatments. However, 100 % RDF + Enriched FYM with *Azospirillum* + PSB (367.1 g $plant^{-1}$), 75% RDF + Enriched FYM with *Gluconobacter* + PSB (355.1 g $plant^{-1}$) and 75% RDF + Enriched FYM with *Azospirillum* + PSB (344.1 g $plant^{-1}$) were on par with each other. Lower cob weight per plant was recorded with 50% RDF + Enriched FYM with *Azospirillum* + PSB.

3.1.4 Number of grain rows per cob

Results indicated that, the maximum kernel rows per cob noticed in 100% RDF + Enriched FYM with *Gluconobacter* + PSB (18.0). However, 100% RDF + Enriched FYM with *Azospirillum* + PSB (16.4) was at par with 75% + Enriched FYM with *Gluconobacter* + PSB (16.3) and 75% RDF + Enriched FYM with *Azospirillum* + PSB (16.1). The minimum number grain rows per cob observed in T_2 (13.0) i.e., 50% RDF + Enriched FYM with *Azospirillum* + PSB.

3.1.5 Number of grains per row

Results observed that, number of grains per row was significantly highest due to application of 100 % RDF + enriched FYM with *Gluconobacter* + PSB (42.6) as compared to other treatments. However, among the other treatments, application of 100% RDF + Enriched FYM with *Azospirillum* + PSB (39.7), 75% RDF + Enriched FYM with *Gluconobacter* + PSB (39.6) and 75% RDF + Enriched FYM with *Azospirillum* + PSB (39.5) were on par with each other. Whereas, application of 50% RDF + Enriched FYM with *Azospirillum* + PSB (33.8) recorded significantly least number of grains per row.

3.1.6 Number of grains per cob

The results indicated that, number of grains per cob varied from 766.8 to 439.4. The highest number of grains per cob obtained with application of 100% RDF + enriched FYM with *Gluconobacter* + PSB (766.8) which was significantly differing with 100% RDF + Enriched FYM with *Azospirillum* + PSB (651.1) and it was on par with 75% RDF + Enriched FYM with *Gluconobacter* + PSB (645.5) and 75% RDF + Enriched FYM with *Azospirillum* + PSB (636) were on par with each other and the lowest was observed in 50% RDF + Enriched FYM with *Azospirillum* + PSB (439.4).

The yield parameters *viz.*, cob length (cm), cob girth (cm), numbers of grain rows cob^{-1}, No. grains row^{-1}, number of grains per cob, cob weight (g cob^{-1}), were significantly higher in the treatment with the application of 100 % RDF + Enriched FYM with *Gluconobacter* + PSB. This might be due to higher dry matter production in plants and effective translocation of photosynthates from source to sink might have further improved the yield parameters of sweet corn. These findings align with the reports of Sasikanth *et al.* (2021) [10] with application of *Azotobacter* + *Azospirillum* + 0.5 % Zn.

3.1.7 Fresh cob yield (q ha^{-1})

Results revealed that, significantly the maximum green cob yield was obtained with application of 100% RDF + Enriched FYM with *Gluconobacter* + PSB (175.6 q ha^{-1}) over the rest of the treatments. While 50% RDF + Enriched FYM with *Azospirillum* + PSB (128.9 q ha^{-1}) recorded significantly lowest cob yield. 100 % RDF + Enriched FYM with *Azospirillum* + PSB (165.9 q ha^{-1}), 75% RDF + Enriched FYM with *Gluconobacter* + PSB (159.9 q ha^{-1}) and 75% RDF + Enriched FYM with *Azospirillum* + PSB (150.7 q ha^{-1}) were on par with each other.

The significantly maximum green cob yield of 175.6 q ha^{-1} achieved with the application of 100% RDF + Enriched FYM with *Gluconobacter* + PSB can be attributed to the optimal and balanced supply of essential nutrients, particularly nitrogen, phosphorus, and potassium provided by this combination. *Gluconobacter* plays a vital role in solubilizing phosphates and fixing atmospheric nitrogen, making these nutrients more available to the plants. Enriched FYM enhances soil structure, boosts organic matter content, and promotes microbial activity, improving nutrient availability and uptake by the roots. This leads to better root growth and development, enhancing the plant's ability to absorb water and nutrients, resulting in overall improved plant health and vigour. The improved nutrient uptake and root development enhance growth parameters such as plant height, leaf area index, and dry matter production, as well as yield-contributing factors like the number of kernels per cob, number of cobs per plant, and cob weight, thereby increasing the green cob yield. Comparable outcomes were noted by Jagathjothi *et al*. (2008) [2], Lavanya *et al.* (2023) [6] and Devasena and Innazent (2024) [1]. On the other hand, the significantly lowest cob yield recorded with 50 % RDF + Enriched FYM with *Azospirillum* + PSB (128.9 q ha^{-1}) could be attributed to insufficient nutrient supply due to the reduced fertilizer dose. Despite the presence of beneficial microbes, the lower nutrient availability likely limited plant growth and yield.

3.1.8 Green fodder yield (q ha^{-1})

Results revealed that, among different treatments, application of 100% RDF + Enriched FYM with *Gluconobacter* + PSB recorded significantly higher green fodder yield (224.8 q ha^{-1}) as compared to other treatments. However, 100% RDF + Enriched FYM with *Azospirillum* + PSB (217.1 q ha^{-1}), 75% RDF + Enriched FYM with *Gluconobacter* + PSB (203.3 q ha^{-1}) and 75% RDF + Enriched FYM with *Azospirillum* + PSB (199.0 q ha^{-1}) were on par with each other. Lower green fodder yield was recorded with 50% RDF + Enriched FYM with *Azospirillum* + PSB (160.2 q ha^{-1}).

The higher green fodder yield achieved with the application of 100% RDF + Enriched FYM with *Gluconobacter* + PSB can be attributed to a significant increase in dry matter production in leaves and stems at various growth stages. This progressive increase in dry matter was primarily due to improved growth factors, such as plant height, which resulted from extended internodal length. Additionally, higher dry matter production was associated with an increased number of leaves per plant and larger leaf area at harvest. The combination of 100% RDF and enriched FYM with *Gluconobacter* + PSB provided more photosynthates for the grain (sink) and retained more accumulated dry matter in the stem at harvest, leading to higher stover production. These findings are in accordance with work of Reddy *et al.* (2023) [9] and Tejaswi (2021) [11].

Lowest green fodder yield (160.2 q ha^{-1}) with 50% RDF + Enriched FYM with *Azospirillum* + PSB indicates that the reduced fertilizer dose is insufficient to meet the nutrient demands of the plants, despite the presence of beneficial microbes. This leads to suboptimal growth and lower yield.

3.2 Effect of enriched FYM on nutrient content and uptake by sweet corn

3.2.1 Nutrient content in sweet corn

Significantly the maximum value of N, P and K was noticed with 100% RDF + Enriched FYM with *Gluconobacter* + PSB and minimum value of N, P and K was found in the treatment received 50% RDF + Enriched FYM with *Azospirillum* + PSB. 100% RDF + Enriched FYM with *Azospirillum* + PSB, 75% RDF + Enriched FYM with *Gluconobacter* + PSB and 75% RDF + Enriched FYM with *Azospirillum* + PSB were on par with each other.

The nutrient content in leaves, stem and grain is largely influenced by the nutrient availability from applied 100% RDF + Enriched FYM with *Gluconobacter* + PSB. This treatment provides a balanced and ample nutrient supply, leading to improved nutrient assimilation in the plants. These results are conformity with the findings of Ramesha (2010) in sweet sorghum.

3.2.2 Nutrients uptake by sweet corn

3.2.2.1 Nitrogen uptake by sweet corn (kg ha^{-1})

The results showed that, the highest nitrogen uptake (210.2 kg ha^{-1}) was achieved in the treatment with the application of 100% RDF + Enriched FYM with *Gluconobacter* + PSB. However, the lowest nitrogen uptake by crop was observed in the treatment received 50% RDF + Enriched FYM with *Azospirillum* + PSB (100.9 kg ha^{-1}). Further, application of 100% RDF + Enriched FYM with *Azospirillum* + PSB (177.6 kg ha^{-1}), 75% RDF + Enriched FYM with *Gluconobacter* + PSB (169.2 kg ha^{-1}), and 75% RDF + Enriched FYM with *Azospirillum* + PSB (159.2 kg ha^{-1}) were on par with each other.

Higher biomass production is likely the primary reason for the increased nutrient uptake observed in treatments with higher levels of recommended nitrogen. This correlation is supported by the strong relationship between soil available nitrogen and dry matter production, as well as green cob and green fodder yields at harvest. Specifically, treatments using 100% RDF + Enriched FYM with *Gluconobacter* + PSB demonstrated higher nitrogen uptake. This can be attributed to the superior ability of organic manures to retain nutrients in forms that are more readily available to plants over an extended period. In contrast, nutrients from inorganic fertilizers are already in mineral form and provide a quick, immediate source of nutrients to the crops. the results concur with those of Jat *et al.* (2021) [3] application of *Azotobacter* + *Azospirillum* + Phosphates solubilizer + PGPR accumulated maximum N, P and K content in grain and straw thereby total uptake of N, P and K. Khan Mohammadi *et al.* (2017) [4] and Lavanya *et al.* (2023) [6].

3.2.2.2 Phosphorus uptake by sweet corn (kg ha^{-1})

Regarding phosphorus uptake, the highest absorption was observed in the treatment received 100% RDF + Enriched FYM with *Gluconobacter* + PSB treatment (59.0 kg ha^{-1}). The lowest phosphorus uptake (20.0 kg ha^{-1}) was recorded in the treatment with the application 50% RDF + Enriched FYM with *Azospirillum* + PSB. However, application of 100 % RDF + Enriched FYM with *Azospirillum* + PSB (47.3 kg ha^{-1}), 75% RDF + Enriched FYM with *Gluconobacter* + PSB (45.3 kg ha^{-1}) and 75% RDF + Enriched FYM with *Azospirillum* + PSB (42.1 kg ha^{-1}) were on par with each other.

Plants absorbed maximum phosphorus (59.0 kg ha^{-1}) when treated with 100% RDF + Enriched FYM with *Gluconobacter* + PSB. This might be due to phosphorus uptake was higher due to the action of phosphate-solubilizing bacteria (PSB), which secrete organic acids and enzyme phosphatase, solubilizing insoluble phosphates and enhancing phosphorus absorption. The combination of native P solubilization by organic acids from FYM and PSB, along with applied fertilizers, increased phosphorus content and uptake in grain and fodder. This improved root growth and physiological activity, enabling roots to absorb more phosphorus. Consequently, biomass production increased, leading to greater phosphorus accumulation in plants with higher doses of chemical fertilizers, FYM and PSB inoculation. The findings here are in line with those of Khan Mohammadi *et al.* (2017) [4], Jat *et al.* (2021) [3] and Lavanya *et al.* (2023) [6].

3.2.2.3 Potassium uptake by plants (kg ha^{-1})

Similarly in case of potassium uptake, the same trend was seen as in the cases of N and P as given in Table 1. The treatment 100% RDF + Enriched FYM with *Gluconobacter* + PSB showed the highest uptake (156.0 kg ha^{-1}) while the lowest uptake was recorded in 50 % RDF + Enriched FYM with *Azospirillum* + PSB (83.51 kg ha^{-1}).

Application of 100% RDF + Enriched FYM with *Gluconobacter* + PSB treatment promotes vigorous root growth and greater root volume due to optimal nutrient availability and enhanced soil health. This robust root system increases the surface area for nutrient absorption, leading to higher potassium uptake. *Gluconobacte*r improves potassium solubilization, making it more accessible to the extensive root growth. The enriched FYM and effective microbial interactions further enhance root health and nutrient absorption efficiency. These outcomes are supported by the studies of Khan Mohammadi *et al.* (2017) [4], Jat *et al.* (2021) [3] and Lavanya *et al.* (2023) [6].

Table 1: Yield parameters of sweet corn as influenced by the application of enriched farm yard manure with biofertilizer

Treatments	Cob length (cm)	Cob girth (cm)	Green Cob weight (g $plant^{-1}$)	No. of grain rows cob^{-1}	No. grains row^{-1}	100 sweet corn weight (g)
T_1: 100% RDF	20.0	16.4	315.4	14.6	36.7	535.8
T_2: 50% RDF + Enriched FYM with *Azospirillum* + PSB	18.3	14.7	278.9	13.0	33.8	439.4
T_3: 50% RDF + Enriched FYM with *Gluconobacter* + PSB	19.9	16.3	309.1	14.5	36.6	530.7
T_4: 75% RDF + Enriched FYM with *Azospirillum* + PSB	21.6	18.0	344.1	16.1	39.5	636.0
T_5: 75% RDF + Enriched FYM with *Gluconobacter* + PSB	21.7	18.1	355.1	16.3	39.6	645.5
T_6: 100% RDF + Enriched FYM with *Azospirillum* + PSB	21.8	18.2	367.1	16.4	39.7	651.1
T_7: 100% RDF + Enriched FYM with *Gluconobacter* + PSB	23.3	19.8	396.6	18.0	42.6	766.8
S.Em. ±	0.5	0.5	9.1	0.5	0.9	23.9
C.D. (P=0.05)	1.6	1.6	27.9	1.4	2.7	73.9

Table 2: Fresh cob yield, green fodder yield and harvest index of sweet corn as influenced by the application of enriched farm yard manure with biofertilizer

Treatments	Fresh cob yield q ha^{-1}	Green fodder yield q ha^{-1}	Harvest index
T_1: 100% RDF	140.5	171.1	0.45
T_2: 50% RDF + Enriched FYM with *Azospirillum* + PSB	128.9	160.2	0.45
T_3: 50% RDF + Enriched FYM with *Gluconobacter* + PSB	143.5	177.8	0.45
T_4: 75% RDF + Enriched FYM with *Azospirillum* + PSB	150.7	199.0	0.43
T_5: 75% RDF + Enriched FYM with *Gluconobacter* + PSB	159.9	203.3	0.44
T_6: 100% RDF + Enriched FYM with *Azospirillum* + PSB	165.9	217.1	0.43
T_7: 100% RDF + Enriched FYM with *Gluconobacter* + PSB	175.6	224.8	0.44
S.Em. ±	3.0	2.4	0.01
C.D. (P=0.05)	9.1	7.3	NS

Table 3: N, P and K content in sweet corn at harvest as influenced by the application of enriched farm yard manure with biofertilizer

Treatments	Nitrogen content (%)	Phosphorus content (%)	Potassium content (%)
T_1: 100% RDF	2.43	0.62	2.21
T_2: 50% RDF + Enriched FYM with *Azospirillum* + PSB	2.13	0.44	1.99
T_3: 50% RDF + Enriched FYM with *Gluconobacter* + PSB	2.30	0.54	2.15
T_4: 75% RDF + Enriched FYM with *Azospirillum* + PSB	2.58	0.72	2.37
T_5: 75% RDF + Enriched FYM with *Gluconobacter* + PSB	2.71	0.77	2.41
T_6: 100% RDF + Enriched FYM with *Azospirillum* + PSB	2.81	0.81	2.45
T_7: 100% RDF + Enriched FYM with *Gluconobacter* + PSB	3.00	0.90	2.61
S.Em. ±	0.06	0.03	0.05
C.D. (P=0.05)	0.18	0.08	0.15

Table 4: Nutrients uptake by sweet corn at harvest as influenced by the application of enriched farm yard manure with biofertilizer

Treatments	Nutrients uptake (kg ha^{-1})		
	Nitrogen	Phosphorus	Potassium
T_1: 100% RDF	134.2	32.6	105.8
T_2: 50% RDF + Enriched FYM with *Azospirillum* + PSB	100.9	20.0	83.51
T_3: 50% RDF + Enriched FYM with *Gluconobacter* + PSB	125.2	27.9	101.4
T_4: 75% RDF + Enriched FYM with *Azospirillum* + PSB	159.2	42.1	125.8
T_5: 75% RDF + Enriched FYM with *Gluconobacter* + PSB	169.2	45.3	129.3
T_6: 100% RDF + Enriched FYM with *Azospirillum* + PSB	177.6	47.3	132.4
T_7: 100% RDF + Enriched FYM with *Gluconobacter* + PSB	210.2	59.0	156.0
S.Em. ±	10.6	3.8	7.5
C.D. (P=0.05)	32.0	11.3	22.5

4. Conclusion
The study concludes that the application of 100% RDF + Enriched FYM with *Gluconobacter* + PSB resulted in a notably higher yield parameters with enhanced nutrient content and uptake by sweet corn leading to higher fresh cob yield, green fodder yield.

5. References

1. Devasena A, Innazent A. Impact of combining microbial enriched organic manures with inorganic nutrients on physiological characteristics and productivity of pearl millet (*Pennisetum glaucum* L.). Int J Enviro Clim Change. 2024;14(4):545-52.
2. Jagathjothi N, Ramamoorthy K, Kokilavani S. Effect of FYM with and without enrichment on soil microbial population, soil fertility, yield and economics. Res J Agric Biol Sci. 2008;4(6):647-50.
3. Jat ML, Chaplot PC, Choudhary J, D BC, Meema RL. Effect of organic, inorganic and biofertilizer on nutrient content, uptake and nutrient status of soil in barley (*Hordeum vulgare* L.). Pharma Innov J. 2021;10(12):301-7.
4. Khan Mohammadi N, Pankhaniya RM, Joshi MP, Patel KM. Influence of inorganic fertilizer, vermicompost and biofertilizer on yield and economics of sweet corn and nutrient status in soil. IJAR. 2017;3(5):183-6.
5. Khatkar R, Thomas A, Shalu AJ. Effect of biofertilizers and sulphur levels on growth and yield of blackgram (*Vigna mungo* L.). Legume Res. 2007;30(3):233-4.
6. Lavanya N, Ajayakumar MY, Krishnamurthy D, Shankarand KA, Veeresh H. Effect of enriched FYM levels and fertilizer levels on yield, soil properties and nutrient availability in soil after harvest of hirsutum cotton variety (*Gossypium hirsutum* L.). Environ Ecol. 2023;41(2):852-6.
7. Panse VG, Sukhatme PV. Statistical methods for agricultural workers. New Delhi: ICAR; c1967. 359 p.
8. Ramesha YM. Evaluation of cultivars, harvesting stages and fertilizer management in sweet sorghum (*Sorghum bicolor* (L.) Moench) for bioethanol production in Bhadra command area. PhD thesis. Bangalore (India): University of Agricultural Sciences; c2010.
9. Reddy KD, Singh R, Pradhan A. Influence of biofertilizers and zinc sulfate on yield and economics of maize (*Zea mays* L.). Int J Plant Soil Sci. 2023;35(17):149-54.
10. Sasikanth MT, Singh V, George SG. Effect of biofertilizers and levels of zinc on growth and yield of wheat (*Triticum aestivum* L.). Pharma Innov J. 2021;10(11):1410-3.
11. Tejaswi Y. Effect of zinc and bio-fertilizers on growth, yield and economics of baby corn (*Zea mays* L.). Pharma Innov J. 2021;10(10):167-70.