

Agriculture in Odisha by 2036: Fan the Winds of Change!

Gokul Patnaik



Gokul Patnaik is the Chairman of Global AgriSystem Pvt. Ltd., India's premier agri-services organization, based in New Delhi. He is also the Vice-Chairman of Katra Group which has a strategic presence across diversified sectors including Wellness, Agri-business, Information Technology, Marine Logistics, and Leisure & Lifestyle. Prior to taking premature retirement from the Government, Mr. Patnaik had an illustrious career as a civil servant. As a member of the prestigious IAS, he served in senior positions both with the Government of Punjab and the Government of India. While in Government, he headed a number of Public Sector Undertakings (PSUs) including Punjab State Industrial Development Corporation (PSIDC), Punjab MARKFED, Punjab Agro Industries Corporation (PAIC) and the Agricultural and Processed Food Products Export Development Authority (APEDA) under the Ministry of Commerce where he was able to achieve phenomenal growth in Indian agri-exports through effective Public-Private partnerships.

Mr. Patnaik has served as President of the All India Food Processors' Association, Chairman of the Working Group on Agriculture Marketing constituted by the Planning Commission, and a member of the Governing Body of ICAR. He is a well-known authority on agribusiness and his views are frequently sought for by the Government as well as the private sector.

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A drone spraying fertilisers and pesticides, innovated by Rayagada farmer, Mr. Babu Rao. Image: Biswajit Sahani

Agriculture is the mainstay of Odisha's economy. As many as 79% of the total working population of the state are engaged in agriculture and allied activities. Therefore, it comes as no surprise that the state government has identified agriculture as one of the main growth engines for the development of the state¹. With the pressure of the increasing population, the per capita availability of cultivable land has gone down from 0.39 hectares in 1950-51 to 0.15 hectares by 2010-11. Out of this, marginal and smallholdings account for 91.81%, medium about 8%, and large landholdings less than 1%.

Productivity is low due to a multitude of factors. The soil, except for the coastal belt, is poor. Out of the 64.09 lakh hectares of cultivable area, almost 40.17 lakh hectares is acidic. Another 4 lakh hectares suffer from salinity and 3.00 lakh hectares from intermittent waterlogging. Although Odisha gets an average rainfall of 1452 mm per year, it is not evenly spread out. 80% of the precipitation occurs during the monsoon season which lasts from June to September. Irrigation facilities are inadequate – only 30.89 lakh hectares land get some irrigation for Kharif crops and it goes down to only 15.01 lakh hectares in the Rabi season. The sale and consumption of quality inputs, essential for improving productivity are very low in Odisha. The use of chemical fertilisers is only 63kg/ha which is less than half of the all India average of 140 kg/ha and much lower than advanced agricultural states like Punjab and Haryana. The seed replacement rate is also abysmally low.

All these factors combine to create a vicious cycle of low productivity, low income, and abject poverty which has given rise to an unprecedented agrarian crisis. How do we get out of this vicious circle?

The root cause, I feel, is that Indian agriculture in general, and agriculture in Odisha in particular, is overpopulated. Agriculture contributes only 16% to the Gross State Domestic

Products (GSDP). Yet the share of agriculture in employment in India is as high as 45% and more than 56% of the total population depend on it for their livelihood.

It is true that as the per capita income rises, the share of agriculture in GDP decreases – 2% in South Korea, 1.6% in Taiwan, 1.5% in France, 1% in Japan and the United States, and 0.5% in the United Kingdom. However, in each country, the decline in the share of agriculture in GDP is followed by a commensurate decline in the share of agriculture in employment. For example, today the share of agriculture in employment stands at 5% in South Korea and Taiwan, 3.5% in Japan, 3% in France, 2% in the United States, and 1% in the United Kingdom. The Indian situation is clearly not sustainable, and a substantial number of people have to be taken out of farming to make farming sustainable.

Diversification of Agriculture

The best way to find alternate or additional employment opportunities is to encourage allied sectors like fishery, poultry, dairy, and other animal husbandry activities to augment farmers' income. Horticulture and floriculture are also more remunerative, provided one creates a market for them. As most of these activities are capital intensive, the state government should come forward with innovative schemes for financing the farmers to diversify and invest in building agri-infrastructure.

Proper research and development work, training, and extension are of paramount importance. These new vocations would also require new skills and the State Government would do well to set up skill development centres to impart appropriate technology and skills. Several states are now deliberately forging new directions to provide alternate avenues to the farming community. Odisha's neighbouring state of Telangana is promoting sheep farming, many North-Eastern states are encouraging piggery and Himachal Pradesh is going in for horticulture in a big way. Odisha should find its own USP, that suits its agroclimatic conditions and acceptable social norms.

Value Addition

Along with the diversification of agriculture, the second major effort of the Government should be to encourage processing and value addition. Currently, most farmers sell their produce as primary commodities. At best, paddy is converted into rice and wheat is processed into *atta* or *maida* (flour). Generally, value addition to agricultural commodities before they are marketed is only 7%. In comparison, value addition to agri-products in the USA and West Europe is 70-80%. Even in developing countries like Thailand, Philippines & Indonesia, value addition is well over 60%. To promote value addition, the Government should not only have a conducive policy to attract private sector investment but also take proactive steps like setting up agri-infrastructure in the public domain or in PPP (Public-Private Partnership) mode.

Two mega-food parks have recently come up in Odisha. The Government should assist in populating them as soon as possible. The Food Processing Policy of the Government provides for assistance up to Rs. 15 lakhs to mega food parks – but this subsidy has not been extended to any unit yet. Many states have announced policies with attractive

incentives to lure entrepreneurs into putting up food parks, agri-clusters, or individual food processing units. Perhaps it is time to revisit the Food Processing Policy 2016!

The main crops grown in Odisha are rice, jute, oilseeds, pulses, and coconut. With the increased production of rice in other states, India is now a surplus producer of rice and the central pool is not dependent on the contribution of Odisha. The demand for jute and jute products as well as the area under jute is diminishing from year to year. For coconut also, Odisha faces severe competition from other low-cost producers. It is therefore imperative that Odisha investigates the cultivation of other high-value crops. Horticulture is promising but would require large investment into infrastructure such as cold stores, packing and grading stations, ripening chambers, refrigerated vans, and logistics hubs. It is now time for the Government to plan such facilities and to execute them in a time-bound manner.

Capitalising Hidden Resources

While planning for diversification and new crops, Odisha should not forget to capitalise on nature's bounties with which she is already blessed. Today the world is looking for healthier options. Coarse grains or millets are very much in demand. Quinoa, a minor millet from Peru is being touted as a 'superfood' and is selling for Rs.700-800 per kg in markets of New Delhi. The local '*mandia*' (Ragi), a favourite of the tribal populace of Odisha, has similar properties and marketing could push it up to rival quinoa. Odisha leads India in the production of sweet potato (*Kandamula*). It is rich in beta-carotene and is in great demand in the international market. Jackfruit, which grows in abundance in the backyards and jungles of Odisha also has medicinal properties. Raw jackfruit flour has a very low glycaemic index and is mixed with wheat or rice flour as an ideal diet for diabetics. The health benefits of moringa (*Sajana*) are well-known but not commercially exploited. There are many such hidden gems in the fields and jungles of Odisha which are waiting to be discovered.

Soil and Water

The primary requirements of agriculture are soil and water. It is a fact that large tracts of cultivable land in Odisha have acidic soil while some other areas suffer from salinity or waterlogging. Today agricultural science has advanced to such an extent that it is possible to find cost-effective solutions to such seemingly intractable problems. More than 50% of the land in the Netherlands is below sea-level. More than 70% of the land in Israel is brackish. Yet both these nations are among the countries that achieve high productivity. Our scientists must be tasked to breed drought/submergence/salinity tolerant, high yielding varieties suitable for local conditions. Farmers may be taught to make soil amendments as may be required.

It is true that Odisha gets plenty of rainfall – as much as 1452 mm per year. But still, we cannot afford to be complacent. The rainfall is erratic, concentrated mainly to the monsoon months and large areas are drought-prone. Irrigation facility is available to only 15.01 lakh hectares (less than 25% of the total cultivated area) during the Rabi season. The Government needs to assist farmers in installing both community/individual tube-wells and pumps to expand the area under irrigation. Farmers in Odisha have not adopted micro-irrigation facilities like drip and sprinkler irrigation systems despite very attractive

subsidies available under the National Mission on Micro Irrigation (NMMI). The causes must be analysed, and efforts must be made to spread awareness.



Demonstration Farm, Odisha University of Agriculture and Technology, Bhubaneswar. Image: Biswajit Sahani

Farm Mechanisation and Digitalisation

In modern agriculture, farm mechanisation as well as emerging technologies like protected cultivation, digitisation, Internet of Things (IoT) and artificial intelligence play a big role. Satellite mapping and the use of drones make decision making easier and save resources. Big data analytics and blockchain technology not only help us in traceability but also to pinpoint weak spots and take immediate corrective action. Indeed, modern agriculture is becoming more and more technology-driven.

It may be some time before the farmers of Odisha use all the tools that modern technology offers but they can certainly access some low hanging fruit. Protected cultivation or greenhouses can help them harvest crops a little before or after the peak season, thus fetching them a better price. It will also help them to save resources like pesticides and water. Use of laser levelers to level a field is known to save up to 30% water in paddy. Boom sprayers help to spray pesticides quickly and uniformly. Paddy transplanters have not only helped farmers overcome the shortage of labour during the critical sowing season, but also helped in uniform planting. This has helped to facilitate other operations like weeding, fertiliser, and pesticide application and harvesting. Combine harvesters and bailers have made harvesting quicker and more comfortable. Auto-pilot driven tractors are now available in India where the machine is guided automatically by satellite imagery.

However, most of these machines are costly and beyond the reach of the individual small farmer. The Government can play a crucial role in making the benefits of mechanisation and modern technology available to the farming community by setting up Custom Hiring Centres (CHC). These CHCs can be set up in production clusters after assessing the needs of each cluster. The machines and trained operators can be made available on a hire basis. Farmers

who need their services can hire them on payment of service charges. The Government can either run these CHCs by themselves through a Special Purpose Vehicle (SPV) or allow them to be managed by a Farmer Producer Company (FPO) or an entrepreneur on a PPP mode. But as the capital costs of these machines are high, the Government shall have to devise a suitable funding mechanism. During the Green Revolution years, similar centres for the hiring of tractors and combine harvesters were set up in Punjab and Haryana and contributed largely to the success of the Green Revolution.

An alternative model is 'Uberisation' i.e. to allow individual farmer/service providers to purchase the machine at a subsidised cost and keep it available for hire. Farmers requiring the services shall contact a central registry, which will then direct the call to the nearest available machine service provider. The model is akin to the model of Uber – the largest taxi service provider in the world not owning a single taxi.

Marketing

One of the biggest problems for an Odia farmer is the marketing of his / her produce. Odisha has many markets – it has 66 Registered Marketing Cooperatives (RMC), 180 sub-yards, 14 special commodity markets, 43 Krushak (farmer) Bazars, 76 municipal markets, and over 2000 gram panchayat markets, out of which 250 are managed by RMCs. However, the situation on the ground is quite different.

Most of the market yards are dysfunctional and the main income of the RMCs comes from collections from the check gates or from the levy on procurement of paddy from Primary Cooperative Societies. The Odisha Agricultural Marketing Act does not apply to the municipal markets or the gram panchayat markets that are governed by their own rules. The poor farmer is confused as to where to take his produce and is often taxed by more than one agency. Moreover, the facilities at the market yard are poor. Very few markets have warehouses and none of the cold storages function properly. Many markets lack proper sanitation facilities and amenities including water supply and power. The Government has been considering amending the Act and to bring the municipal markets under its purview, but it is yet to be done.

Under the National Horticulture Mission, Odisha proposed to set up 3 modern wholesale markets at Cuttack, Sambalpur, and Berhampur. A sum of Rs. 20 Crores was provided by the Govt. of India for this purpose. This also finds mention in the State Agriculture Policy 2013, but none of the markets have come up yet.

Several developments are taking place at a faster pace in other states. e-NAM (National Agricultural Market) has become a reality. Private markets have come up in many states. Warehouses and aggregators are now being allowed to function as markets. The guiding philosophy behind all these reforms is to remove avoidable restrictions on the farmer so that he may be allowed to sell his goods to whomsoever he likes, whenever and wherever he likes, and at a price that is mutually negotiated. If Odisha is to claim its rightful place in the Indian market, it must amend its APMC (Agriculture Produce Market Committee) Act, provide state-of-the-art marketing infrastructure including electronic auction, sorting, grading, and assaying facility, etc at the market place.

Most of the issues raised above have been considered by the State Government and find mention in the State Agricultural Policy 2013. But it is a pity, even after six years of its implementation, no solution seems to be in sight. Perhaps what is required is a time-bound action plan with clear quantifiable targets and vigorous supervision and monitoring to achieve the same.

Reference:

[i] https://pc.odisha.gov.in/Download/Economic_Survey_2018-19.pdf