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Leading Issues and challenges in the Agriculture Sector of Kerala

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Abstract

The paper deals with the performance of agricultural sector of Kerala and the major issues existing in it. The study is based on secondary data collected from different official sources. Rapid changes have occurred in the agriculture sector of Kerala in terms of land utilization pattern in favor of non-agriculture sector and cropping pattern in favor of cash crops. There has been decrease in both net area sown and gross cropped area resulting in decline in cropping intensity. Kerala has also witnessed a structural transformation in agriculture from food crop cultivation to cash crop cultivation. The high returns obtained from commercial crops and non-agriculture sector are found to be the principal reason for the change. Along with that the fragmentation of land holdings, the severe shortage of labor existing in agriculture and the resultant increase in labor cost have made farming an unprofitable activity. All these changes have landed the State in a situation of food insecurity. The study has advocated for a comprehensive agricultural development strategy for the state.

Key words:

Structural change, food crop, cash crop, land utilization pattern, cropping pattern, labor shortage, and food insecurity.

Introduction

The performance of the agriculture sector of Kerala is closely related to the structural transformation taking place in Kerala economy over a period of time. There are many studies on structural transformation of Kerala economy and the important ones were Jeromi (2003); Prakash (2004), Sanitha and Singla (2016); Oommen (2016); and Prakash (2018). The major changes which have occurred under structural transformation in the economy are changes in sectoral share of GSDP and changes in sectoral share of employment. The structural change in the economy has posed some challenges to the agriculture sector of Kerala. The outcomes of the structural transformation are the changes in land utilization pattern in against the agriculture sector, cropping pattern in favor of cash crops resulting in the commercialization of existing agriculture, fragmentation of agriculture land holdings, shifting of labor from agriculture to non-agriculture and the resultant shortage of agriculture labor, declining profitability in cultivation, and conversion of agricultural land. The current issues in the agriculture sector pose a challenge to the food security of Kerala.

Objective of the Study

The objective of the study is to examine the leading issues and challenges in the agriculture sector of Kerala in the context of structural transformation of the state economy.

Methodology

The study has employed secondary data available from various sources such as Census Report, various issues of Kerala Economic Review, and published journals. Simple statistical tools like average and percentage are used in the analysis.

Results and Discussion

I. Declining share of primary sector and fragmentation of operational holdings

It is seen that the contribution from primary sector has been decreasing and while that of the tertiary sector has been increasing in the State of Kerala. Sectoral distributions to GSDP (at constant prices 2011-12) in 2016-17 are 10.6%, 28.3% and 61.1% respectively by primary, secondary and tertiary sectors. The structural change occurred in the economy indicates a decline in the share of primary sector and persistent rise in the contribution of the tertiary sector while the secondary sector does not show much dynamism. The moderate growth in the contribution of the secondary sector was only on account of the inflow of remittances and the resultant performance of construction sector. Now, services sector is the prime mover of Kerala Economy contributing more than 60% of share to GSDP. The transformation happened in the economy from 1970-71 to 2016-17 is from an agriculture oriented economy to a service sector oriented economy.

Table-1: Sectoral distribution of GSDP at constant prices.

Sectors	1970-71	1980-81	1993-94	2000-01	2010-11	2016-17
Primary	49.4	39.23	32.23	25.30	11.06	10.6
Secondary	16.3	24.37	20.32	19.50	20.13	28.3
Tertiary	34.2	36.40	47.45	55.20	68.81	61.1

Source: Kerala Economic Review, various issues.

The agriculture sector in Kerala has been decelerating with regard to its growth. The annual growth rate (GSVA at constant 2011-12 prices) of agriculture and allied activities (including crop, livestock, forestry and logging and fishing and aquaculture) was (-) 6.31 per cent in 2013-14, 0.02 per cent in 2014-15, (-) 5.10 per cent in 2015-16 and (-) 0.65 per cent in 2016-17. The sector witnessed a growth of 1.72 per cent in 2017-18. But the growth declined to (-) 0.52 per cent in 2018-19.

The State has observed drastic decrease in area of operational holdings due to increase in demand for land for housing due to increase in its population. The average size of operational

holdings in Kerala in 1970-71 was 0.57 hectares and it became 0.18 hectare in 2015-16. The agriculture sector of Kerala is characterized by the preponderance of marginal and small cultivators. Marginal and small cultivators constituted 98% of the total cultivators in Kerala. One of the reasons for the poor performance of the agriculture sector is small holding size of farm land. Such small holdings are not suitable for undertaking major investments and for generating sufficient income.

Table-2: Average Size of Holdings during 1970-71 to 2015-16

Size of holding	1970-71	1980-81	1990-91	2000-01	2010-11	2015-16
Marginal (Below 1.00 ha)	0.23	0.20	0.15	0.14	0.13	0.12
Small (1.00-1.99 ha)	1.36	1.37	1.37	1.32	1.57	1.34
Semi – medium (2.00-3.99 ha)	2.69	2.68	2.61	2.52	2.79	2.54
Medium (4.00-9.99 ha)	5.56	5.45	5.32	5.29	5.32	5.32
Large (10.00 ha & above)	47.04	35.59	55.91	40.93	64.58	51.04
Total	0.57	0.43	0.30	0.24	0.22	0.18

Source: Kerala Economic Review, various issues.

Table-3: Number of Operational Holdings and Area Operated by Size/Class in Kerala

Size of holding (ha)	Number (in '000)			Area of Operational Holdings (ha)		
	2000-01	2010-11	2015-16	2000-01	2010-11	2015-16
Marginal (Below 1.00 ha)	6335	6580	7333	882	886	856
Small (1.00-1.99 ha)	226	180	181	299	282	242
Semi – medium (2.00-3.99 ha)	75	57	56	190	159	141
Medium (4.00-9.99 ha)	16	12	11	84	64	60
Large (10.00 ha & above)	2	2	2	111	120	94
Total	6656	6831	7583	1569	1511	1394

Source: Kerala Economic Review, various issues.

II. Changing land utilization pattern in Kerala

Two important changes have taken place in Kerala in the utilization of land resource as a result of economic development and urbanization. They are, 1) conversion of agricultural lands for non-agricultural purposes; and 2) conversion of food crops area to cash crops area (commercialization of agriculture).

Table-4: Land utilization pattern in Kerala

Classification (Area in hectares)	1970-71	1980-81	1990-91	2000-01	2016-17	% change from 1970- 71 to 2016- 17
Total Geographical Area	3885497	388549	388549	388549	3885497	-
		7	7	7		
Forest	1055000	108150	108150	108150	1081509	2.51
		9	9	9		
Land put to non-agricultural use	275000	269824	297381	381873	441934	86.72
Barren and uncultivable land	72000	85770	58308	29318	11780	-75.62
Permanent pastures and other grazing land	28000	5432	1912	164	0	-99.69
Land under miscellaneous tree crops	132000	63875	34375	15409	2450	-97.45
Cultivable waste	79000	129032	94608	59257	101379	20.81
Fallow other than current fallow	22000	26886	26466	33988	55530	162.13
Current fallow	24000	43579	44164	77853	72008	221.07
Net area sown	2172000	217959	224677	220612	2015482	-6.07
		0	4	6		
Area sown more than once	761000	705250	773206	815556	568518	-18.31
Total cropped area	2933000	288484	301998	302168	2584000	-9.25
		0	0	2		

Source: Kerala Economic Reviews

During the period 1970-71 to 2016-17, land put to non-agricultural use increased from 275000 hectares in 1970-71 to 441934 hectares in 2016-17. The percentage change during the period is 86.72. The Net Sown area declined during the period from 2172000 hectares to 2015482 hectares and the percentage change is -6.07. The total cropped area during the period declined

from 2933000 hectares to 2584000 hectares and the percentage change is -9.25. Urbanization and economic development taking place in the state have their impact on the agriculture economy of Kerala. The gross cropped area in Kerala was above 30 lakh hectares in 1990-91, which further increased and then frequent ups and downs in following years and it finally declined to 25.84 lakh hectare in 2016-17. The trend after 2000-01 is fall in gross cropped area when the impact of economic reforms has started to affect Kerala economy. Similarly, the net sown area also showed a declining trend especially after 1990-91. Net sown area was 21.72 lakh hectares in 1970-71 which declined to 20.15 lakh hectares in 2016-17.

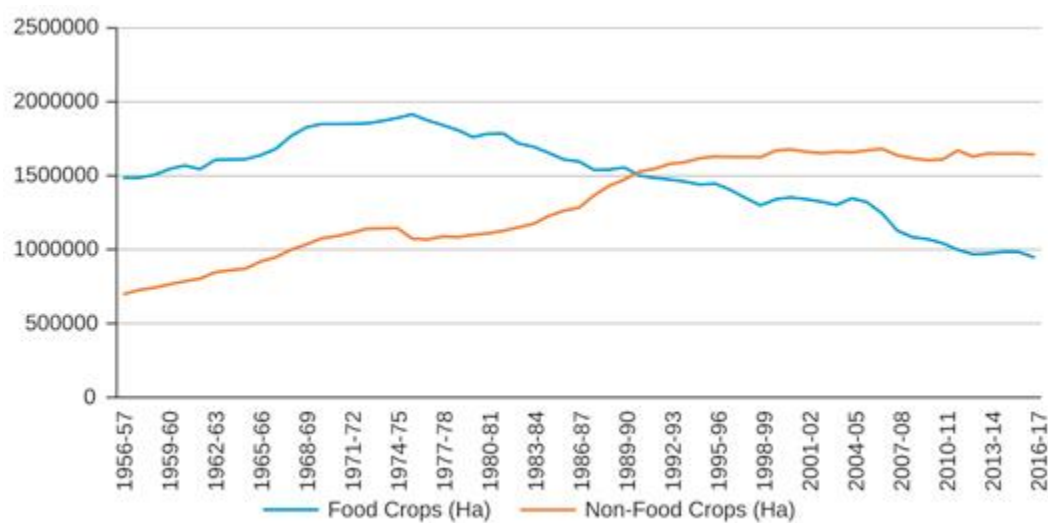
Agricultural land conversion, especially the paddy fields, has been a burning issue both from the perspective of food security and environmental impacts. Though agricultural land conversions have been banned under Kerala Land Utilization Order, conversions have been occurring in an unprecedented manner. The conversion and reclamation of paddy cultivated areas to non agricultural uses is the major land use change that occurred in Kerala affecting the food security of the state. Rice production which registered a negative growth in the state is expected to worsen in the coming years which will further increase the dependency of the state on the outside suppliers. Resorts, homes and roads have taken up the paddy lands, though it's not clear how much of the built up land have been recovered from paddy and water bodies. Further many of the neglected paddy lands have naturally evolved as a dense scrubland; some of them have lost the depth as they get filled with gravel, silt and plant debris. Land conversion is in fact a typical response to the non-profitability of the sector as admitted by the National Agricultural Policy. The uneconomic paddy cultivation is increasingly forcing the farmers to either leave the fields fallow or to convert it to other uses.

The rice growing agricultural wetland ecosystem provides an enormous range of products and services either directly or indirectly. Conversion of paddy fields leads to a number of socio economic and ecological consequences. Reduction in rice production impinges on the food security of the state. In addition it contributes to increasing unemployment and poverty, decrease in ground water recharging and prolonged water logging in villages. It also leads to destruction of rice producing ecosystem in terms of land cover, land quality and capability, weather and climate and the list continues.

III. Changing cropping pattern and commercialization of agriculture

The most important change in the cropping pattern of Kerala from 1956–57 to 2016–17 has been the shift from food crops to non-food crops. Figure-1 shows the area under food crops and non-food crops in hectares. There are three main phases in cropping pattern which are depicted in the figure: (a) from 1956–57 to 1974–75, the area under food crops and non-food crops increased; (b) from 1975–76 to 1994–95, the area under food crops declined, and the area under non-food crops rose to exceed the area under food crops; and (c) from 1995–96 to 2016–17, the area under food crops continued to decline and the area under non-food crops remained stagnant.

Figure-1



Area under food crops and non-food crops, 1956–57 to 2016–17 in hectares

Note: The Y-axis is area in hectares. Ha = hectares.

Source: *Cropping Pattern Changes in Kerala, 1956–57 to 2016–17, Review of Agrarian Studies, Vol. 8, No. 1, January 2018 by Deepak Johnson*

The increase in the area under food crops and non-food crops in the first phase was due to the extension of cultivation in the Malabar region. The changes in cropping pattern in subsequent phases were explained by the price movements of output. Among the major agricultural commodities, rice received the lowest increase in average farm prices (George and Chattopadhyay 2001). This prompted the farmers to shift the cultivation from rice to coconut and rubber. Due to increased trade liberalization and new multilateral trade agreements in the third phase, price variability among cash crops such as rubber, cocoa, and spices increased which reduced the State's ability to safeguard cultivating farmers using quantitative restrictions (Anoopkumar 2012; Harilal and Dhanya 2015). This was responsible for the rapid decline in area under food crops and stagnation in non-food crops from 1995–96 to 2016–17.

The total area under cultivation of food grains in Kerala has been consistently decreasing. Area under paddy in Kerala was about 8.7 lakh hectares in 1970-71 and it became mere 1.71 lakh hectares in 2016-17. During the period, production of paddy declined from 12.92 lakh tonnes to 4.37 lakh tonnes. Production reached its peak level in 1972-73 when the state produced 13.76 lakh tonnes of paddy. The productivity of paddy increased from 1483 kg/hectare in 1970-71 to 2550 kg/hectare in 2016-17. The improvement in productivity was, however, neutralized by the high decline in area under paddy and the resultant decline in production. Reduction in rice

production has an adverse effect on the food security of the state. Kerala has more than 90% deficit in food production. In addition, it contributes to increasing unemployment and poverty, decrease in ground water recharging and prolonged water logging in villages. It also leads to the destruction of rice producing ecosystem in terms of land cover, land quality and capability, weather and climate etc. The trends in area, production and productivity of paddy in Kerala during the period 1970-71 to 2016-17 are shown in the following table.

Table- 5: Area, Production and Productivity of paddy in Kerala (Selected Years)

Year	Area, 000' ha	Production, 000' MT	Productivity, kg/ha
1970-71	874.930	1292.010	1483
1980-81	801.700	1272.000	1587
1990-91	559.450	1086.580	1942
2000-01	347.000	751.000	2162
2010-11	213.190	522.730	2452
2016-17	171.398	437.112	2550

Source: Kerala Economic Reviews

There have been changes in the share of paddy, coconut and rubber in the net sown area of Kerala (cropping pattern) during the period 1970-71 to 2016-17. The share of paddy in net sown area declined from 40.28 per cent in 1970-71 to mere 8.50 per cent in 2016-17. The share of coconut increased from 33.12 per cent in 1970-71 to 38.77 per cent in 2016-17. The share of rubber during the period increased from 8.25 per cent to 27.34 per cent in 2016-17. Rubber and coconut are the principal rival crops of paddy. It is clear from the following table that while the share of area under paddy has been shrinking, the area under rubber and coconut has been increasing.

Table- 6: Share of paddy, rubber and coconut in net sown area (area in 000' hectares.)

Year	Net sown area	Paddy area	Share of paddy area	Rubber area	Share of rubber area	Coconut area	Share of coconut area
1970-71	2172.00	874.93	40.28	179.1	8.25	719.1	33.12
1980-81	2180.00	801.70	36.77	237.80	10.91	651.40	29.88
1990-91	2246.77	559.45	24.90	384.00	17.09	870.02	38.72
2000-01	2206.13	347.00	15.73	474.36	21.50	936.29	42.44
2010-11	2071.51	213.19	10.29	534.23	25.79	770.00	37.17
2016-17	2015.48	171.398	8.50	551.05	27.34	781.49	38.77

Source: Kerala Economic Reviews

IV. Change in Employment structure and shortage of agriculture labor

The working population in India is divided into four categories by the Census Department, viz. cultivators, agricultural laborers, and workers in household industries and other workers. The first two are agricultural workers and the remaining last two are non-agricultural workers. According to census reports, the percentage of cultivators in Kerala declined from 17.80% in 1971 to 5.77% in 2011. Similarly the percentage of agricultural laborers in Kerala declined from 30.70% in 1971 to 11% in 2011. At the same time the percentage of non-agricultural workers in Kerala remarkably increased after 1971. The share of other workers- workers in secondary and tertiary sectors- increased from 47.2% in 1971 to 80.5% in 2011. Majority of the workers in Kerala are classified as ‘Other Workers’ who are mostly working in tertiary sector and the construction sub-sector of the secondary sector.

Table-7: Distribution of workers by major economic categories

Census Year	Cultivators	Agricultural Laborers	Household industry workers	Other workers
1971	17.80	30.70	4.30	47.20
1981	13.06	28.24	3.69	55.01
1991	12.24	25.55	2.58	59.63
2001	7.04	15.76	3.60	73.60
2011	5.77	11.39	2.35	80.50

Source: Census of India

Agriculture is not a reliable source of income and employment for the cultivators and labors. The expansion of construction, trade, transport, banking and a host of other non-agricultural activities in the formal and informal sectors in the state have enabled the cultivators and agricultural laborers to move out of agriculture. The workforce distribution in Kerala has changed in favor of non-agricultural sector, particularly service sector. There has been a sharp growth in rural and urban non-agricultural employment in Kerala since 1981, making a change in the industrial distribution of the workforce. Because of these changes, the structure of rural employment in Kerala has shifted from agricultural activities to non-agricultural activities. The un-sustainability of agricultural employment also induces shifting to non-agriculture. Younger members of agricultural labor households have got facilities to do higher education and technical education. Consequently, they prefer to work in non-agricultural areas and wait until they secure such employment. Large inflow of remittances from Gulf countries has created a construction boom in Kerala. In the wake of liberalization, the tertiary sector continues to lead the growth of the Kerala economy. Within the tertiary sector, transport and communication, trade and commerce, personal and community services etc are the leading areas. Trade and commerce contribute the largest share in the total non-agricultural employment and most of the growth in trade has been due to the phenomenal growth in retail trade of a large range of products. The

growing gap between demand and supply in the agriculture market has adversely affected the cultivation process in the State.

V. Accelerated urbanization and shifting of labor from rural to urban

The shifting of labor from agriculture to non-agriculture was accelerated by the rapid urbanization process in the State. The state of Kerala registered an accelerated rate of urbanization in India compared to other Indian states and it becomes very difficult to make a rural-urban differentiation in the case of Kerala. In 1971, while urban population was 20% in India, it was only 16% in Kerala. The share of urban population then increased to 31% in India in 2011, the share of urban population in Kerala increased to about 48%. During 2001-2011, Kerala experienced an urban population growth rate of 92.72 per cent and such a higher growth rate over a short period of time in a state like Kerala drew special attention because of the diverse socio-economic characteristics of the state. High level of urbanization and the resultant shifting of labor to urban employment, especially service sector jobs increased the scarcity of labor force in agricultural and related activities in rural areas of the state. The tremendous increase in urban population in Kerala posed serious health, environmental, social and other problems.

In 1991 and 1981, regarding the rural-urban distribution of population, there was only nominal difference between India and Kerala. However, in 2011, urban population percentage in Kerala increased to about 50% and it was only 31% in India. The process of urbanization in India was slow over the decades. The state of Kerala has been registering faster increase in urban growth rate since 2001.

Table-8: Rural-Urban Distribution of Population

Census Year	India Proportion of Total Population (Percent)		Kerala Proportion of Total Population (Percent)	
	Rural	Urban	Rural	Urban
1971	80.09	19.91	83.80	16.20
1981	76.66	23.34	81.30	18.70
1991	74.30	25.70	73.61	26.39
2001	72.20	27.80	74.03	25.97
2011	68.80	31.20	52.28	47.72

Source: Various Census Reports

VI. Low profitability of cultivation in Kerala

Male and female wage rate in Kerala are the highest in India. Money wage and the real wage have been steadily increasing in Kerala. The higher increase in real wages of the unskilled workers has narrowed the difference between the wages of skilled and unskilled workers to some extent. The rate of growth in product wages was higher than the rate of growth in labour productivity since the mid 70s in agriculture in the state (Kannan and Pushpangadan, 1990:

1992). Labour cost (wage cost) constitutes-about 60 percent of the total cost of paddy cultivation (Kannan, 1998: 63). “Costs on material inputs and human labour account for more than 80 percent of the total paid-out costs involved in the cultivation of all major crops in the state” (Thomas, 2004: 156). Table-9 clearly shows that substantial difference exists with respect to average daily wage rates in rural India and Kerala.

Table-9: Average daily wage rates in rural India and Kerala (Men – General Agricultural Laborers)

Year	Kerala	India
2014-15	575.1	224.6
2015-16	608.8	236.9
2016-17	644.0	252.6
2017-18	659.8	267.1
2018-19	682.4	277.4
2019-20	700.7	286.6

Source: Average Daily Wages of Agricultural and Non-Agricultural Occupations in Rural India (By State, Age Composition and Sex), Indian Labor Journal, A Monthly Publication, Labor Bureau, Government of India, Various Issues.

Degree of unionization has been cited by many studies as one of the important reasons for the unreasonable hike in rural wages. The Kerala phenomenon is also explained in terms of inter-related labor market and wage relativities or spread effect (Krishnan, 1991: A-89). Accordingly, a rise in wage rate of any category of labor within a structure of inter-related labor markets is transmitted to other labor markets to establish wage parties. The wage increases have been aided by the periodic revision of minimum wages. Since the eighties the shortage of labor to cultivate paddy has become a major problem in spite of the increase in wages. The increase in wage has failed to attract unemployed labourforce. The severe shortage of labor has acted as a disincentive for many farmers to continue cultivation.

Male and female wage rate in Kerala are the highest in India. Money wage and the real wage have been steadily increasing in Kerala. The higher increase in real wages of the unskilled workers has narrowed the difference between the wages of skilled and unskilled workers to some extent.

Table-10: Average Daily Wage Rates of Unskilled Workers in the Agricultural Sector

Agricultural Year	Average Daily Wage Rates of Paddy Field Workers	
	Male	Female
2007-08	195.97	137.42
2008-09	224.40	159.02
2009-10	260.11	185.40
2010-11	312.82	228.48
2011-12	373.06	273.19
2012-13	439.01	323.67
2013-14	499.6	361.67

2014-15	545.15	392.46
2015-16	586.06	422.19
2016-17	608.29	447.85
2017-18	656.79	480.90
2018-19	692.60	500.58

Source: Economics and Statistics Department, GoK

Cultivation is not profitable for the farmers in Kerala. The inference is made on the basis of average index number of prices received and paid by the farmers. The parity index, measured in terms of prices received by the farmers and the prices paid by the farmers, has always been unfavorable to the farmers in Kerala. The main reason for the situation is the consistent rise in wage rate for agricultural laborers.

Table-10: Yearly Average Index Number of Prices Received and Price Paid by Farmers
Base: 1952-53=100

Year	Index of Prices received by Farmers	Index of Price Paid by farmers (₹)	Parity Index as Col.2 to 3
1	2	3	4
2007	2746.00	5288.00	52.00
2008	3167.00	5837.00	54.00
2009	3083.00	6460.00	48.00
2010	3727.00	7135.00	52.00
2011	5117.00	8109.00	63.00
2012	4743.00	9070.00	52.00
2013	6008.50	10478.42	57.08
2014	8272.25	11477.67	72.08
2015	7706.08	12240.00	63.00
2016	7730.75	12936.25	59.83
2017	8862.25	13620.25	65.08
2018	8892.50	14203.92	62.50
2019	8816.17	15212.50	58.08

Source: Economics and Statistics Department, GoK

VII. Issue of food insecurity

Kerala is a State with a deficit in food production. Of the total requirements of food grain, only 15 per cent is being produced in the State. In the case of food grains, the State heavily relies on its neighboring States. There is a strong correlation between stability in agricultural production and food security. Therefore, stability in agricultural production and strengthening of supply chain management needs to be addressed in order to ensure food security. Poor performance in the production front of food grains has made Kerala much vulnerable in the case of food

availability. The major reason for the poor performance of the food grains is explained by the decline in the area under food grains. Kannan and Pushpangadhan (1988) attributed the agriculture stagnation in Kerala to the inadequate public investment in land development policies such as soil conservation and consolidation of landholding and also to the prioritization of large irrigation dams instead of the much required minor irrigation policies such as flood control measures, timely supply of water etc. The food requirement in the State has been increasing with the increasing population. The availability of food grains from internal production has been falling in the State and the growing deficit in food production has resulted in food insecurity.

VIII. Conclusion

The agriculture Kerala economy has undergone faster structural changes in recent time. The major changes occurred under structural transformation in the economy are changes in land utilization pattern, deceleration in agriculture and commercialization of existing agriculture, changes in sectoral share of GSDP, rapid urbanization, and changes in sectoral share of employment. The consequences of these changes are conversion of food crops area to cash crops area (commercialization of agriculture); and conversion of agricultural lands for non-agricultural purposes. In Kerala, there has been sizable reduction in employment in crop production and a sharp growth in rural and urban non-agricultural employment. Shortage of labor in agriculture has pushed up the wage rate and cost of cultivation. The declining profitability in agriculture has resulted in withdrawal of farmers from agriculture. The impact of these changes is deceleration of agriculture leading to deficit in food production and food insecurity for the State. A comprehensive agriculture development strategy is essential to address the issues in agriculture and to revive it as a dependable source of income and employment.

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