Journal of Pharmacognosy and Phytochemistry

Available online at www.phytojournal.com

E-ISSN: 2278-4136
P-ISSN: 2349-8234
JPP 2018; 7(4): 1009-1012
Received: 10-05-2018
Accepted: 12-06-2018

Pawan Kumar Pareek
Ph. D. scholar Department of Horticulture, College of Agriculture, SKRAU, Bikaner, Rajasthan, India

PK Yadav
Head & Professor, Department of Horticulture, College of Agriculture, SKRAU, Bikaner, Rajasthan, India

Susheel Kumar
Assistant Professor, Departments of Horticulture, KVK, SKRAU, Bikaner 334006 India

SR Yadav
Head & Professor, Department of Soil Science, College of Agriculture, SKRAU, Bikaner, Rajasthan, India

BD Sharma
Principal Scientist, Division of crop production, ICAR-CIAH, Bikaner, Rajasthan, India

Correspondence
Pawan Kumar Pareek
Ph. D. scholar Department of Horticulture, College of Agriculture, SKRAU, Bikaner, Rajasthan, India

Effect of integrated nutrient management on soil physico- chemical properties of date palm orchard under alkaline soil condition

Pawan Kumar Pareek, PK Yadav, Susheel Kumar, SR Yadav and BD Sharma

Abstract
The effect of organic and inorganic sources of NPK and foliar spray of micronutrient on soil physico chemical parameters was studied. Experimental findings revealed that treatment T_{16} significantly increased organic carbon, Available N, P_2O_5 and K_2O and reduced soil pH and EC. The application of organic manures like FYM alone or in combination with inorganic chemical fertilizer have also been reported to decrease the bulk density, improved soil porosity and increases water holding capacity of the soil. Therefore, it is advocated that application of 100 kg FYM + 1.50 kg N + 1.00 kg P_2O_5 + 1.50 kg K_2O + 0.00% $FeSO_4$ + 0.00% $ZnSO_4$ (T_{16}) build up maximum soil fertility for higher and sustainable production of date palm in Bikaner condiation.

Keywords: FYM, nitrogen, phosphors, potash, micronutrient and date palm

Introduction
The date palm (*Phoenix dactylifera* L.) is one of the important and potential fruit crop of arid irrigated region in India. It is being grown in the state of Gujarat, Punjab and Rajasthan. It is a dioecious tree plant that produces the economically popular fruits called 'dates' that are eaten as dessert. It requires almost rain free conditions during the fruiting season particularly at the time of fruit ripening to avoid spoilage of fruit due to rains. The climatic conditions of Thar desert especially in Western districts of Rajasthan (Bikaner, Jaisalmer and Barmer) and part of Kachchh district of Gujarat are suitable for cultivation of dates. The cultivated area of this crop was 8,973 hectare with production 0.54 lakh MT during the year 2000-01 but the area increased to 16,668 hectare with annual fruit production of 1.24 lakh MT of dates during 2009-10 in Bhuj, Anjar, Khedio, Mundra, Mandvi, Gadsissa and Kachchh district of Gujarat (Muralidharan *et al*., 2011) [14]. However, in Rajasthan, the area under date cultivation is about 800 hectare which is increasing fast with the plantation of tissue cultured plants obtained from Al-Ain, UAE under Public Private Partnership (Govt. of Rajasthan and Atul Ltd.) under RKVY.

Owing to the increasing area under date palm cultivation there is an urgent need for development of nutritional package for date palm in western arid part of Rajasthan to attain long term sustainability for fruit production and quality for maintaining soil productivity. Integrated plant nutrient supply system encourages integration of different sources of nutrients such as organic, biological and inorganic fertilizers etc. In recent years, decline in soil health with respect to physical, chemical and biological properties is evident due to indiscriminate use of synthetic nutrients, particularly chemical fertilizers (Rathore *et al*., 2013) [19]. Soil of Bikaner condition alkaline in reaction pH (8.55) and EC (0.31) and having limited options for cultivations of fruit crops. Date palm crop with certain floor management aspect through integrated nutrient management would be improved soil physic-chemical properties that affects both productivity and quality of produce and also contribute substantial share in cost of production (Rathore *et al*., 2013) [19]. Keeping this in view the present experiment was conducted.

Materials and Methods
The present investigation conducted at Date Palm Research Centre and Department of Horticulture, College of Agriculture of Swami Keshwanand Rajasthan Agriculture University, Beechwal, Bikaner during October 2014 to July 2016. In order to assess the physico-chemical properties of soil, samples were taken randomly from 0-30 cm depth from different spots of the experimental field and a representative composite sample was prepared by mixing all these

samples together. This composite sample was analysed to determine the physico-chemical properties of the soil.

The experiment was laid out in Randomized Block Design with three replication and eighteen integrated nutrient management treatments combinations *viz*., T_1 (Control), T_2 (0 FYM+0 N+0 P_2O_5+0 K_2O+0.50% $FeSO_4$+0.25% $ZnSO_4$),T_3 (0 FYM+0 N+0 P_2O_5+0 K_2O+1.00% $FeSO_4$ +0.50% $ZnSO_4$), T_4 (25 FYM+0.50 N+0.25 P_2O_5+0.50 K_2O+0% $FeSO_4$+0% $ZnSO_4$), T_5 (25 FYM+0.50 N+0.25 P_2O_5+0.50 K_2O+0.50% $FeSO_4$+0.25% $ZnSO_4$), T_6 (25 FYM+0.50 N+0.25 P_2O_5+0.50 K_2O+1.00% $FeSO_4$+0.50% $ZnSO_4$) T_7 (50 FYM+1.00 N+0.50 P_2O_5+1.00 K_2O+0% $FeSO_4$+0% $ZnSO_4$), T_8 (50 FYM+1.00 N+0.50 P_2O_5+1.00 K_2O+0.50% $FeSO_4$+0.25% $ZnSO_4$), T_9 (50 FYM+1.00 N+0.50 P_2O_5+1.00 K_2O+1.00% $FeSO_4$+0.50% $ZnSO_4$), T_{10} (100 FYM+0.50 N+0.25 P_2O_5+0.50 K_2O+0% $FeSO_4$+0% $ZnSO_4$), T_{11} (100 FYM+0.50 N+0.25 P_2O_5+0.50 K_2O+0.50% $FeSO_4$+0.25% $ZnSO_4$),T_{12} (100 FYM+0.50 N+0.25 P_2O_5+0.50 K_2O+1.00% $FeSO_4$+0.50% $ZnSO_4$), T_{13} (100 FYM+1.00 N+0.50 P_2O_5+1.00 K_2O+0% $FeSO_4$+0% $ZnSO_4$), T_{14} (100 FYM+1.00 N+0.50 P_2O_5+1.00 K_2O+0.50% $FeSO_4$+0.25% $ZnSO_4$), T_{15} (100 FYM+1.00 N+0.50 P_2O_5+1.00 K_2O+1.00% $FeSO_4$+0.50% $ZnSO_4$), T_{16} (100 FYM+1.50 N+1.00 P_2O_5+1.50 K_2O+0% $FeSO_4$+0% $ZnSO_4$), T_{17} (100 FYM+1.50 N+1.00 P_2O_5+1.50 K_2O+0.50% $FeSO_4$+0.25% $ZnSO_4$) and T_{18} (100 FYM+1.50 N+1.00 P_2O_5+1.50 K_2O+1.00% $FeSO_4$+0.50% $ZnSO_4$). The treatments were applied on last week of October after recording initial (base) value of soil parameters. Nitrogen was applied in two split doses i.e ½ in October + ½ in March. Micro nutrients iron and zinc were applied as foliar spray twice, first in month of November and second at the pea size fruit stage in month of March, in control plants water was used for spray. Inorganic fertilizers (nitrogen, phosphorus and potassium) were applied through urea containing 46 per cent nitrogen, diammonium phosphate containing 46 and 18 per cent phosphorus and nitrogen and muriate of potash containing 60 per cent potassium, respectively. Organic manures as farm yard manure (FYM) containing 0.50 per cent nitrogen, 0.25 per cent phosphorus and 0.50 per cent potash was used in the present investigation alone or with a set of inorganic fertilizers.

Table 1: Physico-chemical characteristics of the experimental soil before treatment application

S. No.	Particulars	Soil depth(0-30 cm)	Method of analysis
A.	**Mechanical analysis**		International pipette method (Piper, 1950) [18]
i.	Sand (%)	85.21	
ii.	Silt (%)	7.35	
iii.	Clay (%)	7.95	
iv.	Texture	Loamy sand	
B.	**Chemical properties**		
i.	Available nitrogen (kg ha^{-1})	89.80	Alkaline permanganate method (Subbiah and Asija, 1956) [23]
ii.	Available P_2O_5 (kg ha^{-1})	10.51	Olsen's method (Olsen *et al.*,1954) [17]
iii.	Available potash (kg ha^{-1})	151.13	Flame photometric method (Metson, 1956) [13]
iv.	EC dS m^{-1}(1:2 soil water suspension)	0.31	Conductivity meter (Jackson, 1973) [6]
v.	pH(1:2 soil water suspension)	8.55	pH meter (Jackson, 1973) [6]
vi.	Organic carbon (%)	0.10	Walkley and Black rapid titration method (Walkley and Black, 1934) [24]

Result and Discussion

Application of integrated nutrient treatments in combination with a set of organic manure, inorganic fertilizers and micronutrient application significantly improved organic carbon as well as water retention and N, P_2O_5 and K_2O availability in the soil after harvest over application of inorganic fertilizers alone but the foliar application of chemicals did not affect these parameters significantly. The application of FYM with a set of inorganic fertilizers gave significantly higher build up of organic carbon and increase in organic contents of soil might be due to the additive effect of FYM in maintaining higher organic carbon level (Acharya *et al.*, 1988) [1]. The addition of manures itself adds sufficient amount of organic matter to the soil and solubilizes plant nutrients and improve physical conditions of the soil by accelerating porosity, aeration and water holding capacity (Bhriguavanshi 1988) [2]. Incorporation of FYM in soil also increases the carbon sequestration in soil and sequestration of C results in increased yields of root and plant residues, which adds a good amount of biomass to the soil (Singh *et al.*, 1997) [20].

The application of treatment T_{18} significantly increased the available status of NPK in soil during 2014-15 and 2015-16 ascribed to the beneficial role of organic manures in mineralization of native as well as nutrients through fertilizer in addition of its own nutrient content which enhanced the available nutrient pool of the soil. As a matter of fact, all available nutrients are not taken by the plant and the rest remain in the soil, which improve available nutrients status of soil after harvest (Srikanth *et al.*, 2000) [22]. Madhavi *et al.* (2005) [10] also recorded significant increase in the available soil NPK content by the application of different doses of manures and fertilizers after two year of study when compared to control.

Organic manures enhanced soil properties and soil fertility (Mathew and Karikari, 1995; Kaurch *et al*., 2005) [12, 8] and might lead to the increase of available nutrients and their uptake (Kanal and Kuldkepp, 1993) [7]. The addition of organic manure might have provided supplemental exchangeable cations such as potassium, calcium, magnesium and ammonium as well as increasing the available phosphorous (Magdoff, 1998; Ofosu-Anim *et al*., 2006)[11,16]. In this respect, the overall increase in fruit mineral contents, as a result of applying organic manure or organic manure in combinations with mineral fertilizer.

The results are in agreement with the findings of Biswas *et al*. (1971) [3], Kwakye (1988) [9], Nawade (1997) [15], Hayes and Naidu (1998) [5], Dheware (2002) [4] and Singh *et al.* (2007) [21] who also reported increased available nitrogen, phosphorus and potash content with combined application of inorganic and organic sources of NPK.

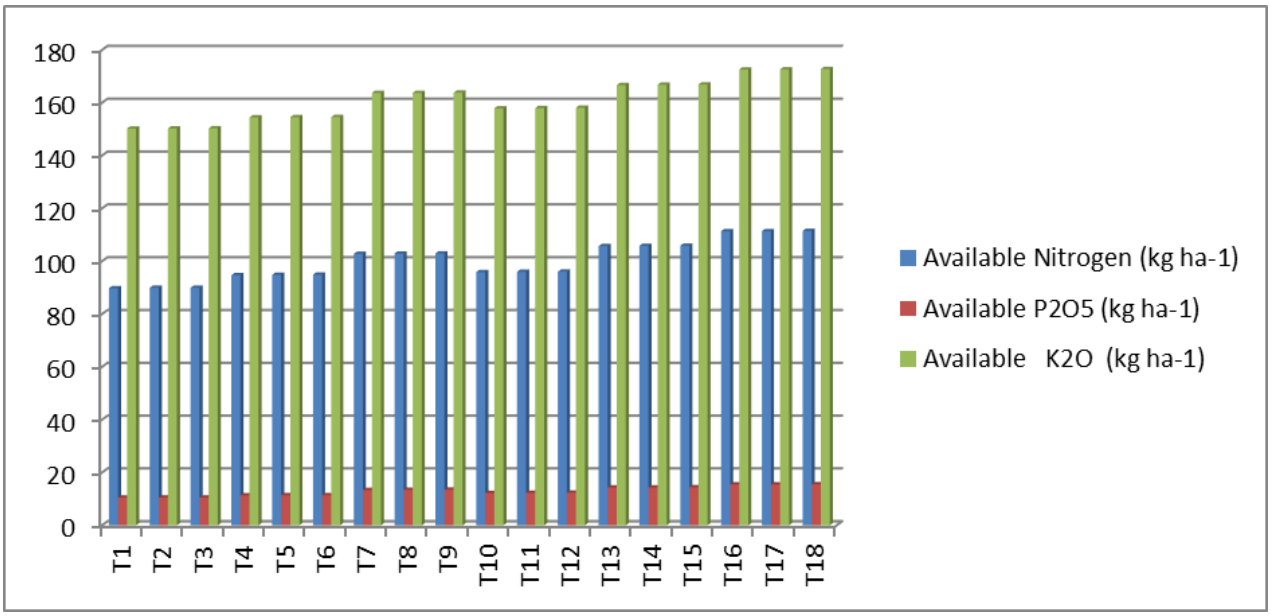

Fig 1: Effect of integrated nutrient management on soil available nitrogen, P_2O_5 and K_2O content of date palm orchard *cv.* Khadrawy.

Table 2: Effect of integrated nutrient management on soil pH, electrical conductivity and organic carbon of date palm orchard *cv.* Khadrawy

Treatments	Soil pH			Electrical conductivity(dSm^{-1})			Organic carbon (%)		
	2015	2016	Pooled	2015	2016	Pooled	2015	2016	Pooled
T_1 ($F_0N_0P_0K_0Fe_0Zn_0$)	8.55	8.55	8.55	0.31	0.31	0.31	0.107	0.104	0.105
T_2($F_0N_0P_0K_0Fe_{0.50}Zn_{0.25}$)	8.55	8.55	8.55	0.31	0.31	0.31	0.107	0.104	0.106
T_3($F_0N_0P_0K_0Fe_{1.00}Zn_{0.50}$)	8.55	8.55	8.55	0.31	0.31	0.31	0.107	0.105	0.106
T_4($F_{25}N_{0.50}P_{0.25}K_{0.50}Fe_0Zn_0$)	8.54	8.54	8.54	0.30	0.30	0.30	0.114	0.117	0.116
T_5 ($F_{25}N_{0.50}P_{0.25}K_{0.50}Fe_{0.50}Zn_{0.25}$)	8.53	8.54	8.54	0.30	0.30	0.30	0.115	0.117	0.116
T_6($F_{25}N_{0.50}P_{0.25}K_{0.50}Fe_{1.00}Zn_{0.50}$)	8.54	8.54	8.54	0.30	0.30	0.30	0.115	0.118	0.117
T_7($F_{50}N_{1.00}P_{0.50}K_{1.00}Fe_0Zn_0$)	8.54	8.53	8.54	0.30	0.29	0.30	0.122	0.125	0.124
T_8($F_{50}N_{1.00}P_{0.50}K_{1.00}Fe_{0.50}Zn_{0.25}$)	8.53	8.53	8.53	0.30	0.29	0.30	0.122	0.126	0.124
T_9($F_{50}N_{1.00}P_{0.50}K_{1.00}Fe_{1.00}Zn_{0.50}$)	8.53	8.52	8.53	0.29	0.29	0.29	0.123	0.126	0.125
T_{10}($F_{100}N_{0.50}P_{0.25}K_{0.50}Fe_0Zn_0$)	8.51	8.50	8.51	0.29	0.28	0.28	0.136	0.140	0.138
T_{11}($F_{100}N_{0.50}P_{0.25}K_{0.50}Fe_{0.50}Zn_{0.25}$)	8.51	8.50	8.51	0.29	0.28	0.28	0.136	0.142	0.139
T_{12}($F_{100}N_{0.50}P_{0.25}K_{0.50}Fe_{1.00}Zn_{0.50}$)	8.51	8.50	8.51	0.29	0.28	0.28	0.137	0.142	0.140
T_{13}($F_{100}N_{1.00}P_{0.50}K_{1.00}Fe_0Zn_0$)	8.50	8.49	8.50	0.29	0.27	0.28	0.140	0.142	0.141
T_{14}($F_{100}N_{1.00}P_{0.50}K_{1.00}Fe_{0.50}Zn_{0.25}$)	8.50	8.49	8.50	0.28	0.27	0.28	0.140	0.145	0.143
T_{15}($F_{100}N_{1.00}P_{0.50}K_{1.00}Fe_{1.00}Zn_{0.50}$)	8.49	8.50	8.50	0.28	0.27	0.27	0.142	0.146	0.144
T_{16}($F_{100}N_{1.50}P_{1.00}K_{1.50}Fe_0Zn_0$)	8.49	8.49	8.49	0.28	0.27	0.28	0.144	0.150	0.147
T_{17}($F_{100}N_{1.50}P_{1.00}K_{1.50}Fe_{0.50}Zn_{0.25}$)	8.48	8.47	8.48	0.28	0.27	0.28	0.144	0.150	0.147
T_{18}($F_{100}N_{1.50}P_{1.00}K_{1.50}Fe_{1.00}Zn_{0.50}$)	8.48	8.47	8.48	0.28	0.27	0.28	0.145	0.151	0.148
S Em±	0.02	0.02	0.01	0.02	0.01	0.01	0.004	0.003	0.00
C. D. at 5%	NS	NS	NS	NS	NS	NS	0.012	0.009	0.007

Table 3: Effect of integrated nutrient management on soil available nitrogen, P_2O_5 and K_2O content of date palm orchard *cv.* Khadrawy

Treatments	Available Nitrogen (kg ha^{-1})			Available P_2O_5 (kg ha^{-1})			Available K_2O (kg ha^{-1})		
	2015	2016	Pooled	2015	2016	Pooled	2015	2016	Pooled
T_1 ($F_0N_0P_0K_0Fe_0Zn_0$)	89.80	89.73	89.77	10.51	10.46	10.49	151.13	149.30	150.22
T_2($F_0N_0P_0K_0Fe_{0.50}Zn_{0.25}$)	89.97	89.90	89.94	10.51	10.48	10.49	151.15	149.37	150.26
T_3($F_0N_0P_0K_0Fe_{1.00}Zn_{0.50}$)	89.98	89.93	89.96	10.52	10.49	10.51	151.23	149.40	150.32
T_4($F_{25}N_{0.50}P_{0.25}K_{0.50}Fe_0Zn_0$)	94.52	94.90	94.71	11.13	11.53	11.33	154.19	154.73	154.46
T_5 ($F_{25}N_{0.50}P_{0.25}K_{0.50}Fe_{0.50}Zn_{0.25}$)	94.72	94.93	94.83	11.15	11.58	11.37	154.33	154.80	154.57
T_6($F_{25}N_{0.50}P_{0.25}K_{0.50}Fe_{1.00}Zn_{0.50}$)	94.77	95.07	94.92	11.18	11.66	11.42	154.35	154.83	154.59
T_7($F_{50}N_{1.00}P_{0.50}K_{1.00}Fe_0Zn_0$)	101.82	103.77	102.79	12.86	13.88	13.37	162.78	164.67	163.72
T_8($F_{50}N_{1.00}P_{0.50}K_{1.00}Fe_{0.50}Zn_{0.25}$)	101.93	103.87	102.90	12.95	13.91	13.43	162.80	164.70	163.75
T_9($F_{50}N_{1.00}P_{0.50}K_{1.00}Fe_{1.00}Zn_{0.50}$)	101.96	103.93	102.95	12.97	13.98	13.47	162.88	164.77	163.83
T_{10}($F_{100}N_{0.50}P_{0.25}K_{0.50}Fe_0Zn_0$)	95.50	96.28	95.89	11.95	12.56	12.25	157.11	158.67	157.89
T_{11}($F_{100}N_{0.50}P_{0.25}K_{0.50}Fe_{0.50}Zn_{0.25}$)	95.60	96.34	95.97	12.00	12.61	12.31	157.30	158.70	158.00
T_{12}($F_{100}N_{0.50}P_{0.25}K_{0.50}Fe_{1.00}Zn_{0.50}$)	95.68	96.43	96.06	12.02	12.68	12.35	157.37	158.83	158.10
T_{13}($F_{100}N_{1.00}P_{0.50}K_{1.00}Fe_0Zn_0$)	104.67	106.78	105.73	13.15	15.47	14.31	165.93	167.53	166.73
T_{14}($F_{100}N_{1.00}P_{0.50}K_{1.00}Fe_{0.50}Zn_{0.25}$)	104.78	106.87	105.83	13.18	15.49	14.33	165.97	167.73	166.85
T_{15}($F_{100}N_{1.00}P_{0.50}K_{1.00}Fe_{1.00}Zn_{0.50}$)	104.80	106.93	105.87	13.27	15.54	14.41	166.09	167.77	166.93
T_{16}($F_{100}N_{1.50}P_{1.00}K_{1.50}Fe_0Zn_0$)	109.72	112.97	111.34	14.47	16.45	15.46	171.70	173.43	172.57
T_{17}($F_{100}N_{1.50}P_{1.00}K_{1.50}Fe_{0.50}Zn_{0.25}$)	109.73	113.03	111.38	14.49	16.51	15.50	171.77	173.53	172.65
T_{18}($F_{100}N_{1.50}P_{1.00}K_{1.50}Fe_{1.00}Zn_{0.50}$)	109.85	113.13	111.49	14.52	16.51	15.52	171.92	173.57	172.74
S Em±	1.57	1.54	1.10	0.14	0.09	0.08	1.30	1.63	1.04
C. D. at 5%	4.53	4.41	3.10	0.42	0.25	0.24	3.75	4.67	2.94

Conclusion

Application of 100 kg FYM + 1.50 kg N + 1.00 kg P_2O_5 + 1.50 kg K_2O + 0.00% $FeSO_4$ + 0.00% $ZnSO_4$ (T_{16}) Registered significantly higher soil nutrient status that build up fertility and improved in future definitely would be productively of that orchard. It is hoped that these findings will be of great value to progressive fruit growers and will open a vast field for further investigation in this line.

References

1. Acharya CL, Bishnoi SK, Yaduvanshi HS. Effect of long term application of fertilizers, organic and inorganic amendments under continuous cropping on soil physical and chemical properties of Alfisol. Indian Journal of Agricultural Science. 1988; 58:509-516.
2. Bhriguavanshi SR. Long-term effect of high doses of farm yard manure on soil properties and crop yield. Journal of the Indian Society of Soil Science. 1988; 36:787-790.
3. Biswas TD, Jain BL, Mandal SC. Cummulative effect of different levels of manures on the physical properties of soil. Journal of the Indian Society of Soil Science. 1971; 19:31-37.
4. Dheware RM. Influence of organic, inorganic and biofertilizers on flowering, fruit set, yield and quality of sweet orange. M.Sc. (Ag.) Thesis, M.A.U., Prabhani, 2002.
5. Hayes RJ, Naidu R. Influence of lime, fertilizer and manure applications on soil organic matter content and and soil physical conditions. Earth and Environmental Sciences. 1998; 51(2):123-137.
6. Jackson ML. Soil Chemical Analysis. Prentice Hall of India Pvt. Ltd., New Delhi, 1973.
7. Kanal A, Kuldkepp P. Direct and residual effect of different organic fertilizers on potato and cereals. J Agron. Crop Sci. 1993; 171:185-195.
8. Kaurch K, Kapoor K, Gupta A. Impact of organic manures with and without mineral fertilizers on soil chemical and biological properties under tropical conditions. J Plant Nutr. Soil Sci. 2005; 168:117-122.
9. Kwakye PK. The influence of organic matter in combination with mineral fertilizer on crop yield and soil propertieis on a savanna soil in Ghana under continuous cropping. International Journal of Tropical Agriculture. 1988; 6:56-57.
10. Madhavi A, Prasad M, Prabhakar Reddy I, Girwani A. Integrated nutrient management for increased productivity and quality in guava. 1st Guava International *Guava Symposium*, Dec. 5-8, CISH, Lucknow, 2005, 83.
11. Magdoff F. Building Soils for Better Crops: Organic Matter Management. Ohio Agronomy Guide, Bulletin, 1998, 672.
12. Mathew IP, Karikari SK. Horticulture Principles and Practices. Macmillan Education Ltd, London and Basingtroke, 1995, 80-84.
13. Meston AJ. Methods of chemical analysis for soil survey samples. Department of Science Md. Research Soil Bur. 1956, 12.
14. Muralidharan CM, Tikka SBS, Verma P. Date palm cultivation in Kachchh. Tech. Bull. SDAU, Mundra. 2011, 36
15. Nawade. Integrated nutrient management for sapota (*Achras sapota*) cv. Kalpatti. Ph. (Ag.) Thesis, M.A.U. Prabhani, 1997.
16. Ofosu-Anim J, Baly ET, Frempong ME. Effects of organic manure on okra (*Abelmoschus esculentus* L.) Moench production. J Appl. Hort. 2006; 8:155-158.
17. Olsen SR, Cole CS, Wantable FS, Dean CA. Estimation of available phosphorus in soils by extraction with sodium bicarbonate USDA, Washington, D.C. Circular. 1954; 18:939.
18. Piper CS. Soil and plant analysis. The University of Adelaide, Australia, 1950.
19. Rathore N, Mishra NK, Lal RL, Mishra DS. Effect of integrated nutrient management on yield and quality of litchi cv. Rose Scented. Pantnagar Journal of Research. 2013; 11(3):369-372.
20. Singh GR, Parihar SS, Chaure NK, Choudhary KK, Sharma RB. Integrated nutrient management in summer sesame (*Sesamum indicum*). Indian Journal of Agronomy. 1997; 42:699-701.
21. Singh V, Dashora LK, Rathore RS, Meena CL. Flowering and yield of guava (*Psidium guajava* L.) cv. 'Sardar' as influenced by various organic and inorganic sources. Current Agriculture. 2007; 31(1, 2):67-71.
22. Srikanth K, Srinivasamurthy CA, Siddaramappa R, Ramakrishna PVR. Direct and residual effect of encircled composts, FYM, vermicompost and fertilizers on properties of an Alfisol. Journal of the Indian Society of Soil Science. 2000; 48:496-499.
23. Subbiah BV, Asija GL. A rapid procedure for determination of available N in soil. Current Science. 1956; 25:259-260.
24. Walkley A, Black CA. An examination of digation methods for determining soil organic matter and a proposed modification of the chromic acid titration method. Soil Science. 1934; 37:29-38.
25.