

Whither Agriculture?

By

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Theme: Economy and Development
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Abstract

Development of agriculture sector in ecologically sensitive and rich bio diverse states in NE in general and Arunachal Pradesh in particular should essentially be based on environmental & climate change concerns, cost effectiveness, economic viability & opportunity cost, availability of resources, employment & revenue generation potential. Since primary occupation of indigenous communities is agriculture and allied activities, and as this sector is heavily subsidized by federal and state governments, be it fertilizers, loans, power, and as the country has achieved self-sufficiency in food grain production, the state need not necessarily aim at achieving the same as GoI, has been providing food grains to the state to meet the shortages, by fulfilling its obligations under Co-operative federalism. For providing irrigation facilities to an additional 6 % of land is estimated to cost Rs. 17,700 cr. over 5 years for the revenue deficit state. Development of horticulture sector in the state, not only requires heavy investments, but provide higher revenues to the farmers, lessen burden on and reduce import of tropical and temperate fruits. Horticulture also protects environment, prevent soil erosion, siltation, enrich wildlife and the state can showcase its efforts in global platforms for doing its part in addressing the climate change concerns.

Key words

Horticulture, Agriculture, Environmental management, Subsidies, Livelihoods

Whither Agriculture ?

Introduction: Varied soils, rainfalls, altitudinal and latitudinal variations made the State of Arunachal Pradesh rich in flora and fauna. The state has tropical, subtropical, temperate and alpine forests covering 80.30% of its geographical area (FSI, 2015) and is home to 5000+ plant, 85 mammal, 500 bird, 259 fish species and a large number of butterflies, insects and reptiles. It is inhabited by indigenous people having diverse cultures, customs, traditions, dialects and folklore whose primary occupation is agriculture and allied activities.

There is a need to increase the revenue of the people dependent on agriculture and the present government wants to double farmer's income. It's no mean task given the physio-geographical & socio-cultural constraints and scientific, technological and infrastructural deficiencies.

Resources: Resource base of the state includes forests, coal reserves, highly fertile soils, and rivers, waterfalls, gorges which hold enormous potential to produce hydro electric power for which there is unlimited demand in the country.

Forests: Country being a signatory to many international conventions, treaties & protocols is bound to protect & conserve its forests, wildlife and environment. Since trees and other vegetation continuously grow, the value of forests and its growing stock increases year after year. Though there are scientific methods to harvest forests in environmentally sustainable manner and generate income to the state exchequer, the contribution of forestry sector to the state GDP has been reducing continuously.

Hydro-electric power: The state is said to have 75 % hydro-electric power potential of NE and 50 % potential of the country. As hydel projects have serious environmental, ecological, anthropological, social, humanitarian considerations their approval by the Governments would take considerable time. If all the hydel projects are executed, besides producing power, flood control, they can pave way for development of new navigational channels for transport of men and materials, cruises for tourists, new reservoirs would become habitats for wild life, birds and fishery and can substantially increase livelihoods.

Mining: Mineral wealth of the State is quite impressive with a sizeable reserves of metallic and non metallic minerals including pyrites, lead, zinc, limestone, dolomite, graphite. Exploration for natural gas and oil is going on.

Soils and farming systems: The State is endowed with nutrient and humus rich fertile soils soaked with rains spread over 6-7 months/year. 68 % of total population is engaged in agriculture and related activities (Anon, 2017) as major part of the state is mountainous, the traditional farming community practices shifting cultivation/subsistence farming though it offers less revenue which is not commensurate with the hard work put in and the loss of forests/green cover.

The drastic reduction in the cycle of shifting cultivation from 50-60 years to 3-6 years has been found to be economically not remunerative and environmentally destructive. There is a need to wean out people from shifting cultivation to some other farming system which gives them higher yields while maintaining soil health & fertility without losing forest/green cover. There are limited options available to planners, policy and law makers, in view of the constraints and limitations mentioned above.

Constraints faced by farmers: Over the past 4-5 decades, indigenous communities in the state got acquainted with modern methods and techniques of agriculture, though not practised in full measure due to lack inadequacies in extension, research, storage, processing, marketing & branding facilities. Parts of the state, especially the interior and inaccessible areas, are by default organic, but farmers are not able to successfully market them and realise higher revenues. Parts of the state are not well connected with the rest of India, but paradoxically easy access to neighbouring countries can be developed which would allow farming community to market their merchandise in remunerative international markets.

Whither Agriculture: The table below on the demand and supply of rice and other food crops reveals that the total deficit in food production in the state is a miniscule 0.15 lakh MT, i.e. 15000 MT (Purkayastha, 2017).

Requirement and Production of Rice & other Food crops during XII PLAN in Arunachal Pradesh					
(in lakh MT)					
Commodity	2012-13	2013-14	2014-15	2015-16	2016-17
Requirement of rice	4.06	4.15	4.28	4.39	4.49
Production	2.63	2.75	2.85	3.06	3.30
Deficit	(-36%)	(-33%)	(-33%)	(-30%)	(-27%)
Rice (Unprocessed) Deficit	-1.43	-1.40	-1.43	-1.33	-1.19
Rice (processed) Deficit	-0.89	-0.87	-0.86	-0.79	-0.71
Requirement of Rice and other food crops (Coarse grains & Pulses)	4.22	4.34	4.48	4.65	4.80
Total Food Deficit / Surplus	-0.12	-0.10	-0.39	-0.34	- 0.15

To bridge the gap between demand and supply, planners and policy makers are making plans to ensure the state achieves self-sufficient in food grain production and plans have been submitted to GoI for bringing an additional 5.3 lakh hectares under assured irrigation with in a period of 5 years (2016-17 to 2020-21) at an estimated cost of Rs 17,712.31 crores, (State Level Sanctioning Committee under PMKSY, 2017).

Food grain production in India: During 2015-16 the country produced 252.22 million metric tons (MMT) of food grains (Agri. Stat at a Glance 2016, MoA&FW) which rose by 8.7% to a record 273.38 MMT in 2016-17. Pulses output jumped 37% to 22.40 MMT. Since the country has surplus food stocks, the state can always borrow from it.

Cooperative Federalism: India practices the policy of cooperative federalism, in which "national, state and local governments interact cooperatively and collectively to solve common problems, rather than making policies separately but more or less equally". The state has been getting not only the food grains from FCI, but also oil seeds, milk, fish, eggs and many other commodities from the neither states.

While it is praiseworthy to achieve self-sufficiency, one has to seriously ponder whether agriculture is suitable for this hilly state? In the long run agricultural practises would leave its deleterious footprints on environment as traditional seasonal agriculture, where land is kept fallow for 2/3^{ths} of year, which is drenched by torrential rains for more than 7 months/year leads to erosion of fertile top soil, sedimentation of lakes and reservoirs, loss of habitat for wild life etc. It would not be a bad idea to opt out for intensive agriculture, rather than expansion of the area.

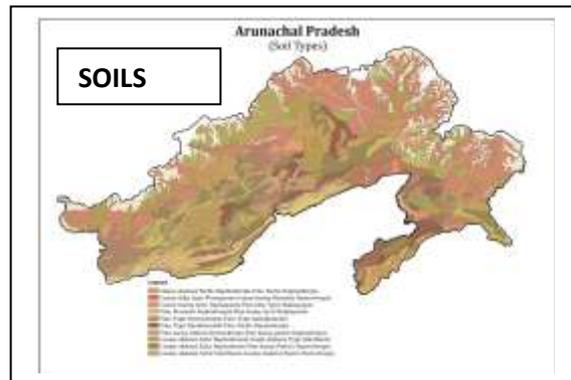
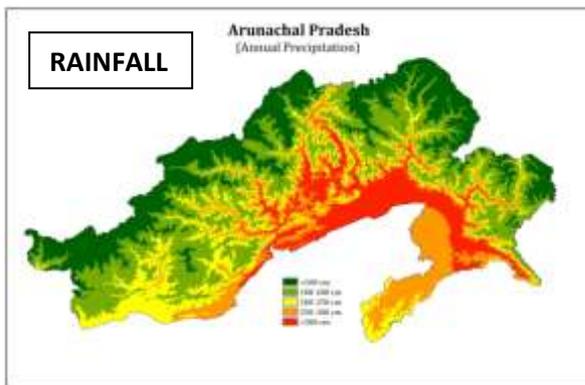
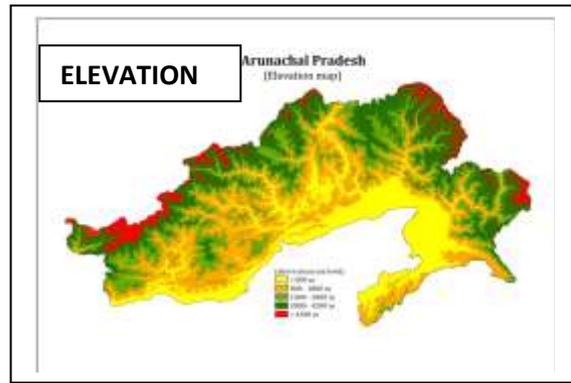
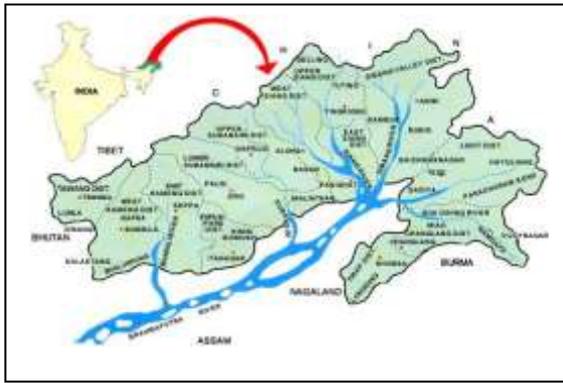
Though the state has estimates of the area that is suitable for agriculture, land use policy for the state is yet to be prepared. Unless the same is prepared, it becomes unscientific to make a deliberate and informed choice/decisions. For expanding the net sown area, irrigation facilities have to be provided, which is one of the important components of green revolution. Unless the other vital factors viz., integrated pest and disease management, supply of genetically superior improved varieties of agriculture seeds, training, extension and advisory services are made available, agriculture production is not likely to record higher production. Besides, as fertilisers, farm loans, electric power for agriculture are heavily subsidised, the state will have to bear the additional burden with no extra benefit.

Even if the State achieves self-sufficiency, a question arises what is the cost of such achievement? For a State which is constrained with resources, making plans to spend more than Rs. 17700 cr in 5 years needs serious rethinking. The state also spends considerable amounts under SADA, BADP, MP LAD, MLA LAD etc., also for providing irrigation facilities. Besides Agriculture, state has many other priority areas viz, health, education, drinking water, roads, communications, power supply etc., which requires considerable investments.

There are some states and regions like Haryana, Punjab, Gangetic plains of UP, Bihar, WB, deltas of Mahanadi, Godavari, Krishna and Kaveri (Cauvery) which contribute highly significant quantities of food grains to the national pool. They have certain advantages like plain level fertile land irrigated by canals & wells, availability of improved seeds, pesticides, fertilizers, farm equipment, subsidized power, finances besides well established farming practises and marketing facilities.

The state of Haryana, which is half the size of Arunachal Pradesh, has by and large same kind of soil, rainfall, temperature and altitude throughout her length and breadth, where its farmers grow about 10 -15 kinds of crops and over the period of time they specialised in them and are able to produce more per unit area. Same is the case with Punjab and rice producing areas of WB, Orissa, AP, TN, UP, Bihar. Emulating policies and practises of major food grain producing states may not prove healthy for this hilly state.

Uniqueness of Arunachal Pradesh: The Mother Nature has endowed this state with varying altitudinal zones & latitudinal spread resulting in sub-tropical, tropical and alpine climatic conditions, varying rain falls, moisture regimes and soil types. If these layers of data are superimposed what we get is a grid of multitude of agro-climatic conditions each of which is suitable for a different horticulture crop, for which there is enormous market and export potential.



Organic Hub and Fruit Bowl: The State Government is contemplating to brand the state as an “Organic Hub and Fruit Bowl” though it is yet to be enshrined as state policy. Such an ambitious and worthy dream requires pooling of resources, focussed attention, developing expertise, imparting skills to the stake holders including farmers, traders, students, extension workers, departmental staff etc. As agriculture is regarded as sacrosanct, in view of the resource crunch, developing Horticulture, which is more suitable to the state, its people, geography and environment should not receive step motherly treatment.

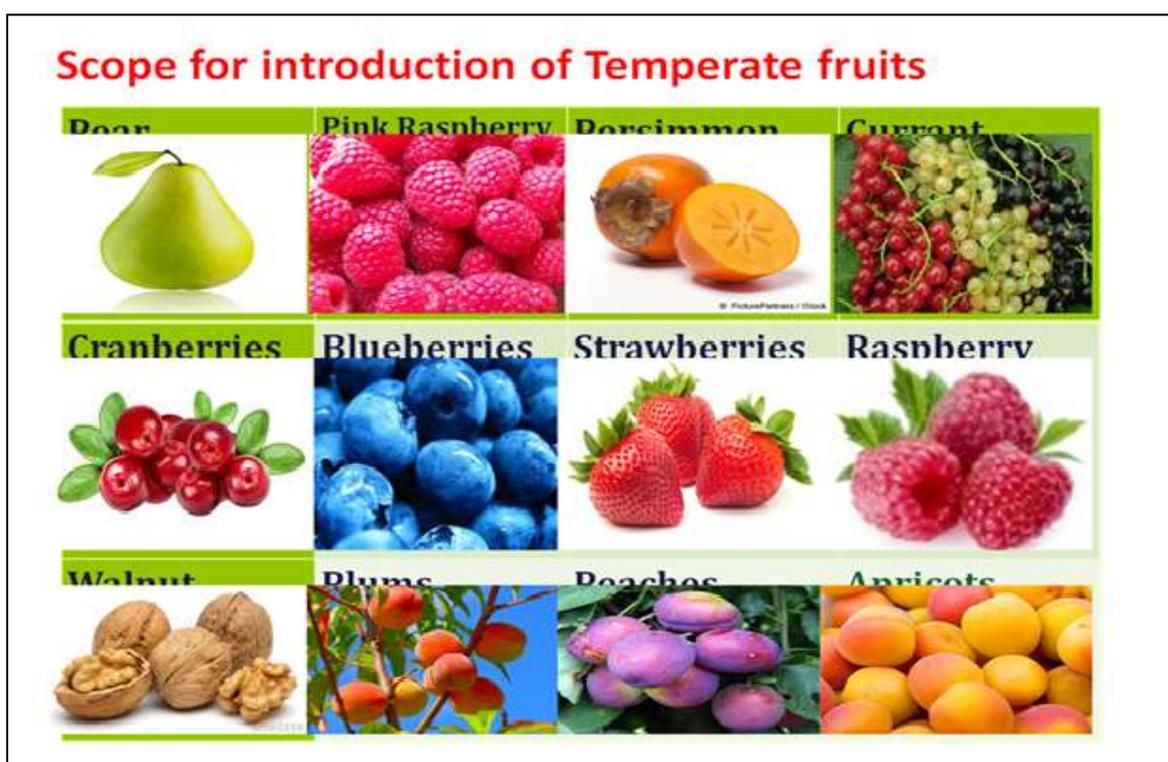
Horticulture, apiculture, aquaculture, olericulture (Vegetables), poultry, animal husbandry have great scope for development in the state and can create livelihoods for rural and urban masses, besides providing nutritious food to the local populace, while the surplus can be marketed and exported. Organic farming requires lesser inputs and yet yields more revenue to farmers and puts lesser burden on provincial and federal governments as there would be lesser subsidies.

Adoptability of farmers: The soils, hills, rain fall, moisture regime make the state suitable for growing not only tropical but temperate fruits for which there is a huge demand in the country. There is no room for apprehensions that the local farmers are not adept in the cultivation of exotic fruits, as Kiwis, though introduced in the state only in the 21st century, the state became the largest producer in the country (7000 MT/year).

Technical support: Our farmers would not be lagging behind in producing exotic and indigenous fruit crops provided personnel from the Horticulture department, KVKs, College of Horticulture & Forestry (CoH&F) Pasighat take lead in imparting skills required for their cultivation. Students of CoH&F could be assigned task of producing and supplying improved planting stock and supervise the farm operations and make them become entrepreneurs.

Higher farm revenues: The exotic fruits command a very high price in the country and the farmers can reap rich profits from them. Kiwis are sold at Rs. 60-80/kilo (about 20 fruits) in Itanagar and the same are sold @ of Rs. 40 per fruit or Rs 800/kilo in all parts of India, and this 10 fold increase in rate demonstrates that there is a huge demand, but also reveals that entrepreneurs can enter the fray in branding, marketing and processing.

Employment potential: Promotion of Organic fruits helps the farmers earn higher incomes as there are less input costs. Besides marketing, this sector also helps in creating livelihoods for many others as sectors like storage, packaging, transportation unlike agriculture products which are consumed locally and not much of value addition is involved.



Modern methods of marketing: Not only the urbanites, but rural masses are using digital platforms to make online purchases. Many sections of Indian population is now well versed with ATMs, online banking, on line train and flight reservations etc., and getting familiarised with the use of smart phones, computers and internet of things. Online marketing platforms like Amazon, Flipkart, Myantra, Snapdeal, Jabong, eBay, Netmeds, OLX, Magic bricks, Book my show etc., are increasingly being used by people for shopping and people in Arunachal Pradesh are not lagging behind.

Marketing APPs: In the same way, horticulture and other farm produce can also be marketed on line so that farmers can show case his produce viz., quantity, quality, rate, location sitting in his/her home/farm by using smart phone having net access. The consumer or trader sitting in his/her home/shop/factory elsewhere in the country or abroad, can see the produce and rate offered and can enter in to a deal/transaction. To facilitate it, all that government needs to do is to develop mobile and computer applications and register producers/farmers of the state. The transactions going on in the app, can be monitored to prevent frauds and to facilitate frictionless transfer of merchandise.

Food processing: GoI and its agencies are encouraging establishment of Food Processing Units, SEZs, EEZs, Food parks, Organic food production etc., and providing ample financial and technical support for such endeavours. It is time now for the state to showcase its resources to invite investors to set up industrial units. If need be, Hon'ble CM may visit few countries to show case the opportunities available in the state to invite big investments in the State.



Water usage by agriculture crops: Since availability of water for drinking and irrigation is likely to reduce in the coming decades, due to ever increasing population and climate change, planners have to go in for such farm crops which consume less water. Crops like maize or sugarcane need more water than millet or sorghum. Rice, uses up to 40 percent of all irrigation water worldwide (Anon, 3).

Water wars and Chinese plans: UN recognised that water wars could erupt between countries, states and regions due to conflicts of interest. There are reports in the press that China is going to build mega dams across Yarlung Tsangpo (Brahmaputra) and planning a 1,000 km tunnel for diverting waters to Tibet. If Beijing really goes ahead with such projects, our plans to irrigate additional 6 % of land may go awry. Hence planners need to consider international geo-political scenario before planning developmental activities in the state contiguous with China.

Climate Change & Carbon Sinks: There is another reason why the state should promote Horticulture. All the countries in the world are seriously discussing Climate Change and its impending consequences and the GoI on its part has asked the States/UTs to prepare action

plans to tackle it and providing financial support even for establishing climate change cells. If horticulture crops especially shrubs and trees are promoted in the state, besides offering protection to soil, allows more precipitation to seep in to the ground, and helps in maintain water table, soil fertility and its health. Since they mostly survive on natural rains, providing additional irrigation facilities at a whooping cost can be avoided. In lieu, efficient drip and sprinkler irrigation facilities could be promoted which ameliorates environment. Trees and shrubs act as carbon sinks not only in its trunk, branches and leaves but in its underground roots.

Climate change action plan: Such endeavours by the State will go hand in hand with the philosophy of containing climate change at the local level. It improves green cover and positively impacts the microclimate. Usage of steel & cement for irrigation projects and their transportation from far off places leaves carbon foot prints and causes damage to the environment of the state, country and the world. India having signed the Paris accord on climate change vowed to reduce its emissions and our actions should complement the effort of the Union of India.

Why Horticulture and Organic Farming: Promotion of Horticulture and Organic farming helps the state in generating more profits in view of higher cost it demands in national and international markets, and obvious lesser input costs and thus empowers farming community. If similar investments are made in Aquaculture, Piggery and Animal Husbandry, which complement each others will prove highly beneficial to the state in protecting and maintaining ecology and environment, besides playing our part in the endeavour to mitigate climate change and global warming.

Conclusion: The state is also emerging as a tourist destination and there is need to maintain in pristine nature and bio-diversity for future generations to enjoy. The ethnicity, salubrious climate, snow clad mountains, varied culture are some of the aspects that attract tourists. Horticulture tourism is one area which captured the attention of some south east Asian nations and the State too can promote it. For ensuring ecological stability and economic prosperity Horticulture is, perhaps, the only way and hope the policy and law makers consider it positively.

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