Organic Elephant Foot Yam Production: A Viable Alternative Farming Strategy

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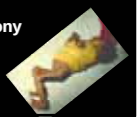
ORGANIC FARMING

- An alternate viable strategy targeting on sustainable production as well as soil, environmental and human health hand in hand
- An ecological production system that focuses on soil health by largely excluding the use of synthetic chemicals and with maximum use of on farm generated resources

- It promotes and enhances biodiversity, biological cycles and soil biological activity
- Minimal use of off farm inputs and management practices that restore and maintain ecological harmony



Scope of Organic Farming in Tropical Tubers

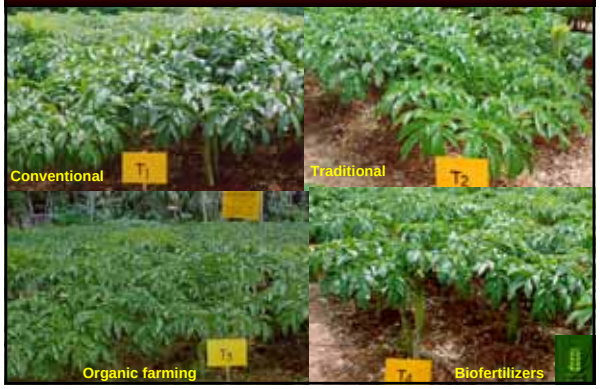
- Most of the tuber crops are grown by small and marginal farmers and use of chemical fertilizers and insecticides are limited
- Tropical tuber crops are well adapted to low input agriculture
- Tuber crops (especially aroids) respond well to organic manures
- Great demand for organically produced vegetables, particularly aroids and yams, among affluent Asians and Africans living in Europe, USA and Middle East
- Fewer pests and disease problems as compared to cereals and vegetables

Objective

- Comparison of growth, yield and quality attributes of elephant foot yam grown under organic, traditional and conventional management

METHODOLOGY

Design : RBD; Treatments : 4; Replications : 5; Test variety : Local



In situ green manuring with cowpea

Inter sowing of cowpea between EFY pits

Soil fertility status prior to experimentation

Stage of soil sampling	Nutrient status of the soil			
	Organic C (%)	Available N (kg ha^{-1})	Available P (kg ha^{-1})	Available K (kg ha^{-1})
Prior to green manuring (2003)	1.026	329.38	79.64	253.49
After green manuring (pre experiment nutrient status - 2004)	1.319	255.61	142.06	527.80

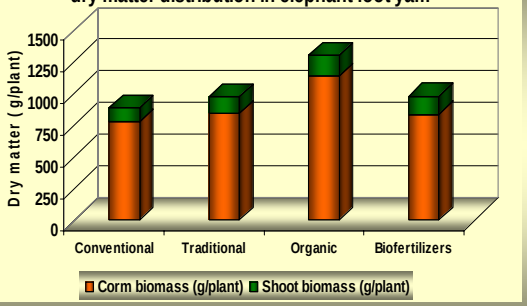
Impact of production systems on growth characters of elephant foot yam

Production system	Plant height (cm)		Leaf spread (cm)		Pseudo stem girth (cm)		Collar rot incidence (%)
	04-05	05-06	04-05	05-06	04-05	05-06	
Conventional	71.47	76.33	109.60	119.53	11.98	12.80	20.73 (27.08)*
Traditional	73.73	73.80	108.40	119.4	11.83	12.53	11.88 (20.16)
Organic	78.20	82.00	125.00	134.47	12.86	12.67	11.33 (19.68)
Using biofertilizers	74.33	73.40	105.80	117.07	11.67	12.66	15.27 (23.00)
CD (0.05)	NS	NS	13.15	12.61	NS	NS	NS

*Figures in parentheses are transformed means in angles

Comparison of collar rot infection in conventional and organic practice

Effect of production systems on dry matter distribution in elephant foot yam



Comparative yield advantage of organic farming over conventional and other production systems

Production system	Corm yield (t ha^{-1})		Corm weight per plant (kg)	
	2004-05	2005-06	2004-05	2005-06
Conventional	58.560	47.494	4.880	3.958
Traditional	50.126	54.540	4.177	4.545
Organic	65.867	70.625	5.489	5.885
Using biofertilizers	54.362	45.509	4.530	3.792
CD (0.05)	10.748	10.754	0.895	0.896

Effect of production systems on quality attributes of corms

Production systems	Dry matter (%)		Starch (%) (FW basis)		Oxalate (DW basis) (%)	
	04-05	05-06	04-05	05-06	04-05	05-06
Conventional	20.46	16.14	16.35	10.46	0.228	0.180
Traditional	19.94	20.02	17.44	15.08	0.182	0.196
Organic	21.08	21.62	18.12	14.04	0.178	0.166
Biofertilizers	19.90	21.20	16.40	13.10	0.188	0.174
CD (0.05)	NS	NS	NS	2.928	NS	NS

Effect of production systems on quality of EFY

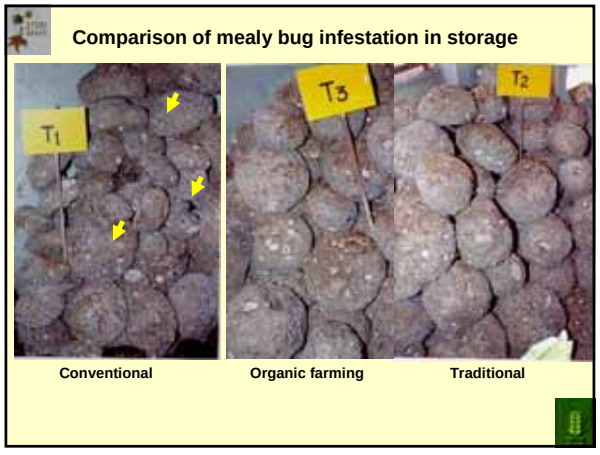
Production systems	Total sugars (%)	Reducing sugars (%)	Total phenols (mg/100g)
Conventional	1.66	1.28	53.82
Traditional	1.78	1.40	50.70
Organic	2.02	1.24	35.78
Biofertilizers	2.12	1.72	44.30
CD (0.05)	NS	NS	NS

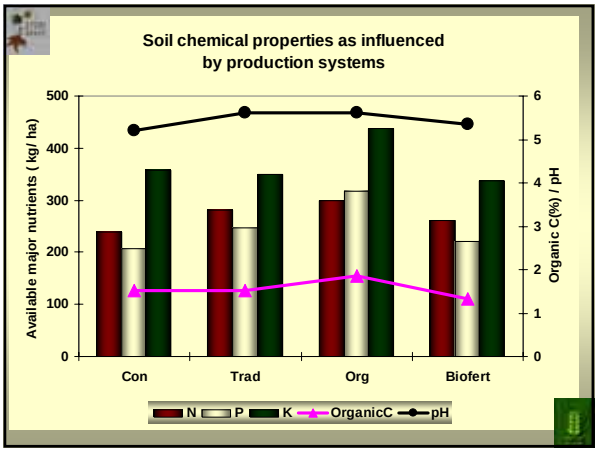
Conventional

Traditional


Organic
T5


Biofertilizers
T4


Comparison of mealy bug infestation in storage
T1
T3
T2
Conventional
Organic farming
Traditional


Soil chemical properties as influenced by production systems
Available major nutrients (kg/ ha)
Organic C(%) / pH
500
400
300
200
100
0
6
5
4
3
2
1
0
Con
Trad
Org
Biofert
N
P
K
OrganicC
pH


THANK YOU