

Annexure i

Zero Budget Natural Farming

ZBNF has four pillars *viz.*,

1. Bujamirth
2. Jeevamirth / Gnanajeevamrith
3. Mulching (Achadana)
4. Wapasa (Air and moisture maintenance)

All the ZBNF inputs were scientifically evaluated in comparison with proven organic package of practices under All India Network Project on Organic Farming and conventional methods of crop cultivation under TNAU core project funding and the results will be available at the end of field experimentations (Sep 2020). So far the *in situ*-composting studies prior to ZBNF experimentations were carried out and the results are as follows.

The initial characterization ZNBF inputs were carried and the results are given below

Table 1 Characteristics of organic ameliorates

ZBNF inputs	pH	EC (dSm- 1	Total N(%)	Total P(%)	Total K(%)	Organic carbon(%)
Jeevamiruth	5.3	3.5	1.8	0.42	1.1	15.7

Ganajeevamiruth	5.2	4	2	0.46	0.1	16.9
Waste Decomposer	7.4	5.6	1.5	0.28	0.2	15.3

Table 2 Micronutrient content of organic ameliorates

ZBNF inputs	Fe (ppm)	Zn (ppm)	Cu (ppm)	Mn (ppm)
Jeevamiruth	2.0	0.8	BDL	1.1
Ganajeevamiruth	0.07	3.1	BDL	0.4
Waste Decomposer	36.7	0.1	BDL	0.3

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Fig. 1 Shredding of waste materials



Fig. 2 Heap formation



Fig. 3 Turning of waste material and watering

Experimental Results

Table 3. Initial characterization of bio-inputs

Treatments	Organic carbon (%)	Total N (%)	Total P (%)	Total K (%)
Crop residues alone (Initial)	28.0	1.25	0.65	0.72
Cow dung	22.8	1.9	0.89	0.90
Waste decomposer	15.3	1.5	0.28	0.20

Table. 4 Characterization of composting materials in different treatments @ 30th day

Treatments	Organic carbon (%)	Total N (%)	Total P (%)	Total K (%)
T ₁ (Cow dung alone)	28.1	1.25	0.40	0.38
T ₂ (Cow urine alone)	23.7	1.20	0.39	0.37
T ₃ (2 % EEM)	22.0	0.90	0.45	0.45
T ₄ (2% Biomineralizer)	21.2	1.12	0.44	0.42
T ₅ (2% Waste decomposer)	20.5	1.20	0.48	0.48
Initial crop residue alone	30.9	0.68	0.28	0.29

Table. 5 Characterization of composting materials in different treatments @ 60th day

Treatments	Organic carbon (%)	Total N (%)	Total P (%)	Total K (%)
T ₁ (Cow dung alone)	21.9	1.32	0.43	0.52
T ₂ (Cow urine alone)	22.4	1.28	0.41	0.55
T ₃ (2 % EEM)	18.5	1.38	0.39	0.65
T ₄ (2% Biomineralizer)	18.9	1.48	0.49	0.68
T ₅ (2% Waste decomposer)	16.2	1.50	0.50	0.71