

From Chemical To Organic: Sikkim's Journey To Becoming A Fully Organic State

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Abstract: In January 2016, Sikkim was officially declared as the Country's first fully organic state. The farmers in the state are using natural manure in place of chemical fertilizer, pesticide or insecticides over the past 12 year around 75000 hectares of land has been converted into certified organic farm following the guidelines prescribed by the National program for organic production (NOPP). This paper analyses that how did Sikkim's organic mission of becoming a 100 percent organic state and what strategies had been implemented to achieve this feat and the challenges faced by this vision. For this purpose relative books, magazines, newspaper sites, research journals have been extensively considered.

Keywords: Sikkim, organic, mission, strategy, state, programme

I. INTRODUCTION

India is one of the few densely populated countries where pesticides go largely unregulated. Recent agriculture report found that many food productions had "unacceptable amount of chemical components. In the country Monsanto has control over 95 percent of cotton seed and where the most hated Bio-tech Company of the century has caused a massive 291000 suicides with its poisonous pesticides and fertilizers. GMOS and extortionist business practices made the country to become organic. Organic farming is nothing new; it's a tradition that has sadly been overtaken by overzealous corporation. In India organic farming has been practiced since ancient times. The recent resurgence of organic farming in India is largely due to the increasing demand for organic products in western nations with the past decade. We have seen a global cultural shift towards a health conscientious mentality of eating organic foods. However as each society becomes more aware of these harmful effects of pesticides and fertilizers. In this era organic food has become the new staple to drive for Indian government has now been spearheading this initiative in a number of its states to improve the quality of food. In India its way to becoming an entirely organic state in September 2014 government of India launched Rastriya krishi vikas Yojana as a way to encourage organic farming,

and decrease dependence on chemical input. In January 2016 the state of Sikkim was declared as the country first 100 percent organic state.

Sikkim produces 800000 tonnes from of organic produce that's free of harmful pesticides, chemical fertilizers and toxic GMOS, accounting for roughly 65 percent of India's total organic produce yields. Goa has also recently announced that they will be looking to reduce the use of chemical fertilizers and pesticides, and is also seeking to go to 100 percent organic. Other state like Kerala, Arunachal Pradesh, Mizoram, Meghalaya also lead the pack in the switch of organic farming. The Western Indian state of Rajasthan launched plans for dedicating thousands of hectares of land for the farming of organic pulses, Besides, The state declared its Barmer district to become a fully organic district. Their efforts seek to combat the rampant protein malnutrition, and the unsustainable practice of chemical fertilizer based farming. Other western states are also in this way of organic farming.

Sikkim in also know as land locked India state locked in the Himalayan mountain. This state is boarded by Nepal of the west, China's Tibet Autonomous region to the north and east, and Bhutan to the east, the Indian state of west Bengal lies to the south, the state has four districts namely east, west, north and south, the district headquarter are Gangtok, Gyalshing, Mangan and Namchi respectively. These four districts are

further divided into subdivisions Pakyong and Rongli are the sub division of district Soreng is the sub division of west district, Chungthang is the sub division of north district and Ravongla is the sub division of south. The total population of Sikkim is 6,10,577 covering an area of 7096 square kilometers. It is one of the least populous state in India and second smallest state after Goa.

Organic farming has been used by the farming community of the state of Sikkim for a long period of time. But in due course of time, as chemical fertilizers and pesticides were utilized for the supply of plant nutrients and control of diseases the noble practice slowly started fading and chemical took over on certain crops over a period of time. Still the consumption of synthetic fertilizer and pesticides was very low compared to the other states of India and far below the national average. Many of the crops have never encountered chemicals and have been growing on the strength of organic movement to take roots here, the green revolution was launched in India in 1966 bringing about increased chemical use leading to enhance production and productivity of crops under irrigated area. But in Mountainous state like Sikkim as well as other north eastern states where agriculture is basically rain-fed the chemical use did not have significant impact on production and productivity. Sikkim which is endowed with climate condition favorable for the production of fruits, flowers and certain other crops has been currently adopting the techniques of organic farming for more than a decade. The state is now moving towards the organic mission by producing such crops with high demand in both domestic as well as foreign markets.

This process of transforming was started in 2003 when the Pawan Chamling led government decided to make Sikkim an organic farming state through a declaration in the legislative assembly. Later the entry of chemical inputs for farm land was restricted and their sale banned. Farmers therefore had no option to go organic. This was made possible through federal funding around roughly \$123 per 100 acres for the first three years of this initiative. In order to have the land certified organic, the government has spent about \$9,697,327 on the Sikkim organic mission. When Sikkim started its organic programmed in 2003 only few farmers are using chemical and remaining farmers are already following the organic practices by choice. This has helped Sikkim to become fully organic state. But it looks almost 13 years to become fully chemical free. It was a historic movement for Sikkim when the humble chief minister of Sikkim brought a resolution in the state assembly in the year 2003 for transforming the state into a "Total Organic State" by adopting certain policy interventions. After 13 years this historic movement becomes real in January 2016 when Sikkim state was officially announced as the country's first fully organic state, by implementing organic practices at around 75000 hectares of agricultural land.

II. REASONS FOR ORGANIC FARMING IN SIKKIM

Organic farming has been a traditional way of farming in Sikkim adopted by farmer's science ages. Due to unavailability of assured irrigation, farmers practice rain-fed

farming system with an integrated approach. Integrated farming system is predominant in the state with agriculture, horticulture, animal husbandry in perfect coordination. Sikkim is rich in bio-diversity with abundant plant species because of which the soil is rich in organic matter content and makes the conversion easier. The fragile eco-system in Sikkim hills demand sustainable farming practices without depletion of natural resources. It is therefore advantageous for Sikkim to go into organic system of farming keeping in view of protection of soil from degradation. Because projection of environment and ecology and healthy living of the people for generation. There is some other reason also behind Sikkim going organic:

- ✓ Farming under rain-fed conditions with low productivity.
- ✓ Average fertilizer consumption 7 Kg/hectares and negligible pesticides consumption.
- ✓ Rich-Biodiversity – ample scope for a farm production of organic manure, which is the main item in the menu of organic farming.
- ✓ About 15000 hectares area under cardamom where fertilizer has never been used'
- ✓ The total geographical area of the state is 729900 hectares out of which farming is done in about 10.20 percent area and 89.80 percent of the area has not been touched therefore this untouched area is free from chemical affected.
- ✓ Soil is rich in organic matter content which range from 2-7 percent organic carbon.
- ✓ To promote tourism through organic village concept.

III. STEPS TAKEN BY SIKKIM GOVERNMENT IN A BID TO BECOME FULLY ORGANIC STATE

Sikkim is divided into five agro-climatic zones:- Tropical zone, sub Tropical zone, Temperate zone, sub-Alpine zone and Alpine zone. The main agricultural lands fall in Tropical, Sub Tropical and Temperate zone. The total geographical area of the state is 7,29,900 hectares out of which farming is done in about 10.20 percent area (74,303 hectares) only where all the farming activities taken place and rest of the area constitutes of forest cover, permanent pastures, cultivable waste barren and uncultivable, land put to non-agricultural use land under miscellaneous trees and groves etc. To convert this agricultural land into organic farming Sikkim can become a fully organic state.

Sikkim has become India's first full organic state by implementing organic practices at around 75000 hectares of agricultural land. This agricultural land was gradually converted to certified organic land by implementing organic practices and principles as per guidelines laid down in National programmed for organic production.

A. 1ST STEP: RESOLUTION IN THE STATE ASSEMBLY

It was a historic for Sikkim when Hon'ble Chief Minister government of Sikkim brought a resolution in the state assembly in the year 2003 for transforming the state into a "Total Organic State" by adopting certain policy interventions.

B. IIND STEP: INITIAL CONCEPT FARMING POLICY IN 2004 POST DECLARATION

After the declaration few programmes of organic farming were launched –

- ✓ Adoption of Bio-villages.
- ✓ Subsidy Reduction on chemical fertilizer:- Subsidies on chemical fertilizers and pesticides reduced at the rate of percent every where to make these inputs costlier and discourage purchase of chemical fertilizer.
- ✓ Stopped lifting of government of India quota of fertilizer and pesticides.
- ✓ Closed all sale points and outlets.
- ✓ Requested transport department not allow transportation of fertilizers and pesticides from outside the state.
- ✓ Stopped placing order to SIMFED for supply of synthetic fertilizers.
- ✓ Request UD and HD department not to issue trade license for trading of fertilizer and pesticides.
- ✓ Alternative certified organic manures purchased and made available to farmers.
- ✓ To encourage on farm production of inputs large numbers of rural and vermicompost units subsidized.
- ✓ Eight units of vermiculture hatcheries were established in five government farms and three KVKS.
- ✓ Four plant protection an integrated pest management (IPM) laboratory established.
- ✓ Large scale training and orientation programmes organized.
- ✓ Infrastructure like seed processing units established to encourage farmers produce certified seeds of desired varieties organically.
- ✓ Establishment of three livelihood schools on organic farming so as to generate employment opportunities to educated unemployed youths of the state.

C. IIRD STEP: SIKKIM ORGANIC MISSION

To implement the programmes and policy of organic farming in a mission mode – Sikkim organic mission was launched on 15 August 2010. Under the mission some targets were decided to promote and adopt appropriate technologies for organic crops production, processing, branding and marketing of organic products of the state.

Mission target	Target (hectares)	Target achieved (hectares)
2010-11	18000	18234
2011-12	18000	19216
2012-13	14000	19188
Total	50000	56638

Source: *Sikkim organic policy, Government of Sikkim*

Table 1

The dynamic “organic-Sikkim” vision is spread headed under the leadership of one of the largest serving Chief Minister Pawan Chamling, take a bold decision in state legislative assembly in 2003. According to “Sikkim organic vision” it takes 13 years to transition to an organic state. In the first phase, that spanned seven years, the government launched state – wide awareness programme building the capacity of its field officers on organic farming practices and developing and

documentation indigenous technical knowledge on bio-fertilizers and pesticides. Government created livelihood school. Where 835 educated unemployed youth were taught organic farming practices.

With the aim to become fully chemical free by December 2015, this programme was launched in 2010. In The programme several steps has been taken for fully organic farming.

- ✓ *Sikkim organic market:* The state government for selling organic varieties at 20 to 25 percent more prices than that of the conventional varieties. Proper tie-up with the retail outlets and wholesale markets of the metro cities were established for sale of organic products of Sikkim in these markets. Cold storage and refrigerated van facility were created in due course of time for temporary storage and transportation of production. For safely selling organic products in national and international market processing and packaging facilities were developed. Value additions have been done to organic products and brand name given to every item with “Organic Sikkim logo”.
- ✓ *The certification of lands:* The state government carries out certification of lands by accredited agencies, which follows the standards laid down in National programme for organic production. As per the standards its takes three year to certify organic and certifying agency assessed the land once a year for three years. During the three year period, the soil will clean itself without any special treatment. In case if any use of chemical is found in the land it takes another three years to get certified, under the state law, penalties of Rs one lacs and/or imprisonment up to three month are imposed for using or storing chemical fertilizers or pesticides.
- ✓ *Strategies for research backup:* Realizing that research support is equally important for sustainable organic farming, Adaptive research was conducted on soil management, pest management and moisture management aspects of organic farming and proper recommendation were generated by research organization to tackle the problem faced by farmers in the process of organic farming. In this process of transformation, ICAR, Spices Board, NRC orchid, Krishi Vigyan Kendra’s play a vital role. Hence, by conducting proper orientation and training programmes local educated unemployed were trained to bring awareness among the farming community with regard to the benefits of going into organic and to seek support of the farmers. In this scheme experience of local self help groups and NGO’s were take in account. To converting entire state into organic from conventional system large scale training and orientation programmes were organized. Educating school children by including organic farming in the course curriculum. When the entire state is being converted into organic it is essential that the school children must be educated the basic knowledge of organic farming. So they can help their parents in the organic farming. This organic farming process requires a huge exercise in changing the mindset of farmers who are now solely relaying on inorganic fertilizers. They need to be educated on the benefits, especially that of health so that they take to organic farming. Farmers need to be trained to make manure locally and to put adequate

amount in the soil to keep the productivity of produce at about the same level.

- ✓ *Policy strategies for infra structure development:* The department FSAD and HCCD have constituted a technical advisory committee to support the Sikkim organic mission on technical matter. The committee decided to discourage the import of fertilizers, which have no guarantee of absence of chemical in the materials. Rather emphasis given to farm production of these inputs utilizing locally available resources. Under the guidance of this committee some policy strategies have been developed. Use of chemical fertilizers and pesticides were totally eradicated and replaced by organic manure, pesticides and eco-friendly input by providing subsidies for infrastructure like rural compost and vermi-compost units, encouraging bio-dynamics farming, Rishi krishi, Panchagauya krishi, Natural farming, Jaiva krishi etc. which are cheap and farm recourse based. Besides soil health, management and monitoring is very important in organic farming and thus, district wise soil testing laboratories were established. The present capacity of analyzing 25000 samples per annum has to be increased to 45000 samples to cover the entire farming families.

IV. FUTURE CHALLENGES BEFORE SIKKIM FOR MAINTAINING A FULLY ORGANIC STATUS

Sikkim MP Prem Das Rai has suggested that there is a need to take up organic farming as a mission. He stated that the north east region can be the organic food producer for not only India but the rest of world. The region has this unique opportunity to leap frog economically which will help people get better livelihood and value for their produce. An adequate budget has be provided NEC for carrying out the mission of organic farming Sikkim did not receive any budgetary support from the centre for its efforts in the last 12 year. Sikkim has done on its own. This year the state has received its first grant of Rs42cores. Future inadequacy in fulfilling budget could lead to failure of the programme.

Agricultural scientist G.V. Ramanajanegulu, with the Hyderabad based center for sustainable agriculture, said that Sikkim has long been a food deficient state. Existing food productions there meets only 30 percent of the local population direct needs. The rest has to import from neighboring states. In making plans for organic agriculture the Sikkim government seems to have avoided discussion on two major issues food self sufficiency and nutritious food for all Sikkimees Rajeswari Sarala Raina said “that for a state to shift organic production it is enough to do certification, support on farm input generation and training programmes. Besides that the state has to begin with a policy goal of food sovereignty and minimizing nutritional inequality and then built the organic agriculture mission to cater to these overreaching policy goals.”

Agricultural scientist Ramanjaneyulu says that he is “intrigued” by the fact that farmers do not seem be at the center stage of Sikkim’s organic mission. It was the government that set a five year target on organic farming a top down agenda that didn’t consider the farmers perspective and

eventually failed to meet its time target. Anti-dam activist Dawa lepcha views that the transition news was cautious optimism but the things at grass root level papers have been included as organic farmers Lapcha’s name is added to the list of organic farming but never been consulted. Despite that Lepcha is also concerned about market linkages given the mountainous terrain and remoteness of many rural communities but rural realities are different. In Sikkim organic mission, non-timber forest produce was not considered. This non-timber forest can help in bio-fertilizer and state can use its locally available bio mass for compost rather than shifting or importing recourses from other states.

Transporting the produce to the markets is another major challenge. Vegetables and fruits which generally have very short shelf lives, make up a large part of the produce in Sikkim. But the mountainous state is poorly connected to the rest of India. It doesn’t linking the state to the nearest trade-hub siliguri in west Bengal are poorly maintained and prone to landslides. Roads and highway within the state too often get washed out during the rainy season rendering many remote areas inaccessible for days. So it is very difficult to deal in fresh produce, especially when we are land locked and have no road and airport connectivity says Renzin Lepcha, chief operating officer of Mavedir an organic company that provides services to Sikkim government in primarily four key crops for organic expert, namely ginger, turmeric, buckwheat and large cardamom cymbidium orchid is also one of the value added expert commodity. Sikkim is India largest producer of large cardamom and cymbidium orchid. Being geographically isolated transporting fragile produce on a mountainous terrain to faraway urban centers in India is not a simple feat. Hence, it incurs a lot of transportation charge.

“The risk factor is quite high because there are no proper storage facilities. There is no cold storage chain, no refrigerated vans, no processing units, no food parks, no packaging material (every things comes outside the state). All these factors make transportation of produce very expensive and many small scale farmers have a hard time covering their costs and finding a fair price for their produce.”(Business standard Jan.2016)

Certification of farmer’s field will be a challenge due to fact that farmers will have to get it done themselves over time. It will have to be done as a yearly exercise to ensure that organic status in maintained in certified terms because the trade does not trust farmers and their cooperatives. Hence the certification of farmer’s field will add more trust and impel the process of value addition. If not done then it will add to the risk to whole value chain and also the entrepreneurs, because Geo tagging is an important element in understanding the source of food produce. Globally it is even more important in view of problems being faced due to food adulteration and other forms of processing issues. The question of bearing certification cost is very important before the government that how can be it funded.

Thanks to Sikkim vision of organic farming that was started in 2003 and despite may hurdles, challenges and opposition the state persisted to complete the exercise in 2015, when India’s Prime minister Narendra Modi officially declared in January 2016 Sikkim a fully organic state. But we

still have a long way to go to before becoming a healthier nation.

Sikkim in spite of achieving the full organic state it has to continue its effort to maintain the states. For that it has to continue the certification programme. Certification also adds trust and provides support to the value addition industry. Marketing also needs to be more focused. Export markets can be tapped to get better value. The youth in the state should be back to take up agriculture. Hence let us get future certification processes organized properly and with the least amount of cost of the farmers. Let us get out marketing right and higher value addition and branding our value chain must be properly lubricated for minimum commercial friction and finally let us get young people to the organic farms.

V. CONCLUSION

While transitioning to an organic state was no small feat, the task was easier given the size of the state and agriculture land. Sikkim is one of the smallest states second to Goa, with total geographical area of 7.096 square kilometers. Farmland is a little over 10 percent of the total area. The government was tasked to bring some 75000 hectares under the cover of organic farming. Sikkim has the smallest population with a little over 6 lacks. According to the government of Sikkim, farmers in Sikkim also use much lesser quantity of chemical fertilizers compared to other states 7 to 10kg/hector. Per annum compared to national average of 70 kg/hector. Over the time the state government eliminated subsidies for chemical fertilizers. Despite this some of the crops have never encountered chemical and have been growing at the strength of organic input this has matter the organic movement easier. Green revolution launched in India in the early seventies, but mountainous state like Sikkim and other north eastern state where basically agriculture is rain-fed, the chemical use did not have significant impact on production and productivity. Considering all these aspect the government of Sikkim took a decision to adopt organic system of farming in the entire state and probably the first state in India to bring resolution in the state assembly to convert entire state into organic by 2015.

The state first initiated this journey by endorsing multiple efforts planning all sales of pesticides and chemical fertilizers. This left local farmers with no option but to go organic. Then two days workshop with expert in the organic fields and scientists assisted farmers in making this transition. By utilizing the framework set forth by the government agency which deals with organic accreditation, the National program for organic production Sikkim has eliminated the use of pesticides, chemical fertilizers and GMO's and replaced these practices with working in conjunction with the local ecosystem to preserve biodiversity and prevent erosion. Being a small state the land holding of farmers are very small. So organic farming has become an appropriate option for Sikkim. Becoming the 100 percent organic the costs that go into segregating, packaging, labeling and differential pricing are saved. When everything is organic, the price automatically falls, become ordinarily in organic a retain deals with small quantities from awide range of farmers. The supply chain is broken and discouraged, this adds the cost of produce. It

organic marketed well it will also boost the tourism industry in the state. In this day and age of heightened environmental awareness a fully organic state is definitely gold worth. There were worries of production falling due to the heavy costs involved in the transition. The farmers were barely sustaining themselves. So questions were raised about feasibility of using indigenous technologies like pheromone loops to control fruit-files, bio- pesticides, bio- fertilizers and natural alternative like compost and manure made from dung , decayed leaves and dry grass.

Though the challenge looked insurmountable the government involved the local park in its vision. They included organic farming as a subject in the school curriculum , initiating compulsory training on organic farming and its advantages as part of capacity building and started to spread awareness on the why, how, what of the vision. The state thrive on sustainable farming without destroying its unique drivers flora, fauna and wild life habitat ultimately convinced its people to embrace the change.

Over the past 13 year, around 75000 hectors of land has been converted into certified organic farm following the guidelines prescribed by the national programme for organic production and finally in January 2016. Sikkim state was officially announced as the country's first fully organic state. The farmers in the state are using natural manure from cow in place of chemical fertilizer and pesticides or insecticides. The Sikkim can be emulated by the other states in the country especially those states which are focusing on agricultural practice which are focusing on agricultural practices.

Sikkim in spite of achieving the full organic state, it has to continue its effort to maintain the status. For that it has to continue the certification programme. Certification also adds trust and provides support to the value addition industry. Marketing also needs to be more focused. Export markets can be tapped to get better value. The youth in the state should be encourage to go back to take up agriculture.

Hence let us get future certificate processes organized properly with the least amount of cost of the farmers. Let us get out marketing right and move to higher value addition and branding our value chain must be properly lubricated for minimum commercial friction and finally let us get young people to the organic farm.

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