



## **Status of Organic farming in North Konkan of Maharashtra**

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### **ABSTRACT**

*The survey of farms were under the process of certification with PGS certification agency conducted during 2017-18 (in month of January 2018) in North Konkan region includes Raigad, Thane and Palghar district of Maharashtra to ascertain reality and stability of organic farming in term of its profitability. The study reveals that, the cost of production with respect to all cereals, pulses, vegetables and fruit crops were reduced against cultivation with recommended package of practices except cow pea, mango and banana. The net returns over cost C with respect to all organically produced pulses, vegetable and fruit crops were reduced against cultivation with recommended package of practices except rice brinjal mango and banana. The benefit cost ratios were found to be higher in organically produce rice, wal, cucumber, brinjal, mango, coconut, cashew, sapota and banana as compared to grown under recommended practices. Most of the farmers using direct sell marketing method except sapota growers. However less productivity is the major problem in organic farming*

**Key words:** Organic farming, profitability and productivity.

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### **INTRODUCTION**

Organic agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved. Organic farming is the method of crop and livestock production that involves much more than choosing not to use pesticides, fertilizers, genetically modified organisms, antibiotics and growth hormones. Organic agriculture is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects.

There has been lot debate in recent year about the feasibility of organic farming under Indian conditions. The most questions related to organic farming includes production potential, economic feasibility and possible environmental benefit like improved soil quality and health. However there were some farmers who have been cultivating their land under organic farming conditions for the last 15 to 20 years and some of them have been certified by APEDA accredited organic certifying agencies. It have been envisaged that scientific study of these farms may yield clue regarding the production potential, economic feasibility and likely benefit of organic farming in terms of improved soil fertility and quality. Hence study has been undertaken to know the status of organic farming in the north konkan region.

### **MATERIAL AND METHODS**

The survey was conducted during 2017-18 (in month of January 2018) in North Konkan region includes Raigad, Thane and Palghar district. The list of organic farmers were obtained from Agriculture Department and other indirect sources. The 10 farmers from the list have been selected. These farms were under the process of certification with PGS certification agency. The collected data were analyzed by using simple cost concepts.

### **RESULTS AND DISCUSSION**

#### **Scenario of organic farming**

The major countries which are leading in the organic farming are given in the Table 1. The organic farming is gaining gradual momentum across the world. Based on the global survey on organic farming carried out in 2015-16 by the Research Institute of Organic Agriculture (FiBL), The International Federation of Organic Agriculture movement (IFOAM) and Foundation Ecology and Agriculture (SOEL), organic agriculture is now practicing in more than 179 countries with total area of 50.90 million hectares in 2.4 million numbers of organic producers. It is observed from table that Australia is a leading country constituted about 2269 million hectare of land under organic farming. India become 9<sup>th</sup> rank in organic farming having area about 118 million hectares is under organic farming (this includes certified and area under organic conversions).

It is also seen from Table 2 that the Indian organic farming industry is estimated 11.80 million tons of production in year 2016-17 out of that oil seeds, sugarcane, cereals and fibers crops contributed significantly.

#### **General information of organic farmers**

The general information of organic farmer regarding age, education, occupation etc. is given in Table 3. It is observed from table that the average age of the farmer was 58 years. This indicates that sample organic farmers were in mature age that will help for influencing enterprising attitude and managerial ability and skill. It is also seen from Table that the average educational score was found to be at graduation level. Therefore it concluded that the organic farmers have sufficient influencing managerial ability, skill and technical knowledge regarding production and marketing of organic production. The main and subsidiary occupations identified in the study area were farming and tourism.

It is observed that all sample organic farmers have organic certification under PGS certified agency and they had been received 1 to 5 days five organic farming training from ATMA and Horticulture Training center, Pune.

#### **Crops under organic farming**

Per organic farm area under various crops is given in Table 4. It is observed from table that the per farm area under organic fruit was found to be maximum for sapota constituted 16.60 hectare which was followed by mango 3.5 hectare, coconut 0.85 ha, banana 0.25 ha and cashew and pineapple 0.20 ha each. However, in case of organic vegetable in each organic farm more or less 0.20 ha areas were found to be under green chilli, tomatoes, cucumber, lady's finger, cabbage, flower, *gawar* (cluster bean), capsicum, brinjal, and leafy vegetables. Similarly under pulses and cereals only wal, cow pea and rice were undertaken by organic farmer constituted 1.2 ha area of rice per farm, and 0.80 ha of area under wal and 0.40 ha area under cow pea.

The organic farmer also growing an organic fodder to their livestock which includes *Hattigrass*, *Kadwai*, *Lasun grass*, *Dasharam grass* and *Napier grass*. It is found that per organic farm 0.20 ha area was under *hattigarss*, 0.10 ha land is contributed for *kadawai* and *Lasun grass* each, whereas 0.05 ha of area was under *Dasharam grass* and *Napier grass* each.

#### **Input utilization under organic farming**

The organic farmers were use different kinds of organic fertilizers like FYM, *jivamruit*, Poultry litter, vermi-compost, vermiwash, fish meal, mulching with paddy straw, Neem pend, organic manure 5:10:5, *Dhencha*, *Glyricidia*, and green manure of cow pea (Table 5). However for controlling the pest and diseases they use *dashparni ark*, turmeric, lime, *hing (asafoetda)*, cow urine and fogging with cashew shells. The quantity of these manure and organic pesticide they use as per availability in the area. The plants which were used for preparation of *dahaparni ark* is given in the table 6. The same quantity of each plant leaves viz. *neem*, *Rui*, *Kanher*, *Nirgudi*, *karanj*, *Jatropa*, *Glyricidia*, *Papaya*, *Dhotra* and *Zendu* can be used for preparation of *dashaparni ark*. The farmers are not using all ten plants at a time but three plant leaves with one common *Neem* plant leaves for preparation of *dashaparni*. According to pest and disease attack they choose different combination of three plants leaves and that one *Neem* plant leaves are common in each combination.

#### **Plant protection measures for mango**

The plant protection measures for mango under organic farming followed by farmers in north konkan region are given in the Table 7. It observed from the table that the first spray of neem extract was given immediately after rain which was followed by *dashaparni ark* after third week of first spray. Then after third week of second spray again *dashaparni ark* with different combinations of plant leaves spray were given in that neem leaves become common factor. The next plant protection regarding mango hopper control, they used fogging with cashew nut shells in mango garden as and when required.

#### **Methods of organic farming followed by Farmers**

Organic farming uses a variety of methods to improve soil fertility, including crop rotation, cover cropping, reduced tillage, and application of compost. By reducing tillage, soil is not inverted and exposed to air; less carbon is lost to the atmosphere resulting in more soil organic carbon. This has an added

benefit of carbon sequestration, which can reduce green -house gases and help reverse climate change. The various methods of organic farming followed by farmers in the region are presented in the Table 8. They are explaining as follows.

i) **Normal cultivation practices with application of organic inputs**

It involves the use of organic manures and bio pesticides with complete avoidance of inorganic chemicals and pesticides. Organic farmers also use animal manure, certain processed fertilizers such as seed meal and various mineral powders such as rock phosphate and green sand, a naturally occurring form of potash that provides potassium. Together these methods help to control erosion. In some cases pH may need to be amended. Natural pH amendments include lime and sulfur, but in the United State some compounds such as iron sulfate, aluminum sulfate, magnesium sulfate, and soluble boron products are allowed in organic farming.

ii) **Green manure /recycling method**

It refers to the dying plants that are uprooted and turned into the soil to make them act as a nutrient for the soil to increase its quality. Organic farming relies heavily on the natural breakdown of organic matter, using techniques like green manure and composting, to replace nutrients taken from the soil by previous crops. This biological process, driven by microorganisms such as mycorrhiza, allows the natural production of nutrients in the soil throughout the growing season, and has been referred to as feeding the soil to feed the plant.

iii) **Crop rotation**

It is the technique to grow various kinds of crops in the same area, according to the different seasons, in a sequential manner. Crop rotation and green manure ("cover crops") help to provide nitrogen through legumes (more precisely, the Fabaceae family), which fix nitrogen from the atmosphere through symbiosis with rhizobial bacteria. Intercropping, which is sometimes used for insect and disease control, can also increase soil nutrients, but the competition between the legume and the crop can be problematic and wider spacing between crop rows is required. Crop residues can be ploughed back into the soil, and different plants leave different amounts of nitrogen, potentially aiding synchronization.

iv) **Integrated farming with animal component**

It involves integrated nutrients management and integrated pest management. It is the type of farming in which development of crops from natural resources having the complete nutritive value and manages to prevent the crop or plants from the pests. This is a farming system where in combination of cow manure, poultry litter, goat manure and cow urine mixed in proportion of 6 local cow dung and urine: 100 poultry birds litter: 20 Goats manure. That mixed slurry used as manure for various crops.

v) **Interdependent farming ( Natural farming)**

Popularly known as "do nothing" farming, natural is an environmentally sustainable way of growing food founded not on a technique, but on a principal of building communion and kinship between farmer and nature. As a result, individual methods and techniques between natural farmers vary widely.

vi) **There is no need to till the field**

Based on the biological understanding that there are millions of living making their homes in each small clump of soil, and that all of these living things contribute to the health of the soil in some way. When we till the soil, we harm these lives, deplete the soil's fertility, and we create the conditions where fertilizer and herbicides become necessary in order to grow anything.

vii) **Bugs and weeds are not enemies**

All creatures and plants must be respected. This does not mean 'never cut a weed' or 'never take actions to keep bugs off plants' but it does mean that we should work to respect their lives and their roles as parts of this living nature.

viii) **There is no need for external inputs into your farm**

Biologically speaking, nature is taking care to heal the land by itself. In nearly all situations, the land has the power to grow and regenerate itself; hence it is not essential to use fertilizers, pesticides, or any outside input in farm area.

ix) **Maintain forest up to 40 percent**

Maintain shrubs of different heights at the border of farm. The survivals of carnivorous birds on the shrubs will help biological control of pest. The canopy of plants sometimes acts as a barrier for pest to enter in the farm.

x) **Permaculture**

It is a system of agricultural and social design principles centered on simulating or directly utilizing the patterns and features observed in natural ecosystems. In a permaculture system, (which can

never be fully closed), energy is ideally used by one element effectively and passed on for the benefit of the next before it leaves the system. The ideal Permaculture 'Farm' brings production of food closer to consumers and the consumer's wastes back into the cycle. It also reduces the energy wasted in transporting the foods by producing the foods where the people are. In permaculture, the people contribute in their daily life toward the production of their food and other needs.

In north konkan the natural energy is effectively used in farming by preparation of layers of wood and other farm waste on the soil viz. First layer is prepared by using farms bigger size wood, then second layer by smaller size wood, afterword's give third layer of cactus or other thorny waste of farm on the bed. Then fourth layer by banana leaves and other soft waste, fifth layer of FYM or compost and last layer of paddy straw on the bed. Then bed is allowed to keep for up to six month and afterwards use for cultivation. There is no need to give any kind of fertilizer.

#### **xi) Open Gotha system ( Open cow shade)**

This is another method of organic farming mostly used in horticultural crops like mango and sapota where cow and bullock tied to each plant for eight days. Benefit of doing this is mixing of waste, litter and cow dung and urine developed environment for earthworms and other beneficial microbes near the root zone. However during the day period cattle are allow to feed in the orchard grass so as to cow urine and dung would be drops in the orchard.

#### **Productivity of crops in organic verses farming with recommended package of practices**

The various crops grown under organic farm and their productivity level in comparison to crop grown with recommended package of practice are given in Table 9. It is observed from table that on an average, the productivity of cereals crop in organic farming is lower than cereals grown with recommended package of practice. It is estimated that 20 per cent reduction in rice, 45.00 per cent reduction in wal and 13.33 per cent reduction in cow pea.

In case of vegetables, the productivity level of all vegetables grown under organic farming is also very much lower than vegetable grown with recommended package of practice. It is depicted from table that maximum 66.66 per cent reduction was recorded in cucumber production which was followed by 55 .20 per cent reductions in tomato, 45.00 per cent reduction in green chilli, 38.00 per cent reduction in lady's finger, 25.00 per cent reduction in bitter gourd and 22.50 per cent reduction in brinjal.

However in case of fruit crops, it is seen from the table that all fruit crops grown under organic farming showing less productivity as compare to fruit crop grown with recommended package of practices. It is observed that, maximum 74.80 per cent productivity reduced when cashew grown under organic farming, which was followed by 39.28 per cent reduction in organic production of banana, 36.84 per cent reduction in sapota, 36.34 per cent reduction in coconut and 14.29 per cent reduction in mango production as compared to grown with recommended package of practices. In case of black pepper it is found that 58.18 per cent production was reduced when it grown under organic farming condition.

#### **Cost of production and return of crops in organic verses farming with recommended package of practices**

The cost of production and net returns under organic farm in comparison to crop grown with recommended package of practices are given in Table 9.

The cost of production with respect to cereals and pulses is depicted in table that the 35.27 per cent and 42.22 per cent cost of cultivation was reduced in case of rice and wal cultivation respectively against cultivation with recommended package of practices. Whereas 2.93 per cent cost of production was found to be increase in cow pea produce under organic farming over cultivation with recommended package of practices. It was might be due to use of organic manure and organic pest control.

In case of vegetables it is found that all vegetable production under recommended package of practices has higher cost of cultivation as compared to organically produce. It is seen that, the cost of production of chilli at the rate of 30.30 per cent was reduced in organically produced over chilli produce with recommended package of practices. Which was followed by 29.87 per cent reduced cost of production in tomato, 13.44 per cent reduction in lady's finger, 10.75 per cent reduction in cucumber and 7.79 per cent reduced in brinjal over produce with recommended package of practices.

However in case of fruit crops, the mango and banana production under organic farming shows increase in cost of production over production taken under recommended package of practices by 17.57 and 13.52 per cent respectively. Whereas in fruit crop like coconut cashew and sapota, shows reduction in cost of production in the tune of 23.29 per cent, 23.06 per cent and 59.45 per cent respectively over produce with recommended package of practices. In case of black pepper grown under organic farming, the cost of production also reduced up to 47.13 per cent over produce with recommended package of practices.

The net returns over cost C is worked out with respect to organically produced and with recommended package of practices produce crops and presented in Table 10. The table shows that in case of rice produce under organic farming 133.48 per cent net returns was increase over rice grown under

recommended package of practices. This was due to price advantages of organic production and produce directly sold to the consumer. However in case of wal and cow pea there was 38.10 and 9.51 per cent reduction in net profit over grown under recommended package of practices.

The production to grown under recommended package of practice are directly related to the intensity of farming. In case of intensive farming system, shifting to organic agriculture decrease the yield.

.In case of vegetables, brinjal produce under organic farming, 6.98 per cent net returns were increase over brinjal produce under recommended package of practices. Whereas, other vegetable produce under organic farming shows net return reduced in chilli 33.69 per cent, 36.69 per cent in tomato, 8.92 per cent in cucumber and 17.60 per cent in lady's finger over grown under recommended package of practice.

The net return from fruit crops grown under organic farming revealed that mango and banana crops had increased in net return over grown under recommended package of practice by 97.05 per cent and 159.50 per cent. Whereas other fruit crops like coconut cashew and sapota shows reduction in net return over grown under recommended package of practices by 21.29 per cent, 8.66 per cent and 39.31 per cent respectively. The net returns from black pepper grown under organic farming also reduced to 23.11 per cent over grown under recommended package of practices.

The replacement of external inputs by farm- derived organic resources normally leads to a reduction in variable input costs under organic farming management. Expenditure on fertilizer and sprays is substantially lower than recommended package of practices in almost all the cases. In few cases like mango, banana and cow pea higher input cost due to the purchase of compost and other organic manures have been noticed. It is found in some cases that the organic farming combination of lower input costs and favorable price premium can offset reduced yield and make organic farms equally and often more profitable than farm under recommended package of practice. The economics of organic rice cultivation indicated that there is reduction in cost of cultivation and increased net return compared to recommended practice cultivation. The benefit cost ratio is also studied and presented in Table 11. The benefit cost ratios were found to be higher in organically produce rice, wal, cucumber, brinjal, mango, coconut, cashew, sapota and banana as compared to grown under recommended practices, accounted increase over grown under recommended practices were 31.82 percent, 1.57 per cent, 0.59 per cent, 5.48 per cent, 17.16 per cent, 0.78 per cent, 8.33 per cent, 24.75 per cent, 101.70 per cent and 13.70 per cent respectively, This could be indicating that even production of crop is lower in organic farming than the recommended practices method, farmers getting price benefit of organic produce and direct selling the produce to consumer through agro tourism and effective advertisement.

#### **Marketing of organic produce**

The organic product produce by the farmer were distributed through various marketing channels that are presented in Table 12. It found that there are three marketing channels viz. Producer to consumer, mostly all farmers using this channel for marketing of mango rice, vegetables, pulses, coconut, cashew and banana. The second channel is Producer to commission agent to wholesaler to retailer to consumer. The sapota and mango grower farmers in Dahanu area of Palghar district were following this channel. The third channel is Producer to Retail mall to consumer, this channel mostly use for sapota, coconut, banana and vegetable marketing, the advance demand is placed for organic produce.

#### **Reason for organic farming**

The production from organic farming is comparatively low, even though the farmers were doing the organic farming. So that the reason were also studied for organic farming and presented in Table 13. The basic reason of organic cultivation by the farmer (100%) was found that for the production of quality, better taste and chemical free food for consumption to home and society. Then other reason was for controlling soil and water pollution, increase soil quality and for his mental satisfaction.

#### **Constraints in organic farming**

The constraint faced by the organic farmer is documented and presented in Table 14. Almost cent per cent farmers experienced the problem of less productivity of crop, and so that it is difficult to maintain supply of organic produce to consumer. The other problems are if they sell their produce in the market they were not getting separate rate for their organic produce, they have to wet for direct consumer for getting higher price. The problem related to input supply that are difficult to get supportive organic fertilizers, the suitable varieties for organic production are not available in various crops, pest and disease resistance varieties are not available. Another most important constraint is that because of domination of inorganic farming, it is very difficult get back in the organic farming.

#### **Suggestions for organic farming:**

The suggestion for increasing the area under organic farming also documented and presented in Table 15. Almost all the farmers (100%) given the following suggestion that Minimize the chemical supply step by step with respect to pesticides and fertilizers, For organic cultivation of rice need suitable variety (90%), Advertise the adverse effect of inorganic food on our body and society (100%), Give training of organic

farming to society for understanding the importance of organic food (90%), Give training to farmers at University and other Institutional level for marketing of organic produce (90%), Give training regarding in situ production of vermicomposting (80%), Branding is require for organic farming (100%), Maintain at least 40 percent jungle in the nature because it gives biomass and maintain ecosystem and biodiversity that will create natural enemies for pests and diseases(30%), Maintain other host plants in the main production field and Crop rotation for nitrogen fixation (100%).

**Table 1 Area of major countries under organic farming during 2017**

Sr. No.	Country	Area under organic Farming in million hectares
1	Australia	2269
2	Argentina	307
3	USA	203
4	Spain	197
5	China	161
6	Italy	149
7	France	138
8	Uruguay	131
9	India	118
10	Germany	109

**Table 2. Category wise production of organic products under NPOP (2016-17)**

Sr. No.	Category	Production (000,MT)
1	Oil seeds	299.78
2	Sugarcane	281.66
3	Cereal & Millets	195.55
4	Fiber crops (Cotton)	155.13
5	Pulses	62.33
6	Tea	39.13
7	Spices & condiments	36.72
8	Medicinal & Aromatic Plants	29.52
9	Fruits	27.85
10	Vegetables	24.34
11	Dry Fruits	8.24
12	Coffe	6.21
13	Ornamental plants and Flowers	5.51
14	Others	5.03
15	Plantation crops other than tes&coffee	2.55
16	Fodder crops	0.48
17	Tuber crops (Potato)	0.11
	<b>Total</b>	<b>1180.10</b>

**Table 3. General information of Organic farmer.**

Sr. No.	Particular		
1	Average age	58 Years	
2	Average education	Graduate level	
3	Occupation	Farming and (Tuorism)	
4	Training of organic farming		
	1		1 day
	2		2 day
	3		6 day
4		5 day	Horti training center Pune
5.	Organic certification	Certification under PGS	Participatory Guarantee system for India (Decentralized Organic farming Certification System)

**Table 4. Per farm average area under different crop in hector**

Sr. No.	Crop							
	Vegetable	Area (ha)	Fruit crops	Area (ha)	Fodder crops	Area (ha)	Cereals and pulses	Area (ha)
1	Chilli	0.20	Mango	3.5	Hatti grass	0.20	Rice	1.2
2	Tomato	0.20	Coconut	0.85	Kadwai	0.10	Wal	0.8
3	Cucumber	0.20	Cashew	0.20	Lasun grass	0.10	Cow pea	0.4
4	Bhendi	0.20	Sapota	16.60	Dasharam grass	0.05		
5	Cabbage	0.15	Pineapple	0.20	Napier grass	0.05		
6	Flower	0.15	Banana	0.25				
7	Gawar (cluster bean)	0.20						
8	Capsicum	0.15						
9	Brinjal	0.20						
10	Leafy vegetable	0.15						

**Table 5. Organic inputs used for cultivation**

Sr.No.	Inputs	Sr.No.	Inputs	Sr.No.	Inputs
1	FYM	7	Mulching (asafoetda) with paddy straw	13	Dashparni
2	Jivamrit	8	Neem pend	14	Turmeric
3	Poultry litter	9	Organic manure of Godrej –Vikas 5:10:5	15	Lime
4	Vermicultur	10	Dhencha	16	Hing (asafoetida)
5	Vermowosh	11	Glyricidia	17	Cow urine
6	Fish meal	12	Cow pea green manure		

**Table 6. Plants are used for preparation of dashparni Ark.**

Sr. No.	Plants leaves	Botanical name
1	Neem	<i>Azadirachta indica</i>
2	Rui	<i>Calotropis gigantean</i>
3	Kanher	<i>Nerium oleander</i>
4	Nirgudi	<i>Vitexnegundo</i>
5	Karanj	<i>Millettia pinnata</i>
6	Jatropha	<i>Jatropha curcas</i>
7	Glyricidia	<i>Glyricidia sepium</i>
8	Papaya	<i>Carica papaya</i>
9	Dhotra	<i>Datura stramonium</i>
10	Zendu	<i>Tagetes erecta</i>

**Table 7. Organic Plant protection measure for mango**

Sr.No.	Particular	Spray adopted
1	Neem extract	I <sup>st</sup> spray after Rain
2	Dhashparni Ark	after three week of first spray
3	Dhashparni Ark with different combination	after three week of second spray
4	Fogging ( as per requirement)	In case of hoppers attack Fogging with cashew shells in the mango garden

**Table 8. Various methods used in organic farming**

Sr. No.	Method
1	Normal cultivation practices with application of organic inputs
2	Green manure / recycling method
3	Crop rotation
4	Integrated farming with animal component
5	Interdependent farming ( Natural farming)
6	Permaculture
7	Open Gota system

**Table 9. Productivity of crops in organic versus Farming with recommended package of practice farming**

Sr.No.	Crop	Organic farming	Farming with recommended package of practice	Per cent increase (+) decrease (-) in organic farming
<b>A</b>	<b>Cereals and pulses</b>			
1	Rice	32 q	40 q	-20.00
2	Wal	5.5 q	10 q	-45.00
3	Cow pea	6.5 q	7.5 q	-13.33
<b>B</b>	<b>Vegetable</b>			
1	Chilli	55 q	100 q	-45.00
2	Tomato	112 q	250 q	-55.20
3	Cucumber	120 q	200 q	-66.66
4	Lady's finger	62 q	100 q	-38.00
5	Brinjal	155 q	200 q	-22.50
6	Bitter gourd	90 q	120 q	-25.00
<b>C</b>	<b>Fruit Crops</b>			
1	Mango	60 q	70 q	-14.29
2	Coconut	11140 nuts	17500 nuts	-36.34
3	Cashew	5.04 q	20 q	-74.80
4	Sapota	120 q	190 q	-36.84
5	Banana	42.50 tone	70 tone	-39.28
<b>D</b>	<b>Spices</b>			
1	Black pepper	0.92 q	2.2 q	-58.18

**Table 10. Economics of crop production in organic versus Farming with recommended package of practice**

Crop	Cost of cultivation (Rs/ ha)			Net return's (Rs./ ha)			
	Organic farming	Farming with recommended package of practice	Percent increase (+) decrease (-) in organic farming	Organic farming	Farming with recommended package of practice	Percent increase (+) decrease (-) in organic farming	
<b>A</b>	<b>Cereals and pulses</b>						
1	Rice	67506	104285	-35.27	11043	-32985	+133.48
2	Wal	34008	58858	-42.22	9992	16142	-38.10
3	Cow pea	37179	36122	+2.93	14820	16378	-9.51
<b>B</b>	<b>Vegetable</b>						
1	Chilli	182686	261477	-30.13	92314	138523	-33.36
2	Tomato	199947	285096	-29.87	136053	214904	-36.69
3	Cucumber	210530	235886	-10.75	149470	164114	-8.92
4	Lady's finger	237433	274310	-13.44	103568	125690	-17.60
5	Brinjal	252288	273613	-7.79	135212	126387	+6.98
<b>C</b>	<b>Fruit Crops</b>						
1	Mango	245167	208530	+17.57	140833	71470	+97.05
2	Coconut	171546	223636	-23.29	51254	65114	-21.29
3	Cashew	102700	133475	-23.06	97300	106525	-8.66
4	Sapota	116617	287614	-59.45	171383	282386	-39.31
5	Banana	338159	297885	+13.52	861841	332115	+159.50
<b>D</b>	<b>Spices</b>						
1	Black paper	35918	67942	-47.13	23882	31058	-23.11



**Table 11. Benefit cost ratio in organic versus Farming with recommended package of practice**

Sr. No.	Crop	Benefit cost ratios		
		Organic farming	Farming with recommended package of practice	Percent increase (+) decrease (-) in organic farming
<b>A</b>	<b>Cereals and pulses</b>			
1	Rice	1.16	0.88	+31.82
2	Wal	1.29	1.27	+1.57
3	Cow pea	1.40	1.45	-3.45
<b>B</b>	<b>Vegetable</b>			
1	Chilli	1.51	1.53	-1.31
2	Tomato	1.68	1.75	-4.00
3	Cucumber	1.71	1.70	+0.59
4	Lady's finger	1.44	1.46	-1.37
5	Brinjal	1.54	1.46	+5.48
<b>C</b>	<b>Fruit Crops</b>			
1	Mango	1.57	1.34	+17.16
2	Coconut	1.30	1.29	+0.78
3	Cashew	1.95	1.80	+8.33
4	Sapota	2.47	1.98	+24.75
5	Banana	3.55	1.76	+101.70
<b>D</b>	<b>Spices</b>			
	Black paper	1.66	1.46	+13.70

**Table . 12 Marketing channels of organic product**

Sr.No.	Marketing channel	Commodities marketed
1.	Producer — consumer	Mango, Rice, vegetables, pulses, coconut, cashewnut, banana.
2.	Producer — Commission agent— Wholesaler— Retailer— Consumer	Sapota and mango
3.	Producer—Retail Mall— Consumer	Sapota, coconut, banana, vegetables.

**Table. 13. Reason for organic farming**

Sr.No.	Reason of organic farming	Percent
1	Mental Satisfaction	80
2	Quality production	100
3	Getting best quality and chemical free food for home consumption	100
4	To control water and soil pollution	90
5	To increase soil quality	90

**Table. 14. Constraints in organic farming**

Sr.No.	Constraints
1	Less productivity
2	Difficult to maintain supply
3	No organized market
4	Dependency on direct costumer only for higher rate
5	Difficulty in getting supportive organic fertilizers
6	No availability of suitable varieties of various crops for organic production
7	Pest and disease resistant varieties are unavailable
8	Because of inorganic farming it is difficult to get back in organic

**Table. 15. Suggestions for organic farming**

Sr. No.	Suggestions	Percent
1	Minimize the chemical supply step by step with respect to pesticides and fertilizers.	100
2	For organic cultivation of rice need suitable variety	90
3	Advertise the adverse effect of inorganic food on our body and society	100
4	Give training of organic farming to society for understanding the importance of organic food.	90
5	Give training to farmers at University and other Institutional level for marketing of organic produce.	90
6	Give training regarding in situ production of vermicomposting	80
7	Branding is require for organic farming	100
8	Maintain at least 40 percent jungle in the nature because it gives biomass and maintain ecosystem and biodiversity that will create natural enemies for pests and diseases.	30
9	Maintain other host plants in the main production field	30
10	Crop rotation for nitrogen fixation	100

**CONCLUSIONS**

1. The sample organic farmers in the region have organic certification under PGS certified agency and they had been received 1 to 5 days five organic farming training from ATMA and Horticulture Training center, Pune.
2. The organic farmers producing fruit crops like sapota, mango, coconut, banana, cashew and pineapple, whereas in vegetable they producing green chilli, tomatoes, cucumber, lady's finger, cabbage, flower, *gawar* (cluster bean), capsicum, brinjal, and leafy vegetables. Similarly they produce pulses and cereals like wal, cow pea and rice.
3. The organic farmer also growing an organic fodder to their livestock which includes *Hattigrass*, *Kadwai*, *Lasun grass*, *Dasharam grass* and *Napier grass*.
4. The organic farmers were use different kinds of organic fertilizers like FYM, *jivamruit*, Poultry litter, vermiculur, vermiwosh, fish meal, mulching (*asafoetda*) with paddy straw, Neem pend, organic fertilizer 5:10:5, *Dhencha*, *Glyricidia*, and green manure of cow pea
5. For controlling the pest and diseases farmers use *dashparni ark*, turmeric, lime, *hing (asafoetida)*, cow urine and fogging with cashew shells.
6. Organic farming uses a variety of methods of organic farming to improve soil fertility, including crop rotation, normal cultivation practices with application of organic inputs, green manure / recycling method, integrated farming with animal component, Interdependent farming (Natural farming), Permaculture and open gota system.
7. The productivity of cereals, pulses, vegetables fruit crops in organic farming is lower than grown with recommended package of practices.
8. The cost of production with respect to all cereals, pulses, vegetables and fruit crops were reduced against cultivation with recommended package of practices except cow pea, mango and banana.
9. The net returns over cost C with respect to all organically produced pulses, vegetable and fruit crops were reduced against cultivation with recommended package of practices except rice brinjal mango and banana.
10. The benefit cost ratios were found to be higher in organically produce rice, wal, cucumber, brinjal, mango, coconut, cashew, sapota and banana as compared to grown under recommended practices.
11. Most of the farmers using direct sell marketing method except sapotagrowers.
12. Less productivity is the major problem in organic farming
13. Most of the farmers suggested branding of organic produce and proper advertisement of organic importance to society for betterment of organic farming.

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