

Barmecide Feast – The Problems in Production and Sale of the Produce of Organic Agriculture

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Abstract

Agriculture in India is in serious crisis. Economic and ecological unsustainability have not only jeopardised the livelihoods of farmers but also threatens the food security of the country. The solution to this problem is the communitarian practice of organic agriculture, ecosystem restoration and localised renewable energy generation. However, this is easier said than done. This paper first details the problems facing agriculture and then describes the steps taken by an NGO working in western Madhya Pradesh, Mahila Jagat Lihaaz Samiti, to find a solution to the problems of agriculture. The analysis of this work clearly shows that NGOs and farmer's organisations can do only so much and the Governments and Corporations need to do considerably more than what they are doing at present to improve the status of agriculture in particular and the country's ecosystems in general.

Barmecide Feast – The Problems in Production and Sale of the Produce of Organic Agriculture

Agriculture in India directly or indirectly provides livelihoods to 60 percent of the population and so the problems of this sector are most relevant for the overall development of the country and have to be effectively addressed. Especially in distress are the small and marginal farmers who have less than 2 hectares of land and constitute 85% of all farm households (MoA, 2016). The average landholding, in fact, is only 0.5 hectares per household (NSO, 2021).

1. The Problem

Specifically, the problems of agriculture with regard to aggravating global warming are as follows (CGIAR, 2020) -

1. Carbon dioxide emissions from the heavy use of gasoline-powered agricultural machinery that modern techniques require.
2. Carbon dioxide emissions from the deforestation and burning of land to convert it for intensive agriculture.
3. Loss of soil and forests as carbon sinks. Natural vegetation acts as a huge reservoir, soaking up atmospheric carbon, as does the soil. Destruction of the plants and the disruption of the soil that occurs when land is converted to agriculture decrease the available of these sinks, meaning more carbon is left in the atmosphere. Conventional farming techniques also increase soil erosion and the leaching of soil nutrients, which decrease the use of soil as a sink. Rough estimates are that man-made changes in land-use have produced a cumulative global loss of carbon from the land of about 200 thousand million tonnes.
4. The use of synthetic fertilizer releases huge amounts of N_2O – it is the single largest source of N_2O emissions in the world. The application of fertilizers accounts for 36% of the total emissions of N_2O . According to the IPCC, if fertilizer applications are doubled, N_2O emissions will double, all other factors being equal. Since regular applications of fertilizer are an integral part of modern farming, and as the developing countries adopt more of these industrialized agricultural practices, this is a realistic situation. Remembering that N_2O has over 300 times the warming potential of CO_2 and can stay in the atmosphere for about 120 years, the effect on global warming could be devastating.
5. Methane released from animals and manure piles. Manure storage and treatment systems equal 9% of total CH_4 emissions and 31% CH_4 emissions from the agricultural sector.

Apart from this the indirect contributions to global warming of modern farming are even greater. The manufacture of synthetic fertilizer is one of the most intensive energy processes in the chemical industry, which itself is a primary energy user globally. Add into this the need for the fertilizer to be transported to the farmer, and we find that synthetic fertilizer is the largest producer of CO_2 emissions in the agricultural industry – even considering all the tractors and equipment belching out exhaust fumes. The use of synthetic fertilizer tends to acidify the soil, which then requires the application of lime to balance the pH; manufacture of lime also produces CO_2 emissions. Finally, synthetic fertilizers suppress the soil's natural micro-organisms that break down methane in the atmosphere, which leads to higher levels of methane than otherwise. The soil micro-organisms are largely responsible for controlling soil temperature and water run-off, production of vitamins, minerals and a host of plant hormones, not to mention that soil micro-organisms provide much of a plant's immune system so reducing their population is harmful. Thus, modern agriculture is unsustainable from the point of view of its harmful contribution to global warming and reduction of biodiversity and organic soil fertility (Shiva, 1992).

Simultaneously, economically too this modern agriculture is proving to be unsustainable. The main problem with modern artificial input agriculture is that there is a natural limit to the artificial inputs that the soil can take and so the quantity of fertilisers, pesticides and water to be applied goes on increasing while the yields go on falling and sometimes the crop fails altogether. Consequently, the

economic costs of providing the inputs go on increasing while the realisation of the value of agricultural products in the market does not keep pace with this rise in input costs. Inevitably this leads to farmers falling into the clutches of moneylenders and becoming enmeshed in spiraling debt. Matters have been compounded by the reduction in the availability of cheap institutionalised credit and various kinds of government subsidies for fertilisers, water, diesel and electricity and research which even now amount to about Rs 5 lakh crores annually in India (16% of the farm sector GDP) while it is as much as \$20 billion (20% of the farm sector GDP) annually in the USA. The economic crisis in agriculture has now assumed serious proportions with thousands upon thousands of farmers having committed suicides, sold their lands, houses and even their kidneys and there is a general reluctance among them to continue with farming (NSSO, 2005).

The Mahila Jagat Lihaaz Samiti (MAJLIS), an organisation of Bhil Adivasi farmers in Dewas district of Madhya Pradesh, conducted a survey to determine the economics of agriculture among 50 Adivasi marginal farmers spread over the districts of Dewas, Indore and Alirajpur in Madhya Pradesh, asking them about their performance in the 2020-21 agricultural year over the two seasons of Kharif and Rabi. In addition to the farming details the respondents were also asked about their monthly food consumption. The results of this survey are disturbing to say the least and are given in Table 1 below.

Table 1: Results of Farm and Consumption Expenditure Survey 2020-21

Average Daily Per Capita Calories Consumed (Calories)	Average Daily Per Capita Food Cons. Exp. (Rs)	Average Daily Per Capita Total Cons. Exp. (Assuming it is double of Food Exp.) (Rs)	Average Daily Per Capita Farm Income (Dividing Total Net Farm Income by 365 days) (Rs)	Average Household Labour Wage (Dividing Total Net Farm Income by No. of days of Household Labour) (Rs)	Average Agricultural Income Per Acre (Rs)	Average Annual Per Capita days of farm Work (Days)
2092	43	87	14	72	11950	54

The average daily per capita food consumption expenditure is Rs 43 whereas the average daily per capita farm income if we were to divide the total net income by 365 days is only Rs 14. Which means that the farm income is grossly inadequate to even cover the food consumption expenditure. If we assume the total consumption expenditure for such a poor household to be double the food consumption expenditure then the farm income is able to cover only 16 percent of total household expenditure and 32 percent of food expenditure. No wonder then that the average daily per capita calorie consumption of the sample is only 2092 which is well below the benchmark of 2400 calories for good nutrition as determined by the World Health Organisation. This has to be compared with the poverty line determined by the World Bank which is \$1.9 per capita per day which works out to Rs 42 per day in India in purchasing power parity terms (World Bank, 2021). As is evident from the results above, this poverty line income is not sufficient to even provide a minimum necessary food intake of 2400 calories per day let alone take care of other household expenditures. Therefore, the determination of the poverty line income is itself faulty and it needs to be at least trebled to ensure that people get adequate nutrition and other benefits. If that is done then the proportion of people below the poverty line will increase substantially from the 28 per cent that is officially quoted now.

One more disconcerting aspect is that these farmers are getting on an average only 54 days of work per capita annually from their farms. Whereas, accounting for holidays they should be getting at least 250 days of work on par with salaried workers in permanent jobs. Moreover, in 2021 the statutory minimums wage in agriculture was Rs 220 per day but as we can see, the farmers on an

average got only Rs 72 per day for the number of days they worked. If the farmers are to get Rs 220 per day for 250 days then the income per acre has to increase to a huge Rs 1,65,000 assuming three workers per household, from the paltry Rs 11,950 they are getting now due to depressed prices for their products and the high prices of inputs like seeds, fertilisers and pesticides. Since this is not forthcoming, all the surveyed farmers are also doing wage labour either locally or by migrating to cities like Indore and Surat to make ends meet. The NSO survey cited above (NSO, 2021) also confirms this as it finds that farm production contributes only 37 percent of the total income of farm households and the contribution of wage labour is more at 40 percent. Obviously, proportion of farm income is even less for marginal farmer households. The NSO survey also reveals that this economic unviability has resulted in escalated indebtedness of farming households with 50 percent being in debt with the average outstanding being Rs 74,000.

The problem of depressed prices for agricultural products is a longstanding global one. This can be understood from an analysis of the data in Table 2 below which gives the comparative prices of wheat and gold in the USA between 1923 and 2023.

Table 2: Comparative Prices of Wheat and Gold 1923 – 2023

Year	Wheat price in \$/Bushel	Gold price in \$/Troy ounce	Population	Wheat Production in Bushels	Gold Stock in Metric Tonnes	Wheat/capita in Bushels	Gold/capita in Troy Ounce	Consumer Price Index
1923	1.11	20.7	111947000	78,20,00,000	15000	6.985448	0.000134	17.1
2023	6.79	1835.9	339996563	165,00,00,000	50000	4.85299	0.000147	307.8
Change (%)	510	8782	204	111	233	-31	10	1700

Source: Various US Government websites

The price of wheat increased from \$1.11 per bushel in 1923 to \$6.79 per bushel in 2023 which is an increase of 510% over the past century. Whereas the price of gold increased from \$20.67 per troy ounce to \$1835.9 per troy ounce in 2023 which is an increase of 8782%. The production of wheat went up in the same period by 111% while the total stock of gold in the USA went up by 233%. The population in the USA increased by 204% in this time. The production to population ratio for wheat, which was 7 bushels per capita in 1923 has dropped to 4.9 bushels per capita in 2023 whereas the stock to population ratio for gold which was 0.000134 troy ounce per capita in 1923 has risen to 0.000147 troy ounce per capita in 2023. Consequently, given the fact that the availability of wheat per capita has gone down and the availability of gold per capita has gone up in the USA one would expect the inflation in the price of wheat to be greater than that in the price of gold!! However, instead the inflation in the price of gold greatly exceeds the inflation in the price of wheat. The consumer price index in the USA was 17.1 in 1923 and has since risen to 307.8 in 2023 which is a rise of 1700%. Thus, while the rise in the price of wheat has lagged the rise in CPI by 1190%, the rise in the price of gold has topped the rise in CPI by 7082%. A similar situation exists to a lesser or greater extent in other countries too and especially in India.

Clearly, the prices of agricultural products have been suppressed by Governments in the USA and elsewhere by various means, mainly subsidies, so as to keep food prices and wages low. While, keeping food prices low is a legitimate objective, but it should not be at the expense of farmers and so the level of subsidy to them needs to increase.

Another problem arising from the adoption of modern agriculture has been that of the increasing scarcity of water. Most of the water needed for irrigation in India is being provided by groundwater extraction and this has led to a situation of "water mining" wherein water collected in the deep confined aquifers over hundreds of thousands of years were used up in the space of a decade and large parts of the country have been facing a ground water drought from the nineteen nineties onwards. Since then, there has been less and less ground water available for not only irrigation but also for drinking and the cost of its extraction is continually going up. Big dams, however, are the environmentally and socially most harmful component of modern agriculture. The World Commission on Dams reviewing the performance of big dams brought out the fact that the benefits gained from big dam construction have been at an unacceptable and unnecessary higher cost in terms of environmental destruction and human displacement (Dharmadhikari, 2005). There is lack of equity in both the distribution of benefits and costs with the poor having lost out on both counts. According to the Falkenmark Indicator of water stress, India is a water stressed country as the water availability is only 1400 m³/year/person whereas it should be 1700 m³/year/person. In fact, many areas in India are water scarce as the water availability there is less than 1000 m³/year/person which is the level below which a region is classified as water scarce (Niti Ayog, 2019).

Additionally, modern agriculture drastically reduces the agricultural bio-diversity with its stress on mono-cultures. For example, in the western Madhya Pradesh region there has been a reduction in the acreage under coarser cereals and pulses which have been replaced by soybean. This combined with the greater monetisation of the rural economy has forced the marginal Adivasi farmers to buy their food from the market instead of getting it cheaply from their farms and this has reduced their nutritional levels well below healthy standards. Thus, they too have become sufferers of the problem of chronic hunger that today engulfs the poor in much of the developing world and even in the developed countries because the shrinking of livelihood opportunities has meant that they are not able to earn enough to buy wholesome and adequate food (Dreze & Sen, 2013).

Agricultural Production and Consumption Expenditure surveys conducted from time to time by MAJLIS have shown that the scheduled tribe households in western Madhya Pradesh are earning only about Rs 18 per capita per day from their agricultural operations which is well below the international poverty line income as decided by the World Bank of \$1.9 per capita per day (equivalent in Purchasing Power Parity terms in India to Rs 41 per capita per day) (World Bank, 2021) and their average per capita calorie consumption is only 2000 per capita per day which is well below the World Health Organisation Standard for rural areas of 2400 calories per day (Chopra, 2011). Moreover, the annual per capita agricultural work availability is only about 60 days, whereas, assuming a five-day week and a few holidays, the per capita annual work availability should be 250 days. All the farmers surveyed have to undertake supplementary labour, often migrating to Indore to work for big farmers or as construction labourers, apart from the work they do on their own farms, to make ends meet. Thus, small and marginal farmers are not only being grossly underpaid but they are also not getting enough work on their farms.

Tragically, this march of modern chemical agriculture has marginalised women completely. Settled agriculture began after the Neolithic Revolution about 10000 years ago most probably due to the selection of seeds of edible grains done by women from the wild grasses while they were tending to their children when the men went out to hunt and gather (Lerner, 1986). However, once surpluses accumulated from agriculture, thereafter, women were gradually pushed into an even more secondary status in society by men without rights to land and other means of production. With the advent of mechanised chemical agriculture this marginalisation of women assumed greater proportions and their say in the conduct of agriculture reached rock bottom as they were further removed from the market (Agarwal, 1994). The increasing burden of poverty too is disproportionately borne by women due to the feminization of poverty (UN Women, 2023).

2. The Solution

Research has shown that organic arable production is about 35% more energy efficient, and organic dairy production about 74% more efficient per unit of output than non-organic production (Smith et al, 2015). Organic farming, by definition, prohibits the use of synthetic fertilizer, using instead a limited amount per hectare of organic matter and knowledge of soil biology. Since the pH of the soil is not disrupted by organic farming techniques, the use of energy-intensive lime is also minimal or non-existent resulting in lower CH₄ and CO₂ emissions compared to modern external input farming techniques. The use of organic matter also increases carbon content in the soil, storing up to 75 kgs of carbon per hectare per year. Organic farming uses nitrogen-fixing plants as cover crops and during crop rotation, which help to fix nitrogen in the soil rather than releasing it into the atmosphere. Moreover, through bio-gas plants the methane generated can be channelised for cooking and generation of electricity instead of being released into the environment. Finally, organic farming techniques maintain soil micro-organisms and so help in oxidizing atmospheric methane. The combined effect of all the different benefits of organic farming results in a Global Warming Potential that is only 36% that of modern external input farming. The main constraint to organic farming is the availability of adequate amounts of manure as the cowdung produced is not enough to cater for the fertilization of all the agricultural area. This can be solved by composting of animal manure with a mixture of waste agricultural and forest biomass and making microbial cultures out of cow dung which are labour-intensive processes. There are several effective techniques for composting and creating bio-enzyme rich microbial cultures (TNAU, 2023). So, if enough subsidy is given to organic farmers to compensate them for the labour required for composting and microbial culture preparation, then this problem will be solved.

Organic agriculture with indigenous seeds is, moreover, less water intensive. Thus, the virtual water embedded in these crops is less (Hoekstra & Chapagain, 2007). Consequently, this kind of agriculture also greatly reduces water use and relieves water stress which is very important in the Indian context where 80% of the total water demand is from agriculture (Niti Ayog, op cit). Combined with appropriate local area watershed development beginning with the uppermost ridges of river valleys and working down to the drainage lines, this will solve the problem of water stress which has assumed serious proportions.

Therefore, sustainable internal input agriculture is more energy, water and nutrient efficient and results in lower greenhouse gas emissions than modern external input agriculture per unit of crop produced, which is a crucial parameter, given the need for food production to feed the world's population. It is also community dependent rather than market dependent and so it revitalises the local economy. What is required is collective action by communities at the grassroots as individual farmers cannot bring about this radical change (Ostrom, 1990). Collective Action undertaken by Bhil Adivasis in western Madhya Pradesh employing the principle of localized watershed development (Tideman, 1996) has corroborated this (Banerjee, 2010). Last but not the least, sustainable cultivation opens up huge possibilities for women to play a decisive role not only in agriculture but also in society and the economy as a whole. This kind of sustainable agriculture has to be complemented by ecosystem restoration and decentralized renewable energy generation for a comprehensive attack on both poverty and climate change. The United Nations has declared the ten-year period from 2021 to 2030 as the decade of ecosystem restoration (UNO, 2023). This framework of sustainable intervention is schematically shown in Fig. 1 below. However, this will not materialize unless concrete steps as underlined below are taken in this regard.

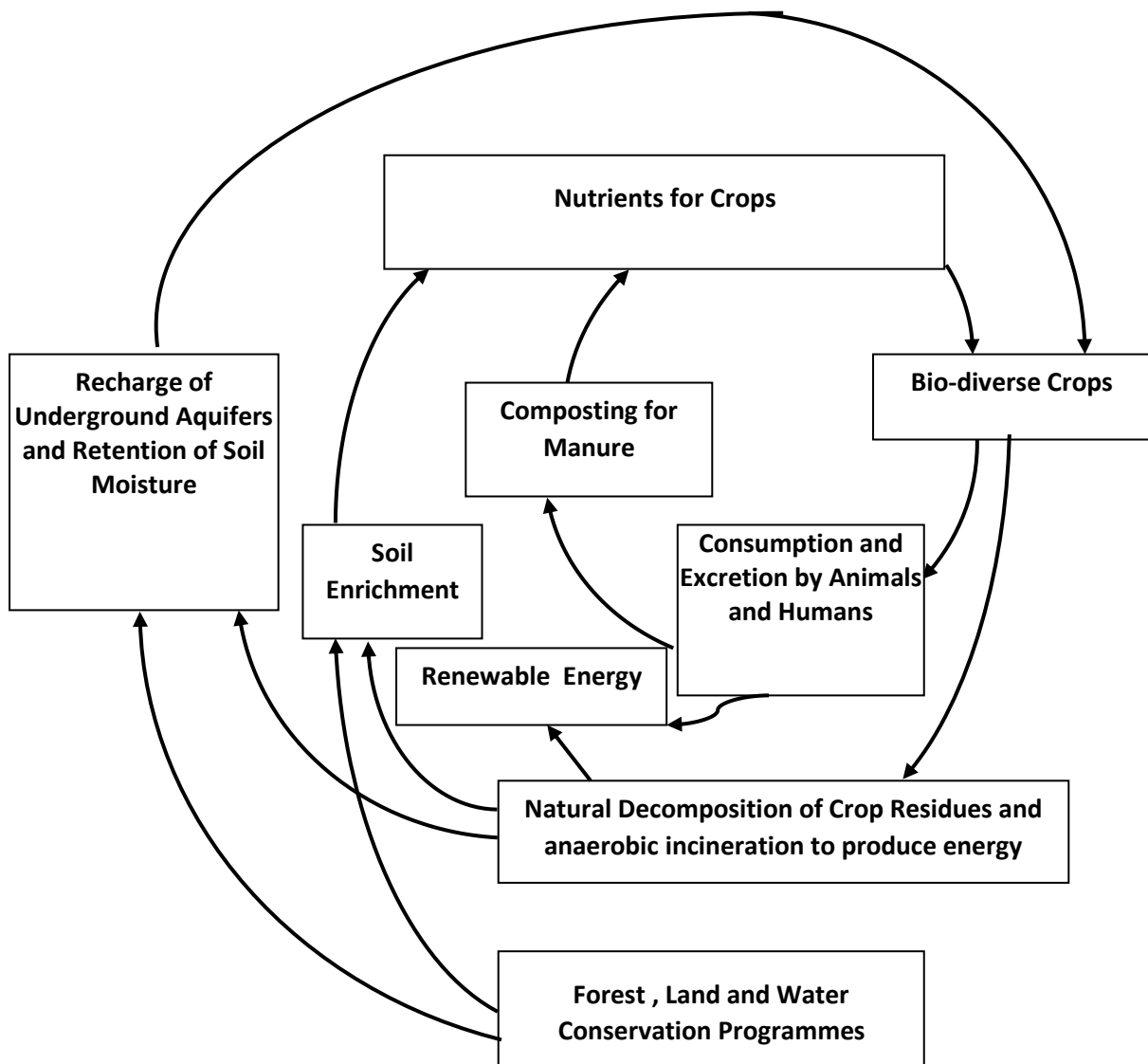


Fig. 1 : Schematic Diagram of Sustainable Agriculture

This system which combines sustainable agriculture and ecosystem restoration along with renewable energy generation, is labour intensive and localized and can succeed only with community participation involving both women and men – gender based collective action. This will, consequently, also solve the problem of rural unemployment which currently leads to the farmers migrating either seasonally or permanently to cities and towns in search of livelihoods.

3. The Remedial Intervention

The organisation Mahila Jagat Lihaaz Samiti (<https://mahilajagatlihaazsamiti.in/>) is carrying out a reorientation of scheduled tribe farmers towards sustainability and gender equity in western Madhya Pradesh. Scheduled Tribe farmers have been chosen because they are traditionally nature friendly and are default organic in their subsistence agriculture (Rahul, 1997). The overall framework for the development intervention is aimed at achieving sustainability and equity for the tribes people through organic agriculture and ecosystem restoration which also mitigates climate change at the global level with the use of **Survival Edge Technology**. This is an assortment of simple technologies that is implemented by communities through collective action to mitigate the agriculture, water, energy and climate crises that face humanity and with the agency of women in its planning and implementation

(Banerjee, 2020). A collective named Kansari Organics (<https://kansariorganics.in/>) was set up to undertake the production and marketing of organic produce. Kansari is The Bhil Adivasi Goddess of Agriculture in Bhil Mythology. The Supreme God created the Goddess Kansari, from the cereal Jowar (Sorghum) and gave her breasts. Human beings fed from these breasts and blood flowed into their veins giving them life. That is why the Bhil Adivasis believe that if they do not eat Jowar, their blood will dry up and their civilisation will perish. Kansari is, thus, an apt name that signifies the importance of reviving organic agriculture as a must for restoring the health of the planet and of human beings.

The problem started with the selection of farmers. Such is the hegemony of chemical agriculture that it was initially not possible to find farmers to take up organic agriculture even though they were assured of being provided a subsidy for preparing organic manure followed by a fair income. Farmers just do not believe that it is possible to do agriculture in the organic way. Eventually two marginal farmers, with about 1 acre of land each, undertook organic cultivation of the Lok1 variety of wheat with support from MAJLIS. This is a hybrid variety of wheat but since its introduction by the NGO Lok Bharti (<https://www.lokbharti.org/Wheat-Research>) in 2000, over the years it has stabilised and the seeds were selected from the production on the pilot farm of MAJLIS in Pandutalab village. Ideally with a proper application of chemical fertilisers Nitrogen (N), Phosphorus (P) and Potassium (K) in the right proportion of 24 kg of N, 12 kg of P and 12 kg of K per acre, the output should be 18 quintals of Lok1 wheat. However, when a shift is made to organic compost there is a reduction in yield initially and so the two farmers produced about 12.5 quintals of output from an acre each though it slowly increases later over a period of three years or so. The seed sown was 0.5 quintals per acre and so the net output was 12 quintals per acre.

4. The Economics of Organic Lok1 wheat variety production per acre in 2021

The costs of production of Lok1 wheat were as follows –

1. Cost of manure – Rs 6600
 2. Preparation of field and sowing of wheat @ Rs 220 per day which was the agricultural minimum wage in Madhya Pradesh in the 2020 Rabi season – Rs 2200
 3. The electricity cost for running the pump for irrigation was Rs 2000
 4. Five waterings were done each requiring one person to work for two days– Rs2200
 5. Preparation and application of microbial culture thrice – Rs 1800
 6. Harvesting and threshing of wheat – Rs 3600
 7. Cleaning, grading, storing and packaging of wheat – Rs 2200
 8. Total Agricultural Cost A2 (sum of costs on items 1-7 above) – Rs 20600
- Family Labour (FL) in protecting the crop for 140 days – Rs 6600
Total cost C2 = A2 + FL – Rs 27200

Therefore, price at the farm for the organic wheat by applying the Government formula (Indian Express, 2020) was $1.5 \times C2 = \text{Rs } 40800$ for 12 quintals which came out to be – Rs 34 per kg. Thus, after giving the statutory minimum wage to the farmer and also a 50% profit over and above the costs so as to ensure enough to invest in soil and water conservation and meet other household expenses, the cost of wheat produced by Kansari was double that being offered to the farmers in 2021 in the open market of Rs 17 per kg. The Madhya Pradesh Government offered slightly more at Rs 19.75 per kg under its minimum support price scheme but that too could not cover the cost of organic wheat at the farm gate and additionally for chemically produced wheat the Government subsidises the cost of chemical fertiliser purchase whereas there is no such support for preparation of organic manure which is a very labour intensive process. Moreover, the subsequent application of this manure to the fields too requires more labour than in the case of chemical fertilisers.

6. Problems of Marketing Organic Produce

The price of the organic Lok1 wheat in Indore that was sold by Kansari Organics after adding Rs 1 per kg for transportation from the farm to the city was Rs 35 per kg. Comparable quality of Lok1 wheat graded and cleaned and produced by chemical means sold at Rs 25 per kg in Indore and so the organic wheat produced by Kansari was 40% more costly. Consequently, despite this wheat being healthier, it had few takers. The problem became even more serious when the wheat had to be sold outside Indore. To be able to reduce the transportation and delivery cost in an external location there has to be a hub and spoke model in that location. The wheat is transported in bulk to the hub from the farms and there it is packed in smaller retail sale quantities and delivered to the stores or to homes. However, for this to be possible there must be a huge production along with brand recognition and a high demand among customers for the product.

Unfortunately, as there is a lack of credibility regarding the authenticity of organic products among consumers and consequently a reluctance to pay a premium price for them, the demand for them is low generally and a new brand like Kansari has very little traction. In fact, the difficulty of getting farmers to produce organic crops going against the strong tide of chemical agriculture, is there across the country and so even established organic produce firms too are unable to ensure purity of their offerings. A study conducted by the Consumer Education and Research Centre, Ahmedabad, showed that the products of seven leading organic food brands in India had traces of heavy metals in them and some had pesticides also (CERC, 2018). Tests conducted by MAJLIS on the organic produce of some of the firms that were tested by CERC, Ahmedabad, being sold in Indore, revealed the same presence of heavy metals and pesticides, indicating that chemical produce was being passed off as organic by them.

The market for organic products is limited by these price and credibility factors. The number of people in India with annual incomes above Rs 5 lakhs is only about 20 million as estimated from the latest available income tax filing data (Outlook, 2023). Only some of these people will be able to buy the doubly priced organic products if they are so inclined.

Given this situation, the organic firms have to courier their produce across India or set up dedicated stores themselves and that increases the cost by a substantial amount as even the cheapest courier, India Post, charges about Rs 40 per kg. So organic wheat or flour made from it is very expensive compared to chemical wheat or flour which can be delivered cheaply through the hub and spoke model because of the huge demand. There are thus both severe demand and supply side constraints for organic produce which organic producers cannot overcome on their own. The products of Kansari Organics are the cheapest among all organic produce on the market because not only is there no mark up for profits but the management costs also are being subsidised by MAJLIS from grant funds. While there are a few customers across the country and in Indore and one in the USA who are doing repeat orders and have paid glowing tributes to the quality of its products, they are not enough to consume the whole of the very low production of 25 quintals of wheat that Kansari had this year!! Over the year only about 8 quintals of the wheat will be sold through word of mouth advertising and the trust networks of MAJLIS.

6. Problem of Storage of Produce

This brings up another intractable problem of storage of wheat as after about 5 months after the harvest in March it starts getting attacked by pests. The big traders of chemical wheat who deal in lakhs of tonnes use pesticide fumigation to keep the wheat free of pests. Organic producers can't do that and so have to resort to fumigation with Carbon dioxide which is not only more costly but also a

contributor to global warming. A small player like Kansari cannot invest in machinery required for Carbon dioxide fumigation and anyway it is harmful from a climate change perspective. So MAJLIS bought 17 quintals of the wheat from Kansari at Rs 35 a kg and then spent some more in distributing it free to poor Adivasi households in the form of COVID relief!! The problem of storage is a little bit more for organic produce but it is there even for the produce of chemical agriculture. The Food Corporation of India and the various state government agencies that procure grains under the minimum support price mechanism eventually end up losing a portion of the procured grains. There is no data regarding this loss and even though the Government claims that the loss is only about 6%, experts say that it is more likely to be greater than 10% (TPCI, 2023).

7. Status of Big Organic Companies

The gross annual value added from agricultural production of crops is around Rs 17 lakh crores (Gol, 2018). Whereas, only 1.3% of all farming households are doing some organic farming on 1.5% of the total arable land with a gross annual value addition of only Rs 16,000 crores (Khurana and Kumar, 2020). The export component of this value addition is about Rs 7,000 crores with Soya meal constituting 57% of the total value (APEDA, 2023). The Big Organic companies and Multinational Corporations are involved in this lucrative export market as the complications involved in exporting organic produce are many which cannot be tackled by small producers. Most of the exports are done by Multinational Corporations. The biggest Indian company, Sresta Natural Bioproducts Private Limited which sells its produce under the brand name 24 Mantra, had a total annual turnover in 2019-20 of just Rs 217 crores with a net profit after tax of Rs 3.1 crores, up from a turnover of Rs 176 crores and a net profit after tax of Rs 1.3 crores in the previous year. This, after a higher profit rate from exports as the Indian market is not ready to pay for the high prices of organic products and so its Indian operations are less profitable. Moreover, studies have revealed that overall the farmers have not benefited in financial terms from the practice of organic agriculture whether on their own or as contract farmers for big organic companies (Peramaiyan et al, 2012).

8. Millet Farming

Recently the Government has initiated programmes to promote millet farming citing the virtues of millets and exhorted farmers and consumers to embrace them (ToI, 2022). A scheme for providing loans to startups to process and sell millets has been launched. However, this scheme does not address the huge barriers to the popularisation of millets vis a vis rice and wheat. First, the productivity of millets is less. Second, their processing costs are high. Third, their shelf life after processing into flour or rice is very low. Most importantly, the farmers have to spend a lot of time in protecting the ripe crop from the birds. The MAJLIS programme has promoted eight varieties of millets on its own experimental farms and those of farmers and it is quite a challenge to get the ripe crop in as all the birds of the area zero in on them given that they ripen early and are the only millets in the area. Therefore, just exhortation and offering of loans won't do as what is needed are hefty subsidies to farmers to make them grow millets and subsequently equally hefty subsidies to consumers to enable them to buy processed millets.

9. Conclusions

The organic farmer and any organisation, whether an NGO like MAJLIS or a commercial entity like Sresta Natural Bioproducts, that tries to promote organic farming, is thus faced with Herculean problems. First of all, given the huge support that is being provided to chemical farming by the Government and the market over the past six decades and next to no support for organic farming (the Government subsidy is about Rs 500 crores for organic agriculture as opposed to Rs 5 lakh crores for chemical agriculture), most farmers are reluctant to believe that it is possible to successfully do

organic farming. Secondly, this has resulted in lack of authenticity of organic produce which in addition to its high price in the absence of subsidy makes even the well-off consumers, who are anyway very few in number, suspicious and reluctant to buy organic produce. The common consumer can't afford organic produce anyway and it is exclusively bought by the rich. In fact, as mentioned earlier most farming households are not producing enough food for themselves and so are dependent on additional work to make ends meet and are suffering from chronic hunger.

This severe restriction of the consumer base means that organic producers cannot deliver their goods to the consumers through the hub and spoke model and have to rely on couriers and dedicated stores instead and this further increases the price. Then there is the problem of storage and loss due to pest attacks which reduce the shelf life of organic produce and also increase the costs of loss prevention. Consequently, companies engaged in organic farming and trade are not able to grow the sector and provide remunerative prices to farmers and so organic farming remains marginal to the agricultural economy. Overall, the farmers and especially the small holder farmers, even after getting subsidies for chemical agriculture, cannot solve the twin crises of unsustainability of this agriculture and the adversities of climate change on their own given the huge and complex problems that they face in terms of lack of adequate Government support and remunerative prices in the market. This is even more so in the case of organic farmers who do not get even a fraction of the support that chemical farmers get. Consequently, despite grandiose promises being made to the farmers by the Government, their plates are in reality empty as in a Barmecide feast and they are suffering from both indigence and hunger!!

Thus, the primary onus for promoting sustainable agriculture in particular and ecosystem restoration and climate change mitigation in general is on the Governments both Union and State to switch subsidies and investments from chemical agriculture to the promotion of sustainable agriculture, ecosystem restoration and localised renewable energy generation through collective action at the grassroots. Along with this big companies in India must use their massive Corporate Social Responsibility funds to promote organic farming and grow the organic consumption market because commercially run companies cannot do so on their own given the poor returns from the market and the immense obstacles in terms of authentic organic production, its storage and distribution.

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