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Influence of different rate of solid manure and types of liquid organics on yield, nutrient content and uptake of sweet corn under south Gujarat condition

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Abstract
A field experiment was conducted during *rabi* season of 2016-17 at Organic Farm (F block), Aspee College of Horticulture and Forestry Research Station, Navsari Agricultural University, Navsari Gujarat. The experiment was laid out in a Factorial Randomizes Block Design, comprising fifteen treatment combinations. The results indicated that application of 100% RDN through Nadep compost (O_1) significantly increased green cob (15801 kg/ha) and fodder (19628 kg/ha) yield and was statistically on par with treatment O_2 (75% RDN through Nadep compost). Similarly, significantly higher green cob (16145 kg/ha) and fodder (20068 kg/ha) yield were noted with application of *Jeevamrut* (L_1) and remained at par with *Panch gavya* (L_3) and *Sanjeevak* (L_4) @ 600 L/ha, respectively. No significant effect of different levels of Nadep compost and liquid organics was observed on N, P, K, Fe, Mn, Zn and Cu content. Significantly higher individual as well as total uptake of N, P, K, Fe, Mn, Zn and Cu by sweet corn were noted with treatment O_1 and L_1, receiving 100% RDN through Nadep compost and *Jeevamrut* @ 600 L/ha, respectively.

Keywords: sweet corn, yield, nutrient content and uptake, solid, liquid organics

Introduction
Sweet corn (*Zea mays* L., *Saccharata Sturt*) is a popular multipurpose cereal crop belonging to the family *Poaceae* and is cultivated as an annual field crop all over the world (Remison, 2005) [23]. It is peculiarly an American crop and introduced in India from USA. Globally, the United States leads corn production (39%), followed by China and Brazil (Shultz, 2008) [27]. It ranks second in farm values and fourth in commercial values among all the commercial crops in India. In India, its cultivation is popular in Haryana, Maharashtra, Meghalaya, Karnataka and Andhra Pradesh and now in Gujarat also.
The current global scenario firmly emphasizes the need to adopt eco-friendly agricultural practices for sustainable food production. The cost of inorganic fertilizers are increasing enormously to an extend that they are out of reach of small and marginal farmers. The use of organics plays a major role in maintaining soil health due to build up of soil organic matter, beneficial microbes. To sustain the soil fertility and crop productivity, the role of solid organic manures *viz.* Nadep compost, bio compost, vermi compost and fermented liquid organic manures mainly *Jeevamrut*, *Panchagavya*, *Sanjeevak*, *Amrut pani*, bio-digester liquid and cow urine etc., are very important. These solid or liquid organic solutions are prepared from the farm, house waste or cow dung, urine, milk, curd, etc. (Sreenivasa *et al.* 2010) [29].

Materials and Methods
An experiment was conducted during the year rabi 2016-17 at Organic Farm (F block), Aspee College of Horticulture and Forestry Research Station, Navsari Agricultural University, Navsari. The soil of the experimental field was alkaline in reaction (7.82), medium in salt and DTPA-Zn content (0.55 mg/kg), high in organic carbon, available P_2O_5, K_2O, DTPA-Fe, DTPA-Mn, DTPA-Cu (95.30 kg/ha, 582 kg/ha, 14.24 mg/kg, 13.96 mg/kg and 2.68 mg/kg respectively) and deficient in available N content (232 kg/ha). The experiment was laid out in a Factorial Randomizes Block Design, comprising fifteen treatment combinations, three levels

of Nadep compost (O_1: 100% RDN through Nadep compost O_2: 75% RDN through Nadep compost and O_3: 50% RDN through Nadep compost) and five types of liquid organic manures (L_0: control- no liquid manure, L_1: *Jeevamrut* @ 600 L/ha, L_2: *Amrut pani* @ 600 L/ha, L_3: *Panch gavya* @ 600 L/ha and L_4: *Sanjeevak* @ 600 L/ha which were repeated three times with irrigation. The seeds were inoculated with *Azotobacter*. Sweet corn SUGAR-75 was sown at 10/11/2016 by dibbling two seeds per hill at 60 X 15 cm^2 spacing. The observations recorded were tabulated, were statistically analyzed as per the methods described by Steel and Torrie (1960) [30].

Table 1: Methods followed for soil, plant and irrigation water sample analysis

Parameters		Methods	References
Soil chemical and Fertility parameters			
i	pH	Potentiometric,	Jackson (1973)
ii	EC	Conductometric	Jackson (1973)
iii	Organic carbon	Wet oxidation	Jackson (1973)
iv	Available N	Alkaline permanganate method	Subbiah and Asija (1956)
v	Available P_2O_5	Spectrophotometric (0.5M $NaHCO_3$, pH 8.5)	Olsen *et al.* (1954)
vi	Available K_2O	Flame photometric (Neutral N NH_4OAc)	Jackson (1973)
vii	DTPA-extractable Fe, Zn, Mn, Cu	Atomic absorption Spectro photometer method (DTPA)	Lindsay and Norvell (1978)
Quality parameters			
i	Crude protein	Total N determined by Wet digestion (Chromic acid) method and Crude Protein(%) was calculated using the formula = Total N X 6.25	Trivedi *et al.* (1999)
ii	Total Reducing Sugar	DNS method	Asana and Saini (1962)
iii	Total Non Reducing sugar	DNS method	Malhotra and Sarkar (1979)
Plant analysis			
i	Total N	Wet digestion (Chromic acid)	Trivedi *et al.* (1999)
ii	Total P, K, Fe, Mn, Zn, Cu	Wet digestion (Diacid) P:Vanedomolybdo yellow color method K: Flame photometry Fe, Zn, Mn, Cu: Atomic absorption Spectrophotometer method	Jackson (1973)

Result

Yield

The green cob and fodder yield, of sweet corn was significantly influenced by application of solid organics. Among the different levels of Nadep compost, treatment O_1 (100% RDN through Nadep compost) significantly higher and was at par with treatment O_2 (75% RDN through Nadep compost) while, treatment O_3 (50% RDN through Nadep compost) produced significantly the lowest plant height of sweet corn.

The green cob and fodder yield of sweet corn was also significantly affected by soil application of different liquid organic manure. Among the applied five liquid organics treatments, application of L_1 treatment (*Jeevamrut* @ 600 L/ha) generated significantly green cob and fodder yield and was statistically on par with treatment L_2 and L_3, receiving *Amrut pani* and *Panch gavya* @ 600 L/ha, respectively. While, the treatment receiving no liquid organic manure (L_0) showed significantly the lowest growth and yield of sweet corn.

Nutrient Content

The data on N, P, K and micro nutrient (Fe, Mn, Zn and Cu) content in cob and fodder of sweet corn was not significantly affected by either different levels of Nadep compost or different liquid organics or their interaction. But in general, in case of solid organics, treatment O_3, receiving 50% RDN through Nadep compost and in case of liquid organics, treatment L_2, receiving *Amrut pani* @ 600 L/ha registered comparatively higher N, P and K content in cob and fodder of sweet corn, except K content in fodder with treatment O_1. Here also, interaction O X L failed to show any significant effect on N, P and K content in cob and fodder of sweet corn (Table 1 and 2).

Effect on Uptake

The individual uptake of N, P, K, Fe, Mn, Zn and Cu by cob and fodder of sweet corn were calculated taking into consideration the nutrient concentration and dry matter production of respective component of sweet corn while total uptake of N, P, K, Fe, Mn, Zn and Cu by sweet corn were computed by summation of individual uptakes of respective nutrients by sweet corn components. The data on individual as well as total uptake of N, P, K, Fe, Mn, Zn and Cu by sweet corn as affected by solid organics (O), liquid organics (L) and their interaction (O x L) are presented in tables 4, 5 and 6.

Nutrient Uptake

The results revealed that individual N uptake by cob (50.68 kg/ha) fodder (84.18 kg/ha) and total N uptake (134.32 kg/ha), P uptake by cob (9.84 kg/ha), fodder (22.23 kg/ha) and total P uptake (32.07 kg/ha) and K by cob (10.95 kg/ha), fodder (128.23 kg/ha) and total uptake of K (139.18 kg/ha) by sweet corn were found significantly higher under the treatment O_1, receiving 100% RDN through Nadep compost and was on par with the treatment O_2, receiving 75% RDN through Nadep compost except, individual N uptake by dry cob where N uptake by cob, O_2. Also in total P uptake by sweet corn only. While, in cases of individual P uptake by cob and fodder, treatment O_1 found significantly superior and in cases of K uptake by cob and fodder while, in case of total K uptake by sweet corn, treatment O_1 found significantly superior was found significantly highest. While the significantly lower N, P and K individual and total uptake by sweet corn were registered under the treatment O_3 receiving only 50% RDN through Nadep compost (Tables 4, 5 and 6).

The treatments comprising different liquid organics were also found significant for individual as well as total N uptake by sweet corn (Tables 4, 5 and 6). Significantly higher individual

N uptake by cob (49.43 kg/ha) and fodder (90.34 kg/ha) and total N uptake (139.78 kg/ha), P uptake by cob (9.76 kg/ha), fodder (24.64 kg/ha) and total P uptake (34.41 kg/ha) and K uptake by cob (10.70 kg/ha), fodder (140.16 kg/ha) and total uptake (150.87 kg/ha) by sweet corn were recorded under the treatment L_1, receiving *Jeevamrut* @ 600 L/ha and was on par with treatments L_3 and L_4 in cases of individual N uptake by cob and total N uptake by sweet corn while, in case of individual N uptake by fodder, it stood on par with treatment L_4 only. Also remained at par with the treatments L_2, L_3 and L_4 in case of individual P uptake by cob and with treatments L_3 and L_4 in cases of individual P uptake by fodder and total P uptake and with the treatments L_2, L_3 and L_4 in case of P uptake by cob and stood superior in cases of K uptake by fodder and total K uptake by sweet corn. The significantly lowest individual N, P and K uptake by cob, fodder and total N uptake by sweet corn were recorded under treatment L_0 (control).

Micro nutrient (Fe, Mn, Zn and Cu) uptake

The data on micro nutrient (Fe, Mn, Zn and Cu) uptake by sweet corn components and total micro nutrient uptake by sweet corn revealed that significantly higher individual Fe, Mn, Zn and Cu uptake by cob, fodder and total uptake by sweet corn was recorded under the treatment O_1 receiving 100% RDN through Nadep compost and remained at par with the treatment O_2 (75 % RDN through Nadep compost) in cases of individual Fe uptake by fodder and total Fe uptake by sweet corn whereas, it was found significantly highest in case of individual Fe uptake by cob. Also in Mn uptake by cob. While, in cases of Mn uptake by fodder and total Mn uptake by sweet corn, treatment O_1 absorbed significantly highest Mn (Tables 5 and 6). in case of Zn uptake fodder (Tables 5 and 6), Zn uptake by cob and total uptake of Zn by sweet corn, treatment O_1 noted significantly highest Zn uptake. only in case of Cu uptake by fodder (Tables 5and 6). While, in cases of Cu uptake by cob and total Cu uptake by sweet corn, treatment O_1 recorded significantly the highest Cu uptake over remaining levels of Nadep compost. On the other hand, treatment O_3 (50 % RDN through Nadep compost) recorded significantly the lowest individual micro nutrients uptake by cob, fodder and total uptake of (Fe, Mn, Zn and Cu) by sweet corn.

Table 2: Effect of solid and liquid organics on macro nutrient contents in cob and fodder of sweet corn

Treatments	N %		P %		K %		Green cob yield (kg/ha)	Green fodder yield (kg/ha)	Dry cob yield (kg/ha)	Dry fodder yield (kg/ha)
	Cob	Fodder	Cob	Fodder	Cob	Fodder				
Solid organic manure (O)										
O_1	1.75	0.75	0.34	0.20	0.38	1.15	15801	19628	2889	11065
O_2	1.77	0.75	0.35	0.20	0.39	1.06	15452	19478	2564	10703
O_3	1.80	0.77	0.36	0.20	0.39	1.06	14543	18253	2153	9934
S. Em. ±	0.04	0.01	0.01	0.01	0.01	0.04	343	349	60	204
CD @ 5 %	NS	NS	NS	NS	NS	NS	995	1012	174	590
Liquid organic manure (L)										
L_0	1.77	0.76	0.34	0.19	0.38	1.07	13489	16791	2160	8729
L_1	1.78	0.78	0.35	0.21	0.39	1.20	16145	20068	2777	11593
L_2	1.79	0.77	0.35	0.20	0.39	1.07	14829	18774	2436	10190
L_3	1.78	0.75	0.35	0.20	0.38	1.06	15985	19910	2692	10955
L_4	1.76	0.74	0.35	0.19	0.39	1.05	15879	20052	2611	11369
S. Em. ±	0.05	0.01	0.01	0.01	0.02	0.05	443	451	78	263
CD @ 5 %	NS	NS	NS	NS	NS	NS	1284	1306	225	762
Interaction (O x L)										
S. Em. ±	0.08	0.03	0.02	0.03	0.03	0.09	768	781	134	456
CD @ 5 %	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
CV %	7.58	6.50	11.58	11.49	13.50	14.77	8.7	7.1	9.18	7.47

Table 3: Effect of solid and liquid organics on micro nutrient contents in cob and fodder of sweet corn

Treatments	Fe (mg/kg)		Mn (mg/kg)		Zn (mg/kg)		Cu (mg/kg)	
	Cob	Fodder	Cob	Fodder	Cob	Fodder	Cob	Fodder
Solid organic manure (O)								
O_1	126.60	329.73	21.85	45.59	35.75	22.94	15.72	11.68
O_2	126.73	329.33	22.89	42.21	34.76	22.31	14.87	11.13
O_3	122.73	322.06	22.72	43.42	32.67	20.84	14.41	10.33
S. Em. ±	1.75	2.91	0.67	1.36	0.90	0.15	0.42	0.39
CD @ 5 %	NS	NS	NS	NS	NS	NS	NS	NS
Liquid organic manure (L)								
L_0	125.78	327.33	22.18	43.69	34.33	22.09	14.71	10.95
L_1	124.44	334.88	23.27	44.56	34.20	22.60	15.18	11.24
L_2	126.22	328.88	22.36	44.30	33.78	22.09	15.00	11.60
L_3	125.67	324.00	22.22	43.53	34.59	21.62	14.98	11.04
L_4	124.67	320.11	22.42	42.63	35.07	21.84	15.13	10.40
S. Em. ±	2.26	3.76	0.87	1.75	1.16	0.84	0.55	0.51
CD @ 5 %	NS	NS	NS	NS	NS	NS	NS	NS
Interaction (O x L)								
S. Em. ±	3.91	6.52	1.50	3.34	2.00	1.46	0.95	0.87

CD @ 5 %	NS	NS	NS	NS	NS	NS	NS	NS
CV %	5.40	5.24	11.55	12.03	10.08	11.47	10.93	13.72

Table 4: Effect of solid and liquid organics on individual uptakes of macro nutrient by sweet corn components

Treatments	N uptake (kg/ha)		P uptake (kg/ha)		K uptake (kg/ha)	
	Cob	Fodder	Cob	Fodder	Cob	Fodder
Solid organic manure (O)						
O_1	50.68	84.18	9.84	22.23	10.95	128.23
O_2	45.55	80.66	8.86	21.58	9.87	113.56
O_3	38.74	76.67	7.79	19.82	8.39	105.54
S. Em. ±	1.43	2.03	0.32	0.65	0.41	5.47
CD @ 5 %	4.14	5.88	0.95	NS	1.20	15.84
Liquid organic manure (L)						
L_0	38.21	66.33	7.20	17.22	8.27	93.58
L_1	49.43	90.34	9.76	24.64	10.70	140.16
L_2	43.47	78.92	8.59	19.90	9.51	109.07
L_3	47.90	81.16	9.48	21.97	10.14	116.68
L_4	45.90	85.76	9.10	22.31	10.04	119.38
S. Em. ±	1.85	2.62	0.42	1.08	0.53	7.06
CD @ 5 %	5.34	7.60	1.22	3.13	1.54	20.45
Interaction (O x L)						
S. Em. ±	3.20	4.55	0.73	1.87	0.93	12.23
CD @ 5 %	NS	NS	NS	NS	NS	NS
CV %	12.31	9.78	14.33	14.26	14.82	8.19

Table 5: Effect of solid and liquid organics on micro nutrient uptakes by sweet corn components

Treatments	Fe uptake (g/ha)		Mn uptake (g/ha)		Zn uptake (g/ha)		Cu uptake (g/ha)	
	Cob	Fodder	Cob	Fodder	Cob	Fodder	Cob	Fodder
Solid organic manure (O)								
O_1	365.50	3649.91	63.25	505.67	103.35	255.73	45.36	130.23
O_2	324.78	3524.09	58.87	451.85	89.90	238.22	38.54	119.15
O_3	264.34	3199.25	48.94	431.86	70.47	207.04	30.92	102.21
S. Em. ±	8.82	81.24	2.18	17.70	2.91	8.67	1.68	4.45
CD @ 5 %	25.55	235.29	6.32	51.25	8.42	25.12	4.88	12.89
Liquid organic manure (L)								
L_0	272.09	2853.16	47.68	381.75	74.17	192.45	31.66	95.91
L_1	346.13	3883.07	64.56	515.59	95.89	262.88	42.38	130.69
L_2	308.35	3352.75	54.31	453.63	82.82	225.66	36.98	118.00
L_3	338.06	3555.57	59.96	477.85	93.13	238.18	40.63	121.45
L_4	326.40	3644.21	58.59	486.83	92.06	249.15	39.71	119.94
S. Em. ±	11.38	104.88	2.82	22.85	3.75	11.20	2.17	5.75
CD @ 5 %	32.98	303.76	8.16	66.18	10.87	32.43	6.30	16.65
Interaction (O x L)								
S. Em. ±	19.72	181.65	4.88	39.58	6.50	19.40	3.76	9.96
CD @ 5 %	NS	NS	NS	NS	NS	NS	NS	NS
CV %	10.74	9.10	14.82	14.80	12.85	14.37	14.03	14.71

Table 6: Effect of solid and liquid organics on total uptake of macro and micro nutrients by sweet corn

Treatments	Macro nutrients			Micro nutrients			
	N uptake (kg/ha)	P uptake (kg/ha)	K uptake (kg/ha)	Fe uptake (g/ha)	Mn uptake (g/ha)	Zn uptake (g/ha)	Cu uptake (g/ha)
Solid organic manure (O)							
O_1	134.32	32.07	139.18	4015.41	568.93	351.08	174.92
O_2	126.20	30.44	123.43	3848.87	510.72	237.21	157.69
O_3	115.41	27.67	113.93	3463.59	480.81	277.51	131.13
S. Em. ±	2.89	0.82	4.76	73.26	18.03	8.92	5.18
CD @ 5 %	8.36	2.39	13.80	212.18	52.21	25.84	15.05
Liquid organic manure (L)							
L_0	104.54	24.42	101.86	3125.25	429.43	266.63	127.57
L_1	139.78	34.41	150.87	4229.20	580.16	358.76	173.07
L_2	122.39	28.58	118.58	3661.10	507.94	308.47	154.98
L_3	129.29	31.46	126.82	3893.63	537.81	331.31	162.07
L_4	130.55	31.41	129.43	3970.61	545.43	341.16	158.53
S. Em. ±	3.73	1.06	6.15	94.58	23.27	11.52	6.61
CD @ 5 %	10.80	3.08	17.81	273.93	67.41	33.62	19.43
Interaction (O x L)							

S. Em. ±	6.46	1.84	10.65	163.81	40.31	19.95	11.62
CD @ 5 %	NS	NS	NS	NS	NS	NS	NS
CV %	8.92	10.62	14.70	7.51	13.42	10.76	12.96

Among liquid organic treatments, significantly the higher individual and total micro nutrient (Fe, Mn, Zn and Cu) uptake by cob, fodder and total uptake of sweet corn was recorded under treatment L_1, receiving *Jeevamrut* @ 600 L/ha) and remained at par with the treatments L_3 and L_4 in case of Fe uptake by cob and with only treatment L_4 in cases of Fe uptake by fodder and total Fe uptake by sweet corn (Tables 18 and 19). Also with treatments L_3 and L_4 in cases of Mn uptake by cob and total Mn uptake by sweet corn. While, in case of Mn uptake by fodder, similarly treatments L_2, L_3 and L_4 remained at par with treatment L_1 (Tables 18 and 19). with treatments L_3 and L_4 for all the Zn uptakes (Tables 18 and 19). Cu was also at par with treatments L_2, L_3 and L_4 for all the uptakes of Cu by sweet corn (Tables 18 and 19). While, the significantly lowest individual and total uptake by cob fodder and total uptake of (Fe, Mn, Zn and Cu) by sweet corn were noticed with treatment L_0.

Discussion

Yield

Plant yield green cob and fodder yield of sweet corn were significantly affected by applied solid organics. This might be due to addition of organic manure, enhanced the level of soil enzymes activity and promoted the recycling of soil nutrients in the ecosystem, improve the absorptive power of cations and anions present on soil particle and that may be released slowly during the crop growth and improvement in soil structure which reduced the soil crusting and also serves as a source of energy for soil micro flora which resulted in better root nodulation and nitrogen fixation. This could be also ascribed due to existence of favorable nutritional environment under the influence of organic manures which had a positive effect on vegetative and reproductive growth which ultimately led to realization of higher values for growth attributes leading to higher yield of crop (Virkar, 2008) [38]. These results are in accordance with Bhavsar (2008) [2] and Zende (2007) [40] in sweet corn. Similar results were also reported by Lingaraju *et al.* (2010) [13], Sutaria *et al.* (2010) [23], Jat and Ahlawat (2010) [11], Dadgale *et al.* (2011) [4] and Patra *et al.* (2011) [21], Sindhi *et al.* (2016) [28] and Patil and Kolambe (2013) [19].

Another possible reason for higher growth and yield characters of sweet corn might be due to the growth enzymes present in *Jeevamrut*, *Panchagavya* and *Sanjeevak* which favored rapid cell division and multiplication (Vasumathi, 2001 and Sanjutha, *et al.* 2008) [36, 26].

According to Muthuvel (2002) [15] four sprays of *Panch gavya* @ 3% and Moringa leaf extract spray @ 25 ml/plant resulted in higher plant height and number of branches per plant. The application of *Jeevamrut*h at critical stages of crop growth resulted in higher plant growth at harvest stage which was on par with *Beejamruth* application (Uwah *et al.*, 2011) [34]. Besides, liquid organic manures (*Jeevamrut* and *Panch gavya*) with rich population of microbes might have helped in degradation and mobilization of the nutrients from unavailable form to available form as reported by Verma *et al.* (2006) [37], and Ravi *et al.* (2012) [22].

Content

The results on N, P, K, Fe, Mn, Zn and Cu content in dry cob and fodder of sweet corn was not significantly affected by different levels of Nadep compost and liquid organi manure (Tables 15 and 16). The absorption of nutrients increases with its increasing levels of Nadep compost but simultaneously growth and yield of crop was also increased. Therefore, content of nutrients remains more or less same (dilution effect). Similar, non-significant effect of different manures on content of major nutrients was recorded by Patil and Kolambe (2013) [19] and Salunkhe *et al.* (2013) [24, 25].

Uptake

The effect of different levels of Nadep compost and different types of liquid organic manures on individual uptake of major and micronutrients of crop was ultimately reflected by total uptake value, therefore, the influence of different levels of Nadep compost on total uptake is only discussed here. Significantly higher total uptake of N, P, K, Fe, Mn, Zn and Cu by sweet corn were noted from the organics Possible reasons for significantly higher total uptake of all the nutrients under the research by sweet corn crop might be (i) addition of nutrient rich Nadep compost. Addition of organic manures, enhance microbial activities in soil results in the breakdown of organic manures and release of the nutrients through mineralization. Moreover, the reasons are given for higher yield attributes and yields are applicable here also. The results are in close agreement with the results of, Naikwade (2014) [16], Zadode *et al.* (2014) [39], Ghosh *et al.* (2013) [8], Davari *et al.* (2012) [5], Duhan (2013) [7] and Devakumar *et al.* (2011) [6] have reported the presence of many beneficial microorganisms *viz*., nitrogen fixers, phosphorus solubilizers, actinomycetes and fungi in *Jeevamrutha* and *Beejamrutha* increases the availability of nutrients and helps in absorption of these nutrients finally increased the total uptake. Soil application of *Jeevamrut*, a newly introduced liquid organic manure prepared from FYM, cow urine, pulses flour, jaggary and soil helps to enhance microbial population, soil fertility and productivity of the soil (Patil and Udmale 2016) [18]. These finding are also in general agreement with the experimental results reported by Choudhary *et al.* (2014), Vajantha *et al.* (2013) [32], Jadhao *et al.* (2014) [10] and Salunkhe *et al.* (2013) [24, 25].

Conclusion

The study clearly revealed that there was significant improvement in yield and plant nutrient uptake with the application of Nadep compost @ 75% RDN/ha as a solid organic and among the different liquid organic manures, soil application of *Jeevamrut* @ 600 L/ha found best treatment for organically grown of sweet corn in South Gujarat.

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