

CHAPTER-1

INTRODUCTION

=====

1.1 Background of the Study

Agriculture is the backbone of any country. Agriculture provides different types of food crops and non-food crops. It is not only a business, but also it's a process of economic growth to accelerate economic development as well. However, agricultural productivity of developed countries is cumulative more than that of developing countries over time. Because there are more investment and research on input in the form of capital, land and labor productivity in the industrialized countries compare to emerging countries. In South Africa, particular productivity of the sector nationally has been stagnant since the twenty-first century. This possess several challenges particularly because of level of unemployment is cumulative and food insecurities is a concerning issue.

1.2 Theoretical Background

Agricultural productivity has been defined by various scholars with mention to their own views and disciplines. Agriculturalists, agronomists, economists and geographers have interpreted it in dissimilar ways. Agricultural productivity is defined in agricultural geography as well as in economics as "*output per unit of input*" or "*output per unit of land area*", and the upgrading in agricultural productivity is ordinarily considered to be the results of a more efficient use of the factors of production, namely, Physical, socioeconomic, institutional and technological.

Productivity of land is a very important factor of agriculture because it is the most permanent and fixed factor among the three categories of input; land, labor and capital. Fundamentally, land as a unit basis enunciates yield of crop in terms of productivity to provide the food for the nation and secure employment opportunities for the rural community. Output of land may be raised by applying input packages consisting of improved seeds, fertilizers, agro-chemicals and labour intensive methods (Fladby, 1983).

1.2.1 Irrigation

India accounts for around 17 per cent of the world's population but only 4 per cent of the world fresh water resources. Delivery of these water resources across the vast area of the country is also irregular. Consequently, as incomes increase and the need for water increases, the heaviness for efficient use of highly rare water resources will increase manifold. As per the global averages, a country is classified as Water Stressed and Water Scarce if per capita water obtainability goes below 1700 m³ and 1000 m³, respectively. With 1544 m³ per capita water obtainability, India is already a water-stressed country and moving towards turning water scarce.

While the stress on incomplete water resources in the country is expanding the scarcity is not reflected in use of water. India uses two to four times water to produce one entity of major food crops as compared to other major agricultural countries like China, Brazil, USA (Hoekstra and Chapagain 2008). These variations imply that if India reaches water use efficiency of those countries it can save at least half of water currently used for irrigation purposes.

1.2.2 Seeds

Seed is the most essential true carrier of technology. In India, three sets of institutions produce seeds: public sector seed producing corporations; research institutes and agricultural universities; and private sector firms including multinationals. The last decade has seen two main growths in seed market. One, production of quality seed has increased at a quick rate after 2005-06. And two, public sector has triggered to effectively compete with the private sector.

Beginning with 2001-02, there has been a separate change in the role of public sector in the growth of hybrid in all crops. Till 2001-02, public sector had developed only fifteen hybrids compared with 150 by private sector. Similarly, in maize the number of hybrids developed by private and public sector were 67 and 3, respectively. In the following seven years, share of public sector augmented from 8 to 19 percent in cotton, 4 to 40 percent in maize and 25 to 58 percent in rice. Similar changes are experiential in the case of other crops. Cotton and maize have been the most favorite crops for growth of hybrids both by public and the private sectors. Private sector also evinced strong interest in treasure millet, sunflower and sorghum. Considering all crops together, private sector accounted for three-fourth of the total hybrids developed in the country till year 2009-10, which is significantly lower than that in 2001-02.

Some significant initiatives have been taken under the recently amended New Policy on Seed Growth. The policy permits 100 per cent foreign direct investment below the automatic route and simplifies the process for inclusion of novel varieties in the Organization for Economic Cooperation and Development Seeds Scheme. The thrust is also on making a seed bank. Since 2013-14, a Seed Rolling Plan has been in place for all the States for identification of good seed varieties and activities responsible for production of seeds.

1.2.3 Fertilizer

Fertilizer use has seen quick expansion and intensification in India and in other parts of the world with the extent of the Green Revolution technology. With the scope for raising production through the growth of cultivable land weary, fertilizer will continue to play a key role in meeting the future obligation of food, feed and fiber. Therefore it is important that fertilizer is used reasonably and optimally.

Fertilizers supply three critical macro elements: nitrogen (N), phosphorous (P) and potash (K). A common belief is that the ideal balance among N, P and K in India is 4: 2: 1.

Beginning with the launch of the Green Revolution, fertilizer use in India has gradually grown but it has been excessively tilted in favor of urea, the source of nitrogen. Already in the early 1970s, the average proportions across N, P and K were 6:1.9:1, they shifted in favor of nitrogen over time attainment 10:2.9:1 in 1996. There was minor shift in the reverse direction then but in 2012-13, the proportions still stood at 8.2:3.2:1. Setting aside the sub-optimal mix of different nutrients, the quantity of fertilizer use per hectare in India remains significantly low than in most countries in the world. The average consumption of fertilizers in India rose from 105.5 kg per ha in 2005-06 to 128.34 kg per ha in 2012-13. But the level leftovers' well below what is observed in the neighboring Pakistan (205 kg per ha) and China (396 kg per ha).

Actually, during 1950-2000 the so called second agricultural revaluation of contemporary times United-States agricultural output rose fast. Due to the development of new technologies for example, the average crop of corn rose from 39 bags to 153 bags per acre (+292 percent) and every farmer produced 2000 on average 12 times as much farm productivity per hour worked as a farmer did in 1950. Other hand the average quantity of milk per cow increased from 5,314 pounds to 18,201 pounds per year (+242 percent).

The Indian economy has undergone structural changes over time with the predictable decline in the share of agriculture in the GDP. Irrespective of fall in its share from 55.1 per cent in 1950-51 to 17.0 per cent in 2008-09. The importance of farming has not reduced for two major reasons. First the country achieved self-sufficiency in food production at the macro level, nevertheless still country facing food crisis, it is huge challenges to overcome from it. It also teach high widespread of malnourished children. The pressure on formers more increase to produce agricultural goods and farmers increase in high. Second, the dependence of the rural work force on agriculture for employment has not weakened in proportion to the sectorial contribution to GDP (Chand & Chauhan, 1999). The experiences developed countries show that transfer of lab our force from agriculture to non-agriculture, in particular the industrial sector took place. This had brought enhanced productivity growth in agriculture and hence higher income (Gollin et al., 2002).

1.3 Economic Profile of the Haryana

Haryana as 17th state was constituted in 1966. It is one of the two newly created states fixed out of the greater Punjab state. It is bordered by Punjab and Himachal Pradesh in the north and by Rajasthan in the West and South. The regular river Yamuna defines its eastern border with Utrakhand and Uttar Pradesh. Haryana surrounds Delhi on three sides. Therefore, a huge area of Haryana to her advantage is included in the National Capital Region. Haryana is now a foremost contributor to the country's production of food grains and milk. Cultivation is the principal occupation of the inhabitants of the state. The flat arable land is irrigated with ground water extracted with submersible pumps and tube wells, and by superficial water through extensive canal system. Haryana's contribution to the Green Revolution made India self-sufficient in food production in the 1960s and forwards.

Haryana is one of the richest states of India and has the third highest Per capita income in the country with per capita GDP at Rs. 109227 (2011-12). Haryana is also one of the most economically developed regions in South Asia and its agrarian and manufacturing industry has experienced continued growth since 1970s. Haryana is India's largest manufacturer of passenger cars, two-wheelers, and tractors. Since 2000, the state has emerged as the largest recipient of investment per capita in India. At present Haryana has four administrative divisions constituted of twenty one districts Ambala Division with four districts namely. Ambala, Kurukshetra, Panch Kula and

Yamuna Nagar, Gurgaon Division with six districts namely Faridabad, Palwal, Gurgaon, Mahendragarh, Mewat and Rewari, Hissar Division with five districts viz. Bhiwani, Fatehabad, Hissar, Kaithal and Sirsa, Rohtak Division with 6 districts namely, Jhajjar, Karnal, Panipat, Rohtak, Sonapat, and Jind.

1.4 Economic Profile of the Telangana

Telangana was formed on June 2nd 2014 it is 12th largest state out of 29 states of India. It has 114,840 square kilometre geographical area and population 3.51 core (as per Censuses 2011) and 12th most populated state in India. The density of population in the State ranges from the lowest of 170 per sq. kilometer in Adilabad district and to the highest of the 18,172 per sq. kilometers in Hyderabad district. The districts of Adilabad, Khammam and Mahabubnagar have lower density of population 170, 175 and 220 per sq. kilometer respectively, as compared with the State average of 307 per sq. kilometer. Hence, the sex ratio of the State, defined as the number of females per 1,000 males at 988 is higher than the national average of 943 in 2011. It has main cities viz. Including Hyderabad, Warangal, Nizamabad and Karimnagar. Hence, Telangana national boundaries has south side Andhra Pradesh, west side Karnataka, north side Maharashtra, north east Chhattisgarh and Odessa. However, Water source and rivers, it has been two major perennial rivers, the Krishna and the Godavari passing through the State. The catchment area of the Godavari in the State is 79% and that of the Krishna is 68.5%. Nevertheless large proportion of the catchment of these major rivers in the State, the present use of these river waters in the State is low because of the abandonment of the region in the former State of Andhra Pradesh. However, in the post-independence development have been out of public view in the Telangana state, the primary sector presents unusual production. However, after independence it had been included with Andhra Pradesh in 1956 then it was part of Andhra Pradesh. Even though, agriculture in Telangana paying attention substantial special care in the past few years. Agriculture in Telangana has been seen at backward level and it also suffers from inadequacy of irrigation resource due to neglect of region by the state of Andhra Pradesh Government (Simhadri and rao, 1971). However, the literacy rate in the State at 66.46 percent is lower than the national average of 72.99 percent. It is a matter of concern that the literacy rate is lower than those in some of the lower income States like Odessa, Chhattisgarh and Madhya Pradesh. The literacy rate in the State varies from 55.04 percent in Mahabubnagar and

to 83.25 percent in Hyderabad. There are also enormous differences in the literacy rates of males and females. Although the male literacy rate is 74.95 percent, the female literacy rate is much lower at 57.92percent. Hence, some part of the state is very underdeveloped viz. Mahabubnagar, Nalgonda and Adilabad are most of the backward regions of the state and agricultural productivity is very low in these districts. It has principle crops they are: paddy, wheat, total pulses, total oilseeds, cotton, jute, sugarcane, maize, onions, fruits and vegetables. However, it has 10 districts namely: Adilabad, Hyderabad, Karimnagar, Khammam, Mahabubnagar, Medak, Nalgonda, Nizamabad, Rangareddy, and Warangal.

1.5 Empirical background

On the one hand, there is a quarrel that takes growth in farming as a precondition for industrialization. Amongst the earlier development economists the works of R. Nurkse (1953) and that of W.W. Rostow (1960) are worth saying. Nurkse made agriculture as a precondition for industrialization by mentioning that “*everyone knows that the spectacular industrial revolution would not have been possible without the agricultural revolution that preceded it,*” and likewise Rostow said that “*revolutionary changes in agricultural productivity are an essential condition for successful take-off.*” The idea behindhand this view is that as agrarian output increases countries are able to produce additional food with less labor input which allows them to feed their increasing population while freeing labor for manufacturing sector. Moreover, the increase in income and the excess created in the agriculture sector would make demand for the industrial products and serve as a means to finance the industrial sector, respectively. On the other hand, by saying the fact that some countries and provinces with lesser agricultural output have managed to mechanize earlier than those with higher agrarian productivity, there are people who argue that there is a negative link between agricultural output and industrialization. Here again, the works of Mokyr(1976) which is the comparative study of industrialization in Belgium and the Netherlands, and that of Field (1978) and Wright (1979) which are comparative studies on industrialization in New England (i.e. the north eastern part of the US) and the South of the US. According to this view, the manufacturing sector has to compete with the husbandry sector for labor. Low output in agriculture implies the abundant supply of “*cheap labor*” which the industrial sector can rely on. Matsuyama has made an attempt to theoretically explain why these seemingly conflicting views

and truths towards the role of agrarian productivity in the long-run economic growth of countries exist. He claims that that *“the key to understanding these two conflicting views can be found in the difference in their assumptions concerning the openness of economies”*. He contends if we assume a closed economy, *“an exogenous increase in agricultural productivity shifts labor to manufacturing and thereby accelerates economic growth”*. Thus, his closed economy model provides a solemnization of the conventional wisdom. If we assume an open economy, he says, *“high productivity and output in the agricultural sector may, without offsetting changes in relative prices, squeeze out the manufacturing sector and the economy will de-industrialize over time, and, in some cases, achieve a lower welfare level.”* export promotion.

1.5.1 Agricultural Productivity and Green Revolution

The green revolution which is the new farming strategy composed of dwarf High Yielding Varieties (HYV), fertilizers, pesticides and new efficient water management methods etc. These are the result of scientific development. This scientific development was made possible by Norman E. Borlaug of Rockefeller and many other agricultural scientists.

The Rockefeller Foundation established International Rice Research Institute (IRRI) at Los Banos in 1962. All improved varieties prefixed by I.R. owe their origin to IRRI. The government of India arranged for importation of Sonara-64 and Lerma Fajo-64 (wheat varieties) to accelerate production. With this, the year 1965 marked the year of change in Indian agriculture. Besides, many nations in the world started adopting the High Yielding Varieties and this change is selected as green revolution.

1.5.2 Meaning and Features of Green Revolution

The word revolution implies two things they are below:

- 1) A fast alteration in some phenomena, the alteration is so fast that is healthy marked.
- 2) The impact of the alteration is felt over period of time and bring about certain fundamental changes, *“when we add the prefix “Green” to the word “Revolution” and coin the phrase Green Revolution”* thus, it refers toward worked enhancement in agro-production in a short period.

The Green Revolution came on the scene around middle of the sixties, start with the Kharif crop of 1966. It occurred because of certain situations like drought conditions which prevailed during 1965-66 and 1966-67. These were also the years when seeds

of high yielding variety became obtainable. Without loss of time the Government enunciated new farming policy, and put to use these seeds. The earlier policies of IADP (Intensive-Agricultural District Programme) and IAAP (Intensive Agricultural Area Programme) which concerned with increasing production of the traditional crop based on farm-seeds were replaced by the new technology. As before the new strategy was concerned as package programme to include the obligatory inputs like seeds, fertilizer, implements, water supply etc.

The Green Revolution, based on the new technology, derives its name from the fact of a big rise in agricultural production in a short span of time. It was a consequence of the application of new high yielding seeds and chemical fertilizers. The core of new technology involves of seeds drawn from researcher in laboratories (as against traditionally available seeds on farms), inorganic fertilizers like chemical fertilizers (as against traditional fertilizers like leaves, animal dung etc.), adequate water supply, pesticide etc., and their proper combination. Since all these came unexpectedly, spread rapidly and brought affected results, it earned the title of Revolution in green agriculture.

The basic element of this policy is the application of the high yielding varieties (HYV) of seeds. Maximum of these seeds are of the dwarf variety. These seeds mature into plants in a short period of time. These seeds can be usefully spread in those places where there are adequate facilities for drainage and water supplies. To get the main possible production, these seeds need be combined with heavy quantities of chemical fertilizers. Compared with other normal seeds, these need four to ten times more of fertilizers.