Influence of Natural Farming practices in different crops at west central table land zone of Odisha

ABSTRACT

A field experiment was conducted in the farmers field to study the effect of natural farming practice on different crops under the west central table land zone of Odisha. Under this experiment the Farmers practice (FP) was taken as application of soil test-based fertilizer where as recommended practice was taken as natural farming practice (NFP). From the above experiment it is concluded that the application of NFP significantly increase the crop yield in Brinjal, Toria, Ragi but non-significant in Cowpea, Field pea and pumpkin over FP where as in average net return significantly increases over all the crops except Field pea. The highest yield was shown in Pumpkin (158 q/ha) followed by other crops. The cost of cultivation was more in cowpea (Rs. 62,740) followed by pumpkin (Rs. 61,350), Brinjal (Rs. 55,396), Field pea (Rs. 43,044), Toria (Rs. 31,734) and Ragi (Rs. 28754). Irrespective of the crops the gross income of the Pumpkin was more (Rs. 88750/-) followed by brinjal (Rs. 69404), Cowpea (Rs. 34372), Toria (Rs. 19,130), Ragi (Rs. 10906) and Field pea (Rs. 5188).

Keywords:*Natural Farming, Jeevamrut, Beejamrut, Agniastra&Neemastra etc*.

INTRODUCTION

Natural Farming is a traditional farming method which does not use any chemicals. It is called agro-ecology based diversified farming system which integrates crops, trees, animals and functioning biodiversity. In India, Natural farming is promoted as BharatiyaPrakritik Krishi Paddhati Program (BPKP) under the Ministry of Agriculture. PKVY was drawn on centrally sponsored scheme. BPKP promotes indigenous knowledge systems to cut down on external purchased inputs. It is primarily off the appetite biomass recycling with concentrated forests on eco-mulching of entire farm cow dung excreta soup herbs and other main cultivation soil aeration processes and without the use of any agrochemicals(Reddy, 2010). Geographic evidence has demonstrated that the state of Andhra Pradesh, Karnataka, Himachal Pradesh, Uttar Pradesh, Gujarat and Kerala have embraced the BPKP program(Kumar et al., 2023a). Natural farming

increases production, conserves water, enhances soil and farmland ecosystem(Kumar et al., 2019). It is regarded as cost effective farming techniques which have a potential of increasing employment avenues and rural development. It has been estimated that about two point five million farmers in India have already adopted some techniques of regenerative agriculture. In the next five years this figure is expected to cover twenty lakh hectares(Duddigan et al., 2023). In any form of natural farming of which 12 lakh ha are under BPKP.Natural farming also known as "the Fukuoka Method" or even "the natural way of farming" or "do-nothing farming" to others, is in a layman's understanding an environmentally friendly agricultural practice which was developed by Masanobu Fukuoka (1913-2008). Fukuoka, a Japanese farmer and novelist first coined the term in his book entitled 'The One Straw Revolution' published in 1975. Fukuoka saw the activity of agriculture as both using the earth for the production of food and an art and religion whose end is the story of mankind, Therefore There is no single correct way of doing this and more so stating that the satisfying of human's needs through farming cannot be done without farming and farm s (Floyd and Zubevich, 2010; Paul, 1990; Laishram et al., 2022). Farmworkers should carefully study their surroundings to understand culture (Colin, 1996). No external nutrient supply is required in natural farming since it isself-supporting mimics the elements in the ecosystem (Morse and Stocking, 1995). It was said but in any case allowed protecting the environment clean, biodiversity, avoiding soil degradation and hydrological pollution laboratory work could expand the scope of scientific activities in these new fields and accepted ideas (Hilmi, 2018; Reddy, 2010).

METHODOLOGY

The field experiment was conducted in the farmers field to study the "Influence of natural farming practices in different crops at west central table land zone of Odisha". The site of experiment were Baragada,Bara,Cheptibahal,Sulsulia,Bijepur and Patrapallivillage of Bargarh district. The test crops taken as Brinjal (Var. Charpalia), Toria (Var. Kujisorisa), Cowpea (Var. Kasikanchan), Field pea (var. Pantpea-273), Ragi (var. Bhairabi) and Pumpkin (Var. ArkaSuryomukhi) etc.Under this experiment the Farmers practice (FP) was taken as application of soil test-based fertilizer where as recommended practice was taken as natural farming practice (NFP). The details of FP &NFP was given below.

Table-1 :Fertilizer doses under farmers practice (FP)

Sl no	Name of the crop	Fertilizer dose (N : P : K) kg/ha
1	Brinjal	150 : 80 : 125
2	Toria	75 : 30 : 38
3	Cowpea	31 : 50 : 31
4	Field pea	38 : 50 : 63
5	Ragi	75 : 30 : 38
6	Pumpkin	94 : 75 : 94

Table-2 : Natural farming practices (NFP)

Sl no	Natural Farming Practice	Doses of Application
1	Beejamrut	Seed treatment @10 ml/kg seed before sowing
2	Ghanajeevamrut	Soil application @ 2t/ha during sowing/planting
3	Jeevamrut	Foliar application @ 10 ml/lit of water from 25 DAS to 75 DAS(Peak vegetative stage) in 10 days interval (total 6 sprays)
4	Neemastra	Foliar application @ 20 ml/lit water at 15 days interval
5	Agniastra	Foliar application @ 20 ml/lit water at 15 days interval

The FP and NFP application was same for all six crops. The experiment under each crop was replicated five farmers field.During the experiment *Neemastra*was applied for controlling the sucking pest like aphids, whitefly and *Agniastra* was applied for controlling the insect pests like shoot, pod & stem borer. There is no chemical fertilizer application in the NFP. At the harvest time yield (q/ha) was recorded for all the crops with net return (Rs./ha).

RESULTS& DISCUSSION

The effect of NFP on yield of different crops has been presented in the Table-3. Irrespective of the different crops, underNFP higher yield was recorded in Toria and ragi crop whereas lesser yield was recorded in Brinjal, cowpea, Field pea, Pumpkin crops in comparison to the FP. The application of NFP increases 47 per cent yield in Toria, 6.3 per cent in Ragi and decreases 29.3 per cent yield in Brinjal, 12.8 percent in cowpea, 22.4 per cent in Field pea, 13.2 per cent in Pumpkin over FP respectively. Statistically the crop i.e Brinjal, Toria, Ragi etc. significantly and Cowpea, Fieldpea, Pumpkin etc. non-significantly increases the yield.

Table-3: Effect of Natural farming practices on yield of different crops

Crop	Yield in non-demo. Plots	Yield in demo. Plots
Brinjal (Charpalia)	176.6	124.8
P(0.05)	0.0003	
Toria (Kujisorisa)	2.4	4.6
P(0.05)	0.00007	
Cowpea (Kasikanchan)	111.4	97.1
P(0.05)	1.0	
Field pea (Pantpea-273)	15.6	12.1
P(0.05)	1.0	
Ragi (Bhairabi)	7.4	7.9
P(0.05)	0.001	
Pumpkin(ArkaSuryomukhi)	182	158
P(0.05)	1.0	

The effect of NFP on economics of different crops has been presented in the Table-4. The application of NFP gives the average net return Rs. 69404/ha in Brinjal which is 28.4 per cent increase over FP, Rs. 19,130/ha in Toria which is 67.4 per cent increase over FP, Rs. 34,372/ha in Cowpea which is 43.4 per cent over FP, Rs. 5188/ha in Field pea which is 51.9 per cent less increase over FP, Rs. 10,906/ha in Ragi crop which is 55.9 per cent increase over FP and Rs. 88,750/ha in Pumpkin crop which is 48.2 per cent over FP respectively. Statistically the crop i.e Brinjal, Toria, Cowpea, Ragi, Pumpkin significantly increases the average net return and only Filed pea crop non-significantly increases the average net return.

Table-4 :Effect of Natural farming practices on Economics of different crops

Crop	Cost of Cultivation in demo. crops	Cost of cultivation in non-demo plots	Gross income in demo. Plot	Gross income in non- demo. Plot	Net income Demo plot	Net income Non Demo plot

Brinjal (Charpalia)	55396	73830	124800	123606	69404	49650
P(0.05)					0.001	
Toria (Kujisorisa)	31734	19738	50864	25920	19130	6236
P(0.05)					0.001	
Cowpea (Kasikanchan)	62740	80874	97112	100286	34372	19412
P(0.05)					0.00009	
Field pea (Pantpea-273)	43044	51622	48232	62400	5188	10788
P(0.05)					1.0	
Ragi (Bhairabi)	28754	32040	39660	36840	10906	4800
P(0.05)					0.0001	
Pumpkin(ArkaSuryomukhi)	61350	81548	150100	127442	88750	45894
P(0.05)					0.00001	

CONCLUSION

From the above experiment it is concluded that the application of NFP significantly increase the crop yield in Brinjal, Toria, Ragi but non-significant in Cowpea, Field pea and Pumpkin over FP where as in average net return significantly increases over all the crops except Field pea. The highest yield was shown in Pumpkin (158 q/ha) followed by other crops. The cost of cultivation was more in cowpea (Rs. 62,740) followed by pumpkin (Rs. 61,350), Brinjal (Rs. 55,396), Field pea (Rs. 43,044), Toria (Rs. 31,734) and Ragi (Rs. 28754). Irrespective of the crops the gross income of the Pumpkin was more (Rs. 88750/-) followed by brinjal (Rs. 69404), Cowpea (Rs. 34372), Toria (Rs. 19,130), Ragi (Rs. 10906) and Field pea (Rs. 5188).

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1.

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