

HOW REAL IS THE IMPLICATIONS OF ORGANIC AGRICULTURE UPON SUSTAINABLE RURAL DEVELOPMENT IN ARUNACHAL PRADESH

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Abstract

In recent years, all over the world, with growing concern of climatic change and global warming, the concern for preserving people's health as well as a healthy environment acquired a permanent dimension, meant to ensure the meeting of present consumption needs without jeopardizing those of the future generations. Through this paper an attempt will be made to understand the importance of organic agriculture in a state like Arunachal Pradesh, what are its advantages and disadvantage, who real is the concept, and will it able to develop the agricultural sector and rural economy in a sustainable manner. For Arunachal Pradesh, the organic farming is a sector for the future developments, that has the potential of increasing trend in recent years, both in the crop production and livestock sector.

Key words: organic agriculture, Arunachal Pradesh, Agriculture and rural development

Full Paper

The Indian Himalayas cover an area of 53.8 million hectare, approximately 16 percent of the total geographical area of the country. About 15% of the area is permanently covered with snow and provides a perennial flow of water, 1,200 cu km annually, to the vast Indo-Gangetic plains (Chandra 1994). This region is home to 33.8 million people but sparsely populated with an overall population density of 62.7 per 1,000 ha.

Agriculture is the main occupation of the mountain population, providing direct employment to about 71% of the working population. Agriculture is the primary sector of the economy, contributing 45% to the total regional income of the inhabitants. The net cultivated area is higher in the western Himalayan region (15.8% of the total geographical area) than in the north-eastern part (9.8%). The net cultivated area varies from 2.7% in Arunachal Pradesh to 40.9% in the Darjeeling district of West Bengal. Forest is the major land use and accounts for nearly 59% of the total area of the Indian Himalayas. Arunachal Pradesh is the largest state among all the north eastern states, covering a total area of 83743sqkm with the population density of just over 17. The size of rural population is 1069,165 while the urban population is 3,13,446 which is 77.33% and 22.67% respectively.

Major portion of the land falls under mountains region of Himalaya and Patkai hills with an elevation between 60 to 7300 meters. The state's total cultivable area under Jhum cultivation was 1.10 lakh hectares and under permanent cultivation was only 0.90 lakh hectares and are rain fed cultivable land. Arunachal Pradesh has rural base of economy as over 70 % of the population still lives in rural areas. Statistical abstract of Arunachal 2008 shows that about 58.44 percent of the population belongs to the category of cultivators, 3.85 percent agricultural laborers, 0.86 percent in household industries, and 36.85 percent other types of workers.

Organic Agriculture and Rural Development discourse in Arunachal Pradesh

The concept of organic agriculture builds on the efficient use of locally available resources, and on the use of adapted technologies (e.g. soil fertility management, closing of nutrient cycles, control of pests and diseases by means of natural antagonists). This concept opens up new ways of achieving sustainable development in the South and has therefore developed dynamically over the past decade (Willer and Yussefi 2006). Organic agriculture has the potential (Kilcher 2005):

1. to improve soil fertility, biodiversity and sustainability of agricultural production;
2. to conserve natural resources;
3. to improve agronomic and economic performance; to make yields more stable, especially in risk-prone tropical ecosystems; to achieve better food quality and food security;
4. to provide access to attractive markets through certified products;
5. to create new partnerships within the whole value chain as well as to strengthen self-confidence and autonomy of the farmers.

Organic farming is the subject of extensive research in northern countries, especially in Europe. A wide range of studies (Mäder et al. 2002, Offermann and Nieberg 2000, Stolze et al. 2000) have demonstrated the advantageous aspects of this system in terms of ecosystem functioning, soil fertility conservation and economic impact. NGOs and farmers' groups are increasingly adopting organic techniques as a method of improving productivity and food

security in these systems. However, no systematic attempt has hitherto been made to track the extent to which these approaches are being employed, or their effectiveness compared to other approaches, in meeting economic, social and environmental objectives (Parrott and Kalibwani, in: Willer and Youssefi 2006).

What and how organic farming can contribute to food security and sustainable development in tropical countries is of particular interest for research and development, for stakeholders in the whole value chain, and for national authorities, as well as for national and international cooperation agencies concerned with policy development: in view of the diminishing financial resources available for agricultural research in development, it is important to invest in the most sustainable and cost-efficient strategies.

In the recent times, there is an ongoing debate in current rural development discourse concerns the poverty reduction potential of agrarian-based development versus diversification out of agriculture. In order to understand organic agriculture's place in current rural development debates, it is important for us to understand and trace the historical pathway of rural development thought from the 1950s to the present. Adapted from Ellis and Biggs (2001), Figure 1 highlights two main paradigm shifts during a sixty year time frame of rural development. Firstly, modernization ideas of dual growth and the backward peasant have given way to a focus on small farm agriculture as the engine of growth and development from the 1960s onward. Secondly, the authors identify a shift in rural development from top-down approaches to grassroots or process approaches that emphasise participation and empowerment. This has been marked by the rising power of civil society and a backlash against the failure of technological agriculture advances—known as the Green Revolution¹—in low-productivity areas (Ashley and Maxwell, 2001).

In the present context when our focus is on sustainable agriculture development for the small scale farmers within the alternatives agriculture of organic agriculture in Arunachal Pradesh, where rural population have often excluded from development. So when we are talking of developing the state, first priority should be these small farmers, who accounts for about 70% of the total work force of state. Moreover, small farms have been shown to perform with better economic efficiency than large farms (Heltburg, 1998), reduce rural poverty and food insecurity (FAO, 2002), creates productive employment opportunities and vibrant non-farm rural economies, and contain rural-urban migration (Hazell, 2005).

¹ The term 'Green Revolution' refers to the rapid advances and spread of agricultural technology from the 1950s, such as chemical fertilisers and hybrid seed packages, that allowed many farmers to increase yields, but also had negative consequences for many poor farmers whose land was unsuitable for the new technology, and long-term consequences including degradation of the environment due to problems such as increased pest build-up and soil toxicity (Pingali and Rosegrant, 1994).

Figure 1: Dominant and sequential themes in rural development

Decade	Development ideas	Dominant rural development themes		
1950s	Modernisation; dual economy model; 'backward' agriculture; lazy peasants.	Modernisation	Small Farm Efficiency	Process; Participation; Empowerment
1960s	Transformation approach; technology transfer; mechanisation; green revolution (start); rational peasants.			
1970s	Redistribution with growth; basic needs; integrated rural development; state-led policies; urban bias.	Sustainable Livelihoods	Process; Participation; Empowerment	Small Farm Efficiency
1980s	Structural adjustment; free markets; retreat of state; rise of NGOs; Farming Systems Research (FSR); Women in development (WID); Poverty Alleviation.			
1990s	Microcredit; Participatory Rural Appraisal (PRA); environment and sustainability; poverty reduction; Gender and development (GAD).			
2000s	sustainable livelihoods; good governance; decentralisation; critique of participation; sector-wide approaches; poverty eradication.			

Organic agriculture is generally understood as part of the wider term alternative agriculture, an umbrella term for a variety of movements that have sprung up in opposition to the conventional ways of growing, transporting and consuming agricultural products. These movements seek to redress imbalances in the productivist model that causes producers to become increasingly dependent on agribusiness capital, and also seek to assert control over the commodity chain. Whatmore et al. (2003) draw together the diverse strands of alternative agriculture, which they term Alternative Food Networks (AFN), by a common focus on building trust between food producers and consumers, and articulating new forms of political association and market governance.

Potential of Organic Agriculture in Arunachal Pradesh

When we look into the geographical and climatic condition of the state, the picture seems perfect that organic agriculture will certainly be the best way forward to develop the rural economy and agriculture in the right direction. With a congenial climatic conditions such as hot temperatures, high annual rainfall and poor soil properties require appropriate agricultural practices. The extensive forest as an original ecosystem with its closed nutrient cycles and biodiversity serves as an ideal model concerning nutrient management and cropping patterns. The diversity of the production system is therefore of special importance in the tropics: simplified systems and monocropping harm soil fertility and the ecological balance to a much greater extent than in temperate climates because soil oxidation and pest population dynamics run permanently and more rapidly in the tropics. Heavy rainfall and high temperatures accelerate mineralisation of the nutrients and retard accumulation of soil organic matter. Tropical farming can only be sustainable if the primary rules of this natural system are respected.

Central to organic agriculture are promotion of soil fertility, conservation of biodiversity (e.g. native flora and fauna), production methods that are adapted to the locality and avoidance of chemical inputs. Use of such methods and cultivation of a diverse range of crops stabilize the delicate ecosystems in the tropics and reduce drought sensitivity and pest infestations. Organic production reduces the risk of yield failure, stabilizes returns and therefore enhances food security for small farmers' families. Organic farmers do not fight against the natural dynamics; on the contrary, they use them to their advantage. The perennial vegetation in the tropics offers excellent alternatives to simplified production systems:

1. Agroforestry: agricultural production in forestry systems and under shade trees.
2. Intercropping: a combination of two or more crops on the same plot and at the same time.
3. Rotation: one crop is followed by another crop, preferably from a different botanical family.

The organic products contribute to keeping people in good health, ensures water protection against synthetic pesticides and fertilizers, provides solutions for farmers to surmount their professional difficulties and for rural area development; it also ensures a healthy future for the next generations. The reasons why we should have an ecological agriculture are the following: protect the next generations; remove chemicals from our tables; try better tastes; protect farmer's health; support to small farmers; security against bad weather conditions; soil erosion prevention; water quality protection; save energy; promote biodiversity; support to a real economy.

Conclusion:

Agriculture is central to human survival - it provides food and fuel and other ecosystem services, is an important source of livelihood, and plays a crucial role in economic development. Agriculture is, however, also a major source of environmental degradation, contributing to climate change, depleting freshwater resources, degrading soil fertility and polluting the environment through fertilizer and pesticide use.

Arunachal as a state has a huge potential in organic agriculture. If we observe the state of agriculture and farm practice then it become quite clear that a very small proportion of population is involved in commercial agriculture and so a very negligible proportion of chemical and fertilizers are in use. Moreover, in terms of market, the state has a good transport system with Assam where they can sell their product.

There is a need of drastic changes in the state's agriculture and food system in order to achieve a more sustainable agriculture that feeds people adequately, contributes to rural development and provides livelihoods to farmers without destroying the natural resource basis. And for a state like Arunachal, organic agriculture could be proposed as an important means for achieving these goals. Organic agriculture currently covers only a small area in our country and Sikkim has shown the way and there is continuously growing as demand for organic products. Should organic agriculture thus become a priority in development policy in the state as to strive towards a proper agricultural development which will be a sustainable development.

Organic agriculture shows several benefits, as it reduces many of the environmental impacts of conventional agriculture, it can increase productivity in small farmers' fields, it reduces reliance on costly external inputs, and guarantees price premiums for organic products.

Organic farmers also benefit from organizing in farmer cooperatives and the building of social networks, which provide them with better access to training, credit and health services. Organic agriculture generally reduces the vulnerability of farmers as the higher organic prices act as buffer against the low prices and price volatility of conventional markets, as organic systems are often more resilient against extreme weather events, and as the often diverse organic crop-livestock systems provide a diverse set of outputs.

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