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EFFECT OF NITROGEN AND POTASSIUM LEVELS ON YIELD AND QUALITY OF BABY CORN

PALLAVI R. DHAKE*, V. S. KALE, P. K. NAGRE, S.V. BONDRE AND R. S. WANKHADE
Department of Horticulture,
Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola - 444 104, Maharashtra, INDIA
e-mail : pallavidhake21@gmail.com

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***Corresponding author**

ABSTRACT

Among different N levels N_4 (200 kg N/ha) resulted in significantly higher yield attributes *viz*. number of cobs per plant. cob length, cob diameter, cob weight with husk, cob weight without husk, cob yield per plant with and without husk , cob yield per hectare with husk and without husk (325.96 and 62.45 q respectively). Quality parameters viz. fiber and sugar content was also significantly influenced by N levels. N_4 also recorded significantly maximum available nitrogen (196.56 kg ha^{-1}) and available potassium (290.11 kg ha^{-1}). In case of potassium levels, crop with level K_3 (75 kg ha^{-1}) recorded significantly higher plant height at harvest, cob length, cob weight without husk, cob yield per plant with husk, cob yield per plot with husk, cob yield per hectare with husk (281.10 q). Reducing sugar, total sugar and non-reducing sugar content also significantly influenced by potassium level K_3 (75 kg ha^{-1})The present investigation revealed that, raising baby corn with application of 200 kg N ha^{-1} + 25 kg K ha^{-1} with P 60 kg ha^{-1} would produce maximum baby corn yield as it given highest benefit cost (B:C) ratio (2.56).

INTRODUCTION

Baby corn (*Zea mays* L.) cultivation is a recent development. It was Thailand in the 1970s that first seriously started cultivating this crop for export. Later other countries like Guatemala, Zambia, Zimbabave and South Africa started cultivation. Today Thailand and china are the world leaders in baby corn production. Baby corn cultivation is a recent development in India. It is becoming popular among the city elite and the processing industry (Ramachandrappa *et al*., 2004). This crop has been developed into a multi dollar business in foreign countries (Thailand, Taiwan, Singapore, Malaysia, USA, Canada and Germany) because of its potential as a value added product for export and a good food substitute. During recent times, its potentiality has been extended to the field of vegetable production (Mugalkhod *et al*., 2011). It contains more sugar than common corn in grains. It is a small young corn ear harvested at the stage of silk emergence. Young cob corn has been used by Chinese as vegetable for generations and this practice has spread to other Asian countries. It is used as ingredient in most food preparations.

The optimum amounts of basic elements in the soil cannot be utilized efficiently if nitrogen is deficient in plants. Therefore, nitrogen deficiency or excess can result in reduced yield. Application of nitrogen fertilizer has also been reported to have significant effect on grain yield and quality of maize (Sharifi and Taghizadeh, 2009). Nitrogen play an important role in plant metabolism by virtue of being an essential constituent of structural component of the cell wall and many metabolically active compounds. It is also a constituent of chlorophyll, which is important for harvest of solar energy (Bray, 1983). Among the essential nutrient, response to nitrogen application is by and large obtained in Indian soils, low in nitrogen. Even under the best of prevailing situations in Indian soil, utilization efficiency of nitrogen ranges from 30-35 per cent, and has never exceeded 50 per cent (Prasad and Prasad, 1988). Nitrogen is most important in yield and quality formation in crops through manifestation of growth and development (Mishra and Pal, 2016). Its role in photosynthesis, protein synthesis, cell division and other plant metabolic activities are well documented. Increase nitrogen supply in continuous manner to the crop results in greater cell size and leaf area and thus greater photosynthetic activity. Potassium increases crop yield and improves quality. It is required for numerous plant growth processes. The role of K in photosynthesis is complex. The activation of enzymes by K and its involvement in ATP production is probably more important in regulating the rate of photosynthesis than the role of K in stomatal activity.The low quantity of potassium in the plant body decreases the photosynthetic carbon metabolism and the consumption of fixed carbon resources (Mengel and Kirkby, 2001) Therefore, under such circumstances only ways are there which can increase the productivity per unit area and quality with improved agronomic practices and application of standardized fertilizer dose (Kumar *et al*., 2002; Muhammad *et al*., 2004, Pal and Bhatnagar, 2009).

The different levels of nutrition of *Zea mays* plants greatly affected the yield and quality. As baby corn has recently introduced to this area, cultural practices are not yet standardized, specially the chemical fertilizer dose need to be standardized. Therefore this is an attempt to find out the suitable fertilizer dose for baby corn.

MATERIALS AND METHODS

This research was carried out at the Department of Horticulture, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (MS) which is located in subtropical region between 22.42ºN latitude and 77.02º E longitude at an altitude of 307.42 m above the mean sea level. The experimental plot was having very loose soil with uniform texture and structure with good drainage pH; (8.35) analyzed using glass electrode pH meter, EC (0.41 dSm^{-1}) analyzed using conductivity meter (Jackson, 1973), Organic carbon (0.87 %) Walkley and Black method (Nelson and Sommer, 1982) and available N (169.3 kg ha^{-1}) Alkaline potassium permanganate method for nitrogen (Subbiah and Assija, 1956), available P (16.4 kg ha^{-1}) analyzed by Olsen's method (Nelson and Sommer, 1982) and available K (269 kg ha^{-1} kg ha-1) analyzed by Flame photometry (Jackson, 1973).

The experiment was laid out in factorial randomized block design with three replications on a gross size of each plot 2.1 m × 1.8 m. and a net size of each plot 1.8 m × 1.5 m. Total number of plots was 36 with distance of 0.45 m between rows and 0.30 m between plants with in a row. Twelve treatment combinations with factor A *i.e.* nitrogen(N) was applied at the rate of 125 kg ha^{-1} (N_{-1}), 150 kg ha^{-1} (N_2), 175 kg ha^{-1} (N_3) and 200 kg ha^{-1} (N_4). While, factor B *i.e.* potassium (K) was applied at rate of 25 kg ha^{-1} (K_1), 50 kg ha^{-1} (K_2) and 75 kg ha^{-1} (K_3). Entire dose of phosphorus (Constant 60 kg/ha^{-1}), potassium and half dose of nitrogen was applied before sowing as basal dose at the time of sowing and half dose of nitrogen was applied at 30 DAS. The source of N, P and K were Urea, Diammonium phosphate and Muriate of potash respectively. All the cultural operations were performed as per the package of practices of baby corn. Baby corn variety G - 5414 (F_1 hybrid) was used as experimental material. The raw data was subjected to appropriate statistical procedure as suggested by Gomez and Gomez (1984).

Growth observations

Five plants were selected at random from each treatment for recording the observations on growth, yield and quality parameters and their means were worked out. Leaf area index was calculated by using following formula

$$LAI = \frac{\text{Leaf area plant}^{-1}}{\text{Ground area occupied plant}^{-1}}$$

Biochemical analysis

The biochemical parameters were estimated using standard methodologies *i.e.* total chlorophyll (Arnon ,1949), protein content by Kjeldahl's method (Jackson,1967), reducing sugar percent by DNS method (Milleo, 1992), total sugar by Anthron method, (Satasivam and Manickan,1992), the non-reducing sugar percent by subtracting the reducing sugar from total sugar percent, moisture percent by using electronic moisture balance, fiber content was determined from cob with the help of Fibra-plus operational system (Ranganna,1986).

Soil analysis

Chemical analysis *i.e.* initial fertility status of soil, soil nutrient status after harvest and total nutrient uptake by plant was performed.The soil pH was measured in 1:2.5, soil: water suspensions and other relevant properties were determined by following standard methodologies .The soil samples were drawn from each experimental unit after harvesting of baby corn and analyzed for available nutrients as per the following methods; Alkaline potassium permanganate method for nitrogen (Subbiah and Assija, 1956), Olsen's method for phosphorous (Nelson and Sommer, 1982) and Neutral normal ammonium acetate using flame photometer for potash (Jackson,1973).

RESULTS AND DISCUSSION

Nitrogen and potassium levels showed substantial effect on different growth, yield and yield contributing characters of baby corn. Data regarding growth parameters is presented in Table 1. Growth parameters are significantly influenced by nitrogen levels, N_4 (200 kg ha^{-1}) recorded significantly highest plant height at harvest (222.30 cm). The similar finding have also been reported by Saha and Mondal (2006), Bindhani *et al*. (2007), Lone *et al*. (2013) in baby corn and in line with Om Kumar *et al*. (2016) in maize. Same level of N resulted in highest number of leaves at 30 DAS (9.89) and at harvest (13.46). Days to 50% tasseling, silking and cob emergence was recorded minimum at N_4 (200 kg ha^{-1}). The sink capacity of the plant depends mainly on vegetative growth of the plants, vigorous vegetative growth increased leaf area index with the application of higher dose of nitrogen. Consequently supply of photosynithates for the formation of yield components was also enhanced. The above findings are in line with Singh (2013) and in close agreement with Kole (2010). Minimum days required for tasseling, silking and cob emergence might be due to enhanced levels of nitrogen. Fertilizer levels significantly affected time taken to 50% tasseling and observed that baby corn took less number of days to tasseling with increase levels of nitrogen. Results obtained are in accordance with the results of Rafiq *et al*. (2010).

Yield parameters presented in Table 2 *viz*. number of cobs per plant (3.07) was significantly increased in N_4. Also highest cob length (9.03 cm) and diameter (1.48 cm) was recorded with application of 200 kg N, The probable reason for significant increase in number of cobs, cob length and diameter was observed with successive increase in nitrogen levels up to 200 kg ha^{-1} and decrease in cob length with decreasing nitrogen doses. The results are in conformity with Muthukumar *et al*. (2005), Aravinth *et al*. (2011) and Golada *et al*. (2013) in baby corn.

Cob weight with and without husk 49.85 g and 9.53 g respectively was also significantly maximum in nitrogen level N_4 (200 kg ha^{-1}). This might be due to additive enrichment and enhanced nutrient availability. The similar findings have also been reported by Singh (2010) in baby corn. Cob yield per plant without husk (30.12 g), cob yield per plot without husk (1.68 kg), cob yield per hectare without husk (62.45 q) were also significantly influenced by level N_4 (200 kg ha^{-1}). The increased availability of nitrogen might have enhanced number of flowers and their fertilization resulting in higher number of yield attributes. Further, in baby corn, greater

Table 1: Effect of nitrogen and potassium levels on growth parameters of baby corn

Treatments	Plant height(cm)		Number of leaves		Leaf area(cm²)	LAI	Days to 50% tasseli- ng	Days to 50% cob emerge -nce	Days to 50% silking	Days to cob harvest	Chlorophyll content (mg/g)
	30 DAS	Harvest	30 DAS	Harvest							
N_1	39.47	181.66	9.11	13.20	412.27	3.03	53.05	52.92	52.70	55.61	1.82
N_2	40.62	198.96	9.42	13.07	384.89	3.11	52.86	52.72	52.62	55.73	2.13
N_3	41.36	202.82	9.80	13.01	396.14	3.47	52.47	52.46	53.01	55.46	1.83
N_4	42.50	222.30	9.89	13.46	409.54	3.29	52.25	52.35	53.46	55.00	2.03
SE(m) +	0.83	0.21	0.11	0.09	4.86	0.06	0.11	0.12	0.10	0.11	0.01
CD at 5%	NS	0.62	0.31	0.25	14.24	0.16	0.33	0.35	0.31	0.32	0.04
K_1	42.05	198.43	9.45	12.96	413.92	3.38	52.98	52.80	52.82	55.82	1.77
K_2	41.49	200.41	9.92	13.37	391.27	3.14	52.35	52.40	52.47	55.32	1.95
K_3	39.42	205.47	9.30	13.23	396.95	3.16	52.66	52.65	52.81	55.22	2.13
SE(m) +	0.72	0.18	0.09	0.08	4.21	0.05	0.10	0.10	0.09	0.09	0.01
CD at 5%	2.11	0.54	0.27	0.22	12.34	0.14	0.29	0.30	0.27	0.27	0.03
Interaction											
N_1K_1	40.06	178.60	8.73	13.06	436.18	3.19	53.46	53.03	52.86	55.53	2.13
N_1K_2	40.06	180.25	9.66	13.53	383.31	3.01	52.33	52.53	52.60	55.60	1.64
N_1K_3	38.26	186.13	8.93	13.00	417.33	2.89	53.36	53.20	52.63	55.70	1.69
N_2K_1	42.40	198.16	9.73	13.13	393.67	3.23	53.73	53.46	53.06	56.06	1.94
N_2K_2	38.83	199.13	9.46	13.00	403.99	3.06	52.33	52.23	52.26	55.53	2.28
N_2K_3	40.63	199.60	9.06	13.06	357.02	3.05	52.53	52.46	52.53	55.60	2.15
N_3K_1	41.20	199.40	9.80	12.83	387.56	3.68	52.33	52.33	52.86	55.86	1.62
N_3K_2	42.96	200.66	10.26	13.20	382.02	3.38	52.50	52.60	52.46	55.53	1.75
N_3K_3	39.90	208.40	9.33	13.00	418.84	3.35	52.60	52.46	53.70	53.46	2.12
N_4K_1	44.53	217.55	9.53	12.80	438.25	3.42	52.40	52.36	52.46	55.80	1.39
N_4K_2	44.10	221.60	10.26	13.73	395.75	3.09	52.23	52.23	52.53	54.61	2.12
N_4K_3	38.86	227.73	9.86	13.83	394.63	3.35	52.13	52.46	52.36	54.60	2.56
SE(m) +	1.44	0.37	0.18	0.15	8.41	0.10	0.20	0.21	0.18	0.19	0.02
CD at 5%	NS	1.08	0.54	0.44	24.67	NS	0.57	0.61	0.53	0.55	0.07

Table 2: Effect of nitrogen and potassium levels on yield parameters of baby corn

Treatments	Number of cobs per plant	Cob length (cm)	Cob diameter (cm)	Cob weight with husk (g/cob)	Cob weight without husk (g/cob)	Cob yield without husk/ plant(g)	Cob yield without husk / plot(kg)	Cob yield without husk / hectare(q)	Green fodder yield (t ha^{-1})	Total dry matter accumu lation / plant (g)
N_1	2.73	8.55	1.29	38.77	7.54	21.00	1.17	43.51	32.48	89.95
N_2	2.69	8.68	1.35	47.15	7.97	22.06	1.23	45.72	38.51	91.01
N_3	2.89	8.98	1.41	48.41	8.68	25.06	1.40	51.96	35.47	92.63
N_4	3.03	9.03	1.48	49.85	9.53	30.12	1.68	62.45	34.10	90.02
SE(m) +	0.06	0.11	0.02	0.08	0.02	0.27	0.02	0.56	0.26	0.65
CD at 5%	0.16	0.34	0.06	0.24	0.05	0.79	0.05	1.64	0.75	1.92
K_1	2.95	8.90	1.43	45.58	8.32	24.46	1.37	50.71	35.8	88.81
K_2	2.80	8.56	1.38	46.37	8.41	24.05	1.34	49.84	35.04	93.87
K_3	2.78	8.97	1.34	46.19	8.55	25.17	1.41	52.18	34.58	90.02
SE(m) +	0.05	0.10	0.02	0.07	0.01	0.23	0.01	0.48	0.22	0.57
CD at 5%	0.14	0.29	0.05	0.21	0.04	0.68	0.04	1.42	0.65	1.66
Interaction1.68										
N_1K_1	2.46	8.13	1.32	38.03	7.28	17.95	1.04	37.19	33.33	90.06
N_1K_2	2.73	8.77	1.31	40.46	7.49	20.47	1.14	42.38	34.68	95.37
N_1K_3	3.00	8.76	1.24	37.82	7.86	24.57	1.37	50.96	29.41	84.42
N_2K_1	3.00	8.98	1.35	47.11	7.98	23.95	1.34	49.65	41.36	91.99
N_2K_2	2.66	8.22	1.33	46.61	8.06	21.84	1.22	45.27	35.74	93.33
N_2K_3	2.40	8.82	1.38	47.74	7.87	20.38	1.14	42.24	38.43	87.70
N_3K_1	3.06	9.23	1.52	47.66	8.46	24.68	1.38	51.18	34.81	85.89
N_3K_2	2.80	8.63	1.33	48.36	8.66	24.91	1.39	51.62	36.62	97.47
N_3K_3	2.80	9.07	1.38	49.19	8.91	25.61	1.43	53.08	34.97	94.55
N_4K_1	3.26	9.24	1.54	49.50	9.57	31.26	1.75	64.82	33.70	87.30
N_4K_2	3.00	8.63	1.54	50.04	9.44	28.98	1.61	60.08	33.09	89.29
N_4K_3	2.93	9.22	1.36	50.00	9.57	30.12	1.68	62.44	35.50	93.45
SE(m) +	0.10	0.20	0.04	0.14	0.03	0.47	0.03	0.97	0.44	1.13
CD at 5%	0.28	0.58	0.11	0.41	0.09	1.37	0.08	2.84	1.30	3.32

Table 3: Effect of nitrogen and potassium levels on quality parameters of baby corn

Treatments	Protein content (%)	Sugar content (%) Reducing sugar	Total sugar	Non-reducing sugar	Fiber content (%)	Moisture content (%)
N_1	13.68	0.35	2.78	2.45	5.58	86.87
N_2	14.01	0.42	2.93	2.64	5.54	87.67
N_3	15.12	0.43	3.15	2.75	5.74	86.66
N_4	14.57	0.54	3.38	2.87	5.76	86.17
SE(m)+	0.05	0.01	0.06	0.01	0.03	0.21
CD at 5%	0.13	0.02	0.17	0.02	0.10	0.61
K_1	15.96	0.39	2.89	2.61	5.72	87.53
K_2	14.07	0.44	3.12	2.70	5.65	86.39
K_3	13.00	0.47	3.17	2.73	5.60	86.60
SE(m)+	0.04	0.01	0.05	0.01	0.03	0.18
CD at 5%	0.11	0.02	0.14	0.02	0.08	0.53
Interaction						
N_1K_1	15.29	0.26	2.50	2.26	5.81	86.84
N_1K_2	14.03	0.34	2.85	2.52	5.63	85.48
N_1K_3	11.71	0.44	2.97	2.56	5.31	88.28
N_2K_1	12.51	0.45	2.69	2.60	5.36	89.71
N_2K_2	14.17	0.41	3.04	2.66	5.52	86.92
N_2K_3	15.36	0.40	3.03	2.65	5.73	86.37
N_3K_1	19.71	0.35	3.04	2.71	5.86	88.35
N_3K_2	13.45	0.46	3.18	2.75	5.83	86.71
N_3K_3	12.19	0.47	3.23	2.79	5.54	84.92
N_4K_1	16.34	0.50	3.32	2.85	5.86	85.23
N_4K_2	14.64	0.54	3.38	2.87	5.62	86.45
N_4K_3	12.73	0.58	3.45	2.90	5.81	86.83
SE(m)+	0.08	0.01	0.10	0.01	0.06	0.36
CD at 5%	0.23	0.04	NS	0.03	0.17	1.06

Table 4: Effect of nitrogen and potassium levels on chemical properties of baby corn

Treatments	Soil fertility status after harvest (kg ha^{-1})			Total nutrient uptake by plant (kg ha^{-1})		
	Available N	Available P	Available K	Total N	Total N	Total K
N_1	167.04	24.21	287.56	214.42	38.61	199.93
N_2	188.03	20.45	279.22	217.70	40.92	204.60
N_3	188.08	22.71	287.78	186.15	43.70	229.83
N_4	196.56	18.46	290.11	191.90	41.51	214.15
SE(m)+	0.10	0.03	0.66	0.06	0.28	0.03
CD at 5%	0.30	0.08	1.92	0.18	0.82	0.08
K_1	184.89	21.89	294.92	183.60	39.38	204.37
K_2	178.64	24.20	280.33	211.51	41.09	211.76
K_3	191.26	18.30	283.25	212.52	43.09	220.25
SE(m)+	0.09	0.02	0.57	0.05	0.24	0.02
CD at 5%	0.26	0.07	1.67	0.16	0.71	0.07
Interaction						
N_1K_1	162.74	23.76	294.33	207.62	38.64	196.46
N_1K_2	175.48	23.37	274.66	236.52	38.27	183.46
N_1K_3	162.90	25.51	293.66	199.12	38.92	219.86
N_2K_1	200.53	18.02	282.66	244.55	42.41	230.07
N_2K_2	175.44	27.61	271.66	189.86	37.99	178.82
N_2K_3	188.11	15.72	283.33	218.71	42.36	204.93
N_3K_1	188.07	27.61	329.00	156.85	45.47	211.07
N_3K_2	175.45	25.92	281.66	190.30	38.14	253.29
N_3K_3	200.71	14.61	252.66	211.31	47.49	225.12
N_4K_1	188.20	18.15	273.66	125.36	37.85	209.44
N_4K_2	188.16	19.88	293.33	229.37	43.13	201.93
N_4K_3	213.31	17.36	303.33	220.95	43.56	231.07
SE(m)+	0.18	0.05	1.14	0.11	0.49	1.14
CD at 5%	0.52	0.13	3.33	0.32	1.43	3.33

assimilating surface at reproductive developments result in better green cob formation because of adequate production of metabolites and their translocation towards cob. The larger canopy development and increased plant height because of different levels of nitrogen might have increased interception, absorption and utilization of radiant energy which in turn increased ove rall growth, photosynthesis and finally accumulation of dry matter/plant. The results of investigation

Table 5: Effect of nitrogen and potassium levels on B: C ratio of baby corn

Treatments	Cost of cultivation (Rs. ha-1)	Yield (q ha-1)	Green fodder yield(t ha-1)	GMR(Rs. ha-1) @40 Rs./kg corn & 1 Rs./kg green fodder	NMR (Rs. ha-1)	B: C ratio
N_1K_1	94762.34	3719	33.33	182090	87327.66	1: 1.92
N_1K_2	99147.41	4238	34.68	204200	105052.59	1: 2.05
N_1K_3	104689.13	5096	29.41	233250	128494.88	1: 2.22
N_2K_1	104755.12	4965	41.36	239960	135204.88	1: 2.29
N_2K_2	101598.51	4527	35.74	216820	115221.49	1: 2.13
N_2K_3	100726.91	4224	38.43	207390	106663.09	1: 2.05
N_3K_1	105031.42	5118	34.81	239530	134499.58	1: 2.28
N_3K_2	106326.48	5162	36.62	243100	136773.52	1: 2.28
N_3K_3	107724.88	5308	34.97	247290	139565.12	1: 2.29
N_4K_1	114287.47	6482	33.70	292980	178692.53	1: 2.56
N_4K_2	111725.86	6008	33.09	273410	161684.14	1: 2.44
N_4K_3	113734.25	6144	35.50	281260	167525.75	1: 2.47

were in accordance with Golada *et al*. (2013), Bindhani *et al*. (2007), Dadarwal *et al*. (2009) and Sobhana *et al*. (2012) in baby corn.

Quality parameters presented in Table 3 *viz*. fiber and sugar content, fiber content was significantly higher (5.76 %) in N_4 (200 kg ha^{-1}) which was at par with N_3 *i.e.* 175 kg ha^{-1} (5.74 %). Whereas, lower fiber content (5.54 %) was recorded in N_2 (150 kg ha^{-1}). The similar findings have also been reported by Hooda and Kawatra (2013) in baby corn. Significantly variation on protein content was noticed due to the application of inorganic fertilizers which are in conformity with Mishra and Lal (2016) in baby corn fertilized with chemical and biofertilizers.

Significantly maximum available nitrogen (196.56 kg ha^{-1}) and available potassium (290.11 kg ha^{-1}) (Table 4) was observed with application of N_4 *i.e.* 200 kg ha^{-1}. Available N after harvesting in soil was built up due to increased levels of nitrogen. The results of present investigation are in line with finding obtained by Singh *et al*. (2010). Where as, N_3 (175 kg ha^{-1}) was recorded significantly higher LAI (3.47), Total dry matter accumulation per plant (92.63 g), protein content (15.12 %), total P uptake (43.70 kg ha^{-1}) and total K uptake (229.83 kg ha^{-1}), total uptake was increased was mainly due to increased green cob and green fodder yield and higher concentration of applied nitrogen. Similar effect has been reported by Saha and Mondal (2006), Bruns and Ebelhar (2006). While, chlorophyll content (2.13 mg/g), total N uptake (217.70 kg ha^{-1}) was recorded significantly higher in nitrogen level N_2 (150 kg ha^{-1}). These results are in line with Om Kumar *et al*. (2016) for effect of primary nutrients on uptake of nutrients in maize.

In case of effect of potassium, level K_3 (75 kg ha^{-1}) was recorded significantly higher plant height at harvest (222.30), cob length (8.97 cm), cob weight without husk (8.55 g), reducing sugar, total sugar and non-reducing sugar content also significantly influenced by potassium level K_3 (75 kg ha^{-1}). The sugars content was found maximum, might be due to increased levels of nitrogen. The results of present investigation are in similar line as finding obtained by Singh *et al*. (2010). Whereas K_2 (50 kg ha^{-1}) was recorded significantly higher number of leaves at 30 DAS (9.92) and at harvest (13.37), minimum days to 50% cob emergence (52.40 days) and silking (52.47 days), total dry matter accumulation (93.87 g) and cob weight with husk (46.37 g).

Potassium level K_1 (25 kgha $^{-1}$) exhibited significantly higher plant height at 30 DAS (42.05 cm), number of cobs per plant (2.95), cob diameter (1.43 cm), cob yield per plant without husk (25.17 g), cob yield per plot without husk (1.41 kg), cob yield per hectare with out husk (52.18 q), green fodder yield (35.80 t/ha), protein content (15.96 %), fiber content (5.72 %) and moisture content (87.53 %).

An interaction effect of nitrogen and potassium levels in respect of all growth, yield and quality parameters, also with chemical analysis was found significant except plant height at 30 DAS, leaf area index and total sugar content. The treatment combination N_4K_1 (200 kg ha^{-1} + 25 kg ha^{-1}) influenced the yield parameters like number of cobs per plant (3.26), cob length (9.24 cm), cob diameter (1.54 cm), cob yield per plant without husk (31.26 g), cob yield per plot without husk (1.75 kg) and cob yield per hectare without husk (64.82 q).

The benefit cost (B:C) ratio in respect of cultivation of baby corn presented in Table 5 and indicates that, the highest benefit: cost ratio (1: 2.56) was recorded under treatment combination N_4K_1 (200 kg ha^{-1} + 25 kg ha^{-1}) and it was followed by the treatment combination N_4K_3 (200 kg ha^{-1} + 75 kg ha^{-1}) *i.e.* (1: 2.47) and N_4K_2 (200 kg ha^{-1} + 50 kg ha^{-1}) *i.e.* (1: 2.44).

The present investigation revealed that raising baby corn with application of N_4 *i.e.* 200 kg ha^{-1} with K_1 *i.e.* 25 kg ha^{-1} with application of P 60 kg ha^{-1} would produce maximum baby corn yield.

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