Prospecting Organic Production of Spices in Rajasthan

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Dr. Arun K. Sharma
Central Arid Zone Research Institute, Jodhpur,
Rajasthan, Pin- 342 003
email: *arun.k_sharma@yahoo.co.in*

Agricultural productivity is primarily dependent on the availability of water, as land, seed, labor and such other sources can be managed locally. Rajasthan, the largest state of India covers 10.4% area but receives only 1.04% water. Also it is the water management aspect that is most tedious not only technologically but also due to several social, political and ecological issues involved in it. Therefore, the easiest available water is rainwater and 88% farming in Rajasthan is rainfall dependent termed as rainfed farming. Under such set of conditions spices got a prominent part in Agriculture of Rajasthan that needs comparatively less water than food crops but fetches higher price. Also, the dry atmospheric conditions are most suitable for spices like cumin. It is therefore, spices are grown in about 808705 ha. area with a production of 668634 metric ton and having significant contribution in India's spice production as shown in the table.

Name of the spice crop	Percent contribution in India's total production
Chilli	**11-14**
Coriander	**77-82**
Cumin	**26-32**
Fennel	**28-34**
Fenugreek	**72-76**
Ajwain	**65-70**
Dill seed	**8-11**
Garlic	**24-28**

Organic Farming: a Boon for Susatainability

Organic farming or ecofreindly farming can be the best option for solving the problems as well as converting constraints into opportunities for sustainable production in Rajasthan. Rajasthan with the geographical area 3,42,000 sq. km is the largest State of India with 75% of 56.4 million population living in rural areas and about 70% dependent on agriculture as source of livelihood. In Rajasthan two third of the total geographical area is under desert where animal husbandry dominates agriculture as main rural activity. Rajasthan has livestock population of 54.35 million, which comprises of 12.16 million Cattle, 9.76 million Buffaloes, 14.31 million sheep, 16.94 million goats and 0.67 million camels and 0.51 million others. This large cattle population is a source of organic manure being provided in form of cattle dung and urine. Demand of organic spices is increasing in both international and domestic

Overview of MOF-HVC

market on one side and on the other side importers of Indian spices e.g. USA, Europe, Japan etc. have imposed trade restrictions on the produce having residues of synthetic chemicals more than prescribed limit. This is compelled to grow organically all the exporting commodities. As mentioned above, Rajasthan has sizable share in spices production that contributes in good amount of export. Hence, popularization of organic farming of spices which is now catching up with the farmers in view of high cost of cultivation and ever rising cost of fertilizers and pesticides is the answer for sustainable development of agriculture in Rajasthan.

Some of the additional or supporting possibilities are:

Efficient Use of Limited Water: Water is the scarcest 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 Rajasthan. Contrary to the 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 irrigation by 2-4 times in food crops. This water use is further economized by growing low water demanding crops like spices & medicinal plants. By this way there is a great possibility of saving precious water without decreasing yield and income.

Low Fertilizer/Pesticide Use: In rainfed areas due to erratic pattern of rainfall, the rate of fertilizer application is very low (26.4 kg/ha) as compared to national average of 76.8 kg/ha. A large part of arid western zone is still untouched with chemicals. Similarly the use of pesticides is nearly 0.5 kg/ha at the State level and its use is as low as 10 gm, in Rabi season in Udaipur Division. During Kharif it is 119 and 123 gm in Jodhpur and Udaipur division. Hence as far as use of pesticides is considered, there are no issues to hinder organic farming. This can be a good opportunity for early and easy conversion into organic farming.

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 and controls desertification. Further, there are large number of small and marginal farmers in the State, who cannot invest more in Agriculture. Almost 50% of the 53.63 lac holdings are with small and marginal farmers and Agriculture is at subsistence level. Most of these farmers have cattle/dairying as a source of livelihood. Hence, adoption of organic farming will be a boon for them as they will be able to utilize the inputs available at their household for crop production.

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

Natural Availability of Inputs: Plants like neem, pongamia, calotropis, etc. are the best sources of biopesticides and 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.

Employment Opportunities: High density as

well as high growth of human resource remains underutilized 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.

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.

Mitigating Effect of Climate Change: Worldwide 90 million tons of mineral oil or natural gas are processed to get Nitrogenous fertilizers every year. This generates 250 million tons of CO_2 emission. On the contrary, organic farms return 575 to 700 kg CO_2 to the soil. Organic farming thus reduces CO_2 emission by eliminating synthetic fertilisers, and at the same time reduces atmospheric concentration of this gas by storing in the soil, a win-win system. Further, soils with higher humus content can adopt to the adverse effect of climate change that is predicted to be severe in Rajasthan and adjoining states .

Therefore there are ample opportunities in Rajasthan for promotion of organic farming.

Quality of Organic Spices: an Imperative Option

Production of food in organic farming and maintaining quality is becoming a compulsion for standing in international and gradually in the domestic market also, because :

·As mentioned earlier demand of organically produced foods is increasing.

·With the scientific advancement, many of our monopoly crops is being grown by several other countries and quoting lower rates in international market. For example, cumin was a monopoly crop of Indian but now it is being grown by China, Iran, Turkey and Egypt.

·In this era of global open economy, domestic

consumers are free to buy a quality with low priced produced from international market.

Therefore for maintaining our monopoly or rather competitiveness for international as well as domestic market, economic as well as quality production is becoming imperative.

Organic farming helps in two way to get low cost quality produce. These are-

·In organic production system, no external synthetic chemical is used, moreover emphasis is given on recycling of locally available resource. With this approach cost of production can be reduced upto 60% as compared to conventional chemical farming.

There are several examples of experiments and farmers' experience which shows that due to balanced nutrient supply through organic sources, the quality of organic produce increases many fold in terms of aroma, essential oil content, texture, taste and shelf life. Author himself experienced a much better (than chemically grown) aroma, luster, and keeping quality in leafy coriander at village *Ballon-ka-guda* in Udaipur (Rajasthan) district. In that whole village vermicompost was produced and used for coriander production. Farmers told that they get 1.5-2 times higher price in vegetable market. Organic Farmers of Asnavar tahseel of Jhalawar District get 25-30 higher price of organic coriander seed and same premium farmers get for organic cumin in Sanchor (Jalore District). Therefore, organic farming is the only option for low cost quality production.

There are some other issues which compel to opt organic farming for the betterment of society and farmers as well in Rajasthan.

1. Low & Reducing Supply of Fertilizers: To some extent nitrogenous fertilizers and most part of other fertilizers are imported from various countries. Not only these imported fertilizers but also supply of nitrogenous fertilizers is decreasing due to changing international scenario. Moreover, most of the fertilizers companies give priority to irrigated areas Punjab, U.P., Haryana, Maharashtra etc. for supply and rainfed areas are remained short supplied. Therefore, to reduce dependency on imported fertilizers and recurring problem of short supply in rainfed areas, opting organic farming is the only solution.

2. Ethical Need to Grow Medicines: Most of the spices like cumin, fennel, ajwain, fenugreek, etc.are important ingredient of ayurvedic, allopathic, homeopathic preparations. These all medicines are supposed to give to patient and if these ingredients have residues of pesticides it may be poisonous effect instead of curing the patient. Therefore, it is our ethical duty to grown spices and medicinal plant, only organically, as social obligation.

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

No.	Name of Zone	Districts	Prominent spices
1	Northern Canal Irrgated zone	Shri Ganaganage, Hanumangarh, Part of Bikaner and Jaisalmer	Mustard, Garlic, Onion
2	Eastern semi-arid zone	Churu, Jhunjnu, Sikar, Alwar, Jaipur, Ajmer	Ajwain, Fenugreek, Chilli, Garlic, Onion, Fennel
3	South eastern semi-humd zone	Kota, Bundi, Jhalawar, Kaurauli, Dholpur, Baran.S.madhopur	Coriander, Chilli, Garlic, Ginger, Ajwain, Turmeric, Fennel
4	Western arid zone	Jodhpur, Nagaur, Jaisalmenr, Barmer, Bikaner, Part of Jalore	Mustard, Cumin, Fennel
5	Southern hilli zone	Udaipur, Chttorgarh, Sirohi, Banswara, Dungarpur, Bhilwara, part of Jalore	Turmeric, Ginger, Ajwain, Coriander ,Garlic

Organic cumin

Potential Spices Crops in Rajasthan

Rajasthan can be divided into five major agro-climatic zone for organic farming. Details of these zones are given in table below.

Promotional Programms for Organic Farming

Financial Support and Capacity Building: Under the various schemes of central government mainly Mision for integrated Development of Horticulture (MIDH), National Mission on Sustainable Agriculture(NMSA) and Spices Board schemes the Rajasthan state govt. is proving following types of financial support to organic farming.

- For horticultural crops Rs 10000/- per ha upto 4 ha is given to a farmer in three years. Under this scheme a cluster of upto 50 ha can be made and for that financial support up to Rs 5.0 laks is given.

- For permanent vermicompost unit subsidy upto Rs. 50000/- is given while for temporary structure of HDPE, this amount is Rs. 8000/- -Under newly launched 'Paramparagat Krishi Vikas Yojna'(PKVY), Organic Certification with Participatory Garanteed System(PGS) has been started with finanacial support. This is farmers' friendly certification system.

- Training, field tours are regularly organized at Districts level and state level for capacity building in farmers and extension functionaries on organic production and standards.

-Direct technical/financial/marketing support to organic spices producer by Spices Board.

Marketing Support & Certification: Market support and certification of organic produce is very important so as to enable cultivators to get higher price for their produce. Department of Agriculture has identified Rajasthan State Seed Certifying Agency (RSSCA) as the nodal agency to certify organic produce and a part of called as Rajasthan Certification Agency (ROCA) that is approved by APEDA. It is further to inform that some NGOs/exporters are directly in touch with Accredited agencies like SGS, ECOCERT, etc. for certifying some of the produce in the village where they have taken organic agriculture activities. As to date no direct marketing for organic agriculture is being promoted by Department of Agriculture. Whatever, marketing is being done is through private intervention or by NGOs who are in contract with the farmers producing organic food. There is need to promote marketing of organic produce for which separate market need to be made for sale of organic produce.

Training Facility: A certified model organic farm at Central Arid Zone Research Institute, Jodhpur, has been made where production technology of organic spices has been developed and facilities are available for training of extension functionaries and hands on training to the farmers. website: **http://www.cazri.res.in/org_farm.php**

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 soils areas it is best suitable and applicable Rajasthan. Some monopoly high value crops of this region like spices are having great international demand if produce organically. Organic production in Rajasthan not only boosts the economy but also sustain the productivity of natural resources. The need is to development of processing and marketingfrastructure and more number of capacity building programmers for all the stakeholders.