A Historical Analysis of the Governmental Machinery in Improving the Agricultural Labourers of Kerala

Geetha Lakshmi¹

¹Research Scholar, Department of Economics, S. B. College, Changanacherry, M.G. University, Kerala, India.

Abstract:

India is an agricultural country. Ever since independence from 1947 onwards the government is heavily interested in agricultural development. Since the formation of the Kerala government November 1 1956, the changing government introduced a large number of reforms and developmental schemes for the rapid growth of agricultural production. In India, also in Kerala, major problem is to find food for the increasing population. The land area remaining the same food production can be increased only through intensive cultivation. That is, through scientific implementation of new technology in agricultural production. This view was visualised 12 by the Indian planners. So from 1965-66 onwards, we adopted a policy called Green Revolution. Which means Intensive use of land with High Yielding Varity of seeds, chemical fertilizers and pesticides. Long with that policy the Kerala government adopted the land reform measures which has become a model for the other states in India. The application of modern technology requires large land area to apply mechanisation and large scale production. With a view to this the changing government in Kerala adopted a large number of measures to change the existing land tenure system and also the pattern of cultivation. The following explanation gives us a brief historical governmental measures in this field and also the problems faced by the government and the present conditions of the agricultural sector of Kerala.

Keywords: Agricultural Development, Paddy Cultivation, Migration, Scarcity, Modern Technology, Land Reforms.

1. Introduction

It is thought that the policy of liberalization would help the farmers to get surplus from cultivation enabling them to have a favourable terms of trade in agriculture. But the expectations does not make any satisfactory improvement in the terms of trade from agriculture during the reform period. There was a decline in capital formation in agriculture, insufficient expenditure on irrigation and extension services in rural areas and lack of cheap institutional credit resulted in slow down of agricultural growth, insecurity of agricultural labour.

An important factor influencing the functioning of rural labour market is the unionization of agricultural workers. Unionization of agricultural workers has been very extensive in Kuttanad. It resulted in workers' struggles and collective bargaining. The tremendous influence of organized working class is evident from the periodical revision of Minimum wages, setting up of Labour Welfare Fund and grant of old age pension to farm labourers. Unions are sometimes unaware of the impact of their policies on the economics of cultivation and generation of labour days for the farm labour.

2. Objective of the study

- 1. To examine the trend in paddy production for the last two decades.
- 2. To find out different programmes implemented by the government.

3. Methodology of the study

The following analysis is done with the help of primary and secondary data. A major share of Kuttanad region lies in Alappuzha district. It consist of 12 panchayaths. Compared to other regions in Alappuzha district, Kuttanad mainly concentrates on paddy cultivation. It has the largest *kayal padashekharams* and the highest population of agricultural labourers. The primary data is collected from a population of 30 farmers coming from Neelemperoor, Kainakary and Pulinkunnu panchayaths. The period of the study is 2017-18.

4. Area and Production of Paddy Cultivation in Kerala and India

Paddy cultivation is the main agricultural activity in Kerala. It is the major source of the supply of the State's food grain. The State has achieved 50 percent self-sufficiency in the production of rice in 1972-73, even though, the area and production of paddy in Kerala continues to decline over the years.

In the review of the performance of paddy cultivation in India and Kerala during the period 1960-61 to 2013-14, the productivity of rice cultivation has increased from 1111 kg per hectare in 1960-61 to 2425 kg per hectare during 2013-14 at the national level. For the state it has improved from 1371 to 2828 kg during this period. So there has been significant improvement in the yield of rice in the recent years.

Table 1: Increase in Area and Production of Paddy Cultivation

Year	Area(Ha)		Production(Ton)		Productivity(kg/ha)	
	Kerala	India	Kerala /	India	Kerala	India
1960-61	778910	31128000	1067530	34574000	1371	1111
1970-71	874930	37286000	1292010	38051000	1483	1021
1980-81	801700	40152000	12 <mark>7200</mark> 0	53631000	1587	1336
1990-91	559490	42690000	1086580	74290000	1943	1740
1995-96	471150	42910000	953026	79618000	2023	1855
1999-00	349770	44598000	770690	85995000	2203	1930
2001-02	322368	44900000	703504	93340000	2182	2079
2002-03	311000	40410000	689000	75720000	2218	1874
2003-04	287000	42496000	570000	88280000	1984	2077
2004-05	290000	41665000	667000	85310000	2301	2047
2005-06	276000	44258000	630000	91790000	2285	2074
2006-07	264000	43810000	642000	93360000	2435	2131
2007-08	229000	43900000	528000	96700000	2308	2202
2008-09	234000	45600000	590000	99400000	2520	2177
2009-10	234000	41920000	598000	89090000	2557	2125
2010-11	213187	42560000	522738	95330000	2452	2239
2011-12	208160	43970000	568993	102570000	2733	2337
2012-13	197277	42410000	508299	104399000	2577	2462
2013-14	199610	43950000	564320	106540000	2828	2425

Source: Agricultural Statistics 2011-2012, Department of Economics and Statistics, Kerala State

In Kerala the area for doing farm operations up to 1970 showed an increasing trend because the migration of labourers from different parts of the world. Thereafter, the area under rice cultivation in Kerala has been steadily declining over the years. And the rate of increase in production has been much higher than the rate of increase in area under rice cultivation in Kerala. This is mainly because of the implementation of mechanisation of agriculture and the use of better inputs so the outcome is increased yields.

There is a uniform trend in the area for doing paddy operations in India. And along with this production and productivity have also showed an increasing trend for both in the case of India and Kerala. There was a sharp decline in production, area and yield of rice in India because of the extraordinary drought conditions in 2002-03 i.e. 1874 kg/hectare. However, the production and productivity of paddy land was increasing in both India and Kerala. In Kerala Kuttanad is one of the main rice producing regions, the other two rice producing regions are Palakkad and Trissur¹.

According to District wise analysis of paddy area during the year 2013-14, the first position in paddy cultivation in Kerala goes to Palakkad where 82,896 hectares of area comes under paddy cultivation. This accounts for 41.5 % of paddy area in the state. Its cultivated area increased 4.6 % from 2012 to 2013. Alappuzha holds the second position in paddy cultivation, where 37,403 hectares of area comes under paddy cultivation. This accounts for 18.7 % of paddy area in the state. There has been an increase of 3.3 % in paddy area in Alappuzha during 2012 to 2013. Trissur and Idukki districts hold third and fourth positions respectively in paddy cultivation in the state.

4.1 The Area, Production and Productivity of rice cultivation in Alappuzha District -during the period 2000-01 to 2010-2011.

The total area under paddy crop in Alappuzha District during the year 2000-01 was 37740 hectares. In the same year this region produced 103544 tonnes of rice. In that year the state could also retain its relatively better position in rice productivity at the all India level. In 2005 the area under paddy cultivation was very low compared to the other years. This was mainly due to the scarcity of labourers in the previous cultivation year. So in those period large areas of paddy land was not harvested. Then after the introduction of harvesting machine there has been significant increase in the area of paddy land.

Table 2: Area, Production and Productivity	of Rice	e cultivation in	Alappuzha District

Year	Area					
	(in ha.)		Productivity			
		Autumn	Winter	Summer	Total (Ton)	(kg/ha)
2000-01	37740	16384	31207	55953	103544	2743
2001-02	33111	2390	47741	22668	72799	2199
2002-03	29635	9467	53102	28992	91561	3090
2003-04	32083	11736	30092	21180	63008	1963
2004-05	32158	18345	32466	27680	78491	2441
2005-06	28768	16555	43429	11764	71748	2494

¹ State of Indian Agriculture, 2015-16; Government of India Ministry of Agriculture & Farmers Welfare Department of Agriculture, Cooperation & Farmers Welfare Directorate of Economics and Statistics, New Delhi.

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2006-07	31059	22287	40111	27762	90160	2902
2007-08	33335	14128	21366	26776	62270	1868
2008-09	34143	26254	21999	55997	104250	3053
2009-10	33440	28912	22672	46392	97976	2930
2010-11	37060	23856	9235	58234	91325	2464

Source: Directorate of Economics & Statistics, Panchayath Level Statistics-2011 Alappuzha District. Census of India 2011, District Census Handbook, Village and Town Directory, Alappuzha

Here the table shows that during 2010-11, the cultivated area for paddy was 37060 ha. of land producing 91325 tons of rice, whereas the State production of paddy was 910713 tonnes. The share of the district towards paddy production was 16.37per cent of the State production. During 2000-01, cultivated area for paddy was 37740 hectare of land and produced 103544 tonnes of rice, while the production of paddy in Kerala was 751328 tonnes. The share of this district towards paddy production was 13.78 per cent of the state production.

5. Governmental policies

The following section include different measures that are taken by the government to improve the conditions of agricultural labourers since independence.

5.1 Introduction of the Minimum Wage Act

In 1953 Minimum Wages committee for Employment in Agriculture was set up to study the prospects of increasing the wages of farm labourers. The Minimum Wage Act that came in to being in 1953 was the result of trade union activities. Before the entry of trade unions wages were determined by the subsistence theory of wage. This act is in existence even today. Kuttanad Industrial Relations Committee was formed in 1957 for settlement of labour disputes. It consisted of representatives of farmers, labour unions and government nominees. This committee introduced wages for labourers on the basis of price index. The functioning of the committee was not very effective till the exit of the first Communist ministry in 1960. Industrial Relations Committee (IRC) came into being in 1961 replacing the Kuttanad Industrial Relations Committee [Thomas P. M., 2002; George Jose 1984; Tharamangalam Joseph, 1981; Dr. K. A. Suresh, 2000].

5.2 The Kerala Agricultural Workers Act in 1974.

In 1974 an attempt by the Kerala Government was done to preserve certain rights of the agricultural labourers. The Kerala Agricultural Workers act was passed in 1974. It aims at employment security, provident fund for death payment, fixation of working hours, fixation of minimum wages, an arbitration board to settle disputes between workers and employers. Even though the act aims at a lot of positive things its implementation was with a lot of pitfalls. It has its effectiveness in its full strength where agricultural workers unions are strong in areas such as Kuttanad [Richard W. Franke and Barbara H. Chasin, 1992].

5.3 Build up Public Distribution System

Government started to provide food grains through ration shops during the Second World War period at subsidized rates for BPL families [Sonia George, 2013]. In that time the condition of agricultural

labourers became worse (Nair K. Ramachandran, 1982). It has been a good help to the poor families to maintain at least a minimum standard of living. The agricultural labourers were denied ration cards because they received their wages in terms of paddy. Farmers tried to make payments in cash because of the high price of paddy (Jose A. V, 1976). This again strengthened the unionization of farm labourers (Nair K. Ramachandran, 1982). This resulted in a series of conflicts between landlords and labourers. *Punnappra Vayalar* agitation of 1946 is an example of this conflict. This agitation was one of the important turning points in the evolution of labour movements in Kuttanad. The struggle was mainly against the anti people policies of Sir C.P. Ramaswamy Iyer, the Diwan of the State (Nair K. Ramachandran, 2006 and Dr. PrakashPillai R,2015). Government authorities mostly supported the landlords.

5.4 Kerala's Land Reform

Kerala's 1969 land reforms were considered as one of the most radical and most successful reforms in South Asia. The land reform has improved the lives of the vast majority of people in Kerala's countryside. For tenants they received paddy land through allotment by the Government. Land. It is the source of half of their food needs. There is no rent to be paid and no fear of eviction[Richard W. Franke and Barbara H. Chasin,1992]. The distribution of surplus land among the landless labourers is at the core of the land reform programme. It has been socially and economically beneficial for a wide section of the rural poor [N. A. Karim, 2010]. The political, social and economic positions of the tenants were gradually improving and they were acquiring purchasing power to buy land even from their *jenmies* much before the implementation of the Kerala Land Reform Act (KLRA) [K. M. George ,2010].

5.5 20-Point Programme:

The Government introduced the 20-point economic programme in July 1975. In this programme steps were taken to improve the economic condition of landless workers and other weaker sections of the society in the rural areas. These steps include speedy implementation of ceiling laws and distribution the surplus land among the landless, providing for housing sites for landless labourers, abolition of bonded labour, liquidation of rural indebtedness and moratorium on recovery of loans from landless workers etc.

5.6 Passing several Welfare programs for Agricultural Labourers:

Kerala's most remarkable reforms are unemployment insurance, enacted in 1980-1981 and agricultural labourer's pensions, started in 1982. Small numbers of rural households receive widows' pensions and pensions for handicapped family members. In addition to this program, Kerala also provides stipend to children of agricultural labourers every school year [Richard W. Franke and Barbara H. Chasin, 1992].

For developing economies, government investment is significant in raising the overall welfare of the people [Nitesh Sahay and Srobonti Chattopadhyay, 2008]. The trade unions raise wages through collective bargaining, which forced the farmers to refrain from cultivation. It resulted in the loss of work to labourers. In order to compensate for the lost wages the various welfare programs help the rural workers to obtain some income from the house plots they received in the land reform [Richard W. Franke and Barbara H. Chasin, 1992].

5.7 Self Help Groups:

Government also encouraged Self Help Groups. Contract farming with the land owners who are not interested in intensive cultivation of the land is an appropriate method adopted with the help of Self Help groups (SHGs) [M. Mohandas, 2005]. The aim of Government was to reduce the gap between rich and poor.

5.8 Encouraging educational achievements:

One solution to this problem is providing education by the school lunch program. Low caste children are given free education with large system of scholarship. The education system reduces the inequality between the high caste and low caste

people [Richard W. Franke and Barbara H. Chasin, 1992]. Thus education played a cardinal role among the lowest castes for upward social mobility and the traditions were becoming ineffective in putting fetters on their employment prospects [K. M. George, 2010].

5.9 Provision for Housing Sites:

Majority of states have passed necessary legislations for providing housing sites (01 sq. metres) to agricultural labourers. The Second and Fourth Plans have undertaken various steps for this purpose. Under Minimum Needs Programme and 20-Point Programme, high priority is being accorded to rural house site-cum-house construction scheme.

5.10 Various Employment Schemes:

For providing alternative source of employment to the agricultural labourers various schemes have already been launched by the central and the state Governments. These schemes include Crash Scheme for Rural Employment (CSRE), Rural Works Programme (RWP), National Rural Employment Programme (NREP), Employment Guarantee Scheme (EGS) by the Government of Maharashtra, Food for Work Programme (FWP), Rural Landless Employment Guarantee Programme (RLEGP), Jawahar Rozgar Yojana (JRY) etc.

Among all these schemes NREP and RLEGP got maximum importance. NREP was introduced during the Sixth Plan (1980-85) by central Government. It aimed to generate gainful employment to the extent of 300-400 million man days annually Along with employment generation, it also aimed to create durable community assets and improve the standard of living of rural poor.

RLEGP was launched in August 1983 for providing employment to landless cultivators. In 1989-90 NREP and RLEGP were merged into JRY. The seventh plan (1985-90) generated employment to the extent of 3,497 million man days.

6. Conclusion

At the time of independence, the British completely exploited our resources and the agricultural sector was also in a very poor condition. To attain self sufficiency in food production the succeeding governments adopted a number of measures to improve food production and also to help the agricultural farmers. We were not self sufficient in food production in the early years. We faced food problem and we wanted to import food grains from foreign countries, resulting in an unfavourable balance of payments policy. The problem was very serious up to Third and Forth Five- year plans. But

the governmental measures helped the agricultural sector to attain self sufficiency in food production since the Fifth and Sixth Five-year plan onwards. Presently, India is completely self sufficient in the agricultural production. The output from agriculture is not only to feed our population but also a part of it is used for export ,thus earning foreign exchange. All such changes are by way of the government measures taken to develop the agriculture as well as the industrial sector in India throughout the five year plans. So it will also help to increase the opportunity of labourers. Because labourers are the key factor of agriculture.

In the earlier period labourers were mostly needed during the harvesting season. Harvesting was a very tough job for the labourers. They had to carry harvested crop for long distances from the fields. It was full of physical hardship. Their legs would start bleeding, while crushing the paddy under their legs. Due to unavailability of agricultural labourers, many farmers quit paddy cultivation because their crops were destroyed during the rain for want of labour. Therefore farmers suffered a lot due to scarcity of labour during harvesting. As a result farmers were forced to introduce mechanisation in harvesting. Surprisingly both farmers and labourers supported mechanisation at this time because they were unable to move forward without mechanical power.

Mechanisation increases labour productivity [Singh, Gyanendra, 2005; Amare Dagninet, Endalew Wolelaw,2016]. Keeping the output constant, labour requirements were less as compared to premechanisation scenario. This fall in production cost encouraged inactive farmers to take up cultivation thereby increasing the demand for agricultural labour. This resulted in a shortage of labour supply and an increase in their wages.

Mechanisation resulted in large scale production. Agricultural labourers now required less time to do more jobs. They were also able to indulge in non-agricultural activities. Mechanisation resulted in reducing the number of labourers compared to the earlier method of production. Hence the output can be shared among less number of workers, which means labour productivity increased. When labour productivity increased, income increased. Increased income lead to more spending which in turn lead to the consumption of more goods and services resulting in better standard of living.

REFERANCE

Websites

- 1. Chandy J, 2013 shodhganga.inflibnet.ac.in/bitstream/10603/19587/17/17_conclusion.pdf
- 2. Importance of Kuttanad, 7 February 2018, ENVIS Centre: Kerala State of Environment and Related Issues, Hosted by Kerala State Council for Science, Technology and Environment, Sponsored by Ministry of Environment, Forests & Climate Change, Government of India.
- **3.** India Water Portal, October 2011, Pollution of the Pampa River, a major environmental issue for the Central Travancore and Kuttanad regions of Kerala.
- **4.** Kumar M. Ajith, Tuesday 31 December 1996, Kuttanad: A Case in point. www.indiaenvironmentportal.org.in/content/12343/kuttanad-a-case-in-point/
- **5.** Mathew Dennis Marcus, The Hindu, News Paper, Survey Confirms 'High' Prevalence Of Cancer In Kuttanad Alappuzha, January 12, 2010
- **6.** Annual Report 2016-17, Department of Agriculture, Cooperation & Farmers Welfare, GOI, Krishi Bhawan, New Delhi-110 001. www.agricoop.nic.in

Reports

- 7. The Report of the Expert Committee on Paddy Cultivation(1999) vol.1, Main Report, Thiruvananthapuram, Government of Kerala.
- 8. Twelfth Five Year Plan(2012–2017)/Planning Commission, Government of India, Economic Sectors, Volume II, *First published in 2013 by*, SAGE Publications India Pvt Ltd,B1/I-1 Mohan Cooperative Industrial Area Mathura Road, New Delhi 110 044, India.
- 9. Government of Kerala (GOK), 1989, Gazetteer of India, Vol.111, Kerala Gazetteers Department.TVM.
- **10.** GOK, 2006, Panchayath Level Statistics, Alappuzha District, Department of Economics and Statistics, Thiruvananthapuram.
- **11.** GOK, 2006, Paddy Cultivation in Kerala,1995-96 to 2004-05, Department of Economics And Statistics, Thiruvananthapuram.
- **12.** Government of India, October, 2011, An Approach to the Twelfth Five Year Plan (2012-17), Faster, Sustainable and More Inclusive Growth, www.planningcommission.nic.in, Planning Commission.
- 13. Census 2011, Government of India.
- 14. Kerala Sastra Sahitya Parishad (KSSP), 1978, Report of the study team on Kuttanad, TVM.

Books and Journals

- **15.** Aniyankunju P. C. (2005), Agricultural Technology Development and Transfer in the Socio-Economic Transformation of Agrarian Economics-The Kerala Experience with Special Reference to Kuttanad, PhD Thesis, M.G. University, Kottayam.
- **16.** Balachandran Pillai. G, 2004, Constraints on Diffusion and Adaptation of Agro-mechanical Technology in Rice cultivation in Kerala, Discussion paper .59, CDS, Thiruvanathapuram.
- 17. Chen Jen-Hshuan, 2006, The Combined Use Of Chemical And Organic Fertilizers and/or Bio fertilizer For Crop Growth And Soil Fertility, International Workshop on Sustained Management of the Soil-Rhizosphere System for Efficient Crop Production and Fertilizer Use, Department Of Soil And Environmental Sciences, National Chung Hosing University, Taiwan, R.O.C.
- 18. Edayady A. C. Mathew, 2002, Ormachakrangal (Malayalam), ACM Publications.
- **19.** George Jose (1984), Politicization of Agricultural Workers in Kerala- A Study of Kuttanad, Indian Institute for Regional Development Studies, Kottayam.
- **20.** George Jose, 1992, Unionisation & Politicisation of Peasants & Agricultural labourers in India (With special reference to Kerala), Commonwealth Publishers, New Delhi.
- **21.** George, K.M. (2010). Land Reforms in Kerala: Socio- Economic Contribution-A Critique. Prof. Ramen Pillai, (Ed.). C. Achutha Menon Foundations, Thiruvananthapuram.
- **22.** Johnston, Warren E, University of California, Davis, And Ecological Problems Associated with Agricultural Development: Some Examples in the United States.
- 23. Jose A.V., 1976, Working Paper No.43, Center for Development Studies, Thiruvananthapuram.
- **24.** Karim, N.A.(2010)Kerala's Land Reform- From Ambivalence to Prevarication, Prof. Ramen Pillai,(Ed.). C.Achutha Menon Foundations, Thiruvananthapuram. Published by A.P.H. Publishing Corporation, New Delhi.
- 25. Kadam Santosh N. (2009), New Agricultural Technology Socio Economic Impact, New Delhi.
- **26.** Lakshmi Geetha and Dr Aniyankunju. P.C.,2018, Influence Of Trade Unions On Agricultural Labourers In Kuttanad. International Journal of Management and Social Sciences Research (IJMSSR), ISSN: 2319-4421, Volume 7, No. 3, March 2018.
- **27.** Lakshmi Geetha (2018) Agricultural Development and Ecological Imbalance in Kuttanad. International Journal of Social Science and Economic Research. Volume: 3 Issue: 12 (December 2018) Page No:6946-6957.
- **28.** Geetha Lakshmi (2019) Labour Issues and the Impact of Migration on Kerala Agriculture. 2019 JETIR June 2019, Volume 6, Issue 6 www.jetir.org (ISSN-2349-5162). Page No:414-423.
- 29. Mishan, E. J. "the dangerous of economic growth"
- **30.** Mohandas, M. (2005).
- 31. Moore Fitzgerald P. and Parai B.J., 1996, the green revolution, 'Lectures on Technology'.
- **32.** Nair M. Janardhanan (1981), Commission on the Problems of Paddy Cultivation in Kerala, Center for Development Studies, Thiruvananthapuram.
- **33.** Nelliyat Prakash, 2018 May 1, Tuesday, The Hindu, News Paper.
- **34.** Nityati N.(2010). Land Reforms in Kerala and the Current Socio-Economic Crisis.Prof. Ramen Pillai,(Ed.). C.Achutha Menon Foundations, Thiruvananthapuram.Published by A.P.H.Publising Corporation, New Delhi.

- **35.** Oommen, M. A. (1963). The Economics of Cropping Pattern- A Case Study of Kerala, Published in 'The Indian Journal of Agricultural Economics Vol: XVIII. Bombay, January-march.
- **36.** Oommen, M. A. (1971). Land Reforms and Socio- economic change in Kerala- An Introductory Study, (With foreword by Dr.K.N.Raj). Published by- The Christian LiterTURE Society, Madras 3.
- **37.** Oommen, M. A. (1972). The Re-distribution of Land in Kerala: Some Economic Considerations., Development of Kerala-Problems and Promises. P.K.B. Nayar, (Ed.). Department of Sociology, University of Kerala, TVM.
- **38.** Oommen, M. A. (1979). Kerala Economy since Independence. Oxford and IBH Publishing Company Ltd., New Delhi, Bombay and Calcutta.
- **39.** Oommen, M. A. (1993). The Acute Unemployment Problems of Kerala-Some Explanatory Hypothesis. Essays on Kerala Economy, Published in IASSI Quarterly, Oxford and IBH Publishing Company Ltd., New Delhi, Bombay and Calcutta.Vol.10, No: 3.
- **40.** Padmanabhan P. G., Narayanan N.C and Padmakumar K.G (2001), "Economic Viability of an Integrated and Sustainable Resource use Model for Kuttanad"- Kerala Research Programme on local level Development, Discussion Paper Series, Discussion paper No: 33, Center for Development Studies, Thiruvananthapuram.
- **41.** Padmakumar K.G., 2006)- Rice-Fish Rotation: A Sustainable Farming Model For Coastal Lowlands K.G. Padmakumar, regional Agricultural Research Station, Kumarakom 686 566. Edited by Dr. Vandana Shiva and Dr. Poonam Pandey, 2006, Biodiversity Based Organic Farming, A New Paradigm for Food Security and Food Safety, Navdanya, New Delhi.
- **42.** Patil Dhanraj A. and Katti Ravasaheb J.(2012), Modern Agriculture, Pesticides and Human Health: A Case Of Agricultural Labourers In Western Maharashtra Journal Of Rural Development, Vol. 31, No. 3, September: 2012.
- 43. Pillai T. K. Velu, 1940, Travancore State Manual, Government of Travancore.
- 44. Pillai V.R and Panikar P.G.K 1965- Land Reclamation in Kerala, Asia Publishing House, New York.
- **45.** Prakash B. A. (1994), Kerala's Economy- An overview., Kerala's Economy- Performance, Problems and Prospects, Sage Publication, New Delhi.
- **46.** Prakash, Pillai R. (2015). Research Report, Labour Movements in Agriculture Sector: A Case Study of Kuttanad Region. Kerala Institute of Labour and Employment, Thiruvananthapuram, Loyola College of Social Sciences, Sreekariyam, Thiruvananthapuram -695 017.
- **47.** Radhakrishnan V., Thomas E.K. and Thomas K. Jessy, 1994, Edited by Prakash B. A., Kerala's Economy- An overview., Kerala's Economy- Performance, Problems and Prospects, Sage Publication, New Delhi.
- **48.** Richard W. Franke & Barbara H. Chasin. (1992). Kerala Development through Radical Reform, Promilla and Co. Publishers, New Delhi in collaboration with the Institute for Food and Development Policy San Francisco.
- **49.** Sahay, Nitesh and Chattopadhyay, Srobonti. (2008). Assessing the Macroeconomic and Welfare Impact of Global Rice Trade Liberalization for India. Global Rice and Agricultural Trade Liberalization- Poverty and Welfare Implications for South Asia. Razzaque Mohammad A. and Laurent Edwin, (Ed.). Common Wealth Secretariat, Marlborough House Pall Mall, London SWIY 5 HX, UK..
- **50.** Santhosh Simon, K Paulose Jacob, 2012, Development and Deployment of Wireless Sensor Network in Paddy Fields of Kuttanad, ISSN: 2277-3754 ISO 9001:2008 Certified International Journal of Engineering and Innovative Technology (IJEIT) Volume 2.
- **51.** Shantanu De Roy(2004), Economic Reforms and Agricultural Growth in India, The Department of Policy Studies, TERI University, New Delhi.
- **52.** Shiva Vandana and Dr. Pandey Poonam, 2006, Biodiversity Based Organic Farming, A New Paradigm for Food Security and Food Safety, Navdanya, New Delhi.
- **53.** Sreejith K. A. (2013), Human Impact on Kuttanad Wetland Ecosystem- An overview, Review Article International Journal of Science, Environment and Technology Vol.2, No.4, 679-690.
- **54.** Singh R.B., 2000, Environmental consequences of agricultural development: a case study from the Green Revolution state of Haryana, India, Agriculture, eco system and environment, Volumn; 82, issues 1-3,2000.
- **55.** Sivanandan P.K., 1994, Performance of agriculture in Kerala, Edited by B. A. Prakash Kerala's Economy- An overview, Kerala's Economy- Performance, Problems and Prospects, Sage Publication, New Delhi.
- **56.** Suresh K. A., 2000, Group Management Approach to Agricultural Development- A case study of rice farming in Kerala, College of Co-operation, Banking and Management, Kerala Agricultural University, Vellanikkara, Trissur, Kerala.
- **57.** Swaminathen M.S., (2007), Measures to Mitigate Agrarian Distress in Alappuzha and Kuttanad Wetland Systems; A Study Report by Swaminathan Research Foundation, Union Ministry of Agriculture.
- **58.** Tharamangalam, Joseph (1981), Agrarian class Conflict- The Political Mobilization of Agricultural Labours in Kuttanad, South India, University of British Columbia Press Vancouver And London.

- **59.** Thomas, P. M.(2002), Problems and Prospects of Paddy Utilization in Kuttanad Region- A case study of Ramankary Village in Kuttanad Taluk, A Project of Kerala Research Programme Local Level Development (K.R.P.L.L.D), Thiruvananthapuram.
- **60.** Venu K. (2010) Land Reforms in Kerala- Some Observations. Prof. Ramen Pillai, C.Achutha Menon Foundations, (Ed.). Thiruvananthapuram. Published by A.P.H. Publising Corporation, New Delhi.

