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Effect of different levels of nitrogen on growth and fodder quality of maize (*Zea mays* L.)

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Abstract
Among the essential plant nutrients nitrogen play a vital role in plant growth and development. Vegetative growth of plant increases besides this plant and maturity rapidly occur by supply of sufficient nitrogen. The three level of nitrogen (90,120,150 kg per hectare). In examination the impact of nitrogen 150 kg per hectare high plant height, increase number of leaves as followed by 90 kg per hectare. The nitrogen level 180 kg per hectare increase number per ear, row number per cob. The writing about the growth and quality of Maize (*Zea mays* L.) comparable to nitrogen is reviewed in this paper.

Keywords: Growth, fodder quality, yield, nitrogen

Introduction
Maize is one of the most important cereal grains grown worldwide in a wider range of environments because of its greater adaptability. It belongs to *poaceae* family. It was originated in Mexico where its oldest known as ears could be tracked back to about 7000 years ago (Mangeisdorf *et al*., 1964) [10]. It is mainly used as a food source and now has become the most important raw material for animal feed. Maize is one of the main sources of cereals for food, forage and processed industrial products. Maize is known as queen of cereals crop. The composition of the soil is important as it regulates the ability of moisture and nutrients. The best soil forms for maize cultivation are the loam or silt loam surface soil and brown silt clay loam with relatively permeable sub soil.

World maize production is around 790 million tons and serves as a staple food supplying over a third of the calories and proteins in some countries. Maize is second rated grain that is used collectively in form of food stuff or fodder. In the developed world, maize demand will double by 2050, and maize is expected to become the crop with the greatest yield worldwide, and by 2025 in the developing world (Rosegrant *et al.*, 2008).

Maize is a widely grown crop with a high rate of photosynthetic activity due to its C_4 pathway, which results in higher grain yield and potential for biomass. It is predominantly cross-pollinated species, a characteristic which has contributed to its wide morphological variability and geographic adaptability. Since of its demand for food, feed and industrial use, it has taken on greater significance. Maize is developed widely in different nations of the world. US, France, Brazil, India and Italy are the nations which produce maize in large amount. Starch, glucose and corn oil are developed by maize. in addition, this bio fuel, for example, ethanol is likewise created on the planet (Ahmad *et al.* 2007) [2].

Nitrogen is a necessary part of numerous mixes and connected with photosynthetic action. It is a fundamental part of the amino acids and related proteins. Nitrogen in fundamental for sugar utilizes inside plant and animates root and improvement just as the take- up of different supplements (khan *et al.* 2014) [8]. When a lot of nitrogen is applied, abundance vegetative development happens, and the plant lodges with smallest breeze. Harvest development is deferred, and the plants are more susceptible to disease and insect pests. Insufficiency of nitrogen results in low plant development which lessens the grain yield, leaf territory file, leaf region length and pace of photosynthesis. It confers dull green tone to plants.

Effect of Nitrogen Level
Growth Parameters: Among the basic plant nutrients nitrogen assume an indispensable part in plant development and improvement. The plant height, Number if leaves extended

altogether in the expansion level of nitrogen (Khan *et al.* 2014) [8]. Interaction between nitrogen levels was discovered not huge. Mean estimation of the information showed that higher plant stature (120.6 cm) was recorded when nitrogen was applied at the rate of 150 kg N ha followed by 120 kg N ha with plant tallness (114.7 cm). Nitrogen at 90 kg ha came about least plant height (78.3 cm). Nitrogen levels expanded influenced number of leaves plant. Mean estimation of the information showed that higher number of leaves plant (11) was recorded when nitrogen was applied at the rate of 150 kg ha followed by 120 kg N ha with number of leaves plant (10) and Nitrogen 90 kg ha came about lower number of leaves plant (8).

Nitrogen regularly influences the amino acid composition of the protein, and hence the nature of supplements. In cereals, a plentiful flexibly of nitrogen decreases the overall commitment of lysine and threonine, hence lessening the organic estimation of the protein. Expanded nitrogen gracefully frequently prompts part trustworthiness and strength, bringing about better processing properties of the grain (Blumenthal *et al.* 2008) [3]. In proteins, alkaloids, nucleic acids, coenzymes, Porphyrins, nitrogen in the primary fixing. The Porphyrins are answerable fir the legacy, metabolic cycle and development of plants. Porphyrins are the fundamental part of cytochrome and chlorophyll (Jain, 2000) [7].

Fodder Quality: Cox *et al.* (1993) [4]. Announced the outcome on forage maize and uncovered that NDF (Neutral Detergent Fiber) and ADF (Acid Detergent Fiber) decline directly with increment in Nitrogen levels. Anyway, NDF and ADF content diminished with increment in Nitrogen levels. Most extreme and least NDF and ADF were found in charge and 150 kg N hectare. Reddy and Bhanumurthy (2010) [11] detailed that in forage maize, Nitrogen take-up (273.4 kg hectare) and crude protein yield (1695 kg hectare).

Green and Dry fodder Yield: Khan *et al.* (2014) [9] announced that nitrogen levels was likewise discovered critical. Mean examination demonstrated that control versus rest was critical for new weight of maize plants. Mean estimation of the information demonstrated that higher new weight (1771.3 kg ha) was recorded when nitrogen was applied at the pace of 150kg N ha-1 with new weight (1490.7 kg ha) and 120 kg N ha with new height (1101.9 kg ha where 90 kg N ha brought about least new weight. Nitrogen indicated that use of N at the pace of 150 kg N ha expanded new height (2375.9 kg ha). Dry grub yield Mean estimation of the information showed that higher dry weight (727.8 kg ha) was recorded when nitrogen was applied at the pace of 150 kg N ha followed by 120 kg N ha with dry weight (548.9 kg ha) and 120 kg N ha with dry weight (538.9 kg ha). While lower nitrogen rate (90 kg ha) came about most minimal dry weight. Dawadi and Sah (2012) [6] found a higher application pace of Nitrogen adequately expanded bit number per ear and part row number per cob. A more elevated level of Nitrogen (180 kg N/ha) improved seed respect 2.85 t/ha of maize (Adhikary and Adhikary, 2013 [1].

Table 1: Supply and demand scenario of forage and roughages (1995-2025) (in Million tonnes) Chaudhary *et al.* (2012) [5]

Year	Supply		Demand		Deficit as % of demand (as actual)	
	Green	Dry	Green	Dry	Green	Dry
1995	379.3	421	947	526	568 (59.95)	105 (19.95)
2000	384.5	428	988	549	604 (61.10)	121 (21.93)
2005	389.9	443	1025	569	635 (61.96)	126 (22.08)
2010	395.2	451	1061	589	666 (62.76)	138 (23.46)
2015	400.6	466	1097	609	696 (63.50)	143 (23.56)
2020	405.9	473	1134	630	728 (64.21)	157 (24.81)
2025	411.3	488	1170	650	759 (64.87)	162 (24.92)

Source: Based on 10th Five Year Plan Document, Government of India.

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