

A Study on Technology Aspects of Agriculture Livelihoods: Issues Challenges

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ABSTRACT

The Agricultural sector has the greatest potential for improving rural livelihood and eradicating the Growth and Transformation Plan (GTP). By the end of the GTP period, the government seeks to double yields of smallholder farmers largely by scaling-up best practices, producing high value crops, expanding irrigation development and promoting natural resource conservation. A substantial increase in agricultural yield and output is expected to be realized by implementing interventions aimed at speeding-up the assimilation and adoption of improved agricultural technology and management practices of the f these strategies on productivity and production are analyzed to determine their adequacy in meeting the GTP production targets. The analysis shows that while production and productivity targets are generally achievable, the country needs to adopt more cost-effective, innovative and modern approaches to agricultural knowledge management and reform and modernize its agricultural extension system.

1. INTRODUCTION

Knowledge management can play a pivotal role in enhancing agricultural productivity and addressing the problem of food insecurity. If properly managed, it enables appropriate knowledge and information to reach knowledge intermediaries and smallholder farmers in a timely manner. Such delivery of knowledge and information undoubtedly minimizes the risk and uncertainty smallholder farmers face from production to marketing of their produce. But, to effectively engage in agricultural knowledge management, adequate mechanisms are needed for generating, capturing, and disseminating knowledge and information through the use of effective processes and institutional arrangements. Sources of agricultural knowledge include scientific research and indigenous knowledge. After the creation, sourcing or accumulation of knowledge, the knowledge has to be disseminated to users to support the innovation process. Information and communication technology (ICT) can play a critical role in facilitating rapid, efficient, and cost effective knowledge management. However, ICT application in Ethiopia remains low in comparison with several African countries. For instance, in a number of Sub-Saharan African countries, smallholder farmers get technology-related advice as well as location-specific market information on inputs and outputs through ICT kiosks. Furthermore, mobile telephone service is being used to deliver agricultural information to users.

To speed up technology adoption, the government of Ethiopia needs to quickly review and modernize its public extension service delivery system and particularly the agricultural extension system and provide an enabling framework for utilizing advances in information and communication technology to deliver agricultural extension services. Using available ICTs will not only improve information and knowledge management for extension workers and farmers but optimize and rationalize public resources devoted to agricultural extension services. Illustrative

case studies on how modern ICT systems have been utilized to deliver effective public extension service in the agricultural sector will be reviewed and recommendations codified for policy consideration.

PROBLEMS

Slow agricultural growth is a concern for policymakers as some two-thirds of India's people depend on rural employment for a living. Current agricultural practices are neither economically nor environmentally sustainable and India's yields for many agricultural commodities are low. Poorly maintained irrigation systems and almost universal lack of good extension services are among the factors responsible. Farmers' access to markets is hampered by poor roads, rudimentary market infrastructure, and excessive regulation."

With a population of just over 1.2 billion, India is the world's largest democracy. In the past decade, the country has witnessed accelerated economic growth, emerged as a global player with the world's fourth largest economy in purchasing power parity terms, and made progress towards achieving most of the Millennium Development Goals. India's integration into the global economy has been accompanied by impressive economic growth that has brought significant economic and social benefits to the country. Nevertheless, disparities in income and human development are on the rise. Preliminary estimates suggest that in 2009-10 the combined all India poverty rate was 32 % compared to 37 % in 2004-05. Going forward, it will be essential for India to build a productive, competitive, and diversified agricultural sector and facilitate rural, non-farm entrepreneurship and employment. Encouraging policies that promote competition in agricultural marketing will ensure that farmers receive better prices."

2. OBJECTIVE

- To know India's agricultural growth from 1970 to 2001 by the Food and Agriculture Organization identified systemic problems in Indian agriculture
- To know study present population and food distribution future safety.
- To examine modern technology uses in agriculture sector and benefits.

3. METHODOLOGY

The study is based on secondary data. The require data has been collected from various library, in other source, i.e, research paper, various Bulletins of ministry of statistics ,Government of India that are available on internet.

FOOD AND AGRICULTURE

A 2003 analysis of India's agricultural growth from 1970 to 2001 by the Food and Agriculture Organisation identified systemic problems in Indian agriculture. For food staples, the annual growth rate in production during the six-year segments 1970-76, 1976-82, 1982-88, 1988-1994, 1994-2000 were found to be respectively 2.5, 2.5, 3.0, 2.6, and 1.8% per annum. Corresponding analyses for the index of total agricultural production show a similar pattern, with the growth rate for 1994-2000 attaining only 1.5% per annum.

Trends in Agricultural Productivity in India Prior to Green revolution, the yield per hectare in India was low for all important crops. The introduction of modern agricultural practices and HYV seeds;

there was a jump in the productivity of most food grains. The following table shows the per hectare yield of main food crops since 1950-51: Crop 1950-51 1964-65 2010-11 Rice 7.1 10.8 22.4 Wheat 6.6 9.1 29.4 Coarse Cereals 4.3 5.1 14.18 Pulses 4.0 5.2 6.9 Data Quintal Per Hectare The above table makes it clear that while robust yield growth was seen in Rice in pre-green revolution period; the same was seen in wheat in post-green revolution period. In most of the other crops, the average annual growth yield has been low. In comparison to other countries such as Brazil, US, Australia and China, productivity in crops, particularly food grains is very low in India. For example, India fields produce only a third of the wheat per hectare in comparison to France or half in comparison to China. Further, growth in productivity is also stagnant at around 2% per annum. There are several reasons behind low productivity including small land holdings; disguised unemployment; low marginal productivity; inadequate modernization of agriculture; low skill development; increased cost of production; price risks; inadequate irrigation facilities; slow pace of land reforms; inefficient institutional delivery of credit; inefficient marketing of farm produce and so on. To increase productivity, there is a need of significant and widespread improvements in agricultural practices because India does not have large swathes of land available for agriculture like Brazil. Whatever land area is available for farming is shrinking because of urbanisation; industrialisation and successive fragmentation of land holdings with each generation. Further, Agriculture and Land being state subjects under 7th schedule of the constitution; onus for increasing productivity is largely in state governments. Some improvements which can raise productivity include: Introduction of better and efficient irrigation facilities Promotion of agricultural mechanization which can help an average farmer to manage without hired labour. Introduction and upgrading of large scale irrigation Improve promotion and transport of farm produce Remove problems in marketing of farm produce including addressing the issues around APMC act. Improving storage facility, tenant security, supply of better quality seeds Promote multiple cropping Further, we must be more open and receptive to the idea of judicious experimenting and use of genetically modified (GM) crops provided they don't bring disaster to already stressed farmers.

TABLE -1: AGRICULTURAL PRODUCTION (FOOD GRAIN PRODUCTION IN MILLION TONES)

Crop	2010-11	2011-12	2012-13	2013-14	2014-15
	(3rdAE)				
Rice	95.98	105.24	105.24	106.65	102.54
Wheat	86.87	93.51	93.51	95.85	90.78
Coarse cereals	43.40	40.04	40.04	43.29	40.42
Pulses	18.24	18.34	18.34	19.25	17.38
Total foodgrains	244.49	257.13	257.13	265.04	251.12

Source: Directorate of Economics and Statistics, Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India.

The CSO had estimated a positive growth rate of 0.2 per cent for agriculture in India for 2014–15, recording a sharp decline in growth following a bumper year in 2013–14. Table 1.4 (a) indicates that the total foodgrain production in the country stood at 251.1 MT in 2014–15, showing a decline of 13.9 MT from 2013–14. Among the commercial crops, groundnut, soybean and oilseeds (nine) have experienced a steady decline in production during the last three years. With the rainfall being 12 per cent less than the long period average (LPA) in the monsoon of 2014–15 (Sidebar 1.2), the production of foodgrains declined by 5.5 per cent compared to the previous year. The decline in the

current year's production has occurred on account of lower production of rice, coarse cereals and pulses due to erratic rainfall.

TABLE -2: AGRICULTURAL PRODUCTION

Crop	2010-11	2011-12	2012-13	2013-14	2014-15
	(3 rd AE)				
Groundnut	82.65	69.64	46.95	97.14	66.48
Caster seed	13.50	22.95	19.64	17.27	18.24
Sesa mum	8.93	8.10	6.85	7.15	7.70
Niger seed	1.08	0.98	1.02	0.98	0.85
Rapeseed& Mustard	81.79	66.04	80.29	78.77	67.57
Linseed	1.47	1.52	1.49	1.41	1.45
Safflower	1.50	1.45	1.09	1.13	0.64
Sunflower	6.51	5.17	5.44	5.04	3.82
Soybean	127.36	122.14	146.66	118.61	107.05
Total nine oilseeds	324.79	297.99	309.43	327.50	273.80
Cotton	330.00	352.00	342.20	359.02	353.28
Jute	100.09	107.36	103.40	110.83	109.74
Mesta	6.11	6.63	5.90	6.07	5.20
Sugarcane	3423.82	3610.37	3412.00	3521.42	3565.61

Source: Directorate of Economics and Statistics, Department of Agriculture and cooperation Ministry of Agriculture, Government of India.

About 48 per cent of India's population is dependent on agriculture as the main source of livelihood, but the share of agriculture in total GVA in 2014–15 is 17.6 per cent (2011–12 prices) (Government of India, 2015). Unviability of agriculture has led to agrarian distress which, in turn, has added to the woes of farmers.¹ Input levels have to be continuously increased to maintain the yield at the existing level. This poses a threat to the economic viability and sustainability of crop production. Therefore, the goal of long-term food security can be attained only if agriculture is made sustainable through reforms in agricultural policies and agronomic practices.

The area under cultivation of food grains has remained stagnant, at 120.4 million ha, over four-and-a-half decades (Exhibit 1.7). While the area under cultivation of rice increased from 37.0 million ha in 1968–69 to 43.9 million ha in 2013–14, in respect of wheat it increased from 16.0 million ha to 31.2 million ha. There was a meagre increase in the area under cultivation of pulses, from 21.3 million ha to 25.2 million ha.

However, the area under cultivation of coarse cereals witnessed a steady decline during this period, from 46.2 million ha to 25.7 million ha. Due to the limited scope for increasing the area under cultivation, only an improvement in yield can result in long-term growth in output. However, both the average annual growth in production and yield of food grains have stagnated (Table 1.5). The sluggish yield and growth of output in the agricultural sector have been associated with relatively low levels of investment compared to other sectors of the economy.² According to Table 1.6, which displays average monthly income from different sources, the total consumption expenditure, net income and net investment in productive assets per agricultural household during the agricultural year July 2012–June 2013 for each size class of land possessed, the share of income from non-farm business in the average monthly income decreased with an increase in land size. Similarly, the net investment in productive assets per agricultural household increased with an increase in land size.

Further, the net monthly income (farm and non-farm) in respect of size classes up to 1 ha was negative and it increased steadily with an increase in size classes. This demonstrates that small-scale farming is inefficient in India.

4. CONCLUSION

The small and marginal holdings constituting 85 per cent of the total holdings, one of the major challenges faced by the Indian economy lies in enhancing the viability of agriculture, the achievement of which could significantly improve the growth prospects of the economy

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