

PADDY CULTIVATION IN KERALA-THE PARADOX OF RISING PRODUCTIVITY AND FALLING PRODUCTION-

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Abstract: The state of Kerala has always represented human development and has been a pioneer in health and education for the other states in India. Though having a Per Capita Income which is approximately 1.6 times the national average, the state has often been criticized as being a laggard in production -both in agriculture and manufacturing. Agriculture is the backbone of any economy and the base for food security. However, the share of agriculture and allied activities in GSDP declined from approximately 56% in 1960-61 to around 10.38% in 2015-16[Economic Review-2016]. Kerala has always been a food deficit state, recording a gap between demand and production of its staple food, i.e., rice. This gap has widened- from 50% in 1960-61 to more than 85% by 2014[Down To Earth]. Whereas population in Kerala doubled between the period 1971 and 2015, production of paddy was reduced to less than half. Climate disasters like floods and landslides have further worsened the food security scenario.

KEY WORDS: Cropping pattern, Commercialisation, Land conversion, Fragmentation of landholdings, Productivity, Urbanisation.

INTRODUCTION

Kerala economy is known as a consumer economy- its production base referred to as very weak or poor- in agriculture and manufacturing. Being a state with high public debt (debt-GDP ratio of 36%), the long-term fiscal sustainability of the state depends on strengthening the production base. Agriculture, the backbone of any economy, contributing 56% to GSDP IN 1960-61 has recorded a tremendous decline in terms of both production and area though productivity has increased from 1483kg per ha in 1971 to 2877 kg per hectare in 2015-16[KER]. The doubling of population has created a rising demand for its staple food crop-rice. This increased demand has been met by depending on the other states and also on the PDS share from the central govt- The state only contributes approximately 15% of the total demand in the state.

OBJECTIVES

1. To analyse trends in area, production and productivity of paddy in Kerala.
2. To compare the compound growth rates of area, production and productivity of paddy in Kerala.

METHODOLOGY

The study is descriptive and simple analytical tools are used. The study makes use of secondary data. Data are obtained from authentic sources like Agricultural Statistics of Department of Economics and Statistics, Government of Kerala, Kerala Economic Review of Kerala State Planning Board, journals and newspapers. Simple statistical tools like averages and percentages are used

REVIEW OF LITERATURE

Harilakshmeendra Kumar [2016] In the article titled Paddy Cultivation and Land Utilization Problems in Neo Liberal Paradox: A study with special reference to Kuttanad Region in Kerala State, the author states that a large section of paddy farmers in Kerala shifted to more remunerative sectors causing stagnation in agriculture production. Neo-liberal policies have destroyed paddy. Author notes that delay in getting procurement price, input shortage, seed dependency, natural calamities, labour shortage and high wage rate are the reasons behind the fall in area under paddy in Kerala.

P K Viswanathan [2012] In "Rationalisation of Agriculture in Kerala: Implications for Natural Environment, Agro-Ecosystems and Livelihoods" the author states that ever since the colonial period, the state's agriculture sector had witnessed tremendous transformation characterised by expansion of commercial crops at the expense of food crops. The unique geographical features characterised by steep terrain and undulating topography has precluded the state from extensive cultivation of its staple grain, i.e., paddy on the hills and slopes, and have increasingly been utilised for growing commercial crops. Overtime, the agriculture sector

had drifted away from food crop production, mainly paddy to cash crops and this trend had been justified on the grounds that rice, the staple food of Kerala, could be freely imported from neighbouring states.

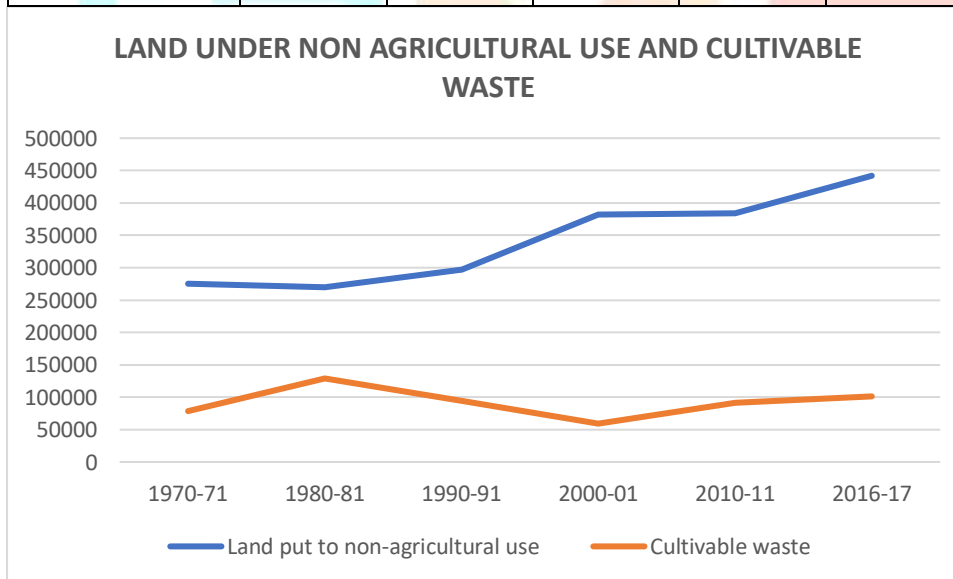
P.K. Shetty, M.R. Hegde and M. Mahadevappa (eds.) [2013] The authors in Innovations in rice production” state that during the green revolution period the semi-dwarf, fertilizer responsive, high yielding genotypes of rice and wheat led to phenomenal increase in production and productivity of these crops. The technology introduced during the green revolution has reached a phase of diminishing returns. In view of the growing demands due to ever increasing population, it is urgent that rice production and productivity need to be enhanced through application of modern tools of science. Anticipatory, strategic and basic research on rice needs to be strengthened with financial and policy support to meet the future challenges of climate change, water crisis and land and labour shortages.

THE LAND USE PATTERN IN KERALA- CHANGES IN LAND PUT TO NON-AGRICULTURAL USE AND CULTIVABLE WASTE

The total geographical area of Kerala comprising of 38.86 lakh ha has Total geographical area of 38.86 lakh hectares has undergone tremendous changes in the land use pattern over the period from 1970-2016. Agricultural lands have been converted for non-agricultural uses and increase in the land under cultivable waste have increased which are major indicators of the change. Economic development and urbanisation have led to structural transformation of the economy.

Table-1: LAND UNDER NON-AGRICULTURE USE AND CULTIVABLE WASTE

Classification of land	1970-71	1980-81	1990-91	2000-01	2010-11	2016-17
Land put to non-agricultural use	275000 (7.12%)	269824 (6.94%)	297381 (7.65%)	381873 (9.82%)	384000 (9.88%)	442000 (11.37%)
Cultivable waste	79000 (2.04%)	129032 (3.32%)	94608 (2.48%)	59257 (1.52%)	91000 (2.35%)	101379 (2.6%)



Source: Kerala Economic Review[various issues]

The Kerala economy has undergone structural transformation and can be seen in terms of changes in land put to non-agricultural uses, like rural and urban settlements, infrastructure and shops and other construction. The increase from 275000hectare to442000 hectare marks a 60.7%increase. Cultivable waste increased from 79000hectare to 101379 hectare in 2016-17 – the percentage increase being 28.3%. The data reveal the wasteful land use pattern which is unsustainable considering the food grain deficit encountered by the state. Land put to non- agricultural purposes had increased gradually from 7.12 per cent in 1970-71 to 11.37 per cent in 2016-17 of the total geographical area of the state. The total area under food grains during 2016-17 was 1,73,386 Ha (Directorate of Economics and Statistics, Kerala). The net sown area experienced a decline of 10.32 per cent during the same period [Sreya B-2018].

GROSS CROPPED AREA

The gross cropped area has fallen in the state as a result of Impact of urbanisation and economic development. The commercialisation of agriculture resulted in the conversion of land. This can be analysed from the changes in gross cropped area from 1970-71 to 2011-12.

TABLE-2**GROSS CROPPED AREA [1970-2012]**

YEAR	GROSS-CROPPED AREA (IN HECTARS)
1970-71	2933000
1980-81	2884840
1990-91	3019980
2000-01	3021682
2011-12	2661757

Source- Kerala Economic Review and Directorate of Economics and Statistics 2020

The gross cropped area was above 29lakh hectare in 1970-71 which rose to over 30 lakh hectare by 1990-91. Impact of economic reforms could be traced from 2001 onwards. The falling trend continues after 2001.

AREA, PRODUCTION AND PRODUCTIVITY OF PADDY [1970-71 TO 2016-17]

The area under paddy in Kerala was 8.75lakh hectare in 1970-71. During the period 70-71 to 2015-16, production of paddy decreased from 12.92lakh tons to 5.49 lakh tons (In 1972-73 there was even a peak production of 13.76lakh tons). Over the period, the productivity of paddy approximately doubled from 1483kg/ha to 2877kg/ha.

The decline in area and production of paddy is a challenge to food security and also ecological and environmental sustainability. 1 hectare of paddy land can store up to 5 lakh litres of water. Kerala has lost much of her paddy land over the period. In addition to ground water recharging, paddy lands also act as bio reserves and support a variety of flora and fauna and livelihoods. Paddy cultivation in Kerala enriches the specific geographical and ecological features of these regions- the *Kaipad* fields in Kannur, *Pokkali* fields in Kochi and *Kole* in Thrissur are examples[Jayan Jose Thomas-2011]

TABLE-3**AREA, PRODUCTION AND PRODUCTIVITY OF PADDY IN KERALA [1970-71 to 1980]**

YEAR	AREA 000' HECTARES	PRODUCTION 000' TONNES	PRODUCTIVITY, KG/HECTARE
1970-71	874.93	1292.01	1483
1971-72	875.16	1351.74	1544
1972-73	873.70	1376.37	1575
1973-74	874.68	1257.67	1437
1974-75	881.47	1333.03	1513
1975-76	876.02	1331.19	1520
1976-77	854.37	1254.00	1468
1977-78	840.31	1294.64	1541
1978-79	779.24	1272.74	1592
1979-80	793.27	1299.70	1638

Source: Kerala Economic Review

TABLE-4

AREA, PRODUCTION AND PRODUCTIVITY OF PADDY IN KERALA [1980-81-1989-90]

PERIOD	AREA,000' HECTARES	PRODUCTION 000 ' TONNES	PRODUCTIVITY[KG/HECTARE]
1980-81	801.70	1272.00	1587
1981-82	806.92	1339.87	1660
1982-83	797.89	1308.01	1639
1983-84	740.09	1207.92	1632
1984-85	730.38	1255.94	1720
1985-86	678.28	1173.05	1729
1986-87	663.28	1133.79	1708
1987-88	604.08	1032.58	1709
1988-89	577.00	1013.00	1754
1989-90	583.39	1141.23	1956

Source: Kerala Economic Review

TABLE-5

AREA, PRODUCTION AND PRODUCTIVITY OF PADDY IN KERALA [1990-91-1999-2000]

PERIOD	AREA,000' HECTARES	PRODUCTION 000 ' TONNES	PRODUCTIVITY[KG/HECTARE]
1990-91	559.45	1086.58	1942
1991-92	541.33	1060.35	1959
1992-93	537.00	1085.00	2018
1993-94	507.00	1004.00	1977
1994-95	503.00	975	1937
1995-96	471.00	953	2023
1996-97	431.00	871	2023
1997-98	387.00	765	1975
1998-99	353.00	727	2061
1999-2000	350.00	771.00	2203

Source: Kerala Economic Review

TABLE-6

AREA, PRODUCTION AND PRODUCTIVITY OF PADDY IN KERALA [2000-01to 2009-10]

PERIOD	AREA,000' HECTARES	PRODUCTION 000 ' TONNES	PRODUCTIVITY[KG/HECTARE]
2000-01	347.00	751.00	2162
2001-02	322.00	704.00	2182
2002-03	311.00	689.00	2218
2003-04	287.00	570.00	1984
2004-05	290.00	667.00	2301
2005-06	276.00	630.00	2285
2006-07	264.00	642.00	2435
2007-08	229.00	528.00	2308
2008-09	234.00	590.00	2520

2009-10	213.19	598.00	2557
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Source: Kerala Economic Review

TABLE-7

AREA, PRODUCTION AND PRODUCTIVITY OF PADDY IN KERALA [2010-11-2015-16]

YEAR	AREA 000ha	PRODUCTION, 000 MT	PRODUCTIVITY (kg/ha)
2010-2011	213.19	522.73	2452
2011-12	208.16	568.99	2733
2012-13	197.28	508.29	2577
2013-14	199.61	564.32	2827
2014-15	192.58	562.09	2919
2015-16	190.94	549.28	2877

Source: Kerala Economic Review

TABLE-8

COMPOUND GROWTH RATES OF PADDY [1970-2010]

YEAR	AREA, 000ha	PRODUCTION, 000 MT	PRODUCTIVITY (kg/ha)
1970-71	874.93	1292.01	1483
1980-81	801.70	1272.00	1587
1990-91	559.45	1086.58	1942
2000-01	347.00	751.00	2162
2010-11	213.19	522.73	2452
<2011-12	208.16	568.99	2733
2012-13	197.28	508.29	2577
2013-14	199.61	564.32	2827
2014-15	192.58	562.09	2919
2015-16	190.94	549.28	2877

SOURCE-AUTHOR'S CALCULATION FROM KER DATA

To find out Compound Annual Growth Rate in commodity models, best procedure is quoted by I S Gulati ie. fitting the curve $Y = ab^t$ where Y is the principal variable, 'a' is the constant and t is the time, 'b' is the growth factor

$$b = 1 + r/100$$

$$r/100 = b - 1$$

$$r = (b - 1) * 100 \text{ [expressed as percentages]}$$

PERIODS	AREA [CAGR IN%]	PRODUCTION [CAGR IN %]	PRODUCTIVITY [CAGR IN %]
1971-80	-1.1	-0.4	0.7
1981-90	-4.1	-2.6	1.7
1991-2000	-5.2	-4.5	0.9
2001-2010	-4.5	-2.7	2.1

TABLE-9

AREA, PRODUCTION AND PRODUCTIVITY OF PADDY [1970-2016]

Source-KERs

Production of paddy is a function of area and productivity. Decline in Production was the highest during 1981-90 and 1991-2000, when fall in area was the highest. Area under the cultivation of cash crops like rubber increased whereas land under paddy cultivation decreased from 8,74,930 ha to 1,90940 ha. Though there is a rising trend in productivity, its impact on production is restricted by the decline in area. The fall in area is much more than the rise in productivity. The trends in area and production show negative growth whereas productivity shows a positive growth. This positive growth is neutralised by the decline in area and the resultant fall in production.

CONCLUSION

The accelerated disappearance of paddy lands in Kerala and the food insecurity faced by the state is a cause for urgent concern. The state of Kerala, though high in human development indicators is deficient in its production base. There are commendable initiatives by the government to expand the production of paddy. But to accelerate the revival of paddy cultivation, there should be cultivation of crops suited to local needs and soil conditions. Bio technological research can be navigated for the development of HYV seeds. The state has about 300,000 rice growers, mostly small and marginal farmers with their average land holding below the national average [Suchithra 2014]. The problem of low production and profitability can be addressed by combining paddy cultivation with allied activities of fish culture and live-stock rearing. Better water management and flood management should also be a priority. To address ecological fragility and food insecurity, government policy should reorient priorities. The state needs a paradigm shift in the management of its land resources.

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