



The Farmerpreneur: Problems and prospects of Agri-Industrialisation A North East India perspective.

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Abstract:

Time immemorial, farmers have been the backbone of the region's economic growth and development. Industrial Revolution has vividly influenced and transformed the rural economy of the region. Despite the many advantageous outcomes, rapid industrialisation in a rural set up of the region has been undermined with certain drawbacks in a continual basis. In fact, advanced modern agricultural tools, machineries and technologies could largely impact the farming environment of the region positively if realistic approach is adhered. Application of industrial fertilizers and chemicals in agriculture, designed for advantageous higher crop yields comes with soil fertility deterioration, causing hazard to health and the environment. Therefore, the sole aims and objectives of this study is to elaborately present the problems and prospect of application of industrial chemicals and their coping strategy towards modern agriculture machineries and bridge the gap for a sustainable Agriculture development through environmental-friendly approach in the region.

Keywords: *Designed, Deterioration, Environmental-Friendly, Hazard, Industrialization, Sustainable etc.*

Introduction

Northeast India region is an agrarian economy unlike the other parts of the country having an agriculture activity mostly dominated by rice cultivation. Agriculturally, North-East India lies in the Southeast Asian rice domain. Besides rice, new plantation crops that have recently penetrated into the agriculture practices of the region are rubber and several varieties of temperate and tropical fruits. Given, the rough and mountainous topography of the region, its climatic conditions range from temperate in the higher altitudes to tropical in the lower altitude and accounts only a meagre portion for cultivable area which is mostly confined to the two alluvial valleys of Assam. Out of the total geographical outlay only 16 % accounts for area under cultivation, and the total cropped area including area under multiple cropping doesn't exceed 22 %. It is noteworthy that 85 % of the cropped area of the region is accredited to Rice which form the staple food crop the region. Jhum

or 'slash and burn' methods of cultivation remains a major agriculture practice in the region. About 12 % of the net sown area is under shifting cultivation, and over 400,000 families are still engaged in this kind of farming. Other important crops grown in the region are pulses and maize. In the recent times, Rubber plantation is gaining momentum across the state for commercial production. Despite the aged agriculture practice prevalence in the region, it continually suffers from low productivity. In average the yield factor of rice stands around 1,600 kg/ha. Among the states, Manipur state exhibits a higher rate of yield in rice which is around 2,400 kg/ha. Nonetheless, Tea plantation a principal plantation crop of the region has over 30,000 large and small tea estates, occupying roughly 280,000 ha of land. Over 95 % of the area of the region under tea is in Assam, centred largely in Darrang; Lakhimpur, on the north bank; and Tinsukia, Dibrugarh, Sibsagar and Jorhat on the southern bank of Brahmaputra.

The region is naturally endowed with richness in diversity of wild relatives of cultivated crops. Out of 355 reports from all over India, 132 are found in this hillock region. The region is considered as the native origin to more than 20 major agricultural and horticultural crops and provides a nativity of about 160 domesticated species of cultivated crops. The tribes and communities' utilization of bioresources is pure indigenous and traditional in character and knowledge. This indigenous knowledge and practice have helped the region in sustainable use and conservation of natural resources. The region's agriculture shares in State Domestic Product (SDP) ranges from 19 percent to 37 percent in different states. Agricultural sector contribution towards SDP has shown a declining trend during the past three decades an adverse indication of development yet major population dependencies on agriculture remains all the higher. Region's agriculture health continues to linger low and generation of investment avenues remain bleak. This sluggish production of agriculture is seemingly a product of different factors such as natural calamities, large number of subsistence farmers, low intensity agri-inputs, lack of finance, reluctance towards modern tools and techniques and negligible seed/variety replacement.

However, the performance of agriculture in the region mainly depends on timely rainfall and weather conditions. Small Scale Farmers face many challenges globally from every seen and unseen angle, and are among the most marginalized entrepreneurial group in the world despite their immense and indispensable roles and contributions to the economic development of every nation. The increasing prevalence of free market economy, multinational corporations and a consolidated agricultural supply chain in the region puts downward pressure on producers and thus wages and working conditions for labour. Agricultural manual labour is often seasonal employment, which increases job insecurity and can inhibit small-scale-farmers from effectively organizing for better working conditions. There was a time not so long ago when famine was an expected, if not accepted, part of life. Until the nineteenth century, which so ever state or country can be named; food came almost entirely from local sources, and harvests were variable. In good years there was plenty, enough for seasonal feasts and for storage in anticipation of winter and hard times to come; in bad years starvation cut down the poorest and the weakest, the very young, the old, and the sickly. Sometimes bad years followed one upon another, reducing the size of the population by several percent. This was the normal condition of social life in pre-industrial times in the region, and it persisted for thousands of years.

Change did not always mean progress; with change there came a number of setbacks as well as advances for the people. With agriculture beginning to use new machinery the market for food increased. They began to use machinery rather than animals and people. The onslaught of industrial machineries in agriculture, Steam becoming a very important part of everyday life, and factories being able to put in new machinery, there was an increase in the position of the government. Agriculture, steam, factories, and the government contributed to how the people were affected by industrialization in the 19th century. A farmer and his sons would be able to run a whole farm on their own without hired help. They were able to get work done in a shorter period of time that would normally take weeks prior to the birth of industrial revolution in agriculture sectors.

Review of literature

In East Africa, smallholder farming accounts for about 75 per cent of agricultural production and over 75 per cent of employment (Salami et al., 2010). However, contributions of smallholder farming to the Region's rapid growth have remained limited. Instead, the service sector is driving growth. In Uganda and Kenya, the service sector has developed rapidly, with a growth rate of about 9.5 per cent, and has outpaced agriculture's contribution to GDP (NPA, 2010; Salami et al., 2010). Why the attitude of the industrial worker is not also the attitude of the rural craftsman, and to an extent they no doubt have something in common. The craftsman knows his materials and controls them directly, so that he knows when he starts the product which he will have when he is finished (Walter C Neale, 1962). Given the importance of entrepreneurship to socioeconomic growth and sustainable development, it is paramount for governments to increase the supply of entrepreneurs (Abdullahi, 2012). Added to this is the danger that well-intentioned support policies for entrepreneurship may have unintended negative consequences. These include patronage, corruption, and rent-seeking, and the prolonging of the life of inefficient and low-productivity firms (Wim Naudé, 2010) Vertical integration is a pattern of organization where various stages of the production process - genetics, feed, grow-out, processing, and distribution - are controlled by a single firm. These new systems are linking farmers, food processors, breeding companies, and other agribusinesses and are changing the way the industry does business in a fundamental way (Barkema, 1993; Barkema et.al.1991). As the food marketing system evolves, it is bypassing the traditional marketing system and shifting toward contract production and vertical integration. Farmers growing animals under contract utilize facilities, feeding, and management strategies prescribed in detail by the integrator or contracting firm.

The key feature of the new marketing schemes is the establishment of rigid production guidelines to help ensure that raw food products will meet food processors' and ultimately consumers' more stringent demands (Barkema and Drabenstott, 1996:62-65). The extent of contract production and integration varies widely in agriculture. In animal production, the trend is most advanced in poultry production; for crops in vegetable production and specialty items such as popcorn. In contrast, relatively little wheat and feed are produced under contract or integration. The proportion is rising with increased production of specialty product grains, like white corn grown for tortilla chips. The proportion may rise further as farmers respond to a likely decline in government support for traditional crops (Barkema and Drabenstott, 1996:62-65). Larger farms are the most likely to benefit from contractual arrangements to produce specialized products for food companies. The industry's new structure will link these farms more closely to the growing market for value-added food products.

In contrast, smaller farms may face a declining market for their generic production. At best, they may become residual suppliers to the specialty product market. Thus, a more industrialized agriculture promises to add momentum to the long-standing shift toward fewer larger farms. The industry's new structure points to increased concentration of large-scale livestock and specialty crop production in fewer, scattered pockets surrounding existing or emerging marketing and processing centres (Barkema and Drabenstott, 1996). Industrialization refers to the movement toward more direct production and marketing relationships between producers and processing. This trend is most fully advanced in the broiler industry. Under industrialization, processors attempt to secure a stable supply of a consistent product while exploiting the economies of scale in new production and processing methods. As production shifts to bigger firms and clusters around processing plants, the result is a further concentration of production (Drabenstott and Smith, 1996). The most striking structural shift, however, is underway in the pork industry which appears to be following the path toward integration blazed by the broiler industry four decades ago. The structural shift in the pork industry is having a profound effect. Huge and new integrated production units are developing in traditional pork states, such as Iowa, Missouri, and Minnesota, as well as in states that previously produced relatively little pork, such as North Carolina, Colorado, and Oklahoma (Barkema and Co ok. 1996; Barkema and Drabenstott, 1996).

Research Methodology

The present study endorsed the nature of descriptive research. Extensive past literature is reviewed in an attempt to make the study more demanding and meaningful. The study engulfs the whole of North East India. However, higher degree of importance is favoured to the state of Manipur. The study strictly aims to focus the deemed concerns about the adverse consequences of agricultural industrialization, Industrial chemicals and the farmers coping strategy towards modern agriculture tools and techniques. As with any type of change, some people will benefit from agricultural industrialization while others will be adversely left affected. It is perfectly reasonable to ask what the impacts of this change might be, who might gain from this process, who might lose, and why that is the case. Therefore, taking ground to this two-sided impact, the following objectives are drawn:

1. To study the benefits and drawbacks of agriculture industrialisation.
2. To bridge the gap for sustainable agriculture.

Common practice of agriculture cultivation in the region

Cultivation in North East India is basically influenced by the physiographic conditions having varied topography, different soil types, uneven distribution of temperatures, rainfall etc. Some of the important agricultural cultivation practices in the region are:

1. Terrace Cultivation: Terrace Cultivation is one of the most adopted practiced across the valleys and foothills of the region. This system help improve production system, conserve soil moisture and erosion and also to prevent land degradation. One of the basic features of terrace cultivation is the mixture of paddy-fish farming practices among the farming families. This practice helps the rural poor to elevate their income through sales of fish and fish fingerlings. In this system, bench terraces are constructed even on hill slopes where water sources are available for the cultivation.

2. Jhum Cultivation: At some point commonly known as 'Shifting' cultivation is a major practice in the hill slopes of hilly areas of the region. The landmass and its topography of the region contributes a potential for jhum cultivation as the large part of the region has hilly features settled by different tribal groups, shifting cultivation; a customary practices has deeply shrouded its importance and serve as supportive subsistence agri-business among the populace. Shifting cultivation is mostly stretched across the region where tribal dominance is in place. It is mostly practise in all districts of Arunachal Pradesh, hill region of southern Assam, mountainous areas of Tripura, Mizoram, Nagaland and in the hills of Manipur.

3. Settled cultivation: The plain or settled agriculture cultivation are concentrated in the fertile alluvial plains of Assam, South Eastern plains of Nagaland, valleys of Manipur, barak valleys and plains if Tripura and the Brahmaputra plain of southern Arunachal Pradesh. A few of the tribes of Arunachal Pradesh such as the Apatanis, the Singphos and the Khamptis have been practising settled cultivation for longer periods since they settled in river valleys and plateaus with suitable terrain.

Opportunities of Agricultural Industrialisation

Industrialisation in North east India has blessed agriculture farmers' community and apparently made farming businesses became less geared toward the sufficiency of a single family as manufactured goods and foodstuffs became available by train or steamship. Instead, farms tended to concentrate on growing crops for market. Industrialization affects us because of the civilization was able to develop. Inventions like Cyrus McCormick's mechanical reaper for harvesting grains decreased the amount of labour needed to work a farm and removed the need for horses and other draft animals. Mechanization permitted farmers to expand the amount of land

they had under cultivation. Farms themselves became corporate operations that achieved vertical integration by controlling distribution and marketing. Corporate farmers also invested in the genetic engineering of hardier seeds that they could also patent. Modern industrial agriculture is reliant on synthetic fertilizers and pesticides, which has dramatically increased crop yields in the second half of the 20th century. Scholars indeed call this increase in crop yields the 'Green Revolution'. Despite our concerned about the adverse consequences of agricultural industrialization in the region, it is also imperative while arguing that it will offer new opportunities and benefits. As with any type of change, some people will benefit from agricultural industrialization while others will be adversely affected. It is perfectly reasonable to ask what the impacts of this change might be, who might gain from this process, who might lose, and why that is the case. The following are some important impacts of agriculture industrialisation in region:

1. Better Opportunities: Due to agricultural industrialization, today, farmers are not limited to large-scale commodity production to maximize their return. Industrialization offers state farmers an opportunity to be part of a system that focuses on developing differentiated products, which create an opportunity to be paid for the additional value, a system where farmers will not have to settle for a commodity price. In this way, market power is created. The strategy can be described as attempting to increase earnings through a higher-valued differentiated product, rather than focusing only on lowering production costs.

2. Higher Demand of Agriculture Products: The rapid rate of industrialisation in the state has contributed basic agricultural commodities production in massive quantities more demanding and in the most costeffective manner, often by large-scale commodity production. It renders both systems to exist side by side, often in the same community. Agriculture has encompassed a number of strategies and systems for the profitable production of agricultural products today in the region. The farm in every community has taken a drastic twist in the agriculture practice in products produced and in production systems used then it was.

3. Economies of Scale As compared to the pre-industrialisation period, today, Technology has enabled economies of scale for farmers who produce commodities, and for the farmers who produce a differentiated product. Similarly, agribusiness firm continues to strive and find ways to reduce production and distribution costs. That is, farmers have been continuing in pressurisation of their efforts to innovation and new technology adaptation, which enables them to lower per-unit production costs. Seemingly, Globalization of agricultural production, processing, and marketing also adds to these pressures. However, unlike the past, farmers of the region have given more attention to expanding their businesses vertically by adding new steps in processing and marketing or by establishing strategic alliances.

3. Specialization is not limited: Agricultural industrialization is not screwed for farmer's specialization nor likely to increase the extent to which farms and agribusiness firms specialize in the commodities or products they produce. Instead, these firms will specialize whether they produce and sell a commodity or a differentiated agricultural product. Specializing, as opposed to diversifying, will most likely create efficiencies within the firm.

4. Better Business Relationships and more Dependency: Horizontal collaboration is more or less seen vertical in today's agri-business communities as are been motivated by the gain of economies of scale. Collective participation in a vertically coordinated industry has shown uptrend. Vertical relationships ultimately lead to less producer independence. But these relationships will increase opportunities to learn from those with whom they do business. This condition allows free flow and access to information that may not otherwise be available, at any price. Information technology adaptation by the farms has more or less created an environment of members of team or oneness rather the individuality. This enhances better business planning and workouts. Also, Increase the emphasis on acquiring, analysing, using and protecting private information.

5. Vibrant Business Partnership: Modern Technology has given a realm wherein one can purposively read, write and study about anything they wish to. This condition clearly entails one's ability to choose and decide whether to or not to? Apparently, birth of industrialisation in agriculture proves better decisions and choice for the farmers in building a good business partner. Producers and agribusiness persons will decide who they will do business with. They will obligate themselves to deliver a specified product or service. Farmers in strategic and contractual alliances may view their neighbours as competitors rather than as friends involved in the same industry. Farmers will view agribusiness firms as potential partners rather than as greedy middleman. Partnerships will not be limited to the business next door. Businesses will be able and willing to enter into business agreements with other businesses that are located many miles away or trans-border nations.

6. Better Risk Management: Irrespective of the nature and size of business operations, risk is an essential component that deserved extreme degree of thoughts and handling. The risk thus involved in the agribusiness Contracts exposes the parties to risks that commodity producers and processors do not currently face. One of these is the risk of having to deliver or accept delivery according to the contract, regardless of the cost of complying. Although farmers and other agricultural businesses expect to fulfil their contracts and bear the consequences if unable to do so, they will be assured a market for their product and a source for their inputs. Managing these new and different risks has made easier by an array of market-based risk management tools as many of these are already being developed by commodity exchanges and insurance companies.

Challenges of Agricultural Industrialisation

It is no doubt, that industrialization in the 19th century has rendered the family farm nearly extinct and undermined the skilled artisans in farming communities. Members of farming families moved to cities and worked in factories under unhealthy conditions and for oppressive hours. In the late 1800s, families who owned and worked farms were self-sufficient people. They provided their own food and clothes. Garments were hand-sewn and made to be practical before fashionable. Clothes would be mended and patched often. The major disadvantages of industrialization can be categorised into the following two categories:

1. Social Disadvantages: The eight sisters state of India is a land of varied Cultural Heritage, rich natural resources, flora and fauna, perennial streams, rivers, high green hills and mountains having much of amenities for growth and development. However, Industrialization has changed the society in many ways. More or less, there arouses to be less security for workers, less continuity with the past, and the fragility of farm ownership. People move to cities, breaking family ties. Time is more regimented, making it harder to observe traditional festivals. Moreover, the potential availability of enormous resources in the villages has left untapped as people are hungry and thirsty for white colour jobs which the urban cities could temporarily offer. On the other hand, the remaining or the left in the villages is hampered by lack of skills for tapping out the locally available resources and to make it flourish in the markets, which has made these places all the duller.

2. Environmental Disadvantages: We have heard and seen pollutions been caused and causing by Industries and Factories. Environmentally, industrialization both pollutes the environment and depletes its resources. Industry requires huge amounts of inputs such as ores and petroleum for fuel. Its outputs (in the form of waste chemicals and such) are major pollutants. Industrialization refers to increase in industrial activities in an economy. This is almost invariably accompanied by creation of large factories and urbanization. While industrialization is essential to reap the benefit of modern technology and improve the level of economic prosperity, it also creates some problems. The major disadvantage of rapid industrialization in the region includes:

- a. Deterioration of quality of life due to urbanization in the valley areas which are generally more crowded than rural areas. This leads to many problems for the individual and the society including psychological disorders, crimes and other social problems.
- b. Urbanization also leads to environmental pollution such as destruction of forests resources and extinction of many varieties of animals and plants for human settlement of wise.
- c. Loss of individuality or ownership of factory workers. Frequently people working in large factory do some simple, repetitive jobs, that gives them no job satisfaction and they feel alienated.
- d. High degree of dependency of machines erodes the importance of individual power. For example, workers are required to work in shifts to improve utilization of expensive equipment.
- e. The increased use of physical comforts and new products frequently has negative impact on health of individual leading of increase in diseases such as obesity, diabetes and heart attacks.
- f. Excessive pollution created by industrial production as well as consumption activities. This one problem like that of urbanization leads to hundreds of associated problems.
- g. The increased advertisement and application of genetic crops seeds for higher crop yields, which requires heavy dose of industrial chemical and fertilizers, is directly or indirectly suicidal to health and environment.
- h. Industrialisation plays a pioneering role in the destruction of traditional locally farming system and cultures which are more economical and environmentally at large.

Bridging the gap for sustainable agriculture

While agriculture's share in India's economy has progressively declined to less than 15% due to the high growth rates of the industrial and services sectors, the sector's importance in India's economic and social fabric goes well beyond this indicator. First, nearly threequarters of India's families depend on rural incomes. Second, the majority of India's poor (some 770 million people or about 70 percent) are found in rural areas. And third, India's food security depends on producing cereal crops, as well as increasing its production of fruits, vegetables and milk to meet the demands of a growing population with rising incomes. To do so, a productive, competitive, diversified and sustainable agricultural sector will need to emerge at an accelerated pace. India is a global agricultural powerhouse. It is the world's largest producer of milk, pulses, and spices, and has the world's largest cattle herd (buffaloes), as well as the largest area under wheat, rice and cotton. It is the second largest producer of rice, wheat, cotton, sugarcane, farmed fish, sheep & goat meat, fruit, vegetables and tea. The country has some 195 m ha under cultivation of which some 63 percent are Rain-fed (roughly 125m ha) while 37 percent are irrigated (70m ha). In addition, forests cover some 65m ha of India's land. By the year 2025, 83 per cent of the expected global population of 8.5 billion will be living in developing countries. Yet the capacity of available resources and technologies to satisfy the demands of this growing population for food and other agricultural commodities remains uncertain. Agriculture has to meet this challenge, mainly by increasing production on land already in use and by avoiding further encroachment on land that is only marginally suitable for cultivation. Major adjustments are needed in agricultural, environmental and macroeconomic policy, at both local and state levels, in valley as well as hill areas, to create the conditions for sustainable agriculture and rural development.

The major objective of the policy makers should be set as is to increase food production in a sustainable way and enhance food security. This will involve education initiatives, utilization of economic incentives and the development of appropriate and new technologies, thus ensuring stable supplies of nutritionally adequate food, access to those supplies by vulnerable groups, and production for markets; employment and income generation to alleviate poverty; and natural resource management and environmental protection. When we talk of sustainable industrialised agriculture development in the region, the priority must be on maintaining and improving the capacity of the higher potential agricultural lands to support an expanding population. However, conserving and rehabilitating the natural resources on lower potential lands in order to maintain sustainable man/land ratios is also necessary. The main tools of sustainable agriculture development must be

a focal point of importance with optimistic policy and agrarian reform, participation, income diversification, land conservation and improved management of inputs. The success of sustainable agriculture development will depend largely on the support and participation of rural people, State/National Governments, the private sector and local bodies, including technical and scientific cooperation.

Concluding remark

The major disadvantages of industrialization were the change in farming methods, culture of the farm town and potential traditional business collapse. Today, industrialization has made farmers left the fields in favour of a steady pay check. This gave rise to bigger insecurity in food productions and farms which required newer technology to grow product faster and be able to weed easier coupled by the hybrid seeds that have less nutritional value and pesticides which destroyed things other than weeds, like birds. The culture of the farm town also went away. Farm towns were places where communities of people came together to help each other out in hard times. The towns were small, the schools were small and children had a harder time slipping through the cracks because everybody knew everybody else. One could argue that this was not always a good thing. Then there is the problem when the factory closes, creating too many families where the bread winner no longer had a pay check. For instance, let's assume, a time come about when a situation where big industries and companies collapse due to lack of raw materials for production. At then, re-ruralisation is our only big or small concept. Without a backup industry, families move; often leaving their now worthless home behind, creating ghost towns and micro depressions within those areas. There were many advantages to industrialization, and one shouldn't minimize them, but it did change many things for the worse. The above-mentioned thoughts are quite accurate. It can be suggested that there is an intense environmental disadvantage to industrialization. The wide-open spaces that serve as natural habitats and areas where communion with nature is evident are destroyed in name of economic progress. And such living example in the region are the construction of Mapao Dam, Mapithel Dam, etc. in the state of Manipur living many homeless and at worse destroying our natural and forest resources. The mass urbanization and cities that end up resulting from the factory system help to create over-crowded conditions where the delicate balances of the ecosystem are destroyed.

Additionally, factories that use the burning of fossil fuels release contaminants in the environment that end up creating huge plumes of polluted area, and trapping gasses that increase the Earth's temperature. From a theoretical point of view, the disadvantage with agriculture industrialization is that it ends up forcing a choice with the respect of nature and the respect for the dollar. Economic progress ends up trumping environmental advocacy and to this effect, there is a significant perceived disadvantage with agriculture industrialization. While industry is a driving force of all social orders, to have it trade off with environmental protection and awareness is an intense disadvantage. One of the advantages of the production methods prior to industrialization was that things were generally produced locally with local expertise such exemplary evidence in the region is the aged old handloom and earthen pottery industry which is still surviving at a cross road due to the rapid industrialisation in its operation.

One of the frustrating things about our industrial system that all of us have dealt with is the inability to get something repaired or the incredible difficulty in getting a replacement or refund. Prior to mass production, a craftsman's reputation and future success was on the line so if something was defective or there was a problem, they would generally attempt to fix it in order to maintain that reputation. It was also locally repairable as opposed to needing to be sent to some distant service centres. However, it is notable to ink that despite the many advantages of agriculture industrialisation, the region and the farmers has witnessed certain failures of agricultural industrialisation, which bears an unrepairable mark on the traditional farming community of the region. More importantly, the disappearance of Small Village and Khadi industries which were once vibrantly contributing to each state economic growth today stood at its total extinction and this is directly an impact of industrialisation in the agriculture farming system of the region.

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