

EFFECT OF FERTONIC (BIO-ORGANIC SOIL ENRICHER) ON THE GROWTH AND YIELD OF POTATO

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Field experiments were conducted during 1996 On Cultivator's fields in shimla region On slightly acidic soil varying in soil organic matter to study the effects of FERTONIC (Bio-organic Soil enricher) on potato. The results shows that the fertonic had a positive effect on the growth and yield of potato when its level was raised from 250 to 500 kg/ha. Its effect was more pronounced at 75% and 100% NPK application than at 50% NPK Application. However the Application of fertonic (500 kg/ha) and FYM at 30 t/ha could not substitute given 50% NPK. The data also indicated that it could substitute p and k by about 50 percent and could not substitute nitrogen fertilizer. The beneficial effect of fertonic was observed on both the soils containing low and high amounts of organic matter. Its application also induced early senescence by about 10 days and could help the crop to escape late blight disease of potato as well as could help in raising the cropping intensity.

EFFECT OF BIO-ORGANIC SOIL ENRICHER ON SUNFLOWER AND WHEAT

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FERTONIC (Bio-Organic Soil Enricher) is enriched organic manure which contains various macro and micro nutrients. This is a new Organic Manure and therefore, studies were conducted to evaluate its efficacy in comparison to farm Yard manure and vermicompost in sunflower and wheat. These studies were conducted on a sandy loam soil low in organic matter and available nitrogen, medium in available phosphorous and high in potash with alkaline in reaction, at the Research Farm of Department of Agronomy, CCS Haryana Agricultural University, Hisar during 1995 and 1996 in sunflower and during Rabi 1995-96 in wheat. Two sunflower Hybrids viz. MSFH-8 and Badshah were tried in spring season under various combinations of organic manure (No organic manure, FERTONIC Bio-organic Soil Enricher) at 250 Kg/ha, FYM at 10 t/ha, vermicompost at 5 t/ha) and fertility levels i.e. 40+20+60+40 and 120+60 kg/ha N + P₂O₅) in a split plot design with three replications. Performance of early December shown wheat Cv WH -542 was studied under various fertility treatments. Viz NPZn (150+60+25 kg/ha+ N+ P₂O₅ + ZnSo₄) + fertonic (bio-organic Soil Enricher) at 125 kg/ha with 50, 70 and 100 percent, recommended NPZn, FYM (15t/ha) +100 kg/ha. Vermicompost 5 or 10t/ha + + 100 kg N/ha in randomized design with three replications.

In sunflower, application of increasing doses of fertilizers increased significantly lineally the production of seed, straw and biological yields and highest seed yield was obtained with 120 kg N + 60 kg P₂O₅ /ha mainly due to positive effect on yield attributing characters' like head diameter, number of seeds per head, percent filled seeds. 100 seed weight and yield per plant. Integration of fertilizers with any of the organic manures had good effect on crop and application of all organic manures resulted in to significantly higher seed, straw and biological yields. Among various organic sources, application of vermicompost at 10t/ha gave significantly highest seed, straw and biological yields.

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FERTONIC (bio-organic Soil Enricher) also had positive effect on the yield of sunflower particularly under lower doses of fertilizer. The Combination of FERTONIC (Bio-organic Soil Enricher)with 80 kg N +40 kg P₂O₅ /ha gave yields statically at par to highest does of fertilizer (120 kg N + 60 kg P₂O₅ /Ha) .This clearly indicate an average in saving of about 40 kg+ 20 kg P₂O₅ /ha.

In wheat application of FERTONIC (Bio-Organic Soil Enricher) at 125 kg/ha was observed to give added advantage only by its application with 100 percent recommended doses of NPZn. This treatment gave significant higher yield the recommended fertilizers which was about 11 percent higher. The combination FERTONIC (Bio-organic Soil Enricher) with recommended fertilizers was also superior to F.Y.M. + 100 kg N/ha. However, the Combination of FERTONIC (Bio-organic Soil Enricher) with lower doses of NPZn was not effective.

Table - 1

Response of sunflower genotypes to nutrient management and fertonic at CCS H. A. U. HISAR

Treatments	1995		1996		
	SHFH-8	Badshah q/ha	HSFH-8	BADSHAH q/ha	
No Organic Manure + No FERET N P	12.50	14, 60	9.73	11.33	
	+ 40 + 20	16.43	19.27	13.87	18.47
	+ 30 + 40	22.77	26.17	20.23	23.13
	+ 120 + 60	24.07	29.53	21.40	25.77
FYM 10 t	+ NO FERT	16.10	19.63	11.27	15.20
	+ 40 + 20	20.77	23.30	16.73	20.37
	+ 80 + 40	23.80	28.30	20.10	24.60
	+ 120 + 60	26.43	30.03	22.03	27.20
V.C 5 t	+ No FERT.	18.10	19.70	13.37	14.57
	+ 40 +20	21.50	23.93	17.30	21.27
	+ 80 + 40	25.57	29.17	22.33	25.43
	+ 120 + 60	26.90	30.20	24.40	26.73
V.C. 10 t	+ NO FERT	20.37	21.00	16.80	20.73
	+ 40 + 20	24.42	25.37	20.50	22.60
	+ 80 + 40	27.13	30.47	23.47	26.50
	+120 + 60	27.67	30.73	25.27	28.37
FERTONIC 250 Kg/ha	+ NO FERT	18.17	19.73	13.70	15.77
	+ 40+ 20	21.37	22.47	18.63	21.67
	+ 80 +40	26.10	29.67	22.27	24.40
	+ 120 +60	27.17	30.07	21.47	26.77

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TABLE: 2

EFFECT OF FERTONIC ON GRAIN YIELD OF WHEAT AT CCS HAU-HISAR

Treatment	YIELD (Q/HA)
Recommended NP ZN	
(150 N + 60 Kg P ₂ O ₅ + 25 Kg ZnSO ₄ / ha)	40.0
FYM (15 t /ha) +100 kg N / ha	40.5
VERMICOMPOST (10 t/ha) +100 Kg N / ha	42.0
FERTONIC (125 kg/ha) + 50% NP ZN (of Rec.)	31.6
FERTONIC (125 kg/ha) +75% NP ZN (of Rec.)	36.0
FERTONIC (125 kg/ha) +100% NP ZN (of Rec.)	44.5

TABLE: 3

EFFECT OF FERTONIC ON SEEDS YIELD OF SUNFLOWER AT CCS HAU-HISAR

Treatment	Sunflower seed yield (q. / ha)		
	Variety		
	SHFH-8	Badshah	Mean
Control - (No. FERTONIC, F.Y.M. of FERTILIZERS)	10.6	18.0	11.8
FYM - 10t/ha	18.7	17.4	15.6
FERTONIC 250kg/ha	16.4	17.8	17.1
FERTONIC - 120 kg + N + 60 Kg P ₂ O ₅ /Ha	22.7	22.7	25.2
F.Y.M - 10 t /ha+ 120 kg N+60Kg P ₂ O ₅ /ha	24.2	28.6	26.4
FEERTONIC 250kg/ha + 120kg N +60 kg P ₂ O ₅ /ha	28.8	28.4	27.1
CD co- 05	--	1.6	--
	18.9	22.2	

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EFFECT OF FERTONIC (BIO- ORGANIC SOIL ENRICHER) AND FERTILIZERS ON THE YIELD OF SUNFLOWER AND WHEAT.

***K.P SINGH, S.K AGRAWAL, T.S. SAHOTA, A.K.MISHRA**

ABSTRACT

In on farm experiments at **CCS, HARYANA Agricultural University, Hisar, Haryana** During 1995 and 1996, the application of FERTONIC (Bio-organic Enricher) @ 125-120 Kg/ha. With recommend dose of fertilizers (120kg.N+60 p205+25 kg Zn so4/ha in Wheat) product the grain yield of late sown wheat (44.5 q/ha) and seed yield of sunflower (27.1q/ha). THE FERTONIC @ 125-250 kg/ha proved better than vermicompost or FYM each @ 10-15 t/ha. The response of sunflower to FERTONIC was better marked in CV. MSFHB then in BADASHA. In on- farm experiments also at Fazalpur and samora, karnal, Haryana, the FERTONIC @ 125 kg /ha produced the maximum yield of the two crops with full dose of fertilizers ranged from 2.6 to 4.5 q/ha in wheat and 1.4 to 1.9 q/ha in sunflower . The return per rupee spent on the FERTONIC manures but could not substitute fertilizers.

Of late, the crop yields especially in the Punjab and Haryana have been on the decline. One of the major reasons for the decline is the use of chemical inputs and the neglect of bio and physical aspects of the soils. Fertilizers no doubt have played a key role in increasing food production but high yield of crops could not be sustained with the use of fertilizers alone. The long term experiment shows that the yield of crop are more sustainable with the combine use of FYM (n10-15 t/ha) and the fertilizers (2). The FYM, due to its limited availability, cannot be applied to all the fields while green manuring has its limitations, there is a need to look for alternate sources of organic products.

FERTONIC (Bio-organic products) is one of such products while improved the bio and physical properties of the soils (1). The contents and composition of the FERTONIC are given in appendix 1. Result from the station and on-farm field experiments conducted in Haryana on FERTONIC / FYM and fertilizers in sunflower and wheat are reported in this article.

MATERIALS AND METHODS on station experiments:

These were conducting during 1995 and 1996 at CCS, H.A.U., and Hisar to evaluate the efficiency of the fertonic vis-à-vis FYM and fertilizers with the treatments give in table 1, 2, 3, for SUNFLOWER (CVS. MSFH8 and BADSHAH) and WHEAT in table 4, 5 (cv. WH542). Sunflower was grown from February to may in 1995 and 1996 while WHEAT was grow from December to April in 1995-96, in sandy loam soil (ph8.2), low in available N and Zn, medium in available P and high in available K. The treatments were replicated thrice in RBD and the data from two years were subjected to pooled analysis of variance.

On farm experiments (conducted at farmers' fields)

SUNFLOWER (CV.MSFH48):

Effect of FERTONIC @ 125 kg/ ha was tested at 80 kg n+ 40 kg p205/ha and the latter was compared with FERTONIC @ 125kg/ha + 60 kg N + 30 kg p205/ha at fazalpur and samora villages (two locations in each villages of district karnal, Haryana during fabruary to

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may, 1996.

WHEAT:

At one location (village samora), FERTONIC @ 125 kg/ha + 90 kg N + 45 kg p205/ha was compared with 120 kg N + kg p205/ha in CV,UP 2338, while at another location, in the same village, efficiency of FERTONIC @ 125 kg/ha was tasted at 120 kg N +60 kg P205/ha in cv. PBW. The plot size for each treatment both in sunflower and wheat was one acre. The soils of these villages were sandy –loam and low in available N, and medium in available P and K.

RESULTS AND DISCUSSIONS:

EFFECT OF FERTONIC ON SUN FLOWER:

The data from on-station experiments (Table-1) clearly show that FERTONIC @ 250 kg/ha produced the highest seed yield of sunflower with or without application of N and P fertilizers. In the absence of fertilizers, the average yield increased by FERTONIC @ 250 kg/ha was 5.3 q/ha which was about 40 % more than (3.8 of 120 kg + 60 kg p205/ha increased the seed yield spectacularly when compared with FYM or FERTONIC.

The effect of FYM or FERTONIC decreased by the application of fertilizers, nevertheless, the application of FERTONIC and FYM. In the percentage of fertilizers still increased the yield by 1.2 and 1.9 of FYM were, however, similar in both the cultivars of sunflower. However, response to FERTONIC was better marked in MSF48 as compared to Badshah which out yielded MSFH48 by 3.3 q/ha.

The on- farm trials also showed that FERTONIC @ 125 kg/ha supplemented with 80kg N + 40 kg p205/ha produced higher yield than the fertilizers alone (Table-2). The data in table -3 shows that the FERTONIC could economize N and P input by 15 kg N and 10 kg P205/ha (by 25%) besides improving the yield on farmer's fields. The increase in seed yield of sunflower was attributed to the increased seed size and seed weight (data not reported).

EFFECT OF FERTONIC ON WHEAT:

The on station trials showed that the application of FERTONIC @ 125 kg/ha increased the wheat grain yield by 4.5 q/ha over the fertilizers alone (Table-4). The data further showed that FERTONIC could not help in fertilizer economy as the FERTONIC in the presence of 75% fertilizer (NPZn) does not compete with 100% of N, P and Zn does. The FYM or vermicompost in the presence of 100 kg N/ha recorded yield similar to 100% of NPZn dose showing that FYM or vermicompost could substitute P and Zn in wheat. Vermicompost and FYM were however similar their effects.

The on-farm trials conducted on farmer's fields also showed the positive effect of FERTONIC on grain yield of wheat (Table-5). FERTONIC had positive effect on the spike length and grain weight (data not reported)

The result also increased that. The FERTONIC @ 125kg/ha could help in 25% of NP- fertilizer economy in the trial conducted with cv. UP 2338. The result of on-farm trials are somewhat at variance with the on station trials in the sense that the fertilizer economy due to FERTONIC use could not be indicated by the seasonal effects. The on station trial was conducted with late sown wheat having low yield potential while on farm trials was conducted with normal sown wheat exhibiting high yield potential.

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ECONOMICS OF FERTONIC APPLICATION:

The economics of FERTONIC was calculated by considering the price of FERTONIC and cost of produce. The data showed that FERTONIC gave return of Rs.2.20/ per rupee spent on it.

In the end, it may be concluded that the application of the FERTONIC (Bio-Organic soil enricher) @ 125-250 kg/ha produced highest yield of sunflower and wheat with full dose of fertilizers. The return per rupee spent on the FERTONIC in both the crop was Rs.2.20. for maximizing returns, farmers are advised to apply full dose of fertilizers with the FERTONIC. It may also be kept in mind that the fertonic cannot substitute fertilizers

Table-1

Effect of FERTONIC, FYM and fertilizers on the seed yield of sunflower (mean over 1995 & 1996).

Sr NO	Treatment	Sunflower MSFH	Seed yield variety BADSHAH	
1	Control (No FERTONIC, FYM of fertilizers).	10.6	18.0	11.8
2	FYM @ 10t/ha.	18.7	17.4	15.6
3	FERTONIC @250 kg/ha.	16.4	17.8	17.1
4	120 kg N+ 60 kg P250/ha	22.7	22.7	25.2
5	FYM @ 10 t/ha, 120 kg N, 60 kg P2 05/ha	24.2	28.6	26.4
6	FERTONIC @250 kg/ha, 120 kg N, 60 kg P2 05/ha.	28.8	28.4	27.1
7	CD CO-05	----	1.6	-----
		18.9	22.2	

Table-2

Effect of FERTONIC on seed yield of sunflower at village fazalpur, district karnal, Haryana.

Treatments	Seed yield of sun flower (q/ha) (mean over 2 location)
80 kg N + 40 kg P205/ha (Rec.dose)	18.76
60 kg N + 30 kg P205/ha + FERTONIC @ 125 kg/ha	20.11

Table-3

Effect of FERTONIC on seed yield of sunflower at village samora, district karnal, Haryana.

Treatments	Seed yield of sun flower (q/ha) (mean over 2 location)
80 kg N + 40 kg P205/ha (Rec.dose)	18.25
60 kg N + 30 kg P205/ha + FERTONIC @ 125 kg/ha	19.41

Table-4

Effect of FERTONIC on grain yield of December sown Wheat (1995-96) S

SR NO.	Treatment	Grain yield(q/ha)
1	150 kg N + 60 kg P205 + 25 kg ZnSO4/ha (100% NP ZN)	40.0
2	FYM @ 15t/ha + 100 kg N/ha	40.5
3	Vermicompost @ 10t/ha + 100 kg N/ha	42.0
4	FERTONIC @ 125 kg/ha + 50% NPZn	31.6
5	FERTONIC @ 125 kg/ha + 75% NPZn	36.0
6	FERTONIC @ 125 kh/h + 100% NPZn CD 0.05	44.5
		3.6

Table -5

Effect of FERTONIC on grain yield of wheat at samor, district karnal, Haryana.

Locatio-1 (cv. UP 2338)

Treatments	Grain yield q/ha
120 kg N + 60 kg P205/ha	52.5
90 kg N + 45 Kg P205 + FERTONIC @ 125 KG/ha	53.4

	Grain yield (q/ha)
120 kg N + 60 kg P205/ha	54.2
90 kg N + 45 Kg P205 + FERTONIC @ 125 KG/ha	56.8

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Location-2 (cv. PBW 343)

Appendix-1

CNOTENTS & COMPOSITION OF FERTONIC (BIO-ORGANIS ENRICHER)

Contents: Dry sewage sludge. Decomposed city garbage, poultry manure, neem cake / castor cake, bone powder, meat/ blood/ fishmeal, tobacco dust/ phosphogypsum etc.

BIO-LOGICAL COMPOSITION

Total Bacteria Count / g	10^{10}
Actinomycetes / g	10^4
Fungi / g	10^6
Azactobactor / g	10^6
Root nodule Bacteria / g	10^4
Phosphate Solubilizers / g	10^6
Nitro Bacteria / g	10^2

CHEMICAL COMPOSITION

Organic Carbon	18 %
Nitrogen	0.6 %
Available Phosphorous	0.6 %
Potassium	1.1 %
Calcium	2.1 %
Magnesium	0.7 %
Sulphate	0.5 %
Ferrous	0.5 %
PH	7.00
C: N Ratio	20:1
Bulk Density	0.8
Moisture	30 %
E.C.	3.5

FERTONIC is produced and marketed in India by M/S. INDO- ISRAEL AGROTECH LTD.504-506, Monalisha complex, Sayajigunj, Baroda-390 005.(Gujarat)

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PROGRESS REPORT KHARIF 2003 ADEPTIVE TRIAL CENTER

Agriculture Extension and Research Project Rampura (Jodhpur)

Data arranged in Table 16 exhibits that variety CAZRI-358 gave Higher dry fodder (1000 kg/ha) and seed yield (55.56 kg/ha) followed by var.CAZRI -75 with dry fodder (711.1 kg/ha) and (6.67 kg/ha) yield. To confirm the result trial; may be respected. Organic Farming

Object

To see the effect of different organic manures on seed yield of prominent Kharif cop of zone Ia. Year of intimation: Rabi 2003-04

Location: ATC Rampura Design: Strips

Organic products used (1) compost (2) Vermicompost (3) fertonic (4) Control

Crop	sowing date
Bajara	26.07.03
Sesame	26.07.03
Cow pea	26.07.03
Moonbean	31.07.03
Moth bean	31.07.03
Cluster bean	31.07.03

Table-17 seed yield of different crops as affected by difficult treatment.

Treatments	No. of effective tillera/ sq. m.	Plant height (cm)	Ear length (cm)	Yield (Kg.h)
T1-FERTIWORM @ 50 Kg/h + 75% NPK	246	73	7.5	2567
T2- Vermi compost + @ 75% NPK	242	75	7.3	2539
T3- Fertilizer as per DR (100%)	258	77	7.7	2667
T4- fertiworm @ 50 kg/h only	221	69	7.2	1833
T5- Vermi compost only	233	66	7.0	1983
SEm				94
CD 5%				289
C.V. %				8.29

Result & discussion:

Data Table 17 clearly indicate that application of fertonic gave highest yield of Bajara (562.96 kg/ha), Moong bean (171.29 kg/ha), Seasm (64.82 kg/ha), and cowpea (71.67 kg/ha) followed by application of Vermi Compost in different crops. However, Yield of Gaur (294.0 kg/ha) and Moth (16 5.50 kg/ha) was Recorded higher when vermin compost was applied.

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Result of adaptive trials (private products) Rabi-2003-04

Result & Discussion:

Expt.No.2 to test the FERTIWORM in Wheat crop. Detail

D/S	24.11.2003
Treats	5
Replication	4
Design	R B D
Plot size	3.6 X 5 m = 18 Sqm
Irrigation	4
Variety	Lok-1
D/H	27.3.2004

Soil test value

PH-7.55, EC 0.52, O.C% 0.63, P2 O5 -360 Kg/h, K2O-650 Kg/h. Table –Avg. grain yield of Wheat and observations.

RESULT & DISCUSSION

Data presented in table clearly indicate that in mustard crop highest seed yield (876 kg/ha) was observed with application of compost 5 t/ha closely followed by spray of start (847 kg/ha) and

Vermi compost 2.5 t/ha , 725 Kg/ha) in Isabgol crop higher seed yield 527 kg/ha observed with the application of Vermi compost & 2.5 t/ha Closely followed by Compost 5 t/ha (527 Kg/ha) and spray of start (513 kg/ha) respectively. While Wheat Crop maximum grain Yield (1307 kg/ha was recived with the application of fertiworm 300 kg/ha. Closely followed by fertonic @ 375 kg/ha (12933 kg/ha and compost 5 t/ha (1183 kg/ha) respectively. Very poor Yield was obtained from cumin crop because of powdery mildew dieseefestation. To confirm the result it may be respected.

Object: To study the residual effect of organic manure on Wheat crop.

Location: ATC Rampura.	Treatments: 7
T	- FYM @ 10 t/ha
T2	- FYM @ 5 t/ha
T3	- Vermi Compost @5 t/ha
T4	- T - T DRF
T5	- T2 - T2 DRF
T6	- T3 -T3 DRF
T7	- Fall DRF

Object: To see the effect of different organic manures on seed yield of Prominent rabi crop of zone la Year of intimation

Rabi 2003-04

Location: ATC Rampura

Design: Strips: Organic product used:

1.Compost 2. Vermicompost 3. Fertonic 4. Fertiworm 5. Start 6. Control

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Crop : Musterd Crop : CUMIN	date of showing 04 date of showing 20	11 11	2003 Crop : wheat 2003 Crop: ISABGOL	date of showing date of showing	18 20	12 11	2003 2003
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Table-14

Seed yield of different crops as a affected by different treatments

Treatment	Seed yield kg/ha			% increased over control		
				Mustered	Wheat	Isabgol
				69	122	45
Vermi compost 2.5 t/ha	725	820	640	40	54	78
Fertonic 375 Kg/ha	642	1293	493	24	142	36
Fertiworm 300 kg/ha	615	1307	502	19	145	38
Spary of start	847	767	513	63	44	41
Control	518	533	363	-	-	-

Treatment	Seed yield in kg/ha						% increase over control					
	Bajara	Moong	Gaur	Moth	Til	Cow	Bajara	Moong	Gaur	Moth	Til	Cow
Compost 5t/ha	297.9 2	120.14	217.48	72.61	53. 24	44. 07	28.45	24.38	42.68	8.92	61.0 7	32. 22
	559. 26	157. 41	294.09	106. 56	58. 33	62. 13	141. 12	62.97	92.93	59. 86	43.6	86. 6
Fertonic @ 375 kg/ha	562. 96	171. 29	245. 83	85. 24	64. 82	71. 67	142. 42	77.34	61.27	27. 87	59. 58	115.0 3
control	231.9 4	96.59	152.43	66.66	40.6 2	33.3 3	---	---	---	--	--	--

Sugarcane Crop Research

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TO WHOM SO IT MAY CONCERN

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(Maharastra)

Effect of fertonic jaivik khadh on sugarcane crop grown in medium black cotton soil in sangli & Kolhapur district of Maharastra state.

Of late, the sugarcane yields especially in the western Maharastra have been on the decline. One of the major reason for the decline in the over emphasis on the use of chemical inputs and the neglect of bio and physical aspects of the soil. Fertilizers no doubt have played a key sole in increasing food production but high yield of crops could not be sustained with the use of fertilizers alone.

M/s indo Israel Agrotech Ltd., Baroda has approached us to conduct field experiments to study effects & economics of FERTONIC BOSE JAIVIK KHAD especially on sugarcane crop which is major cash crop in Maharastra state.

The field experiment were conducted during 1995-96 and 1996-97 on farmer's field at kasbe Digras & samadoli village tal. Miraj, Dist. Sangli & shirol village in shirol talluka Dist. Kolhapur in the Maharastra state under guidance and supervision of our Agricultural Experts. The observations are as Table A, B, C.

The results show that the Fertonic has given a positive effect on the growth, yield & recovery of sugar. The soil application of

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Fertonic 625kg /ha (100% dose) and 100% N.P.K Fertilizer gives highest yield in respect of tonnage, as compared with other treatments in the year 1995-96 and 1996-97. It is observed that the cane yield has been increased up to 30% and sugar recovery has been increased up to 10% over control plot. The average no of tillers and CCS% increased in Fertonic applied Field. Same trend were observed in the subsequent years of the same field. The availability of N.P.K. Fertilizer from soil to crop was increased subsequently. Same result in respect of cane yield, plant population, average till ring and sugar recovery was observed that fertonic jaivik bose khad gives better result over FYM treatments.

The long term experiments shows that the yield of crop are more sustainable with the combined use of FYM (10-20 t/ha) and the fertilizers. The FYM, due to its limited availability, cannot its own limitations; therefore, there is a need for AlterNet sources of organic products.

FERTONIC BOSE JAIVIK KHAD is one of such products which improve the bio and physical properties of the soil. Result from the farmers' field conducted in sangli & Kolhapur district of Maharastra state on fertonic/FYM and fertilizers are reported in this article.

MATERIAL AND METHODS

FERTONIC BOSE JAIVIK KHAD is enriched organic manure with various bacteria. This is new bio- organic manure with bacteria, therefore, studies were conducted to evaluate it's efficiency in comperision to farm yard manure in sugarcane on farmers field. These studies were conducted on a medium black cotton soil low in organic matter, low in available phosphorus and high in potas. With alkaline in reaction. Sugercane CV co-740 was planted in preseason season and 28 fertility level treatments were taken in split plot design with three replications. Fertonic bose jaivik khad at 625 kg/ha with 50%, 75% and 100%, recommended N.P.K. dose, FYM 10 & 20 t/ha was taken for study.

The plot size for each treatment was five gunta. The soils of these plots were clay loam (medium black soil) and low in available N and low in available P and high in available K. the irrigation was given regularly as per requirement of crop common for all treatment plots. The inter culturing operations were done as a regular practice.

RESULTS AND DISCUSSION

Effect of FERTONIC on sugercan growth and yield.

The data from farmers' field trials clearly shows that fertonic @ 625 kg/ha + 100% N.P.K produced highest cane yield, more tillers and recovery. In control plots averge sugarcane yield was 50 kg/ha (T-1) AND IN IN fym 20 T/HA + 100% N .P.K. the yield was 83.40 kg/ha (T-6) and fertonic @625 kg/ha (100%) N.P.K. gives 90.10 t/ha (T-14). This increased in yield of sugarcane to fertonic jaivik khad even FYM + 100% N.P.K. gives less yield than treatment plots.

The effects of FYM or fertonic decreased by the application of fertilizers. Nevertheless, the application of fertonic and FYM in the presence of fertilizers still increased the sugarcane yield. Thus fertonic could substitute FYM. The effects of FYM were, however, similer in three sugarcane cultivators. However, response to fertonic was better marked in all three sugarcane cultivators in 1995-96 & 1996-97. The data in table A, B, C, shows the effect of different treatemnts on yield, plant population, and average tillers and CCS% in the year 1995-96 and year 1996-97.

ECONOMICS OF FERTONIC APPLICATION:

The economics of FERTONIC was calculated by considering the price of FERTONIC and costof produce. The data showed that

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FERTONIC gave return of Rs. 5.40 per rupee spent on it.

In the end, it may be conducted that the application of the Fertonic BOSE JAIVIK KHAD @625 kg/ha + 100% N.P.K. produced highest yield of sugarcane in all three farmers field trials. The fertonic proved to be a better substitute of FYM. For Maximising returns, farmers are advised to apply full does of fertilizers with the Fertonic. It may also kept in mind that the fertponic cannot substitute to chemical fertilizers.

SD. (Dr. V.S.KUMBHAR)

Sr. Scientist Encl: Research Data

TABLE A : Sugercane Response to soil application of FERTONIC BOSE JAIVIK KHAD									
farmers field trial -name of farmers : Shri P.T Patil, Kasbe digraj Tal. Miraj Dist.sangli									
N:P:K-340:170:170 kg/ha, Fertonic-625 Kg/ha, Spacing 3'*1 1/2									
Treatment	YEAR 1995-969				YEAR 1996-97				
	yield t/ha	Plant Popul- action '000/ha	Av. Tilers/5o plants	CCS %	yield t/ha	Plant Popul- Action '000/ha	Av. Tilers/5o plants	CCS %	
T1	No organic, No Fertilizer (control)	50.50	35.20	225	9.83	49.50	34.80	220	9.80
T2	100% N.P.K	75.00	55.50	260	10.10	73.50	55.10	259	9.90
T3	75% N.P.K	68.50	48.60	248	9.96	66.40	48.50	245	9.95
T4	50% N.P.k	60.20	46.40	245	10.20	58.00	46.20	244	10.10
T5	FYM 20 t/ha + No Fertilizer	68.10	46.00	290	11.56	70.20	45.90	288	11.40
T6	FYM 20 t/ha + 100% N.P.K	83.40	60.50	305	12.05	86.50	60.00	301	11.99
T7	FYM 20 t/ha + 75 % N.P.K	79.50	58.00	295	11.99	79.60	58.50	292	11.85
T8	FYM 20 t/ha + 50 %\$ N.P.K	77.60	61.50	288	11.50	77.80	61.20	286	11.30
T9	FYM 10 t/ha + No Fertilizer	60.10	47.00	240	10.01	61.80	47.10	236	9.99
T10	FYM 10 t/ha + 100% N.P.K	72.60	50.00	249	9.97	72.10	50.50	245	9.95
T11	FYM 10 t/ha + 75 % N.P.K	68.00	46.00	245	10.17	68.20	46.50	244	10.15
T12	FYM 10 t/ha + 50 %\$ N.P.K	65.10	47.00	242	10.09	64.90	46.80	241	10.05
T13	Fertonic 100%	70.50	49.50	280	11.78	73.10	49.20	275	11.70
T14	Fertonic 100% + 100% N.P.K	90.10	68.00	310	12.15	98.80	68.10	309	12.10
T15	Fertonic 100% + 75 % N.P.K	86.40	61.50	302	12.04	92.10	61.20	300	12.00
T16	Fertonic 100% + 50 %\$ N.P.K	78.50	61.00	300	12.02	84.40	61.20	299	11.99
T17	Fertonic 75%	66.30	48.00	280	11.96	70.10	48.10	282	11.95
T18	Fertonic 75% + 100% N.P.K	84.40	66.00	320	12.21	84.10	66.10	315	12.25
T19	Fertonic 75% + 75 % N.P.K	81.20	60.50	298	11.88	80.70	60.60	300	11.85
T20	Fertonic 75% + 50 %\$ N.P.K	76.10	59.40	300	12.07	79.80	59.50	302	12.00
T21	Fertonic 50%	62.00	46.00	268	10.65	63.00	46.20	270	10.70
T22	Fertonic 50% +FYM 20 t/ha + 100% N.P.K	81.20	66.50	318	12.20	84.00	66.30	316	12.21
T23	Fertonic 50% +FYM 20 t/ha + 75 % N.P.K	78.60	64.20	302	12.01	82.00	64.10	301	12.00
T24	Fertonic 50% +FYM 20 t/ha+ 50 %\$ N.P.K	70.40	66.00	300	12.00	78.20	66.20	299	11.99
T25	Fertonic 50% +FYM 10 t/ha	61.00	45.00	255	10.25	60.40	45.20	256	10.30
T26	Fertonic 50% +FYM 10 t/ha+100% N.P.K	81.50	58.00	275	11.60	84.20	58.10	274	11.55
T27	Fertonic 50% +FYM 10 t/ha+75% N.P.K	76.00	51.50	262	10.82	78.80	51.60	261	10.80
T28	Fertonic 50% +FYM 10 t/ha+50% N.P.K	70.00	47.00	260	10.21	72.50	47.30	258	10.18

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**TABLE B : Sugercane Response to soil application of FERTONIC BOSE JAIVIK KHAD
farmers field trial -name of farmers : Shri P.T Patil, Kasbe digraj Tal. Miraj Dist.sangli
N:P:K-340:170:170 kg/ha, Fertonic-625 Kg/ha, Spacing 3'x1 1/2**

	Treatment	YEAR 1995-96				YEAR 1996-97			
		yield t/ha	Plant Popul- action '000/h a	Av. Tilers / 5o plants	CCS %	yield t/ha	Plant Popul- Action '000/h a	Av. Tilers / 5o plants	CCS %
T1	No organic, No Fertilizer (control)	51.2	35.23	224	9.95	50.55	34.29	222	9.95
T2	100% N.P.K	74	55.56	258	10.11	74.1	53.2	260	9.98
T3	75% N.P.K	66.5	48.93	245	9.99	67.1	48.6	246	9.96
T4	50% N.P.k	58.4	46.52	244	10.18	58.2	46.25	240	10.12
T5	FYM 20 t/ha + No Fertilizer	67.2	46.32	288	11.57	70.25	45.91	287	11.44
T6	FYM 20 t/ha + 100% N.P.K	82.2	60.98	301	12.09	86.89	60.1	300	11.89
T7	FYM 20 t/ha + 75 % N.P.K	78.5	58.32	294	11.98	79.67	58.6	291	11.86
T8	FYM 20 t/ha + 50 % N.P.K	76.7	61.66	287	11.6	77.79	61.2	287	11.25
T9	FYM 10 t/ha + No Fertilizer	60.2	47.38	242	10.05	61.5	47.2	235	9.98
T10	FYM 10 t/ha + 100% N.P.K	73	50.25	246	10.01	72.2	50.1	244	9.99
T11	FYM 10 t/ha + 75 % N.P.K	68.4	46.59	244	10.19	68.1	46.8	240	10.11
T12	FYM 10 t/ha + 50 % N.P.K	65.4	47.32	240	10.1	64.97	46.5	241	10.05
T13	Fertonic 100%	69.5	49.52	291	11.8	73.75	49.1	274	11.65
T14	Fertonic 100% + 100% N.P.K	92.3	60.23	312	12.19	98.89	68.2	308	12
T15	Fertonic 100% + 75 % N.P.K	88.3	61.03	305	12.05	92.15	61.15	301	12.01
T16	Fertonic 100% + 50 % N.P.K	79	48.32	301	12.03	84.5	61.18	298	12.05
T17	Fertonic 75%	65	66.35	285	11.99	70.2	48.16	280	11.93
T18	Fertonic 75% + 100% N.P.K	85	60.56	325	12.18	84.9	65.94	314	12.26
T19	Fertonic 75% + 75 % N.P.K	81.3	59.38	299	11.86	80.6	60.65	301	11.87
T20	Fertonic 75% + 50 % N.P.K	76	46.23	303	12.05	79.81	59.7	303	12.05
T21	Fertonic 50%	62.3	66.58	266	10.68	64	46.3	268	10.71

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T2 2	Fertonic 50% +FYM 20 t/ha + 100% N.P.K	80.5	64.23	322	12.21	84.6	66.35	318	12.22
T2 3	Fertonic 50% +FYM 20 t/ha + 75 % N.P.K	77.6	66.2	301	12	82.1	65.1	302	12.05
T2 4	Fertonic 50% +FYM 20 t/ha+ 50 % N.P.K	70.4	46.38	306	11.99	78.1	66.18	300	11.96
T2 5	Fertonic 50% +FYM 10 t/ha	61.5	58.56	261	10.3	60.3	45.29	258	10.35
T2 6	Fertonic 50% +FYM 10 t/ha+100% N.P.K	80.6	51.42	276	11.55	84.1	58.2	271	11.66
T2 7	Fertonic 50% +FYM 10 t/ha+75% N.P.K	76	47.36	264	10.85	78.75	51.75	265	10.87
T2 8	Fertonic 50% +FYM 10 t/ha+50% N.P.K	70	49.7	261	10.2	72.1	47.5	256	10.15

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farmers field trial -name of farmers : Shri P.T Patil, Kasbe digraj Tal. Miraj Dist.sangli

N:P:K-340:170:170 kg/ha, Fertonic-625 Kg/ha, Spacing 3'*1 1/2

Treatment	YEAR 1995-96				YEAR 1995-96			
	yield t/ha	Plant Population '000/ha	Av.Tillers /50 plants	CCS %	yield t/ha	Plant Population '000/ha	Av.Tillers /50 plants	CCS %
T1 No organic, No Fertilizer (control)	50.2	35.29	222	9.85	49.8	35	219	9.9
T2 100% N.P.K	74.5	55.96	259	10.15	75.1	54.8	261	9.98
T3 75% N.P.K	67.51	48.1	246	9.97	67.2	49.2	244	9.99
T4 50% N.P.k	60.01	47.1	244	10.25	60.25	47.2	246	10.12
T5 FYM 20 t/ha + No Fertilizer	68.5	46.9	288	11.55	69.1	47.39	289	11.65
T6 FYM 20 t/ha + 100% N.P.K	83.1	60.1	301	12	84.1	61.4	302	11.98
T7 FYM 20 t/ha + 75 % N.P.K	79.6	58.5	296	11.95	80.2	59.6	295	11.91
T8 FYM 20 t/ha + 50 %\$ N.P.K	77.64	61.65	287	11.55	77.99	61.9	290	11.59
T9 FYM 10 t/ha + No Fertilizer	60.25	47.46	241	10.1	61.25	47.85	245	10.75
T10 FYM 10 t/ha + 100% N.P.K	72.9	50.05	250	9.98	74.2	50.5	249	9.99
T11 FYM 10 t/ha + 75 % N.P.K	68.8	46.14	246	10.15	67.59	46.6	250	10.2
T12 FYM 10 t/ha + 50 %\$ N.P.K	65.85	47.1	241	10.1	65.89	47.5	242	10.16
T13 Fertonic 100%	69.8	49.15	281	11.8	69.88	49.6	280	11.88
T14 Fertonic 100% + 100% N.P.K	92.63	68.4	311	12.1	92.5	68.2	310	12
T15 Fertonic 100% + 75 % N.P.K	88.75	61.2	301	10.01	88.7	61.1	300	12.05
T16 Fertonic 100% + 50 %\$ N.P.K	79.5	61	300	12.03	79.8	61.2	301	12.08
T17 Fertonic 75%	65.8	59.59	282	11.97	66.8	59.9	283	11.98
T18 Fertonic 75% + 100% N.P.K	84.9	69.65	321	12.2	85.9	70	320	12.2

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8					2	2			
T1 9	Fertonic 75% + 75 % N.P.K	82.1	59.1	295	11.8 9	82.1 9	69.15	296	11.9 2
T2 0	Fertonic 75% + 50 % N.P.K	76.5	60.64	302	12.0 5	77.1	61.7	303	10.7 5
T2 1	Fertonic 50%	63.1 5	46.14	269	10.6 6	64.2	47.18	270	12.2 5
T2 2	Fertonic 50% +FYM 20 t/ha + 100% N.P.K	81.2 5	67.1	319	12.2 5	82.2 5	67.2	315	12.2 3
T2 3	Fertonic 50% +FYM 20 t/ha + 75 % N.P.K	78.6 8	64.25	301	12.0 2	79.6	65.2	304	12.0 4
T2 4	Fertonic 50% +FYM 20 t/ha+ 50 % N.P.K	71.4	66.18	302	12.0 1	72.4	65.9	302	12.0 5
T2 5	Fertonic 50% +FYM 10 t/ha	61.5	45.15	249	10.2 1	61.9	47.1	248	10.2 5
T2 6	Fertonic 50% +FYM 10 t/ha+100% N.P.K	82.1	58.6	274	11.7	84	58.9	275	11.7 5
T2 7	Fertonic 50% +FYM 10 t/ha+75% N.P.K	76.3	51.2	261	10.8 8	77	52.21	264	10.8
T2 8	Fertonic 50% +FYM 10 t/ha+50% N.P.K	70.1 5	46	259	10.2 2	71.5	47	261	10.1 8