

Full Length Research Paper

A Comparative Study of Trend in Area, Production and Productivity of Rice in Kerala and Tamil Nadu

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This study investigates the sustainability of rice production in Kerala and Tamil Nadu. Food deficit is a persistent issue in Kerala and is highly rely on Tamil Nadu for food grains and vegetables. Ensuring food security to all that is the access of the sufficient quantity of food to meet its nutritional requirements of people has got predominant importance in government policies. Therefore, food security issues cover not only issues related to the availability and stability of food supplies but also to issues of accessibility of food. The study found that the declining area, production and productivity of rice has induce the keralites to rely on neighbouring state of tamil nadu, where rice production is growing up. The implementation of sustainable agriculture policies in Kerala has required more emphasis in production of food grains to meet food demand in future.

Keywords: Area, production and productivity of rice, sustainable agriculture, food security, self sufficiency, constraints.

INTRODUCTION

Agriculture is regarded as the backbone of Indian economy and is the major source of income and livelihood to more than half the country's population. Approximately 43 per cent of India's geographical area is used for agricultural and its allied activities. Agriculture including production of crops, animal husbandry, fisheries, forestry and agro processing provides substantial support to the country for achieving food security and economic growth. In the recent years, agriculture sector has witnessed dramatic progresses in the production and productivity of food grains, oilseeds, commercial crops, fruits, vegetables, poultry and dairy (Tyagi, 2012). Agriculture accounts for about 10 per cent of the total export earnings and provides raw materials support to industrial production. Being as one of the world's largest agrarian economies, Indian agriculture sector has accounted for 17.9 per cent of the GDP in 2014-15 compared to 13.9 per cent in 2011-02. Although the share of Indian agriculture in the GDP has been steadily declining, but it is still the single largest contributor to the GDP and plays a dominant role in the overall socio-economic development of the country (Ramesh, 2013).

Agriculture is the main source of food and source of livelihood. Food grains production in India has shown remarkable improvement in recent years. In every year India produced nearly 225-230 million erti of different food grains. In 2011-12, the production of food grains was at a record high of 259.32 million erti. All major food grains such as paddy, wheat, maize, barley, millets including jowar, bajra and ragi are commonly produced in the country. Thus the country is self sufficient in grain production. Grain processing is the biggest component in the food sector, sharing over 40% of the total value. The basic feature of the sector is the predominance of primary processing sector sharing of 96% of the total value with secondary and tertiary sectors contributing about 4% of the total value addition.

In India paddy is one of the most important food crops and is second in importance throughout the world. It feeds more than 50 per cent of the world's population. Asia accounts for about 90 per cent of the world's paddy production and is the staple food of most of the people in South-East Asia. Maximum area under paddy cultivation is in Asia. It is the most preferred staple food for about 65 per cent of the population in India. Among the paddy

growing countries, India has the largest area under cultivation (42.56 million hectares during 2010-12) followed by China and Bangladesh. India is second to China in terms of quantity of rice produced and accounting more than 20 per cent of global production. Productivity in India is much lower than in Egypt, Japan, China, Vietnam, United States of America and Indonesia and even below the world's average. It makes up 42 per cent of India's total food grains production and 45 per cent of the total cereals produced in the country. Paddy provides about 22 per cent of the world supplies of calories and 17 per cent of the proteins. Average paddy yield of India is 1339 kgs per hectare. It continues to play a vital role in the country's exports constituting nearly 25 per cent of the total agricultural exports from the country.

India has holds one-third of the world's paddy cultivation area. It is grown in almost all the states of India but is mostly concentrated in the river valleys, deltas and low-lying coastal areas of north eastern and southern part of the country. The major paddy producing states are Assam, West Bengal, Bihar, Madhya Pradesh, Odisha, Andhra Pradesh, Tamil Nadu, Kerala, Karnataka, Maharashtra, Gujarat, Uttar Pradesh and Jammu and Kashmir which together contribute over 95 per cent of the country's total paddy. Out of these, West Bengal, Odisha, Andhra Pradesh, Tamil Nadu and Bihar are the major cultivators. Nearly 85 per cent of the country's total paddy output is grown during the kharif season (between June and September) while the rest of the 15 per cent is cultivated during the Rabi season (between November and February). The importance of rice in daily menu is significant and people given more importance on rice. The study explores the trend in acreage, production and productivity of rice in two southern states namely, Kerala and Tamil Nadu.

Statement of the Problem

Rice is seems to be the staple food of kerala and Tamil Nadu. Cultivation of paddy is a lucrative business to various farmers and this is an important crop which helps to increase the economic condition of the paddy farmers. The cultivation of paddy is generally depending on fertility of land, climate condition, high yielding varieties of seeds and rainfall. Therefore the production of paddy is variegating state by state. Climatic condition in kerala is conducive for production of rice but unremunerative nature of paddy cultivation has wiped-out this fertili. In the case of Tamil Nadu, it is not as much as favourable for the cultivation of paddy compared to kerala. Lack of irrigation facilities is the main obstacle to prevent paddy cultivation. The farmers are also affected by various problems in cultivation of paddy viz., non availability of labourers, high wage rate, poor quality of fertilisers, non availability of fertile seeds, loss due to pests and diseases, inadequate technical know-how and lack of market access. Tamil Nadu is one

of the leading producers of rice among other Indian states. Kerala is highly relay on Tamil Nadu and other states for rice, vegetables and other food grains. Changes in production of rice in Tamil Nadu have significant impact in Kerala. In this context it is significant to study the trend in acreage, production and productivity of rice in Kerala and Tamil Nadu.

Objectives of the Study

The study attempts to investigate the trend in area, production and productivity of paddy in Kerala and Tamil nadu since 2005-06. Kerala is remaining as a food deficit state and Tamil Nadu has achieved food self-sufficiency in yesteryears. Over reliance of Kerala on neighbouring states for food grains have causes food inflation, food shortage and people remain as food insecure. Food security of existing population is a topic of deep discussion in kerala. The question is why kerala, the green state of India, blessed with abundant water resources and favourable climate depend upon neighboring states for food grains? Two major factors that contributing to cheaper agriculture production are large scale cultivation and availability of cheap labour. Former is not possible in kerala owing to high population density. Latter is lacking due to high standard of living, gulf migration and influx of foreign money. These factors make Kerala more inclined to cultivating spices and rubber which yield more income from limited land area. There are no real incentives to grow rice and vegetables when they are available at lower costs from neighboring states. It is very essential to compare past, present and future trend in area, production and productivity of paddy in Kerala and Tamil nadu in order to ensure food security not only in Tamil Nadu but also in Kerala.

METHODOLOGY

The study is entirely based on secondary data sources. The secondary data were collected from the website of department of economics and statistics, Kerala and Tamil Nadu. The data on area, production and productivity from 2005-06 to 2014-15 was used for analysis. The study is descriptive and analytical in nature. Trend projection method was employed to estimate the trend from past data to obtain a forecast in production, productivity and area under cultivation of rice in kerala and Tamil Nadu. The basic idea behind this method is that the past data serves as a guide to estimate future trend. The trend projection method is based on time series analysis. In this method, a trend equation and a trend line is framed keeping a view in the past trend of data. On this basis forecast of future trend is made. Trend equation in the time series analysis is based on least square method. The basic formulas of trend projection method are given below.

$$Y_t = b_0 + b_1 t$$

Where,

Y_t = trend forecast for time period t

b_t = slope of the trend line

b_0 = trend line projection for time 0.

$$b_1 = \frac{n \sum ty - \sum t \sum y}{n \sum t^2 - (\sum t)^2}$$

$$b_0 = Y - b_1 t$$

Significance of the Study

Unlike the importance of paddy cultivation in livelihood and income generation, paddy is main source of nutrition to run daily life business. Kerala is remaining as a food deficit state due to backwardness of agriculture sector. During 1960-61 Kerala had a shortage of rice of about 40.12 percent, which increased to 83.45 percent in 2009-10. The total consumption of rice in the State is 40 lakh tonnes in a year. However, the production of paddy in the State is only 8 lakh tonnes. To fill the gap of 32 lakh tonnes, Kerala has to import rice from the neighbouring States, especially from Tamil Nadu, Andhra Pradesh and Karnataka. Tamil nadu is regarded as an agrarian based economy and kerala has depends on Tamil Nadu for the import of rice and vegetables. In order to meet the external demand, the state has to produce more and increase the area of production. The study attempts to explore the trend in acreage, production and productivity of rice in Kerala and Tamil Nadu in a comparative manner. The study helps to understand the current trend in production of rice and the prediction of future trend will help to formulate appropriate policies.

Review of Literature

Rice is the largely producing food grain in kerala and Tamil Nadu and its changing trend in acreage, production and productivity is a topic of detailed investigation. Due to its importance in daily menu, various aspects of rice are explored and imparted endless knowledge. A few studies are selected on the basis of its relevance to the topic and reviewed in the following section.

Richard Scaria, et. al., (2015) examined the conversion of paddy fields to other uses and its impact on the food security. The main objective of the study is to estimate the conversion of paddy fields, and its impact on the food security status of Karrimpuzha watershed in Palakkad district. The study state that Current agriculture land is not sufficient for satisfying the existing dietary needs, so Agriculture land use planning is necessary in Karrimpuzha watershed for satisfying the existing dietary needs. Nearly 2800 tons of rice is deficit per year the in Karrimpuzha watershed, hence people in this area are

depending on other sources and neighboring states or region for receiving rice for their dietary needs. To overcome this issue, additionally 2000 hectares for agriculture land are required. Land use planning analysis point out that total 3463 hectares of paddy fields are mandatory for achieving the status of self sufficient watershed in rice. The study suggested that Government should implements sustainable land-use planning technique to manage the development of land within their jurisdictions. In doing so, the governmental can plan for the needs of the community and safeguarding natural resources.

Karunakaran, N., (2014) in his paper entitled "Paddy Cultivation in Kerala – Trends, Determinants and Effects on Food Security", analyzed the trends and determinants of paddy cultivation in Kerala and the effects on food security. The study used secondary data which was collected from various publications of the Government of Kerala like Economic Review, Statistics for Planning and Agricultural Statistics. Time series analysis of acreage, production and productivity data of rice in Kerala during the five decades from 1960-61 to 2009-10 has revealed the performance of rice in terms of growth of area, production and productivity. The found that production of major food crop, rice, reached negative growth rates due to the declining trend of their area. The diversification of crops in terms of variation in acreage allocation has taken place due to price and non-price factors like agro-climatic conditions, labour availability, irrigation facilities, soil fertility, cost of cultivation, price levels, profitability, mechanization etc. The change has taken place largely in favour of non-food crops and recently it is towards rubber. The study also examines food security aspects of the state and found that rice security is the vital issue for Kerala today. The data revealed that during 1960-61 Kerala had a shortage of rice of about 40.12 percent, which increased to 83.45 percent in 2009-10. The study clearly revealed the increasing demand for rice in Kerala in the coming years compared to the existing supply. This will enlarge the supply demand gap of rice in Kerala in the future years indicating a threat to food security bringing out a need for further increase in rice production in a sustainable way.

Guptha Chandra, et. al., (2014) examined the trends in the cost of cultivation of paddy and its profitability in three Indian states of Kerala, Odisha and Tamil Nadu during the period 1999-2011. The study found that the factors like hired machine and labour, fertilizer, are all growing in varying proportions leading to an increase in the cost of cultivation. In the years showing profits, Profitability seemed to be averaging around ten percent and while in most of the year's loss was reported. Over the years, the increase in cost of cultivation seems to be stable in contrast with the increase in value of paddy produced by farmers. Study stated that Profitability in paddy cultivation shows a variable trend across Kerala, Odisha and Tamil Nadu.

Among the three states, Kerala is relatively better in generating profits while Odisha is the poorest.

Kumar Mukesh, (2011) in his article on "Trends in Indian Agricultural Production in Pre and Post Reform Period" analysed the growth, special pattern and find out the determinants of food grain production in India. For this purpose, both types of data i.e., time series and cross sectionals, data were taken. The foregoing analysis clearly indicates that the performance of India in food grain production has been better than the pre reform period but not sustain. The ACGR of rice, wheat, coarse cereals, pulses, as well as total has decreased from 2.65, 3.51, 1.37, 0.90, and 2.51 in pre freeform period to 1.03, 1.14, 0.77, 0.05 and 0.96 percent respectively post reform period in India.

Saravanadurai, et. al., (2010) examined the growth actions of area, production and yield of selected cereal crops in the Tamil Nadu state. Using the data from 1993-94 to 2007-08. The study found that the paddy holds good performances in absolute terms, among the other cereal crops are concerned. But the compound growth rate reveals that the maize was found to be positive and records a highest growth rate among other cereal crops in terms of area of cultivation, production and yield in Tamil Nadu over the study period. Study suggested that the farmers can also cultivate maize for the money-making purpose in the Tamil Nadu state that suits for the climatic conditions of the state as well.

Rao, V. M., (2008) presented a systemic framework to look at the prospects for sustainability of Indian agriculture. The framework is based on trends, indicators and assessment by experts spanning three domains which are the principal influences shaping the growth, efficiency and stability of agriculture. The domains are: natural resources covering land, water, climate and environment; human development comprising the characteristics of farmers as producers and entrepreneurs; and, technology and institutions which provide the development thrust and means for harmonizing growth, social justice and adjustment to globalisation. This paper concluded with three scenarios ranging from scary to desirable. Not surprisingly, the prospects for agriculture are seen to depend in the final analysis not so much on nature or factors beyond control but on friendliness of the policy regime towards farmer, agriculture and rural communities.

Kumar Praduman, et. al., (2006) in their article on "Agricultural Productivity Trends in India: Sustainability Issues" discussed the sustainability issue of the crop productivity is fast emerging. The post-Green Revolution phase is characterized by high input-use and decelerating total factor productivity growth (TFPG). The agricultural productivity attained during the 1980s has not been sustained during the 1990s and has posed a challenge for the researchers to shift the production function upward by improving the technology index. It calls for an examination of issues related to the trends in the agricultural productivity, particularly with reference to

individual crops grown in the major states of India. Temporal and spatial variations of TFPG for major crops of India have also been examined.

There are only few studies related to area, production and productivity of rice in Tamil Nadu compared to Kerala. Studies related to kerala indicated that rice production has been declining steadily and agriculture land is used for non agriculture purposes.

Analysis and Interpretations

Time series data from 2005-06 to 2014-15 has been used to understand the trend in area, production and productivity of rice in Kerala and Tamil Nadu. The growth in the production of paddy depends on many factors such as area cropped, input management and yield. The cropped area and productivity are determined by the fertility of soil, monsoon behaviour, rainfall, irrigation, availability of agricultural labourers, climatic changes, prices technological advancement, etc. Geography, climatic conditions, socio-economic structure is dissimilar among the two states.

Area production and productivity of rice in Kerala and Tamil Nadu

We can see in table 1 that the area under rice in kerala has been declining consistently over the last several years. After a long period of continuous decline, area under rice has increased from 228938 ha in 2007-08 to 234265 ha in 2008-09 and sharply declined by 208160 ha in 2011-12. During 2011-12, the area under rice declined by 5027 ha, and during 2014-15, the area under rice declined by 1452 ha. Production since 2012-13 shows an increasing trend. The production is increased due to increase in productivity. Production of rice during 2004-05 was 667105 tonnes, reduced to 528488 tonnes during 2007-08. This trend was continued till 2010-11. During 2011-12, rice production was increased unexpectedly, but then declined during 2012-13. Since 2012-13, rice production was increased.

At the same time, data on productivity of rice in kerala has shows a gradual improvement. Increase in production and productivity of rice during the last few years due to advancement of modern technologies, high yield seeds, and also the assistance and programmes on the part of government at various levels has helps to enhance the growth in agriculture sector. During the same period, land used for rice cultivation is not subjected to an increase. Land put to rice cultivation has been declining and changes in land use pattern do not contribute anything to the recent surge in production and productivity of rice. But area under rice cultivation has exhibited a mild increase during 2013-14. Total area under rice was 197277 ha during 2012-13, has increased to 199611 ha by 2013-14 and then declined to

Table 1: Area and productivity of rice in Kerala and Tamil Nadu

| Sl. No | year | Area of rice in Kerala (Hectare) | Area of rice in Tamil Nadu (hectare) | Productivity of rice in kerala (Kg/Ha) | Productivity of rice in Tamil Nadu (Kg/Ha) |
|--------|---------|----------------------------------|--------------------------------------|--|--|
| 1 | 2005-06 | 275742 | 2050455 | 2285 | 2541 |
| 2 | 2006-07 | 263529 | 1931397 | 2435 | 3423 |
| 3 | 2007-08 | 228938 | 1789170 | 2308 | 2817 |
| 4 | 2008-09 | 234265 | 1931603 | 2520 | 2682 |
| 5 | 2009-10 | 234013 | 1845553 | 2557 | 3070 |
| 6 | 2010-11 | 213187 | 1905728 | 2452 | 3039 |
| 7 | 2011-12 | 208160 | 1903772 | 2733 | 3918 |
| 8 | 2012-13 | 197277 | 1493276 | 2577 | 2712 |
| 9 | 2013-14 | 199611 | 1725730 | 2719 | 4123 |
| 10 | 2014-15 | 198159 | 2132521 | 2837 | 4381 |

Source: Department of Economics and Statistics, Kerala, Tamil Nadu

Table 2: Production of rice in Kerala and Tamil Nadu

| Year | Kerala | | Tamil Nadu | |
|---------|---------------------|------------------------------------|---------------------|------------------------------------|
| | Production (Tonnes) | Year wise variations in production | Production (Tonnes) | Year wise variations in production |
| 2005-06 | 629987 | - | 5209433 | - |
| 2006-07 | 641575 | 1.839403 | 6610607 | 26.90 |
| 2007-08 | 528488 | -17.6265 | 5039954 | -23.76 |
| 2008-09 | 590241 | 11.68484 | 5183385 | 2.85 |
| 2009-10 | 598339 | 1.371982 | 5665258 | 9.30 |
| 2010-11 | 522738 | -12.6351 | 5792415 | 2.24 |
| 2011-12 | 568993 | 8.848601 | 7458657 | 28.77 |
| 2012-13 | 508299 | -10.6669 | 4050334 | -45.70 |
| 2013-14 | 564325 | 11.02225 | 7115195 | 75.67 |
| 2014-15 | 562092 | -0.39569 | 9216318 | 29.53 |

Source: Department of Economics and Statistics, Kerala, Tamil Nadu

198159 ha during 2014-15. The attitude of younger population in Kerala towards agriculture is not much sound. They are not interested in farming or sometimes agriculture is considered as a less prestigious job. In addition agriculture is not at all a profitable business in Kerala due to higher cost of labour and raw materials. Shortage of skilled labour is persisted in all parts of Kerala not only in agriculture sector but also all other sectors including construction, manufacturing, etc. No doubt, shortage of skilled labour leads to decline in productivity and profit. Paddy cultivation is stagnant in Kerala due to above issues. The total paddy area during 1961-'62, was 7.53 lakh hectares and in 1975-'76 it was 8.76 lakh hectares. Thereafter a steady decrease in paddy cultivation and reached to 2.29 lakhs hectares during the year 2007-08. But in 2008-09, area of paddy cultivation was increased as 2.34 lakh hectares. On comparing with the year 1975-76, area of paddy cultivation is decreased 77% during the year 2014-15.

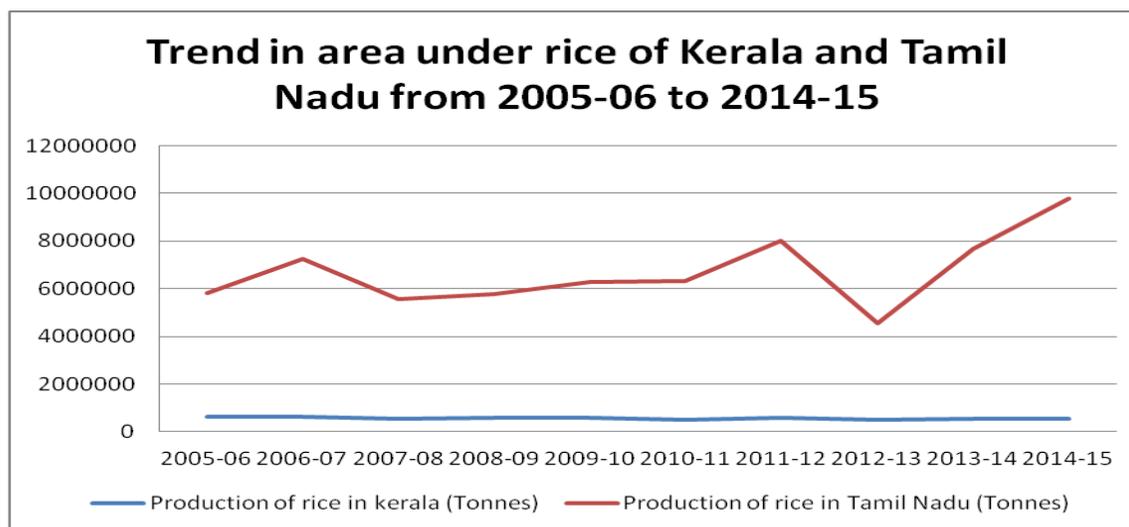
It is clear from the table 1 that the area of rice in Tamil Nadu during 2005-06 was 2050455 ha. has

declined to 1789170 ha. in 2007-08. The area under rice shows a gradual improvement since 2007-08 and has reached a lowest of 1493276 ha. in 2012-13. The area under paddy raised from 1845553 hectares in 2009-10 to 1905728 lakh hectares in 2010-11, the increase being 3.14 per cent. Even though, the yield rate of rice had come down from 3070 kgs. / ha. in 2009-10 to 3039 kgs. / ha. during 2010-11. The total production of rice had improved from 5665258 tonnes to 5792415 tonnes respectively (see table 2).

Table 3 shows the projected area, production and productivity of rice in Kerala and Tamil Nadu. During 2014-15, total area of rice in Kerala was 198159 Ha, as against 199611 Ha in 2013-14. This declining trend will be continued to the future and more and more paddy fields are converted for non agriculture purposes. As per the projected result, the area under rice in Kerala will reach to 135999 ha. in 2020-21, which is 93480 ha. in 2025-26 and will decline to 50961 ha. during 2030-31. As this trend continues, no doubt, there is no paddy land in Kerala. Projected production on the other hand shows

Table 3: Projected area, production and productivity of rice in Kerala and Tamil Nadu

| Year | Kerala | | | Tamil Nadu | | |
|---------|----------------|---------------------|----------------------|----------------|---------------------|----------------------|
| | Area (Hectare) | Production (Tonnes) | Productivity (Kg/Ha) | Area (Hectare) | Production (Tonnes) | Productivity (Kg/Ha) |
| 2020-21 | 135999 | 482930 | 3105 | 1730675 | 8781362 | 4837 |
| 2025-26 | 93480 | 440735 | 3372 | 1663891 | 10041936 | 5583 |
| 2030-31 | 50961 | 398550 | 3639 | 1597107 | 11302510 | 6328 |

**Figure 1:** Trend in area under rice of Kerala and Tamil Nadu from 2005-06 to 2014-15

downward movement. In 2014-15, 562092 tonnes of rice was produced in the state. In future, the rice production will be reached to 482930 tonnes in 2020-21, 440735 tonnes in 2025-26 and will decline further to 398550 tonnes during 2030-31. Irrespective of area and production of rice, productivity has shows an increasing trend. It was 2837 Kg/Ha during 2014-15, will increase to 3105 Kg/Ha in 2020-21. In 2030-31, it will reach to 3639 Kg/Ha. This increased productivity will be achieve through the popularization of high yielding rice varieties and rice hybrids in larger areas and promotion of scientific rice farming through group approach in a participatory mode. The modernization of agriculture sector and Rice farming has to be made more remunerative to attract more farmers for which measures to augment income from rice based farming will be formulated. Agriculture in Tamil nadu highly depends upon availability of rain fall. Crop failure due to drought or flood is a yearly problem. Therefore production and productivity varies year by year. The area of rice in Tamil Nadu was 2132521 hectare in 2014-15 which was declined to 1730675 hectare in 2020-21 and 1597107 hectare in 2030-31. Production and productivity of rice is increasing in the future. Therefore we can expect complete food security in Tamil Nadu.

Rice is the staple food of Tamil Nadu has raised more in the rice bowl districts of Thanjavur, Thiruvarur and Nagapattinam which accounted for about one fourth

of the gross cropped area under paddy in the State. The area under rice cultivation almost remained stagnant in the recent years while the growth in yield rate had shown an increase in the production both at the State and at the All India level. Tamil nadu posses certain differences in geography, climate, size of land area and availability of irrigation facilities compared to kerala. The socio-economic development of Tamil Nadu based on agriculture development. The dominance of service sector in kerala had ignored the importance of agriculture and shift from food crops to cash crops had intensified the problem of food shortage and sustainable agriculture. Scarcity of labour and higher cost of production in kerala induces the keralites to import food grains from neighboring states. The change of cropping pattern to highly remunerative cash crops, that may yield higher return from limited land area, has imparted profit to farmers. The declining cultivation Kerala's staple food-rice does not affect the food consumption basket of malayalies, because rice is cheaply available from Tamil Nadu and other neighboring states. The trend in area, production and productivity of Kerala and Tamil Nadu is shown in figure 1, 2 and 3.

Area under rice in kerala is somewhat stable in the last ten years. Area under rice in Tamil Nadu is fluctuating and increase in the last years. The area of rice in kerala is stable till 2011-12 and declines in 2012-13. Since 2013-14, area of land increases sharply.

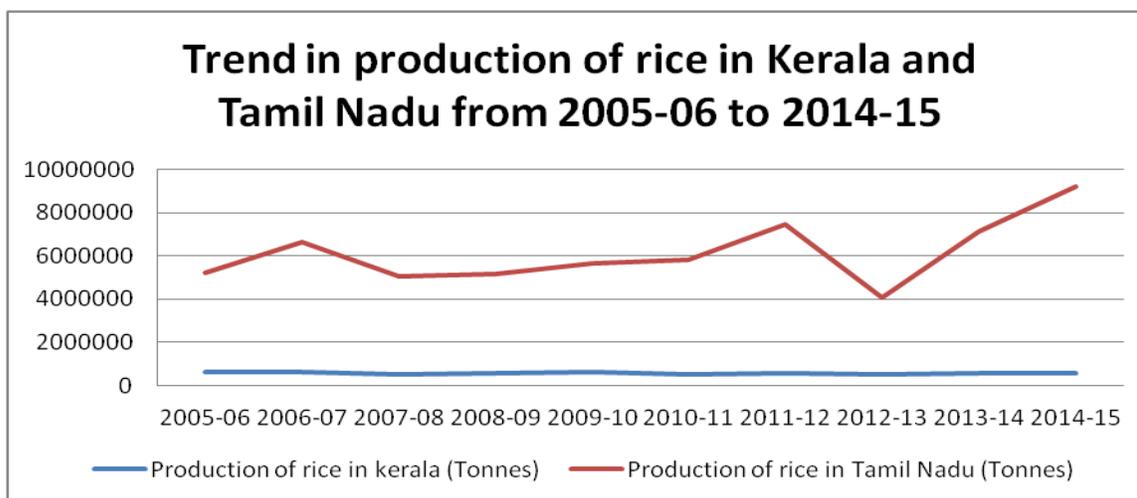


Figure 2: Trend in production of rice in Kerala and Tamil Nadu from 2005-06 to 2014-15

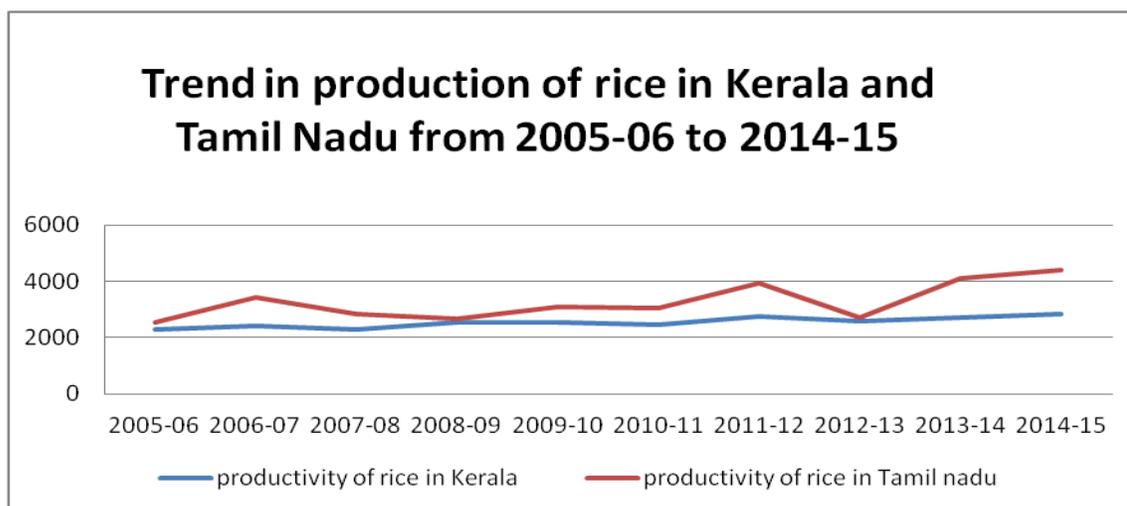


Figure 3: Trend in productivity of rice in Kerala and Tamil Nadu from 2005-06 to 2014-15

Production of rice in Kerala is slightly constant and declining over the years. Tamil Nadu has witnessed a sharp decline in production during 2012-13 and reached highest production in 2014-15. Area and production of Tamil Nadu is increasing at a faster rate in the last two years.

Productivity shows an increasing trend in both Kerala and Tamil Nadu. The introduction of high yield variety seeds, mechanization, use of fertilizers and efficient pest control methods and advancement from research and development had contributed for improving productivity in rice.

The Government of Kerala and Tamil Nadu has taken several efforts during the study period in order to increase the yield and production of rice by mechanization of production as well as promote wide utilization of farm machinery in agriculture at subsidized

prices and granted loans investment in agricultural infrastructure, supplying inputs such as fertilizers, pesticides and seed and support price for rice.

Constraints in Rice Production

The constraints associated with rice vary from state to state and location to location. Therefore Kerala deals with some problems; as such problem does not affect Tamil Nadu. Higher cost of production and shortage of skilled labour is main problem in Kerala in one hand. Lack of land, low marketability, shortage of inputs and low investment are the other problems. In Tamil Nadu, major rice growers are located in eastern region, where high rainfall and flood is the major problem in every year. On the upland area, crop failure due to high rain fall or

drought is seems to be a pertaining problem. Palakkad and Onattukara ecosystems in kerala, drought is a stress limiting rice production in Kharif season. Drought is also experienced during the fag end of Rabi season in Eastern Palakkad, where maximum area is under irrigation and water shortage is experienced during summer months. Flash floods and saline water intrusion in the coastal areas and Kuttanad, drought in Palakkad and Onattukara, and soil problems including acidity, iron toxicity, sulphide injury etc. in the Kari soils are the major abiotic stresses limiting rice production in the state

In Tamil nadu, the continuous use of traditional varieties due to the non-availability of seeds and lack of awareness among farmers about high yielding varieties, low soil fertility due to soil erosion resulting in loss of plant nutrients and moisture had limited the productivity. Heavy infestation of weeds and insects/pests such as blast and brown spot and poor attention for their timely control is major problem in both kerala and Tamil nadu. Escalating cost of production is weaning away rice farmers from cultivation. The cost of production is very high in kerala compared to Tamil nadu. Therefore farmers prefer commercial crops, which require limited area and is highly remunerative.

CONCLUSION

Rice is the staple food of kerala and Tamil nadu and rice posses' great socio-economic and political importance in both states. Low production and growing production cost of rice has impelled the in keralites to depend on neighboring states for food grains. The declining trend in area and production of rice in kerala has created a cause of worry, but the increasing production and productivity and adequate availability from Tamil nadu has imparted reassurance. The fluctuating trend in production would cause inadequate supply and increase consciousness about food insecurity. The increasing productivity in both states and higher production in Tamil nadu from limited land is due to advancement of science and technology and research. The predicted result shows an increase in production of rice in Tamil nadu, whereas rice production declines continuously in kerala. The population growth rate of both states is seems to be declining in the last decades. Therefore, an immediate action is not necessitated. But the declining trend in area of rice in both states in present and the continuation to future has need serious attention. An intervention on the part of the government is requisited in order to ensure food security in both states and formulate appropriate policy to conserve existing natural resource stock for keeping sustainable agriculture policies. Rice production is declining in kerala and is increasing in Tamil Nadu. Therefore an agreement between governments to supply rice from Tamil Nadu to kerala will help ensure food security and generate income to Tamil Nadu farmers in future.

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