

# Organic Farming Of Seed Spices: Opportunities and Action Plan

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## Introduction

Arid and semi-arid regions are known for stressed environments mainly because of erratic rainfall, and low fertility of soil, resulting in low productivity with high uncertainty. These conditions did not support the monoculture of food grain crops, therefore, a farming system with crop+tree+animal is being followed traditionally in these regions to spread the risk of climatic uncertainty and to get food for sustainable life in these regions. This is more or less subsistence farming only. However, in some parts of these regions, irrigated farming either with harvested rainwater or with the exploitation of ground water is prevalent. The main irrigated crops are wheat mustard, sorghum, maize, some monopoly spices like cumin, fennel, fenugreek, coriander etc., and some medicinal plants like isabgol, ashwagandha, shatawar etc. These monopoly crops have a great contribution to the economy of this region and the export market of the country as well. Due to increasing health awareness among consumers, the demand for organic quality produce is increasing rapidly.

## Quality Organic: An Imperative Option

Production of spices in organic farming and maintaining quality is becoming a compulsion for standing in international and domestic markets because:

- As mentioned earlier demand for organically produced spices is increasing.
- With scientific advancement, many of our monopoly crops are being grown by several other countries and quoting lower rates in international market. For example, cumin was a monopoly crop in India but now it is being grown by China, Iran, Turkey, and Egypt.
- In this era of a global open economy, domestic consumers are free to buy quality with low priced produce from international market.

Therefore, for maintaining our monopoly or rather competitiveness in international as well as domestic markets, economic as well as quality production is becoming imperative. Besides, meeting the demand, organic farming helps in two ways to get low-cost quality produce. These are:

1. In the organic production system, no external synthetic chemical is used, moreover emphasis is given to recycling locally available resources. With this approach cost

of production can be reduced by up to 60% as compared to conventional chemical farming.

2. There are several examples of experiments and farmer's experiences which show that due to a balanced nutrient supply through organic sources, the quality of organic produce increases manifold in terms of aroma, essential oil content, texture, taste, and shelf life. The author himself experienced a much better (than chemically grown) aroma, luster, and keeping quality in leafy coriander at the village Ballon-ka-guda in Udaipur district.

In that whole village, vermicompost was produced and used for coriander production. Farmers said that they get 1.5-2.0 times higher prices in the vegetable market and for coriander seeds as well. Therefore, organic farming is the only option for low-cost quality production. Some other issues compel us to opt for organic farming for the betterment of society and farmers as well.

**1. Low and reduced supply of fertilizers:** To some extent, nitrogenous fertilizers and most of other fertilizers are imported from various countries. Not only these imported fertilizers but also the supply of nitrogenous fertilizers is decreasing due to the changing international scenario. Moreover, most of the fertilizer companies give priority to irrigated areas Punjab, U.P., Haryana, Maharashtra etc. for supply and semi-arid and arid areas remain supplied as happened this year also. Therefore, to reduce dependency on imported fertilizers and the recurring problem of short supply in rainfed areas, opting for organic farming is the only solution.

**2. Ethical need medicine not poison:** Most spices like cumin, fennel, ajwain, fenugreek etc. are important ingredients of ayurvedic, allopathic, and homeopathic preparations. These all medicines are supposed to be given to patients and if these ingredients have residues of pesticides they may be a poisonous effect instead of curing the patient (Sharma 1998). Therefore, it is our ethical duty to grow spices and medicinal plants, only organically, as a social obligation.

With the above discussion, it is clear that organic farming is becoming necessary not only for a market point of view but also for the welfare of farmers and earth society as a whole.

### **Arid and Semi-arid Lands: First Place for Organic Spices**

Most of the spices are known for quality produce from arid and semi-arid zones mainly because of dry climate combined with production in traditionally designed (default) organic. However, during the last 4-5 decades, the traditional organic system has been adulterated with the use of synthetic inputs, mainly in cash crops like species, vegeta-

bles, fruits etc. Although, this has increased production for 10-15 years later not only productivity was going down but also the production of chemical farming was not preferred by the consumers. Therefore to sustain the production and demand, it is necessary to restore and improve traditional organic farming, that have immense possibilities in arid & semi-arid regions. Some of these exportable possibilities are:

**1. Efficient use of limited water:** Water is the most scarce resource of these regions. Use of synthetic fertilizers not only increases water demand of crop but also reduces water holding capacity of already light soils of these areas. In these regions at many places ground water combined with fertilizers is being used lavishly for production of rice, wheat, cotton and vegetables. This has resulted in severe depletion of ground water and barren soil. There is strong possibility of desertification of these areas. This type of desertification has already been started in southern Punjab and Vidharbh region of Maharashtra. Contrary to this chemical intensive farming, it has been found by experiments and experience that use of organic manure increases soil water holding capacity and crop water use efficiency, resulted in decrease in number of irrigations by 2-4 times in food crops. This water use is further economized by growing low water demanding crops like spices and medicinal plants. By this way there are great possibilities of saving precious water without decreasing yield and income.

**2. Low fertilizer use-early conversion:** In the arid and semi arid regions 89% agricultural area comes under rainfed and the rainfall pattern is erratic. Due to this limitation, rate of fertilizer application is very low (36.4kg/ha) as compared to national average of 76.8 kg/. This can be a good opportunity for early and easy conversion into organic farming. According to the priority areas of National organic farming policy about 90% part of the state comes under the priority I and II. This may facilitate to get financial help for these regions.

**3. Diversified farming system:** Farming systems in the region are highly diversified in nature with crops, trees, animals, grasses etc. This system is scientifically efficient in nutrient recycling and restoration of soil fertility. In these systems 10-30 trees/ha are available and 2-5 animals are reared by a farm family. This integrated farming system minimizes pest incidence as well as favors organic farming. Table 2 gives trend of animal population in the region, an indirect estimation of availability of organic manure and possibilities of resource recycling.

**4. Rich traditional wisdom:** Rich traditional wisdom in these areas for restoration of soil fertility and pest control further strengthen and provide strong infrastructure for organic system.

**5. Natural Availability of inputs:** Plants like neem, pongamia, calotropis etc. are the best sources of biopesticides, are abundantly available in these areas. Minerals like rock phosphate, gypsum and lime are available in large quantity. These are good soil ameliorator as well as good nutrients supplier. Further the farming systems are dominated by animals. Waste and product of huge animal population can be a best source of balanced nutrient supply.

**6. Employment opportunities:** High density as well as high growth of human resource remains unutilized throughout the year due to erratic rainfall and limited irrigation facilities. Migration of human resources during drought imbalances the development of the state. Since the organic farming is labour intensive and input supply made at local level, there is ample opportunity for employment and proper utilization of human resource.

**7. Soil improvement:** Soils are poor in water holding capacity and deficient in most of these essential nutrients. Addition of organic matter not only improves the water holding capacity but also make the soil to supply nutrients in balanced manner. Therefore, there are ample opportunities in arid and semi arid areas for promotion of organic farming.

### **Action Plan for Promotion of Organic Farming**

Considering the export demand and contribution in the economy of this region; it is need of the hour to do integrated efforts for quality organic production of spices. These efforts are need to be done at four levels i.e. policy, research, market and production of spices. Integration of technologies and programmes and coordination among various agencies is the prime requirement. For example, development of package of organic production may not be much effective until and unless promotion policies and good market facilities are not available. Integrated action plan at four levels is as follows.

#### **Policy**

Policy plays major role in promotion of any programme. Policy in terms of supporting rules and regulations, subsidies, facilities, allocation of budget and personnel etc. can alone is sufficient if executed properly. The best example is Cuba (Latin America), where organic farming was made a national policy and now whole of the country is organic. Similarly, some of the state like Uttranchal, NEH states etc. have been declared organic state and they are taking lead. Although in India, organic movement was started in early 80s but it got momentum only after 2001 when govt. of India launched National Programme on Organic Farming (NPOF). Later on most of govt. agencies have started to give priority to organic farming. However simply giving budget, subsidies etc. may not be sufficient to promote organic farming, as least development has been

done in arid and semi arid areas even, they are kept at Priority I & II in NPOF. For better development of organic farming in arid and semi-arid zone additional measures need to be taken. They are:

**1. Popularization of organic farming without compulsion of certification:** In Dry-lands farmers are very poor and unable to afford the cost of certification. Promoting organic farming with the compulsion of certification has made negative impact on adoption. Instead, at the initial stage organic farming should be promoted for improving soil fertility, reducing the cost of production, and other environmental advantages.

**2. Dissemination of organic farming in holistic manner:** Most of the agencies promoting organic farming in piecemeal approach e.g. only vermicompost, only IPM, only INM etc. This makes confusion among the farmers. Organic farming is an integrated approach for nutrient recycling, conservation of natural resources, water conservation, crop rotation/diversification etc. So it must be included of all these aspects can make sustainable organic farming in the real term.

**3. Integrated efforts of supporting agencies:** Individual agency may not work efficiently for the promotion of organic farming; For example, KVIC has a scheme of margin money to establish vermin-compost units but they are unable to ensure the use of produce of such units. Similarly, the agriculture department and ICAR institutes have a wealth of information but are unable to provide financial support. Thus, there is a need of integrated programs by all related agencies.

**4. Encouragement of decentralized input supply:** Encouragement may be given to produce all inputs for organic farming in a decentralized manner at the local level so that not only local resources can be utilized but also employment at the village level can be generated.

**5. Conservation of water:** With over exploitation of ground water since last 3-4 decades for raising crops mainly Cotton, Sugarcane, and in some places Rice, the ground water reached the dark zone In many parts of Maharashtra, AP, Gujarat, Rajasthan, Punjab, etc. After- 2 decades of experience of demonstration/training on dry land farming it has been realized that farmers did not stop the practice of intensive agriculture till the ground water was exhausted. Some farmers used saline water and made land permanently barren. Therefore, remedy of this malady is only possible through policy reforms. Some of these measures are:

- a. Intensive cropping should be allowed in canal irrigated areas only and drylands should be restricted to integrated farming systems.

- b. Use of ground water is allowed for life-saving irrigation to the monopoly crops of these regions like spices and medicinal plants. Subsidy should be given only if unavoidable.

**6. Adoption of improved methods of composting:** The majority of the farmers in the drylands apply animal and crop waste in undecomposed form to the soil, as a result the availability of nutrients to the plants decreases and also invites several pests. It would be better to apply these materials after composting them using any of the suitable methods.

**7. Awareness and capacity building:** Demonstrations, training, conferences, seminars, farmers fairs, etc. may be organized to make a consensus about organic farming.

**8. Subsidy on organic inputs:** Provision of subsidy may be made for organic inputs to make organic produce more competitive.

**9. Promotion of high value crops:** The demand for spices and medicinal plants is increasing when grown organically, so it must be promoted organically in the various agro-climatic regions of the drylands.

**10. Development of organic clusters of villages:** Available clusters of villages of watershed programs may be converted into organic clusters of villages by providing technical support. This will be cost effective and make easier the certification process of organic produce.

**11. Promotion of lay farming:** In drylands, rotation of grasses and food grain is known as lay farming, developed by CAZRI as the best option for fertility restoration in rainfed drylands.

## Research

Research has been done on various components of organic farming by ICAR/SAUs, yet research is needed to integrate the efforts and assess their effects. Besides, the following aspects of research may be taken simultaneously:

- a. Survey and scientific validation of traditional organic farming practices.
- b. Use of locally available resources for the production of manures and bio-pesticides.
- c. Assessment of economic and ecological returns from organic vis-a-vis intensive agriculture system. d. Development of organic farming models for each sub agro-ecological zone.

## Market

The market environment plays a major role in for opting an enterprise and the same is true for farmers. After the emerging demand for organic produce from Western countries and to some extent from the domestic market, production of organic spices mainly tropical spices like black paper, clove, cardamom etc. has increased. However, a major part of the arid and semi-arid zone which was traditionally organic is yet to come

into the market as certified quality organic to get market premium. Some of the possible measures that need to be taken for a better market environment and proper remuneration to the farmer are:

1. Development of cooperative organic marketing facility.
2. Encouragement to exporters for bearing expenditure of certification.
3. Development of alternative low cost certification system for the domestic market e.g. participatory guarantee system.
4. Facilitating organic consumer-producers associations.
5. Development of post-harvest processing and packaging facilities at the tehsil level.

### **Production**

Although production is the first step to get organic produce it comes at the end in planning as the policy, market, and research aspects should be strengthened before starting production. However, not only for the market but also for the long-term sustenance of soil fertility and farmer's livelihood, basic understanding and principles of organic farming should be applied in the production system. In arid and semi-arid regions main emphasis needs to be given to the efficient use and recycling of limited natural resources. Therefore, from a production and marketing point of view, a strategy with the following components needs to be adopted.

1. Production of inputs (compost, vermicompost, biopesticides etc.) as much as possible at the local level.
2. Efficient use of inputs (time, method, and quantity).
3. Effective integration of perennials, animals, and beneficial organisms in the farming system.
4. Adoption of system-based production rather than crop-based.
5. Improvement in traditional (default) organic system.
6. Continuous experimentation at the farm level to understand natural production systems and interactions.
7. Doing farming and getting certification as a group effort.
8. Giving importance to quality production rather than quantity only.
9. Harvesting at proper time and cleaning and grading at farm level.

### **Good Initiatives**

Some the good programmes on the promotion of organic farming in arid and semi-arid regions have been started. They are:

1. National Project on Organic Farming was launched in 2004 and arid & semi-arid region were placed at priority I and II in the project.
2. Under the National Horticulture Mission, clusters of 50 ha organic farms for seed spices are being developed in several districts of arid and semi-arid regions.



3. Recently a rainfed area development authority has been constituted by govt. of India that is expected to give priority to organic farming of high-value crops like spices.
4. Several NGOs started organic group farming of seed spices mainly cumin, coriander etc.

These programmes may hopefully give momentum to organic production.

### Conclusion

Organic farming is a holistic production system run with the efficient use and recycling of locally available resources. Due to scarcity of water and light soil areas, it is best suitable and applicable for arid and semi-arid areas. Some monopoly high-value crops of this region like seed spices have great international demand if produced organically. Organic production of these spices will not only boost the economy of this region but also sustain the productivity of natural resources. The need is to research the development of easy and economic technologies, development of processing and marketing infrastructure, and financial well as technical support for quality organic production.

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