



ENVIRONMENTAL FACTORS AFFECTING AND TRENDS OF AGRICULTURE PRODUCTIVITY IN INDIA

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ABSTRACT: Sustainability of agriculture productivity is fast emerging. After Green Revolution agriculture sector is characterized by high input use and declining total factor productivity growth. Agriculture productivity since post-independence has not been sustained and needs improvement in production function by technology enhancement. Therefore it calls for analytical probing with reference to crop growth and trends of agricultural productivity. Data is collected from secondary sources. The present study analyzes agriculture productivity, patterns of agriculture workers, share of agriculture in GDP and Export and Import. Study also provides some suggestions to make improvement in agriculture.

Key Words: Environmental Factors, Agriculture Productivity

INTRODUCTION: Indian agriculture has attained consistent growth in its total production of good grains; however the increasing trend reveals the fact that average agricultural productivity of Indian agriculture is lower in comparison to other prosperous countries. Indian economy too has witnessed steady decline 55.1 percent to 17.2 percent in agriculture's share in its gross domestic product (GDP). India has achieved self sufficiency in agriculture production but is still a food deficit country. That is why higher agricultural productivity is necessary and vital in recent times. To achieve growth in total agriculture production it is necessary to maintain productivity level with efficient use of factor inputs. We know that shortage of land and depletion of water resource cause to focus on raising agriculture productivity by optimum utilization of inputs to augment level of factor output.

PRODUCTION VERSUS PRODUCTIVITY: Production is quantitative assessment of total value of agriculture output. It can be measured and expressed in different units or values. It is commonly referred to as value added (i.e. output minus input in value term). Productivity on the other hand is a ratio of output to input. Therefore, the per hectare agriculture production is a productivity measure, in which output is taken as total production and input is taken as land. An increase in the value of input i.e. increases or decreases in the amount of land used or by achieving efficiency of land by use of good fertilizers and change in the pattern of land use or diversifying crop culture. Thus an increase in output by holding input constant or by reducing input to be used would result higher level of productivity.

Labour and capital are the two main factor of production; however there are many potential factors which collectively make an impact on agricultural productivity. Agricultural inputs are defined as products permitted for use in organic farming. These include feedstuffs, fertilizers and permitted plant protection products as well as cleaning agents and additives used in food production. Seed is a basic input in agriculture. Strictly speaking seed is an embryo, a living organism embedded in the supporting or the food storage tissue. In seed, the importance is given to the biological existence whereas; in grain the importance is given to the supporting tissue the economic produce. Modern inputs like machines useful for the sowing of seeds and can reduce the effort of farmers. HIV seeds increase the production of the crops and improve a plant's insect resistance. Fertilizers can improve soil fertility it is essential for plant growth. Farming equipment refers to the tools and machines used for farming. This

page lists the tools and machines used on farms in an effort to improve local farming (by using more suitable tools/machines) and to convert existing machines (i.e. using more suitable fuels,

Therefore, agricultural productivity is usually measured as the market value of the final output. This productivity can be compared to many different types of inputs such as labor or land. The productivity formula multiplies the gross revenue per acre by the landowner's share, and then divides this amount by the capitalization rate. Despite high levels of production, agricultural yield in India is lower than other large producing countries. Agricultural yield is the quantity of a crop produced on one unit of land. Agricultural yield of food grains has increased by more than four times since 1950-51.

NEED AND SIGNIFICANCE OF THE STUDY: As we know that industries playing a very important role in economy of India, but still the Agriculture productivity contribution is the most important factor in the development of Indian economy. Although there were so many research studies were conducted in this field as some discuss in Introduction but through this study the authors were point out some important facts and figures that play an important role in Indian economy like

- Agriculture influence on national income
- Plays vital role in employment generating factors

In this paper the main efforts is to discuss the entire phenomenon that affects the productivity of agriculture and suggestions for the future improvement in the agriculture of India for the development of Indian economy.

OBJECTIVES:

- To analyze the pattern of agriculture productivity.
- To provide suggestion to increase agriculture productivity.

FACTORS DETERMINING AGRICULTURAL PRODUCTIVITY: A number of different factors can cause agricultural productivity to increase or decrease. It is important to note that productivity is not an absolute measure, but rather a reflection of the ratio between inputs and outputs. A field that produces twice as much of some crop as it did in a previous year is not necessarily twice as productive; if the farmer spent twice as much on that field, the net change in productivity would be zero.

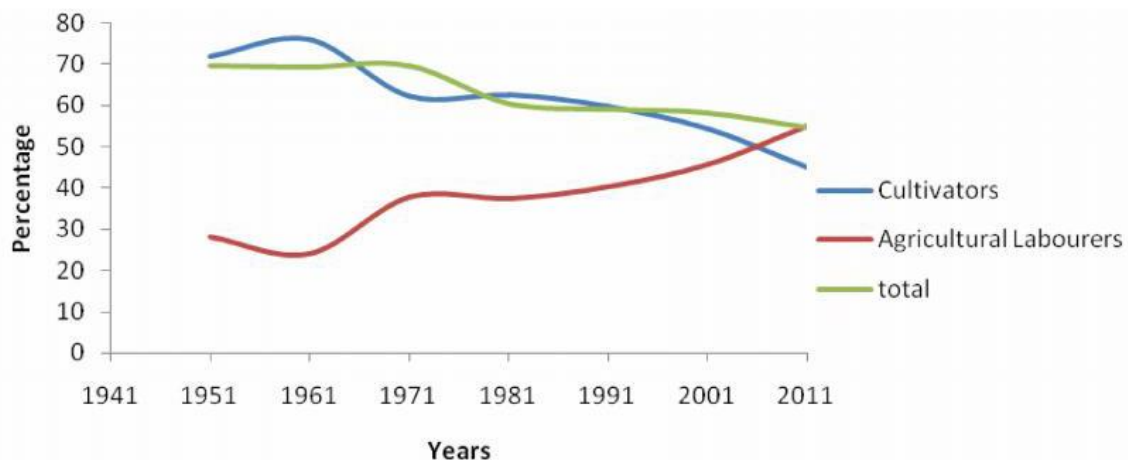
Factors that affect farm productivity and often can't be in the control of the farmer are:

- Weather - unpredictable weather patterns, such as drought, a prolonged rainy season, early or late frost conditions and other factors can ruin crops and bring productivity down.
- The fertile capacity of Farm - soil can't be treated to produce beyond capacity, although there are methods that can be used to improve production capacity, such as proper fertilizing to add nutrients to the soil so that it can support more crops.
- Pests conditions and management - besides spoiling crops, pests can add significantly to the costs of producing a crop. Controlling them may require measures such as fencing, chemical or biological treatments, companion planting or crop rotation, all of which change the ratio of inputs to outputs.
- Availability modern equipment - in regions where access to mechanized farm equipment is low, agricultural productivity can also be low as people handle their crops primarily by hand. This involves a big investment of time, energy and money and also limits the total capacity of the land
- The Supply and Demand equation of Market - farmers will manage their activities to meet the needs of consumers and make an impact on agricultural productivity. In some cases, governments even pay subsidies to farmers to compensate them for damaged crops, which can augment productivity measures.

For agricultural productivity innovation is a key factor. If farmers want to enhance their productivity, they need smart farming, by using farm management system. It helps them manage entire farm production, from tracking of activities on the fields, consumption of fertilizers, pesticides, work hours of workers and mechanization, to tracking

of finances and complete farm analysis and reports. Investment in developing new farming techniques and in researching new approaches to farming need to be on a daily basis.

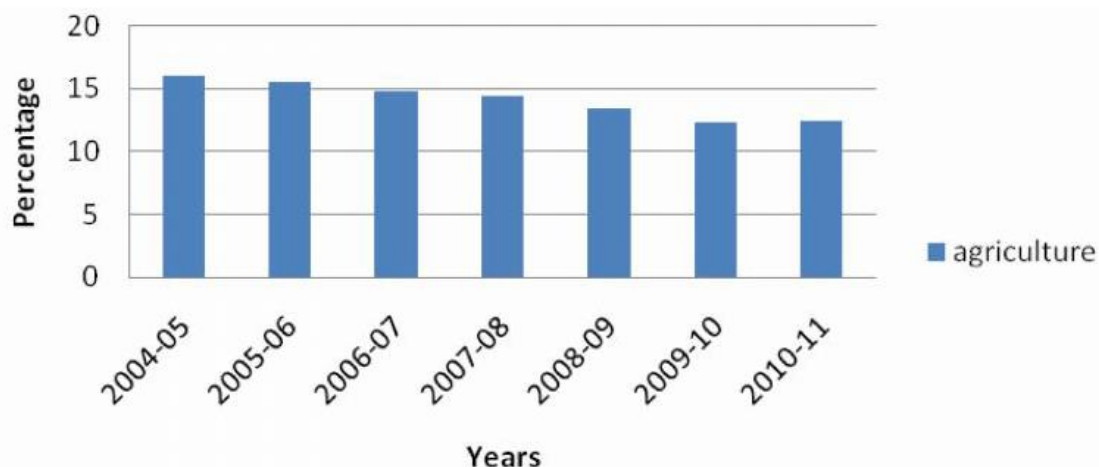
AGRICULTURE WORKERS: In 1951, around 69.7 per cent of working population was involved in the agriculture in which the percentage of cultivator (cultivator are those who are engaged in cultivation of their own land) is higher than the agricultural labour (agriculture labour are those person who are works on another person's land for wages in money or share) shown in Fig. 1.



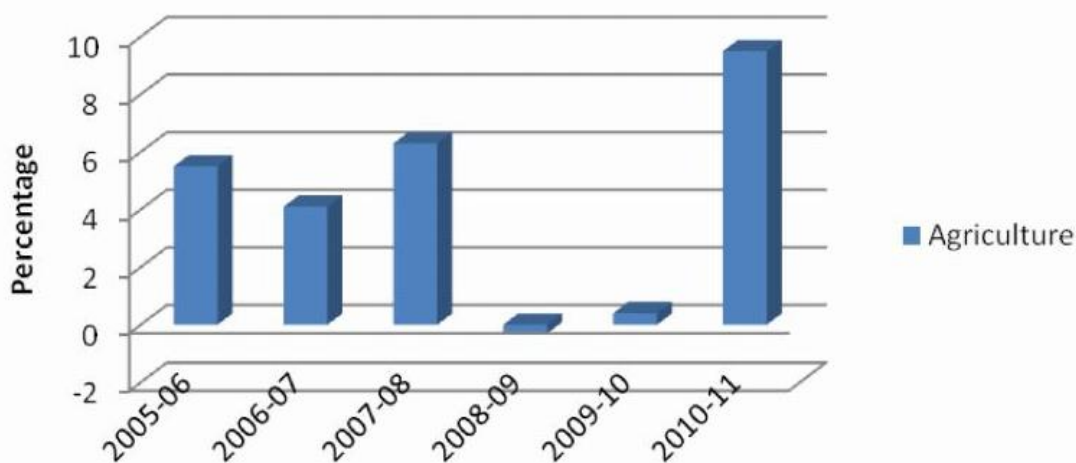
This percentage of working population in this sector was subsequently decline i.e. in 1981 was 60.5 per cent and in 2001 this fell to 58.2 per cent and in 2011 this population fell to 54.6 per cent. On the cultivator side, there population was 71.9 per cent in 1951 but this population was also declined throughout the decades. But Fig. 1 show that agriculture labours was increase throughout the decades i.e. 28.1 per cent in 1951 and in 2011 this population reached to 54.9 per cent.

GENDER WISE INVOLVEMENT: In India, male working population is more involved in the agriculture sector in comparison to female working population. Around 69.6 per cent and 57.3 percentage of male were involved in the cultivation as cultivator and agriculture labor which is more than the females.

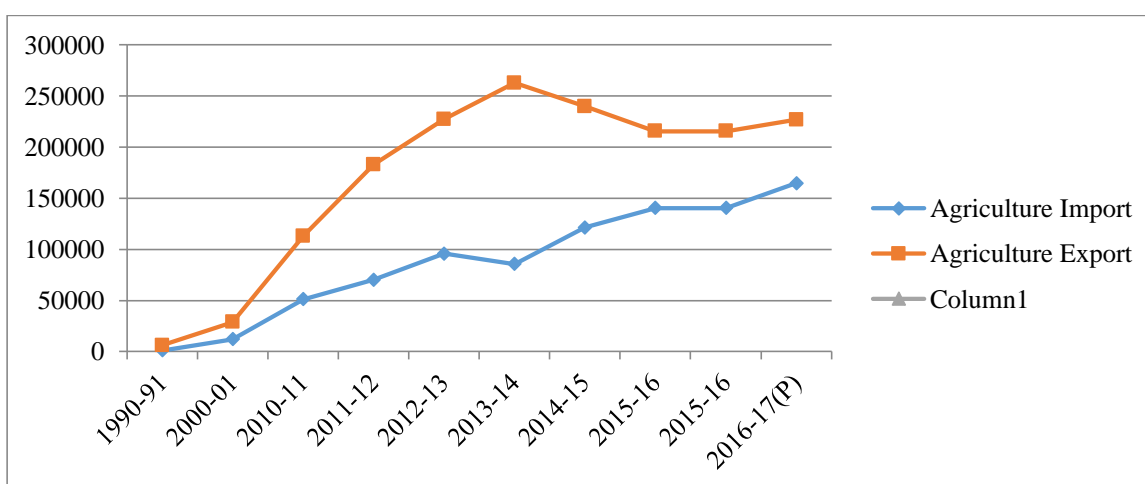
AGRICULTURE SHARE IN GDP: In 2004-05, the percentage of share of agriculture was 16 and fell to 14.7 per cent in 2006-07. Further it fell to 12.4 per cent in 2010-11 shown in Fig. 2.



GROWTH OF AGRICULTURE IN GDP: The percentage of agriculture growth in India shown in the Fig. 3 revealed that it is fluctuated i.e. in 2005-06 it is 5.5 per cent and in the next financial year it came down 4.1 per cent. This percentage fell to -0.3 per cent and 0.4 per cent in 2008-09 and 2009-10. But this percentage shows tremendous growth i.e. 9.5 per cent in 2010-11.



INDIA'S IMPORTS AND EXPORTS OF AGRICULTURAL COMMODITIES: Fig. 4 shows that Indian agriculture export and import was increased year by year. And the value of export was higher than the value of import.



EXPORT AND IMPORT: The percentage of export and import of agriculture to total export and import in 1990-91 was 18.4% and 2.4% shown on Fig. 4. But this percentage fell to 10.02 % in export and 2.42 % in import in 2005-06. This percentage has grown in 2016-17 as 12.55 % in export and 5.63 % in import.

CAUSES OF LOW AGRICULTURE PRODUCTIVITY: This is broadly categorized into four heads:

1. Demographic factors
2. Institutional factors
3. Technological factors
4. Policy formulation issues

Demographically Indian population has increased but availability of land is limited and fertility of soil has declined causing stagnating labour productivity trends in last two decades. Despite low land productivity, there is an increasing trend in land productivity since 1951-2011. Institutional development like developed countries are yet to take place in India. Lack of investment and poor research and development, inadequate modern input and technology fatigue hampers the objectives of higher agricultural productivity. Indian agriculture also suffered from robust policy formulation and promotion on many facts and fronts.

CONCLUSION AND SUGGESTION: This study discussed the trends and patterns of Indian agriculture. The present study revealed that work participation of agriculture has declined the throughout the year. Share of agriculture in the GDP has also shown declining subsequently. Growth of Agriculture in GDP has shown fluctuated result throughout the year by year i.e. in 2005-06 it is 5.5 per cent and in the next financial year it came down 4.1 per cent. This percentage fell to -0.3 per cent and 0.4 per cent in 2008-09 and 2009-10. But this percentage shows tremendous growth i.e. 9.5 per cent in 2010-11. Indian agriculture export and import was increased year by year. But in which the value of export was higher than the value of import. The percentage of export and import of agriculture to total export and import in 1990-91 was 18.4 and 2.4. But this percentage fell to 10.02 % in export and 2.42 % in import in 2005-06. This percentage has grown in 2015-16 as 12.55 % in export and 5.63 % in import.

SUGGESTIONS:

Credit generation: Credit should be provided to farmer adequately from which the financial requirement can fulfilled easily at the time of cropping of crops.

Providing Quality Seeds: Quality seeds should be made available to the farmer at the control rate and prevalence of quality seeds in the Public Distribution System.

Enrich irrigation facilities: there is a strict need to improve the irrigation facilities especially in hilly tracts of India.

Reduce pressure of population: Large population depends on agriculture sector. This paves the way to sub division and fragmentation of land holdings. There is a need to curtail this practice on this sector.

Intensive farming and size of holdings: There is a need to consolidate all the fragmented land into a good size land with the help of co-operative farming and consolidation of land holding which gives profitable returns.

Effective agricultural marketing: Commodities reached easily to the consumer provide more profitable return and this is feasible due to effective marketing. So there is strict need to create the agriculture marketing facility in the agrarian regions of India.

Agriculture extension education: Education should be imparted to the farmer pertaining to land usage, agriculture management and other resources which helps the farmer in more production of commodities, conservation of soil and other amenities.

Preservation and storage centers: Storage centers should be established at district levels so that these centers provide commercial profitability for various farm produce to the farming communities and to raise the production of various valuable crops.

Weather forecasting and satellite networks: Installation of weather forecasting and early warning systems and make farmers adequately familiar with them. It will assist farmers in dealing modern agriculture practices to minimize losses in disasters and other climate- related calamities.

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