

Original Research Article

Response of Nitrogen and Phosphorus on Growth, Yield and Economics of Fodder Maize (*Zea mays*L.)

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ABSTRACT

The field experiment was conducted during *rabi* season, 2022 at Crop Research Farm, Department of Agronomy, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj (U.P) to study the "Response of Nitrogen and Phosphorus on Growth, Yield and Economics of Fodder Maize (*Zea mays* L.)". The results showed that treatment 9 [Nitrogen (100 kg/ha) + Phosphorus (50 kg/ha)] recorded significantly higher plant height (164.67 cm), maximum number of leaves/plant (15.24), higher plant dry weight (75.81 g), maximum stem girth (3.33 cm), higher green forage yield (47.90 t/ha), maximum moisture content (84.02 %) and maximum crude protein content (7.57 %) compare to other treatment. The maximum gross return (119750.00 INR/ha), maximum net return (83883.77 INR/ha) and highest B:C ratio (2.33) was also recorded in treatment 9 [Nitrogen (100 kg/ha) + Phosphorus (50 kg/ha)] as compared to other treatments.

Keywords: Fodder Maize, Nitrogen, Phosphorus, Growth, Yield and Economics.

Introduction

Maize (*Zea mays* L.) is one of the most important fodder crops in the world. It is fondly called as "King of fodder" due to its great importance in animal diet. It is the ideal fodder crop having quick growing ~~habits~~, high yielding ability, palatability, nutritive value, and acceptable to the cattle at any stage of growth. ~~The maize~~ Maize is also ~~the~~ most useful crop for making silage. It can be grown within still wider limits and tolerate a minimum temperature of about 10 °C and maximum of 45 °C (Patel and Thanki, 2020). Maize is cultivated in diverse production environments ranging from temperate hill zone to ~~the semi-arid~~ semi-arid region. In terms of world acreage, among the ~~maize growing~~ maize-growing countries, India ~~rank-ranks~~ 4th in area and 7th in production, Maize is an important crop for billions of people as food, feed, and industrial raw material. The global consumption pattern of maize is feed-61%, food-17% and industry-22%. Currently, nearly 1147.7 million MT of maize is being produced together by over 170 countries from an area of 193.7 million ha with average productivity of 5.75 t/ha

(FAOSTAT 2020).

In India, maize is principally grown in two seasons, kharif and rabi. Kharif maize represents around 83% of maize area in India, while rabi maize ~~correspond~~ ~~corresponds~~ to 17% maize area. Among Indian states, Madhya Pradesh and Karnataka ~~has~~ ~~have~~ the highest area under maize (15% each) followed by Maharashtra (10%), Rajasthan (9%), Uttar Pradesh (8%) and others. After Karnataka and Madhya Pradesh Bihar is the highest maize producer. Andhra Pradesh is having the highest state productivity (ICAR 2020).

Livestock is the backbone of the Indian economy and its importance in India cannot be ~~overemphasized~~ ~~over-emphasized~~. India has the largest livestock population of 520 million in the world. It is about 15% of world's livestock population with only two ~~per cent~~ ~~percent~~ of world's geographical area. With such a huge population of livestock, the country should have been overflooding with milk. The availability of nutritious feed and fodder ~~are~~ ~~is~~ the major limiting ~~factors~~ ~~factor~~ for increasing livestock products like milk, meat, egg, and wool. The supply of nutritious feed and fodder through proper scientific methods ~~are~~ ~~is~~ essential for the vast livestock population (Meena *et al.* 2022).

~~Thus~~ ~~Thus~~, fulfilling the demand for feed and fodder will be a major challenge for the livestock sector of the country. Maize is a most ideal and suitable crop for fodder as well as silage because of its ~~high yielding~~ ~~high-yielding~~ ability, excellent nutritional profile, its quick growing nature, succulence, palatability, and excellent quality without any anti-nutritional factor, when harvested at any stage of crop growth (Panwar *et al.* 2020). It may not be possible to increase the area under fodder crop because of ~~the ever increasing~~ ~~ever-increasing~~ pressure on arable land for grain and commercial crops. So, the only alternative to meet the fodder requirement is to increase the yield of fodder per unit area per unit of time. This can be achieved by growing of ~~high yielding~~ ~~high-yielding~~ varieties and hybrids of cereal fodders.

Fertilizer application is one of the ~~principle~~ ~~principal~~ factors that directly influence ~~the~~ fodder yield and quality. An adequate supply of nutrients at each growth stage is highly essential for good yield and quality of fodder maize. ~~The essential~~ ~~Essential~~ nutrients such as nitrogen and phosphorus are important for plant growth, yield, and quality. Fertilization is the most important agronomic ~~practices~~ ~~practice~~ and therefore there are several studies conducted with different fertilizer levels ~~suggests~~ ~~suggest~~ that the optimum rate of fertilizer for forage maize cultivation depends on many variable factors such as environmental factors, management systems, soil

fertility, and management factors including plant density. Higher plant density may require more fertilizer. Nitrogen and Phosphorus fertilization of maize influences dry matter yield by influencing leaf area index, leaf area duration and photosynthetic efficiency. Some other researchers also reported that there were positive effects of nitrogen on dry matter yield and forage yield (Subrahmanya *et al.* 2019).

Among different nutrients, nitrogen is the most commonly deficient nutrient in the soil and gives considerable response in forage maize ~~crop~~. It has the quickest and most pronounced effect on plant growth and development, and ultimately on forage yields. The adequate supply of this element is associated with vigorous vegetative growth and ~~the~~ deep green color of the foliage. Nitrogen and phosphorus application increases the green fodder yield of maize. Phosphorus application enhances the crop to reach 50% ~~tasseling~~ tasseling and silking earlier. It also enhances the ~~leaves~~ leaf protein content of forage maize. ~~Crude~~ The crude fiber content of maize is also significantly influenced by the application of nitrogen and phosphorus (Ayub *et al.* 2002).

In plants, phosphorus is a common component of organic compounds. Phosphorus deficiency, however, significantly reduces plant growth. Phosphorus application increased ~~the~~ green forage and dry matter yield of the crop. It also ~~effects~~ affects on plant height, stem thickness and ~~and~~ leaf: stem ratio of fodder maize and quality ~~characters~~ characteristics like crude protein content (Eltelib *et al.* 2006). Keeping in view the above fact, the experiment was conducted to find out “Response of Nitrogen and Phosphorus on Growth, Yield, and Economics of Fodder Maize (*Zea mays* L.)”.

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2. MATERIALS AND METHODS

This experiment was laid out during the *rabi* season of 2022 at Crop Research Farm, Department of Agronomy, Sam Higginbottom University of Agriculture, Technology And Sciences, Prayagraj (U.P.). The soil of the field constituting a part of central gangetic alluvium is neutral and deep. The soil of the experimental field was sandy loam in texture, nearly neutral in soil reaction (pH 8.0), low level of organic carbon (0.62%), available N (225 kg/ha), P (38.2 kg/ha) and K (240.7 kg/ha). The treatment ~~consist~~ consists of 3 different levels of Nitrogen (60, 80 and 100 kg/ha) with a combination of 3 different levels of Phosphorus (30, 40 and 50 kg/ha). The experiment was laid out in RBD with 9 ~~treatment~~ treatments each replicated thrice. The treatment combinations are T₁ – [Nitrogen (60 kg/ha) + Phosphorus (30 kg/ha)], T₂ – [Nitrogen (60 kg/ha) + Phosphorus (40 kg/ha)], T₃ – [Nitrogen (60 kg/ha) + Phosphorus (50 kg/ha)], T₄ – [Nitrogen (80 kg/ha) + Phosphorus (30 kg/ha)], T₅ – [Nitrogen (80 kg/ha) + Phosphorus (40 kg/ha)], T₆ – [Nitrogen (80 kg/ha) + Phosphorus (50 kg/ha)], T₇ – [Nitrogen (100 kg/ha) + Phosphorus (30

kg/ha)], T₈–[Nitrogen (100 kg/ha) + Phosphorus (40 kg/ha)], T₉–[Nitrogen (100 kg/ha) + Phosphorus (50 kg/ha)]. The Data recorded on different aspects of crop, viz., growth parameters, and yield attributes were subjected to ~~statistically–statistical~~ analysis by analysis of variance method. (Gomez and Gomez, 1976)

RESULT AND DISCUSSION:

Growth parameters

Plant height (cm)

The data revealed that a significantly higher plant height (164.67 cm) was recorded in treatment 9 (Nitrogen 100 kg/ha + phosphorus 50 kg/ha) as compared to rest of the treatments. However, the treatment-4 (Nitrogen 80 kg/ha + phosphorus 30 kg/ha) treatment-5 (Nitrogen 80 kg/ha + phosphorus 40 kg/ha), treatment -6 (Nitrogen 80 kg/ha + phosphorus 50 kg/ha), treatment-7 (Nitrogen 100 kg/ha + phosphorus 30 kg/ha) and treatment -8 (Nitrogen 100 kg/ha + phosphorus 40 kg/ha) was found to be statistically at par with treatment 9 (Nitrogen 100 kg/ha + phosphorus 50 kg/ha) in (Table 1). Significant and higher plant height was recorded with the application of nitrogen (100 kg/ha) might be due to supply of the proper amount of nitrogen at different stages of maize. ~~The nitrogen~~ Nitrogen promotes plant growth, increased number of internodes, increased cell division, cell elongation, nucleus formation as well as green foliage, which may have direct impacts on growth and development of plants. Similar results ~~was–were~~ also reported by **Kuldeep et al. (2022)**. Further, significant and higher plant height ~~was~~ with the application of phosphorus (50 kg/ha) fertilizer may be due to appropriate nutrient availability, which in turn helps in robust vegetative growth of plants and subsequently increases the plant through cell elongation, cell division, photosynthesis and turbidity of a plant cell which leads to vegetative growth of crop, particularly plant height Similar results was also reported by (**Kumar et al. 2021**).

Number of leaves/ plant

The data revealed that a significantly maximum number of leaves/plant (15.24) was recorded in treatment-9 (Nitrogen 100 kg/ha + phosphorus 50 kg/ha) as compared to rest of the treatments. However, the treatment-4 (Nitrogen 80 kg/ha + phosphorus 30 kg/ha), treatment-5 (Nitrogen 80 kg/ha + phosphorus 40 kg/ha), treatment-6 (Nitrogen 80 kg/ha + phosphorus 50 kg/ha), treatment-7 (Nitrogen 100 kg/ha + phosphorus 30 kg/ha) and treatment-8 (Nitrogen 100 kg/ha + phosphorus 40 kg/ha) was found to be statistically at par with treatment-9 (Nitrogen 100 kg/ha + phosphorus 50 kg/ha) in (Table 1). ~~Significant–A significant~~ and maximum number of leaves/plant

was recorded with the application of nitrogen (100kg/ha) might be due to nitrogen application increased plant growth and development, particularly more nodes and ~~inter-nodes~~internodes, which may have ~~results~~resulted in the production of more leaves /plant. Similar results ~~was~~were also reported by (Amin, 2011). Further, a Significant and maximum number of leaves/plant was recorded with application of phosphorus (60 kg/ha) might be due to the formation of new cells, promote plant ~~vigoursly~~vigorously and fastens leaf development, which ~~help~~helps in harvesting more solar energy and better utilization of nitrogen, which help toward higher growth attributes. ~~Similar~~A similar result was also reported by (Sankadiya *et al.* 2021).

Plant dry weight

The data revealed that a significantly higher plant dry weight (75.81 g) was recorded in treatment-9 (Nitrogen 100 kg/ha + phosphorus 50 kg/ha) as compared to the rest of the treatments. However, the treatment-4 (Nitrogen 80 kg/ha + phosphorus 30 kg/ha), treatment-5 (Nitrogen 80 kg/ha + phosphorus 40 kg/ha), treatment-6 (Nitrogen 80 kg/ha + phosphorus 50 kg/ha), treatment-7 (Nitrogen 100 kg/ha + phosphorus 30 kg/ha) and treatment-8 (Nitrogen 100 kg/ha + phosphorus 40 kg/ha) was found to be statistically at par with treatment-9 (Nitrogen 100 kg/ha + phosphorus 50 kg/ha) in (Table 1). Significant and higher plant dry weight was recorded with the application of nitrogen (100kg/ha) might be due to adequate availability of nitrogen ~~leads~~leading to a better nutritional environment at the root zone and also ~~increases~~increasing auxins supply to plants, which results in better vegetative growth and more dry matter accumulation in plants. ~~Similar~~A similar result was also reported by (Palet *et al.* 2017). Further, significant and higher plant dry weight was recorded with the application of phosphorus (60 kg/ha) might be due to phosphorus increases plant height, no. of leaves/plant, and vegetative growth which results in more dry matter accumulation, Similar result was also reported by (Khanet *et al.* 2014).

Crop growth rate (g/m²/day)

The data revealed that significantly higher crop growth rate (86.74 g/m²/day) was recorded in treatment-9 (Nitrogen 100 kg/ha + phosphorus 50 kg/ha) as compared to rest of the treatments. However, the treatment-1 (Nitrogen 60 kg/ha + phosphorus 30 kg/ha), treatment-2 (Nitrogen 60 kg/ha + phosphorus 40 kg/ha), treatment-3 (Nitrogen 60 kg/ha + phosphorus 50 kg/ha), treatment-4 (Nitrogen 80 kg/ha + phosphorus 30 kg/ha), treatment-5 (Nitrogen 80 kg/ha + phosphorus 40 kg/ha), treatment-6 (Nitrogen 80 kg/ha + phosphorus 50 kg/ha), treatment-7 (Nitrogen 100 kg/ha + phosphorus 30 kg/ha) and treatment-8 (Nitrogen 100 kg/ha + phosphorus 40 kg/ha) was found to be statistically at par with treatment-9 (Nitrogen 100 kg/ha + phosphorus

50 kg/ha) in (Table 1). ~~Significant-A significant~~ and higher crop growth rate was recorded with ~~the~~ application of nitrogen (100kg/ha) with phosphorus (50kg/ha) might be due to ~~the~~ supply of ~~nutrient—nutrientswith—~~with higher availability of nitrogen and phosphorus which ~~might~~ ~~might~~ have promoted development of morphological structure by virtue of multiplication of cell division which is well reflected through increased crop growth rate. ~~Similar-A similar~~ result was also reported by (Khan *et al.* 2017).

Yield attributes

Stem girth (cm)

The data revealed that Significant and maximum stem girth (3.33 cm) was recorded with Treatment-9 (Nitrogen 100 kg/ha + Phosphorus 50 kg/ha) which was superior over all other treatment. However, the treatment -8 (Nitrogen 100 kg/ha + Phosphorus 40 kg/ha) was found to be statistically at par with treatment-9 (Nitrogen 100 kg/ha + Phosphorus 50 kg/ha) in (Table 2). Significant and maximum stem girth was recorded with ~~the~~ application of nitrogen (100 kg/ha) might be due to ~~the~~ increasing supply of nitrogen concentration might trigger cell division, cell elongation which ~~is~~ attributed to ~~the~~ expansion of stem diameter. Similar results were also reported by Ali *et al.* (2017).

Green forage yield(t/ha)

The data revealed that ~~a~~ Significant and higher green forage yield (47.90 t/ha) was recorded with Treatment-9 (Nitrogen 100 kg/ha + Phosphorus 50 kg/ha) which was superior over all other treatment. However, ~~the~~ treatment -7 (Nitrogen 100 kg/ha + Phosphorus 30 kg/ha), ~~and~~ treatment -8 (Nitrogen 100 kg/ha + Phosphorus 40 kg/ha) was found to be statistically at par with treatment-9 (Nitrogen 100 kg/ha + Phosphorus 50 kg/ha) in (Table 2). Significant and higher green forage yield was recorded with application of nitrogen (100kg/ha) might be due to nitrogen plays an important role in the synthesis of proteins, ~~and~~ carbohydrates, which ~~increased~~ ~~increase~~ in yield with increased in nitrogen level was mainly due to associated with increased plant height, leaves/plant, stem diameter, dry matter production resulted ~~in~~ higher forage yield. Similar results was also reported by Ali *et al.* (2012). Further, significant and higher forage yield was with application of phosphorus (50 kg/ha) might be due to phosphorus ~~enhances~~ ~~enhancing~~ nutrient uptake by the crop, better translocation of photosynthesis ~~form—from~~ source to sink, which results in increased plant growth and forage yield. Similar results was also reported by Jena *et al.* (2014).

Moisture content (%)

The data revealed Significant and maximum moisture content (84.02 %) was recorded with Treatment-9 (Nitrogen 100 kg/ha + Phosphorus 50 kg/ha) which was superior over all other treatment. However, the treatment-4 (Nitrogen 80 kg/ha + phosphorus 30 kg/ha), treatment-5 (Nitrogen 80 kg/ha + phosphorus 40 kg/ha), treatment-6 (Nitrogen 80 kg/ha + phosphorus 50 kg/ha), treatment-7 (Nitrogen 100 kg/ha + phosphorus 30 kg/ha), treatment -8 (Nitrogen 100 kg/ha + Phosphorus 40 kg/ha) was found to be statistically at par with treatment-9 (Nitrogen 100 kg/ha + Phosphorus 50 kg/ha) in (Table 2). Significant and maximum moisture content was recorded with application of nitrogen (100kg/ha) might be due to increases the protein formation from manufactured carbohydrates. Where, less carbohydrate ~~are~~ deposited in vegetative cell and more the protoplasm will be formed. As protoplasm is highly hydrated which lead to more succulence in the plant, which results in increasing level of nitrogen ~~and~~ increased moisture content in fodder maize. Similar results ~~was~~ ~~were~~ also reported by **Karla et al. (2015)**.

Crude protein content (%)

The data revealed Significant and maximum crude protein content (7.52 %) was recorded with Treatment-9 (Nitrogen 100 kg/ha + Phosphorus 50 kg/ha) which was superior over all other ~~treatment~~ ~~treatments~~. However, ~~the~~ treatment -8 (Nitrogen 100 kg/ha + Phosphorus 40 kg/ha) was found to be statistically at par with treatment-9 (Nitrogen 100 kg/ha + Phosphorus 50 kg/ha) in (Table 2). Significant and maximum crude protein was recorded with application of nitrogen (100kg/ha) might be due to nitrogen is an active ingredient of ~~the~~ protein molecule and a building block of amino acid results in ~~a~~ linear increase in crude protein with increased nitrogen levels. Similar results ~~was~~ ~~were~~ also reported by **Sewhag et al. (2021)**

Economic

The result showed that, maximum Gross return (119750.00 INR/ha), maximum net return (83883.77 INR/ha) and highest B:C ratio (2.33) was recorded maximum in treatment 9 [Nitrogen (100 kg/ha) + Phosphorus (50 kg/ha)] in (Table 3). Maximum economic was recorded with application ~~of Nitrogen~~ ~~of Nitrogen~~ (100 kg/ha) might be due to sufficient availability and split application of nitrogen minimize nitrogen utilization which helps to get better vegetative growth that leads to higher fodder yield. ~~Similar~~ ~~A similar~~ result was also reported by **Meena et al. (2022)**.

The candidate manuscript does not have a robust scientific discussion, I suggest the authors incorporate the suggested paragraphs, in this way it would improve the scientific quality of the manuscript:

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Nitrogen and phosphorus are essential nutrients for plant growth and play a crucial role in the development and productivity of fodder maize (Olivares et al. 2018; Bertorelli and Olivares, 2020). Adequate nitrogen supply promotes vegetative growth, chlorophyll synthesis, and overall biomass production. Phosphorus is involved in root development, energy transfer, and reproductive processes. Studies have shown that proper application of nitrogen and phosphorus fertilizers can significantly increase the growth and yield of fodder maize. Insufficient nutrient supply can result in stunted growth, lower biomass, and reduced yield.

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The response of fodder maize to nitrogen and phosphorus is not isolated but influenced by their interactions. Nitrogen affects the uptake and utilization of phosphorus, and vice versa. The optimal ratio between nitrogen and phosphorus is essential for maximizing growth and yield. Imbalanced nutrient application can lead to nutrient deficiencies or imbalances, affecting plant health and productivity (Olivares, 2016). Therefore, it is crucial to consider the appropriate nutrient management practices, including the use of balanced fertilizers, to ensure optimal nutrient interactions and plant performance (Olivares, 2022).

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The application of nitrogen and phosphorus fertilizers in fodder maize production can have economic implications. Proper nutrient management practices that optimize the use of nitrogen and phosphorus can enhance the economic returns for farmers. However, excessive or inefficient fertilizer use can result in economic losses due to increased input costs without corresponding yield benefits (Orlando and Franco, 2015). Balancing nutrient application based on crop nutrient requirements and soil analysis can help optimize fertilizer use and improve economic returns (Lopez-Beltran et al. 2019; Lopez and Olivares, 2019).

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Tropical agricultural areas in Latin America often face specific environmental challenges that can influence the response of fodder maize to nitrogen and phosphorus. Factors such as high rainfall (Hernandez et al. 2018a; 2018b), temperature (Casana and Olivares, 2020; Olivares et al. 2021), and soil characteristics can affect nutrient availability (Araya et al. 2020; Olivares et al. 2022a; Lobo et al. 2023), uptake, and losses. Inadequate nutrient management practices, including excessive fertilizer application or poor timing, can lead to nutrient leaching, runoff, and pollution of water bodies (Cortez et al. 2017; Olivares et al. 2022b). Therefore, studies in tropical agricultural areas of Latin America focus on understanding the environmental factors that affect nutrient dynamics and developing sustainable nutrient management strategies to minimize environmental impacts (Rodriguez et al. 2015; Hernandez et al. 2020; Hernandez and

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Olivares, 2019; Pitti et al. 2021).

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Overall, the response of nitrogen and phosphorus on the growth, yield, and economics of fodder maize in tropical agricultural areas of Latin America is influenced by nutrient interactions, economic considerations, and environmental factors. Understanding these factors and implementing appropriate nutrient management practices is crucial for sustainable fodder maize production while optimizing yields, reducing environmental impacts, and ensuring economic viability for farmers.

CONCLUSION:

Based on the above findings it is concluded that fodder maize with the application of Nitrogen (100kg/ha) along with Phosphorus (50 kg/ha) was observed higher green yield and benefit- cost ratio.

UNDER PEER REVIEW

REFERENCE

I suggest adding recent references which address the issue in question in Latin American territories. Suggested citations are for genuine scientific reasons that emphasize the current topic of study in context.

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Table 1: Response of different levels of nitrogen and phosphorus on growth attributes of Fodder maize.

At 80 DAS						
S.No.	Treatment combinations	Plant height (cm)	Number of leaves/plant	Dry weight (g/plant)	CGR (60-80) DAS	RGR (60-80) DAS
1.	Nitrogen 60 kg/ha + Phosphorus 30 kg/ha.	143.20	12.15	64.12	78.57	0.066
2.	Nitrogen 60 kg/ha + Phosphorus 40 kg/ha.	144.13	12.98	67.31	82.92	0.067
3.	Nitrogen 60 kg/ha + Phosphorus 50 kg/ha.	146.13	13.15	65.92	80.38	0.066
4.	Nitrogen 80 kg/ha + Phosphorus 30 kg/ha.	151.97	13.48	68.90	83.88	0.066
5.	Nitrogen 80 kg/ha + Phosphorus 40 kg/ha.	154.63	13.89	70.52	84.25	0.063
6.	Nitrogen 80 kg/ha + Phosphorus 50 kg/ha.	158.17	14.37	71.96	83.54	0.060
7.	Nitrogen 100 kg/ha + Phosphorus 30 kg/ha.	164.10	14.51	72.72	82.83	0.058
8.	Nitrogen 100 kg/ha + Phosphorus 40 kg/ha.	163.23	14.83	74.96	86.29	0.059
9.	Nitrogen 100 kg/ha + Phosphorus 50 kg/ha.	164.67	15.24	75.81	86.74	0.058
	F test	S	S	S	S	NS
	SEm(±)	4.71	0.61	2.49	4.36	0.003
	CD (p=0.05)	14.11	1.83	7.47	13.06	-

Table2:Response of different levels of nitrogen and phosphorus on yield attributes and yield of Fodder maize.

S.No.	Treatmentcombination	Yield attributes and yield			
		Stem girth (cm)	Green forage yield(t/ha)	Moisture content (%)	Crude protein content (%)
1.	Nitrogen 60 kg/ha + Phosphorus 30 kg/ha.	1.34	36.97	73.99	5.04
2.	Nitrogen 60 kg/ha + Phosphorus 40 kg/ha.	1.57	38.07	77.66	5.47
3.	Nitrogen 60 kg/ha + Phosphorus 50 kg/ha.	1.92	38.87	78.74	5.82
4.	Nitrogen 80 kg/ha + Phosphorus30 kg/ha.	2.07	39.80	80.74	5.97
5.	Nitrogen 80 kg/ha + Phosphorus 40 kg/ha.	2.22	41.37	82.23	6.12
6.	Nitrogen 80 kg/ha + Phosphorus 50 kg/ha.	2.44	42.87	82.83	6.34
7.	Nitrogen 100 kg/ha + Phosphorus 30 kg/ha.	2.77	45.27	83.10	6.67
8.	Nitrogen 100 kg/ha + Phosphorus 40 kg/ha.	3.10	46.50	83.54	7.00
9.	Nitrogen 100 kg/ha + Phosphorus 50 kg/ha.	3.33	47.90	84.02	7.57
	F-test	S	S	S	S
	S Em (\pm)	0.11	15.55	1.98	0.21
	CD(p=0.05)	0.33	46.62	5.92	0.62

Table3:Response of different levels of nitrogen and phosphorus application oneconomics in Fodder maize.

S.No.	Treatmentcombination	Economics			B:C
		Cost of cultivation (INR/ha)	Gross return (INR/ha)	Net return (INR/ha)	
1.	Nitrogen 60 kg/ha + Phosphorus 30 kg/ha.	34132.51	92425.00	58292.49	1.70
2.	Nitrogen 60 kg/ha + Phosphorus 40 kg/ha.	34395.01	95175.00	60779.99	1.76
3.	Nitrogen 60 kg/ha + Phosphorus 50 kg/ha.	35257.51	97175.00	61917.49	1.75
4.	Nitrogen 80 kg/ha + Phosphorus30 kg/ha.	34436.87	99500.00	65063.13	1.88
5.	Nitrogen 80 kg/ha + Phosphorus 40 kg/ha.	34999.37	103425.00	68425.63	1.95
6.	Nitrogen 80 kg/ha + Phosphorus 50 kg/ha.	35561.87	107175.00	71613.13	2.01
7.	Nitrogen 100 kg/ha + Phosphorus 30 kg/ha.	34741.23	113175.00	78433.77	2.25
8.	Nitrogen 100 kg/ha + Phosphorus 40 kg/ha.	35303.73	116250.00	80946.27	2.29
9.	Nitrogen 100 kg/ha + Phosphorus 50 kg/ha.	35866.23	119750.00	83883.77	2.33

UNDER PEER REVIEW

