

EFFECT OF FARMYARD MANURE AND NPK ON THE GROWTH AND YIELD OF MAIZE (*ZEA MAYS L.*) CROP

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Abstract: The present research was carried out to examine the effect of Farmyard Manure and NPK on the growth and yield of Maize (*Zea mays L.*) crops. The experimental trial was laid out at the Students' Experimental Farm, Department of Agronomy, Sindh Agriculture University, Tandojam. The experiment was laid out with three replications, in Randomized Complete Block Design (RCBD), Experimental area Net plot size 4 m x 5 m (20 m²). For this experiment Akbar variety was used and treatment combinations viz: T₁ = Control, T₂ = 20-30-30 NPK kg ha⁻¹ + 10 (FYM) tons ha⁻¹, T₃ = 30-40-35 NPK kg ha⁻¹ + 15 (FYM) tons ha⁻¹, T₄ = 40-50-40 NPK kg ha⁻¹ + 20 (FYM) tons ha⁻¹ and T₅ = 50-60-45 NPK kg ha⁻¹ + 25 (FYM) tons ha⁻¹. The maximum result was recorded in T₅ = 50-60-45 NPK kg ha⁻¹ + 25 (FYM) tons ha⁻¹ in seed germination (18.66%), plant height (188.2cm), number of green leaves plant⁻¹ (18.33), Number of internodes plant⁻¹ (22.33), Cob Length (25.4cm), Grains Cob⁻¹ (383.6), Seed index 1000 grain weight (191.47g) and seed yield (7466.7 kg ha⁻¹). Followed by T₄ = 40-50-40 NPK kg ha⁻¹ + 20 (FYM) tons ha⁻¹. Seed germination (16.66%), plant height (182.07cm), number of green leaves plant⁻¹ (15.33), number of internodes plant⁻¹ (18.33), Cob Length (23.4cm), Grains Cob⁻¹ (348.13), Seed Index 1000 grain weight (181.77g) and Seed Yield (6666.7 kg ha⁻¹). And the minimum result was recorded in T₁ = Control seed germination (8%), plant height (133.73cm), number of green leaves plant⁻¹ (8.33), Number of internodes plant⁻¹ (8.33), Cob Length (14.36cm), Grains Cob⁻¹ (198.53), Seed Index 1000 grain weight (132.73g) and Seed Yield (3766.7 kg ha⁻¹). It is concluded from the present study that the maize treated with 50-60-45 NPK kg ha⁻¹ + 25 (FYM) tons ha⁻¹ was found to be the best treatment as compared to other treatments 40-50-40 NPK kg ha⁻¹ + 20 (FYM) tons ha⁻¹. From the present study, it was recommended that 50-60-45 NPK kg ha⁻¹ + 25 (FYM) tons ha⁻¹ were found to be the best treatment.

Keywords: Farmyard Manure, NPK, and Akbar Variety

Introduction: Maize (*Zea mays L.*) is one of the most important food crops grown primarily during the rainy season in Pakistan. It is widely used for both human consumption and livestock feed. In Pakistan, maize ranks third in production area, following wheat and rice (GoP, 2017).

Local crop yields are insufficient to meet the steadily increasing demand for consumption. (Noora et al., 2020). During 2021-22, maize was cultivated on 1,653 thousand hectares, reflecting a 16.6% increase compared to the previous year's 1,418 thousand hectares. The yield reached 10.635 million tonnes, marking a significant 19.0% growth from 8.940 million tonnes the prior year. Maize contributes 3.2% to value-added agriculture and 0.7% to GDP. This production increase was primarily due to expanded cultivation, availability of high-yielding varieties, favorable weather, and better economic returns. (GoP, 2022). The nutritional requirements of maize for humans, livestock, and poultry, as well as the extensive demand for maize sown areas in Pakistan. It has high biological value, confirming the extra accessibility of protein to humans and animals. In industrialized countries, maize is used as a raw material for animal feed and industrial products, while in the lowest-income countries, maize is mostly used for human food. Maize is a versatile crop because every part of its plant has economic value and Maize provides many raw materials to produce many things, such as corn starch, corn oil, cosmetics, wax, and alcohol (Harris et al., 2007).

Maize can be grown as forage during the winter season to address livestock feed shortages. It is an ideal forage crop due to its high energy content and significant protein levels compared to other cereal forage crops. The primary reason for cultivating maize for green forage is its ability to produce a succulent vegetative yield in a relatively short period. Additionally, maize is highly adaptable to a wide range of climatic and soil conditions (Ahsan & Mehdi, 2017). Corn is a versatile crop that serves multiple purposes: providing food for humans, feed for animals and poultry, and fodder for livestock. It is also a valuable raw material for various industries, where it is used in the production of cornstarch, dextrose, corn syrup, cornflakes, and more. In conventional agriculture, farmers often apply high doses of fertilizers and chemical plant protection measures to achieve higher crop yields. While chemical fertilizers and pesticides undeniably boost yields, their excessive use leads to problems such as soil structure degradation, groundwater pollution, increased nitrate levels in vegetables, and high production costs, ultimately destabilizing the system (FAO, 1978).

In Pakistan, the fodder yield of maize is significantly lower compared to other maize-growing countries such as Italy (9.5 t ha⁻¹), Canada (6.6 t ha⁻¹), China (4.6 t ha⁻¹), and Argentina, which produces an average yield of 5.7 t ha⁻¹ (Chachar et al., 2020).

Among the modern agro management practices sowing methods are important for improving the plant growth, development, and yield of maize production. The sowing method is a way in which the crop is sown in the field to give the required plant distribution and arrangement. These methods include drilling, broadcasting ridges, and raised- beds. Maize is the 3rd most important cereal crop after wheat and rice in the world. There are different planting techniques used in the world at the sowing time of maize. Different sowing methods of maize are used in Pakistan, such as flat, ridge, and bed sowing. While the soil and climatic states of Pakistan favor effective maize production, inappropriate sowing methods fundamentally

decrease maize production. Improper planting techniques caused a decrease in germination, development and improvement, ear size, and enhanced sensitivity to sicknesses and lodging (Bakht et al., 2011). Adoption of modern management practices is basic for boosting per-hectare maize yield. Improper planting technique brings about fruitless plants. Ear and its length continue to be smaller crop becomes defenseless to lodging, sicknesses, and pests resulting in minimum yield per unit area. Ridge tillage can be taken into consideration as an option in contrast to no-culturing in atmospheres and conditions (Abu-Grab et al., 2019). The sowing method has played an incredible role in increasing maize yield (Amin et al., 2006 Abdullah et al., 2018) stated that ridge planting considerably enhanced the maize yield in comparison with different planting techniques. The growth of maize seedlings is critical to the supply of phosphorus through the root system under P-deficient conditions and better root systems boost the uptake of phosphorus (Zheng et al., 2020).

Among modern agro-management practices, sowing methods and fertilizer application are crucial for enhancing maize growth and yield, particularly in rainfed conditions. Although considerable research has been conducted in these areas, further efforts are needed to refine these techniques to maximize yield. The planting method plays a significant role in increasing maize production. Many farmers still use the traditional broadcast sowing method, which has several drawbacks, including uneven seed distribution, inconsistent depth, and seeds scattered and vulnerable to birds. Adopting improved planting techniques could boost maize production, contributing to self-sufficiency in both food and feed. (Gul et al., 2015).

Pakistan's soil and climatic conditions are well-suited for maize production, yet several factors contribute to the crop's low yield. Among these, poor soil fertility and improper crop nutrition management are the most critical. Nitrogen, in particular, plays a vital role in promoting crop growth and yield (Arshad, 2003). It is closely linked to the dark green color of stems and leaves, vigorous growth, branching, leaf production, and enlargement. Manures help prevent soil erosion, nutrient leaching, and evaporation losses, while also providing a residual effect for subsequent crops. The benefits of manures are long-lasting, as their nutrients are released gradually, making them available to plants over time. (Malival, 2001; FAO, 2004; Das, 2005). However, the imbalanced use of fertilizers without incorporating farmyard manure (FYM) and without considering crop requirements or soil fertility can lead to issues such as soil structure degradation, environmental pollution, and groundwater contamination. Continuous reliance on chemical fertilizers without the addition of FYM also results in the depletion of soil fertility. The interaction between manure and nitrogen (N) fertilizer has been shown to improve nitrogen recovery by 58-63%, enhancing overall nutrient efficiency. (Nyamangara et al., 2003). Given the crucial role of nitrogen (N) in crop production, a field experiment was conducted to investigate the effects of both organic and inorganic nitrogen sources on the growth and yield of maize.

The planting technique not only ensures proper spacing and optimal plant population in the field but also allows plants to utilize land and other input resources more efficiently, promoting growth and development. The choice of planting method is crucial for improving crop yield. Various planting methods are employed worldwide during maize sowing. An inappropriate planting method can lead to barren plants, smaller ear size, and increased susceptibility to lodging, diseases, and pests, ultimately resulting in lower yields per unit area. Ridge tillage can serve as an effective alternative to no-tillage in climates and environments that are not well-suited for the latter (Abu-Grab et al., 2019). Abdullah et al. (2018) It has been reported that ridge planting significantly increases maize yield compared to other planting methods (Olayinka et al., 2021).

Materials and Methods

The field experiment was conducted at the Students' Experimental Farm, Department of Agronomy, Sindh Agriculture University Tandojam, during the Autumn season of 2023. The purpose of the study was to evaluate the effects of varying doses of NPK (Nitrogen, Phosphorus, and Potassium) fertilizers in combination with Farmyard Manure (FYM) on the Akbar crop variety.

Experimental Details

The experiment was laid out in a Randomized Complete Block Design (RCBD) with three replications to minimize experimental error and ensure reliable results. The net plot size for each treatment was 4 m × 5 m, covering a total area of 20 m² per plot. The Akbar variety was used as the test crop in the study.

Treatments

Five treatments (T₁–T₅) were applied with varying doses of NPK and FYM. The details of the treatments are as follows:

T₁: Control (no fertilizer or FYM applied).

T₂: 20-30-30 NPK kg ha⁻¹ + 10 FYM tons ha⁻¹.

T₃: 30-40-35 NPK kg ha⁻¹ + 15 FYM tons ha⁻¹.

T₄: 40-50-40 NPK kg ha⁻¹ + 20 FYM tons ha⁻¹.

T₅: 50-60-45 NPK kg ha⁻¹ + 25 FYM tons ha⁻¹.

Observations Recorded

Data were collected for the following parameters to evaluate the growth and yield of the crop:

1. **Seed Germination (m⁻²):** The number of seeds germinated per square meter was recorded.
2. **Plant Height (cm):** The height of plants was measured from the base to the tip.
3. **Green Leaves Per Plant:** The average number of green leaves per plant was counted.
4. **Internodes Per Plant:** The number of internodes per plant was recorded.
5. **Cob Length (cm):** The length of the cob was measured from the base to the tip.
6. **Grains Per Cob:** The total number of grains per cob was counted.

7. **Seed Index (1000-Grain Weight, g):** The weight of 1000 grains were measured.

8. **Seed Yield (kg ha⁻¹):** The seed yield per hectare was calculated.

Statistical Analysis

The collected data were subjected to statistical analysis using analysis of variance (ANOVA) in the Statistix-8.1 software (Statistix, 2006). Where significant differences were observed among treatments, the least significant difference (LSD) test was applied to compare treatment means at a 5% probability level.

This experimental setup allowed for a systematic evaluation of the effects of nutrient management on the growth and yield of the Akbar crop variety under controlled conditions.

Result:

1. Seed germination (m²)

Seed germination (m²) of Maize variety as affected by different doses of Farmyard manure FYM and NPK. The results are presented in (Table1). Identifying the effect of Farmyard manure FYM and NPK doses on seed germination (m²) suggested that this characteristic was significantly (P<0.05) influenced by different Farmyard manure FYM and NPK doses and their interactions. It is evident from the results that the maximum seed germination (18.66 %) was recorded in T₅ 50-60-45 NPK kg ha⁻¹ + 25 (FYM) tons ha⁻¹ followed by seed germination (16.66%) in T₄ 40-50-40 NPK kg ha⁻¹ + 20 (FYM) tons ha⁻¹ whereas the minimum seed germination (8%) was recorded in control. The LSD test suggested that the differences in seed germination (%) of maize as affected by different Farmyard Manure (FYM) and NPK doses were significant (P<0.05).

2. Plant height (cm)

Plant height (cm) of maize crop as affected by different doses of Farmyard manure FYM and NPK. The results are presented in (Table 1). Identifying the effect of Farmyard manure FYM and NPK doses on plant height (cm) suggested that this characteristic was significantly (P<0.05) influenced by different Farmyard manure FYM and NPK doses and their interactions. It is evident from the results that the maximum plant height (188.2 cm) was recorded in T₅ 50-60-45 NPK kg ha⁻¹ + 25 (FYM) tons ha⁻¹ followed by plant height (182.07 cm) in T₄ 40-50-40 NPK kg ha⁻¹ + 20 (FYM) tons ha⁻¹ whereas the minimum plant height (133.73 cm) was recorded in control. The LSD test suggested that the differences in plant height (cm) of maize as affected by different Farmyard Manure (FYM) and NPK doses were significant (P<0.05).

3. Green leaves plant⁻¹

Green leaves plant⁻¹ of Maize variety as affected by different doses of Farmyard manure FYM and NPK. The results are presented in (Table.1). Identifying the effect of Farmyard manure FYM and NPK doses on green leaves plant⁻¹ suggested that this characteristic was significantly (P<0.05) influenced by different Farmyard manure FYM and NPK doses and their interactions. It is evident from the results that the maximum green leaves plant⁻¹ (18.33) were recorded in T₅ 50-60-45 NPK kg ha⁻¹ + 25 (FYM) tons ha⁻¹ followed by green leaves plant⁻¹ (15.33) in T₄ 40-50-40 NPK kg ha⁻¹ + 20 (FYM) tons ha⁻¹ whereas the minimum green leaves plant⁻¹ (8.33) was recorded

in control. The LSD test suggested that the differences in green leaves plant⁻¹ of maize as affected by different Farmyard Manure (FYM) and NPK doses were significant (P<0.05).

Table. 1 Seed germination (m⁻²), Plant Height (cm) and Green leaves plant⁻¹ of maize crop as affected by farmyard manure and NPK levels

Treatments	Seed germination (m ⁻²)	Plant Height (cm)	Green leaves plant ⁻¹
T ₁ = (Control)	8.00 E	133.73 E	8.33 E
T ₂ = 20-30-30 NPK kg ha ⁻¹ + 10 (FYM) tons ha ⁻¹	10.66 D	155 D	10.33 D
T ₃ = 30-40-35 NPK kg ha ⁻¹ + 15 (FYM) tons ha ⁻¹	14.33 C	174.03 C	12.66 C
T ₄ = 40-50-40 NPK kg ha ⁻¹ + 20 (FYM) tons ha ⁻¹	16.66 B	182.07 B	15.33 B
T ₅ = 50-60-45 NPK kg ha ⁻¹ + 25 (FYM) tons ha ⁻¹	18.66 A	188.2 A	18.33 A
P-Value	0.0460	0.0002	0.0588
SE	3.08	4.92	2.98
LSD	7.11	6.68	6.83

4. Number of internodes plant⁻¹

Number of Internodes plant⁻¹ of maize crop as affected by different doses of Farmyard manure FYM and NPK. The results are presented in (Table 2). Identifying the effect of Farmyard manure FYM and NPK doses on internodes plant⁻¹ suggested that this characteristic was significantly (P<0.05) influenced by different Farmyard manure FYM and NPK doses and their interactions. It is evident from the results that the maximum internodes plant⁻¹ (22.33) were recorded in T₅ 50-60-45 NPK kg ha⁻¹ + 25 (FYM) tons ha⁻¹ followed by internodes plant⁻¹ (18.33) in T₄ 40-50-40 NPK kg ha⁻¹ + 20 (FYM) tons ha⁻¹ whereas the minimum internodes plant⁻¹ (8.33) was recorded in control. The LSD test suggested that the differences in internodes plant⁻¹ of maize as affected by different Farmyard Manure (FYM) and NPK doses were significant (P<0.05).

5. Cob length (cm)

Cob length (cm) of maize crop as affected by different doses of Farmyard manure FYM and NPK. The results are presented in (Table.2). Identifying the effect of Farmyard manure FYM and NPK doses on cob length (cm) suggested that this characteristic was significantly (P<0.05) influenced by different Farmyard manure FYM and NPK doses and their interactions. It is evident from the results that the maximum cob length (cm) (25.4) were recorded in T₅ 50-60-45 NPK kg ha⁻¹ + 25 (FYM) tons ha⁻¹ followed by cob length (cm) (23.4) in T₄ 40-50-40 NPK kg ha⁻¹ + 20 (FYM) tons ha⁻¹ whereas the minimum cob length (14.36 cm) was record in control. The LSD test suggested that the differences in cob length (cm) of maize as affected by different Farmyard Manure (FYM) and NPK doses were significant (P<0.05).

Table. 2 Number of internodes plant⁻¹ and Cob length (cm) of maize crop as affected by farmyard manure and NPK levels

Treatments	Number of internodes plant-1	Cob length (cm)
T ₁ = (Control)	8.33 E	14.36 E
T ₂ = 20-30-30 NPK kg ha ⁻¹ + 10 (FYM) tons ha ⁻¹	12.33 D	13.03 D
T ₃ = 30-40-35 NPK kg ha ⁻¹ + 15 (FYM) tons ha ⁻¹	15.66 C	21.5 C
T ₄ = 40-50-40 NPK kg ha ⁻¹ + 20 (FYM) tons ha ⁻¹	18.33 B	23.4 B
T ₅ = 50-60-45 NPK kg ha ⁻¹ + 25 (FYM) tons ha ⁻¹	22.33 A	25.4 A
P-Value	0.0660	0.0023
SE	4.12	2.32
LSD	9.52	5.36

6. Grain cob⁻¹

Grain cob⁻¹ of maize crop as affected by different doses of Farmyard manure FYM and NPK. The results are presented in (Table 3). Identifying the effect of Farmyard manure FYM and NPK doses on grain cob⁻¹ suggested that this characteristic was significantly ($P < 0.05$) influenced by different Farmyard manure FYM and NPK doses and their interactions. It is evident from the results that the maximum grain cob⁻¹ (383.6) was recorded in T₅ 50-60-45 NPK kg ha⁻¹ + 25 (FYM) tons ha⁻¹ followed by grain cob⁻¹ (348.13) in T₄ 40-50-40 NPK kg ha⁻¹ + 20 (FYM) tons ha⁻¹ whereas the minimum grain cob⁻¹ (198.53) was recorded in control. The LSD test suggested that the differences in grain cob⁻¹ of maize as affected by different Farmyard Manure (FYM) and NPK doses were significant ($P < 0.05$).

7. Seed index 1000-grain weight, (g)

Seed index 1000-grain weight, (g) of maize crop as affected by different doses of Farmyard manure FYM and NPK. The results are presented in (Table 3). Identifying the effect of Farmyard manure FYM and NPK on seed index 1000-grain weight, (g) suggested that this characteristic was significantly ($P < 0.05$) influenced by different Farmyard manure FYM and NPK doses and their interactions. It is evident from the results that the maximum seed index 1000-grain weight, (191.47g) was recorded in T₅ 50-60-45 NPK kg ha⁻¹ + 25 (FYM) tons ha⁻¹ followed by seed index 1000-grain weight, (181.77g) in T₄ 40-50-40 NPK kg ha⁻¹ + 20 (FYM) tons ha⁻¹ whereas the minimum seed index 1000-grain weight, (132.73g) was recorded in control. The LSD test suggested that the differences in seed index 1000-grain weight, (g) of maize as affected by different Farmyard Manure (FYM) and NPK doses were significant ($P < 0.05$).

8. Seed yield (kg ha⁻¹)

The seed yield (kg ha^{-1}) of maize crop i.e. Akbar treated with Farmyard manure FYM and NPK doses results are presented in (Table.3). Identifying the effect of Farmyard manure FYM and NPK doses seed yield (kg ha^{-1}) suggested that this characteristic was significantly ($P < 0.05$) influenced by different Farmyard manure FYM and NPK doses and their interactions. It is evident from the results that the maximum seed yield (kg ha^{-1}) (7466.7) was recorded in T₅ 50-60-45 NPK $\text{kg ha}^{-1} + 25$ (FYM) tons ha^{-1} followed by seed yield (kg ha^{-1}) (6666.7) was recorded in T₄ 40-50-40 NPK $\text{kg ha}^{-1} + 20$ (FYM) tons ha^{-1} whereas the minimum seed yield (kg ha^{-1}) (3766.7) was recorded in control. The LSD test suggested that the differences in seed yield (kg ha^{-1}) of maize as affected by different Farmyard Manure (FYM) and NPK doses were significant ($P < 0.05$).

Table. 3 Grain cob⁻¹, Seed index 1000-grain weight, (g) and Seed yield (kg ha^{-1}) of maize crop as affected by farmyard manure and NPK levels

Treatments	Grain cob ⁻¹	Seed index 1000-grain weight, (g)	Seed yield (kg ha^{-1})
T ₁ = (Control)	198.53 E	132.73 E	3766.7 E
T ₂ = 20-30-30 NPK $\text{kg ha}^{-1} + 10$ (FYM) tons ha^{-1}	279.77 D	144.5 D	3900.0 D
T ₃ = 30-40-35 NPK $\text{kg ha}^{-1} + 15$ (FYM) tons ha^{-1}	305.67 C	166.83 C	6066.7 C
T ₄ = 40-50-40 NPK $\text{kg ha}^{-1} + 20$ (FYM) tons ha^{-1}	348.13 B	181.77 B	6666.7 B
T ₅ = 50-60-45 NPK $\text{kg ha}^{-1} + 25$ (FYM) tons ha^{-1}	383.60 A	191.47 A	7466.7 A
P-Value	0.0000	0.0001	0.0294
SE	16.66	6.84	1080.5
LSD	38.42	15.78	2491.6

Discussion

Maize (*Zea mays* L.) belongs to the Poaceae family and is one of the most widely grown cereal crops with significant potential production (Jaliya et al., 2008). Maize was mostly planted for grain, which is consumed, but it was also grown for fodder, particularly in advanced countries. Nitrogen, Phosphorus, and Potassium are major elements, which are essential for crop growth and yield (Badu et al., 2015).

The data indicated the maize crop treated with Farmyard Manure and NPK, 50-60-45 NPK $\text{kg ha}^{-1} + 25$ (FYM) tons ha^{-1} showed remarkably superior performance with (18.66%) seed germination, (188.2cm) plant height, (18.66) number of green leaves plant⁻¹, (22.33) Number of internodes plant⁻¹, (25.4cm) Cob length, (383.6) Grains cob⁻¹, (191.47g) Seed index 1000 grain weight and (7466.7 kg ha^{-1}) Seed yield followed by 40-50-40 NPK $\text{kg ha}^{-1} + 20$ (FYM) tons ha^{-1} , seed germination (16.66%), plant height (182.07cm), number of green leaves plant⁻¹ (15.33), Number of internodes plant⁻¹ (18.33), Cob length (23.4cm), Grains cob⁻¹ (348.13), Seed index

1000 grain weight (181.77g) and Seed yield (6666.7 kg ha⁻¹). However, the minimum result was recorded in T₁= Control the minimum result seed germination (8%), plant height (133.73cm), number of green leaves plant⁻¹(8.33), Number of internodes plant⁻¹(8.33), Cob length (14.36cm), Grains Cob⁻¹(198.53), Seed index 1000 grain weight (132.73g) and Seed yield (3766.7 kg ha⁻¹).

The results are further confirmed by the study of Kumar (2008) and (Kumar & Chawla, 2015) found that maize fertilized with Farmyard Manure FYM and NPK had significantly higher plant height than maize unfertilized. Similarly, (Singh and Vashist, 2015) revealed that Farmyard manure FYM and NPK different doses resulted in significantly higher plant height than unfertilized maize crops. According to (Singh and Vashist, 2015) Growth traits such as plant height, leaf area index, and dry matter accumulation were significantly higher in Farmyard Manure FYM and NPK as compared to unfertilized. Many growth traits, including plant height, leaf area index, dry matter accumulation, number of days to different phenological stages, and yield, as well as yield contributing characters, including cob length, number of grains cob⁻¹, cob diameter, and 1000-seed weight (g), were significantly higher with Farmyard Manure FYM and NPK compared to unfertilized (Gul et al., 2015). The Farmyard Manure FYM and NPK a significant impact on all maize yield parameters (Singh, 2011) and discovered that ridge and bed planted crops had significantly more leaves plant⁻¹ than flat planted crops in all periodic observations (Kaur, 2011). Also reported that Farmyard Manure FYM and NPK maize produced more grains than unfertilized maize (Tanveer et al., 2014) found that Farmyard Manure FYM and NPK produced the highest grain yield, followed by unfertilized (Alhrouf et al., 2018) also reported significant results regarding plant height in response of planting methods. These results are in conformity with those of (Rasheed et al., 2003). Who state that crop fertilized with Farmyard Manure FYM and NPK produced significantly taller plants, a greater number of grains cob⁻¹, heavier grains, higher grain and stover yield with greater harvest index. (Memon et al., 2007) found significant effect of Farmyard Manure FYM and NPK on number of leaves plant⁻¹. (Amin et al., 2006) reported higher growth and yield of maize with Farmyard Manure FYM and NPK than unfertilized (Memon et al., 2007). Inferred that maize crop sown on Farmyard Manure FYM and NPK gave outstanding results by producing maximum value of seed index.

Conclusions

It is concluded from the present study that the maize treated with T₅= 50-60-45 NPK kg ha⁻¹ + 25 (FYM) tons ha⁻¹ was found to be the best treatment as compared to T₄ = 40-50-40 NPK kg ha⁻¹ + 20 (FYM) tons ha⁻¹.

Recommendations

The present study recommended that T₅ = 50-60-45 NPK kg ha⁻¹ + 25 (FYM) tons ha⁻¹ be the best treatment compared to T₄ = 40-50-40 NPK kg ha⁻¹ + 20 (FYM) tons ha⁻¹.

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