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ECONOMIC ANALYSIS OF AREA, PRODUCTION AND PRODUCTIVITY LEVELS OF PADDY IN INDIA

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ABSTRACT

Paddy is the staple food of over half the world population. Paddy is normally grown as an annual plant; although in tropical areas it can survive as a perennial crop and can produce a ratoon crop for up to 30 years. Since its origin, the spread of rice cultivation is extensive and rice is now being grown wherever water supply is adequate and ambient temperature is suitable. The rice grain is covered with a woody husk or hull, which is indigestible and is to be removed in the first step during processing for making the rice edible. Rice cultivation is well suited to countries and regions with low labor costs and high rainfall, as it is labor intensive to cultivate and requires ample water. Rice can be grown practically anywhere, even on a steep hill or mountain.

KEY WORDS: *Area, Production, Yield, Cultivation*

INTRODUCTION

FAO during the International Year of Rice, 2004 stated "Rice contributes to many aspects of society and therefore can be considered a crystal or prism through which the complexities of sustainable agriculture and food systems can be viewed. The issues related to rice production should not be viewed in isolation but in the framework of agricultural production systems through ecological and integrated systems" This succinctly delivers indivisibility of rice, not only as one of the most important food crops but also as an intricate part of the socio-cultural aspects of the lives of many people in the major rice producing regions of the world.

Rice (*Oryza Sativa*) is the second highest produced grain in the world after corn (maize). However, since a large portion of corn is produced for purposes other than human consumption, rice is the most important grain with regard to human nutrition and calorific intake, providing more than one fifth of the calories consumed by worldwide by the human species.

Throughout history, rice has been one of the most important food crops for humans. This unique grain is the lifeline for nearly two-thirds of the world's population. It is deeply embedded in the cultural and economic heritage of t heir societies. About four-fifths of the world's rice is produced on small-scale by farmers and is consumed locally. Rice cultivation is the principal activity and source of income for about 100 million households in Asia and Africa

Review Of Literature

Karhale. S. S, Lambe and Neharka. P. S. (2015)[1] revealed that the weeders and methods selected for the study has its own strengths and limitations. Conoweeder can be recommended in the early stages of weed growth as the better weeding efficiency, more turning of the soil and uprooting of weeds overrules the higher cost of operation. Conoweeder performed the task with comparatively higher field capacity, better performance index in the early stages of weed infestation. The field performance analyses have shown that Weeding efficiency as 72.2 per cent for Conoweeder with damage factor of 4.1per cent respectively.

Telu Visalakshi (2015) [2] concluded that owing to the resources in Andhra Pradesh it is the fourth largest producer of rice in India. And about one fourth of the total cropped area of the state is under rice cultivation. After Green revolution the production and yields have considerably increased with the trends in packaging Technology. According to state analysis in 2002-03, Andhra Pradesh recorded the yield of 26.2 quintals/hectare against India's average of 18 quintals/hectare. The Godavari and Krishna delta and the adjoining coastal plains form one of the most outstanding rice producing tracts of the country.

C.Leelavathi and V.Balakrishnama Naidu (2014)[3] revealed that both in India and Andhra Pradesh rice registered decreasing growth in production and productivity in the post WTO period than in the pre-WTO period. The results indicated that the Indian export markets, which remained stable over the period, were Saudi Arabia and 'others'. The Saudi Arabia has indeed been a growing market for Indian basmati rice. The high retention of this market was further reinforced by high probability of transfers from UAE, USA and other countries.

Anwar Hussain (2013)[4] Identified that the average per acre cost for all varieties became to ¹ 16,208, which included the cost of seed (¹ 273), fertilizers (¹ 655), labour usage (man days) (Rs. 6600), transplanting (¹ 1800), harvesting (¹ 1200) and threshing (¹ 1260) in addition to other costs. This cost is higher as compared to per acre cost computed by Hussain et al. (11), which was ¹ 13,565. This is due to increasing trend of prices of inputs over time.

Subbaiah Choudary. P.V. (2011)[5] observed that there was a wide price gap between the whole and milled/ processed rice in the chain of producer to consumer, vulnerability to stored grain pests due to lack of scientific storage facilities at domestic level, lack of governmental support to value addition (like packaging etc).

Ernest Molua. L.(2010) [6] remarks that the rice sector is shown to be influenced by yield expectations, irrigation and relative global market price as well governmental expenditure on agriculture. As shown in the response to relative global price for rice, the presence of market power exerted by imported rice, impacts on producer supply response. The magnitude of the effect on producers may be due to the structure of production units and the characteristics of domestic markets.

Sita Devi.K. and Ponnarasi. T. (2009)[7] in their study revealed that adoption of SRI technique would help increase rice production without increasing the area under cultivation. It has proved to serve as an alternative method for rice cultivation. The increased productivity and net profit would attract the farmers, and saving in water-use for rice cultivation is an important advantage for efficient water management.

Narasimham *et al.* (2003)[8] estimated the cost and returns of paddy in Ynam region of Union territory of Pondicherry. They found that the cost of production of paddy per hectare was highest among all the size groups. The total costs per hectare were high in large farms in both crop I (*kharif*) and crop II (*rabi*) with ¹ 18,094.26 and ¹ 19,071.29, respectively. Rental value on own land in the cost of production of crop II was more than crop I in all size groups. Gross returns per hectare were the highest on large farms followed by medium and small farms in both crop I and crop II. Net returns also showed direct relation with the farm size.

Gupta *et al.* (1985)[9] examined the economics of paddy cultivation on different size groups of Haryana. It was observed that the use of human labour generally declined with increase in farm size while that of mechanical labour increased. The share of fixed costs in the total cost of cultivation was higher on large farms than that on small farms. Use of yield augmenting inputs and yield per hectare increased with the increase in farm size and so did the return over variable costs.

OBJECTIVES

- ✧ To enquire into the factors those have lead to the recent trends in productivity.
- ✧ To seek ways to break out of the yield levels and achieve higher yields.
- ✧ To study the economics of rice cultivation.
- ✧ To assess the role of extension and breakthrough in procedures of rice cultivation

RICE GROWING REGIONS IN INDIA

Rice is grown under so diverse soil and climatic conditions that it is said that there is hardly any type of soil in which it cannot be grown including alkaline and acidic soils. Rice crop has also got wide physical adaptability. Therefore, it is grown from below sea-level (Kuttanad area of Kerala) up to an elevation of 2000 meters in Jammu & Kashmir, hills of Uttarakhand, Himachal Pradesh and North-Eastern Hill (NEH) areas. The rice growing areas in the country can be broadly grouped into five regions as discussed below:

North-Eastern Region: This region comprises of Assam and North eastern states. In Assam rice is grown in the Basin of Brahmaputra River. This region receives very heavy rainfall and rice is grown under rain fed condition.

Eastern Region: This region comprises of Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Orissa, Eastern Uttar Pradesh and West Bengal. In this region rice is grown in the basins of Ganga and Mahanadi rivers and has the highest intensity of rice cultivation in the country. This region receives heavy rainfall and rice is grown mainly under rain fed conditions.

Northern Region: This region comprises of Haryana, Punjab, Western Uttar Pradesh, Uttrakhand, Himachal Pradesh and Jammu & Kashmir. The region experiences low winter temperature and single crop of rice from May-July to September-December is grown.

Western Region: This region comprises of Gujarat, Maharashtra and Rajasthan. Rice is largely grown under rain fed condition during June-August to October - December.

Southern Region: This region comprises of Andhra Pradesh, Karnataka, Kerala and Tamil Nadu. Rice is mainly grown in deltaic tracts of Godavari, Krishna and Cauvery Rivers and the non-deltaic rain fed area of Tamil Nadu and Andhra Pradesh. Rice is grown under irrigated condition in deltaic tracts.

India is the second largest producer as well as consumer of rice in the world. Similar to the trends in world production, rice production in India has also increased at a slow pace throughout 2000s and crossed 100 million tonnes mark in 2011-12 primarily due to rise in yields.

PADDY PRODUCING STATES IN INDIA

Nearly all states and union territories of India produce paddy. The most important states are West Bengal, Bihar, Uttar Pradesh, Assam, Orissa, Andhra Pradesh, Tamil Nadu, Punjab, etc.

1. West Bengal ranks 1st in India in rice production producing 14% of the total production in India. Nearly 72% of agricultural land in West Bengal is under rice cultivation. The leading producers of rice are the districts of North and South 24 Parganas, East and West Midnapur, Jalpaiguri, Bardhaman, Bankura, Birbhum, North and South Dinajapur etc.

2. Uttar Pradesh ranks 2nd in rice production. Plenty of rice is produced in the east in the plains of the Ganga. The areas of production are Pilibhit, Kheri etc.

3. Andhra Pradesh ranks 3rd in rice production. High production occurs in the river valleys of Godavari and Krishna and their deltas.

4. Other States: In Assam rice is produced in the Brahmaputra Valley, in Orissa in the Mahanadi Valley and delta, in Tamil Nadu in the delta of the Kaveri, in Bihar plains of the Ganga, Punjab, Haryana, Tripura and coastal regions of Kerala rice is also produced in large amounts.

Table 1 Trends in rice production

(000 tonnes)

Year	Open Stocks	Production	Imports	Exports	Consumption	End Stocks
2010-11	20500	95980	0	2774	90206	23500
2011-12	23500	105310	0	10376	93334	25100
2012-13	25100	105240	0	10869	94031	25440
2013-14	25440	106540	0	10149	99180	22651
2014-15P	22651	102500	0	9000	99351	16800

Source: USDA

INDIA RICE PRODUCTION

The Indian government says in its second advance estimates that rice production in 2013-14 (October - September) is likely to reach a record of106.19 million tons, the highest ever on record and up about 1% from an estimated 105.24 million tons produced in the previous year. The government says that India's total food grain production, which includes kharif season (July – December) and Rabi crops (November - March), in 2013-14 is likely to reach around 263.2 million tons (about 6 million tons or 2% higher from 2012-13) and production of many crops is likely to break earlier records.

Local sources say that rice production is likely to get a boost this year helped by a surging Rabi (winter) rice crop and high market prices. According to the agriculture ministry, India's Rabi rice area stands at around 2.8 million hectares as of February 14, 2014, up about 33% from last year.

Higher production will help India maintain record rice shipments in 2013-14. According to the USDA, India was the world's largest rice exporter in 2012-13 with exports of around 10.9 million tons. The US agency estimates India's rice production in 2013-14 at around 103 million tons, against a consumption of 95 million tons, while India's exports are expected to reach around 10 million tons in 2013-14. However, rice traders in India

expect rice exports to grow to around 11 million tons in 2013-14.

Table 2 India's Rice Production in Global Context

Year	World Production in million MT	India Production (Million Tons)	India's share in (%)
2001-02	399	93.34	23.39
2001-02	380	71.82	18.90
2002-03	390	88.53	22.70
2003-04	405	83.13	20.53
2004-05	423	91.79	21.70
2005-06	427	93.35	21.86
2006-07	438	96.69	22.08
2007-08	459	99.18	21.61
2008-09	457	89.09	19.49
2009-10	449	95.98	21.38
2010-11	456	104.32	22.88
2011-12	463	103	22.25
2012-13	399	93.34	23.39

Source: USDA (United States Department of Agriculture).

Fig: 1 India's Rice Production in Global Context

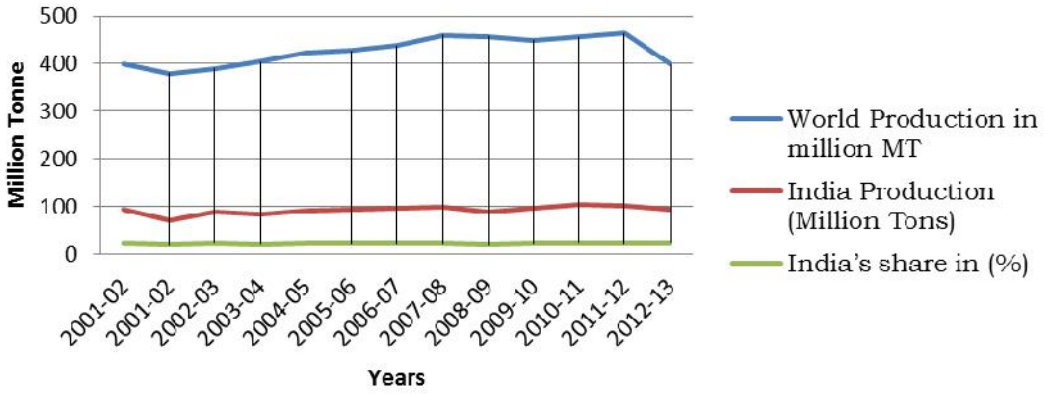


Table 3 Year Wise Area, Production and Yield of Paddy in India

Year	Area(Million Hectare)	Production(Million Tons)	Yield (Kg./ Hectare)
2001-02	44.90	93.34	2079
2001-02	41.18	71.82	1744
2002-03	42.59	88.53	2077
2003-04	41.91	83.13	1984
2004-05	43.66	91.79	2102
2005-06	43.81	93.36	2131
2006-07	43.91	96.69	2202
2007-08	45.54	99.18	2178
2008-09	41.85	89.13	2129
2009-10	36.95	80.41	2177
2010-11	42.86	95.98	2239
2011-12	43.97	105.31	2372
2012-13	42.75	101.80	2462

Source: Directorate of Economics and Statistics and Department of Agriculture and Cooperation

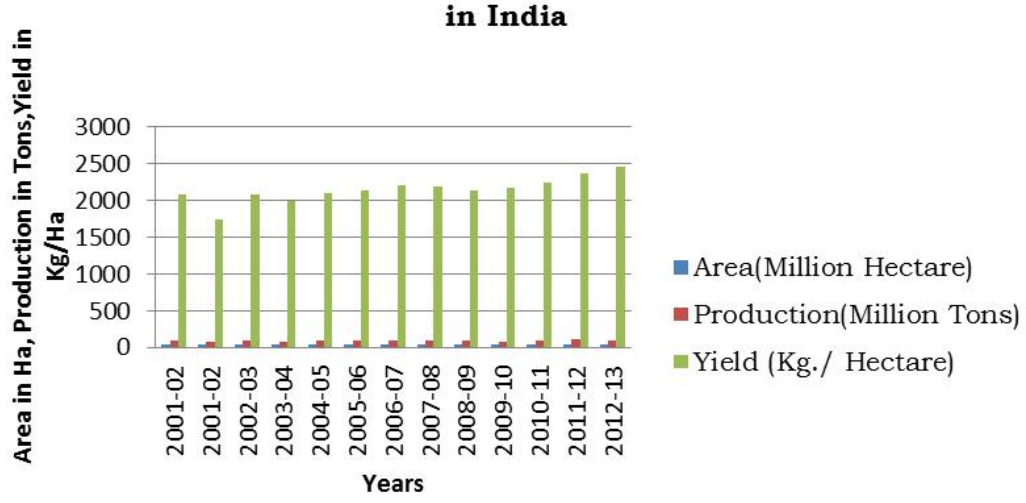
It is observed from the table 3 the area of paddy cultivation is not increased from the year 2001-02 to 2012-14. It is fluctuating between 36-46 million hectares during these 14 years. The maximum area cultivated during the year 2008-09 was 45.54 million hectares and is minimum 36.95 during 2010-11.

The production of paddy during the year 2013-14 is 101.80 million tons. Production is less than 100 from 2001-02 to 2011-12, it is high 105.31 MT during the year 2012-13 and is low 71.82 MT during 2002-03.

The yield in India is 2079 kg/hectare during the year 2001-02. It is high 2462 during 2013-14 and is low 1984 during 2004-05 which is the only yield less than 2000 among the 14 years. It is increasing from 2129.7 during 2009-10 to 2462 during 2012-13.

Indian share in global rice production has been hovering in the range of 19.50 to 24.52 % as show in the table given below. Indian share dipped below 20 percent only in 2009-10. Production of rice in India is expected to drop this year from 104.3 million MT to 101.80 million MT (including 11.11 million MT rabi production) due to lower kharif output pegged at almost 90.69 million MT. Below given table 3 shows the world rice production and percentage share of India in total production.

Fig: 2Year Wise Area, Production and Yield of Paddy in India



METHODOLOGY

The study was conducted on both qualitative and quantitative lines, making use of tools like Questionnaire and discussions. It also looks into the primary and secondary sources of data from the government publications, market yards at both panchayat levels and district/taluka level, and from the database of the Directorate of Economics and Statistics. The study tries to address the issues of productivity levels of rice cultivators, their profitability, problems and prospects of rice cultivators.

CONCLUSION

Indian Agriculture has undergone various stages since independence. Technology transfers and public policy have been the prime determinants of growth rate of agriculture. The post liberalization era has seen massive shifts in the terms of trade against agriculture. While production from agriculture has been increasing, Indian farmers are being increasingly marginalised. India has earned the status of a country with large grain reserves with government, highlighting the co-existence of 'Grain Mountains and hungry millions.'

There is an urgent need for a Second Green Revolution in India. The main focus of such a revolution should be primarily on correction of the negative externalities of the Green Revolution. Dr. Swaminathan stresses the need for an 'Evergreen Revolution' in India.

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