GOVERNMENT OF KERALA
KERALA STATE PLANNING BOARD

FOURTEENTH FIVE-YEAR PLAN
(2022-2027)

WORKING GROUP ON

PREPARING KERALA FOR A SURPLUS IN MILK PRODUCTION – A PLAN

REPORT

AGRICULTURE DIVISION
MARCH 2022

FOREWORD

Kerala is the only State in India to formulate and implement Five-Year Plans. The Government of Kerala believes that the planning process is important for promoting economic growth and ensuring social justice in the State. A significant feature of the process of formulation of Plans in the State is its participatory and inclusive nature.

In September 2021, the State Planning Board initiated a programme of consultation and discussion for the formulation of the 14th Five-Year Plan. The State Planning Board constituted 44 Working Groups, with more than 1200 members in order to gain expert opinion on a range of socio-economic issues pertinent to this Plan. The members of the Working Groups represented a wide spectrum of society and include scholars, administrators, social and political activists and other experts. Members of the Working Groups contributed their specialised knowledge in different sectors, best practices in the field, issues of concern, and future strategies required in these sectors. The Report of each Working Group reflects the collective views of the members of the Group and the content of each Report will contribute to the formulation of the 14th Five-Year Plan. The Report has been finalised after several rounds of discussions and consultations held between September to December 2021.

This document is the Report of the Working Group on "Preparing Kerala for a surplus in milk production – A plan." The Co-Chairpersons of Working Group were Mr.K.S.Mani and Dr.P.Sudheer Babu. Dr.R.Ramakumar, Member of the State Planning Board co-ordinated the activities of the Working Group. Sri.S.S.Nagesh, Chief, Agriculture Division was the Convenor of the Working Group and Smt. Kumari Sangeetha K.R, Deputy Director, Agriculture Division was the Co-Convenor. The terms of reference of the Working Group and its members are in Appendix 1 of the Report.

Member Secretary

PREFACE

As part of formulation of the 14th Five Year Plan, the Kerala State Planning Board had constituted working groups of experts in all the major sectors. In Agriculture and Allied Sectors, 6 working groups were constituted viz. Agriculture and Cooperation, Animal Husbandry and Dairy, Inland and Marine Fisheries, Forest and Environment, Water Resources and Regional Packages. To discuss and frame policies in each of these sectors, the working groups were further divided into 28 Expert Sub-Groups (ESG) with specific mandates.

Each Expert Subgroup held at least three meetings beside one focused group meeting before finalising the report. We, the Co-Chairs, place our deep appreciation and gratitude to all the esteemed members of the ESG for their valuable contributions in preparing the report. We are extremely grateful to Dr. V. K. Ramachandran, the Honourable Vice-Chairperson, Kerala State Planning Board, Dr. R. Ramakumar, Member, Kerala State Planning Board and Sri. S. S. Nagesh, Chief, Agriculture Division for their consistent guidance and suggestions in preparing the report. The drafting team put in commendable work in bringing together all the views and opinions of the members. We sincerely hope the recommendations in the report can lead to important changes in the public policy for the development of Animal Husbandry and Dairy sectors in the State.

Mr. K. S. Mani
Expert Co-chairperson

Dr.P.Sudheer Babu
Official Co-chairperson

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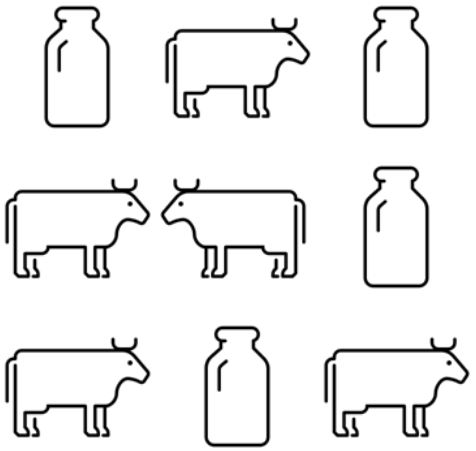


PREPARING KERALA FOR A SURPLUS IN MILK PRODUCTION – A PLAN

HIGHLIGHTS

- Livestock sector, specially dairying is critical for Kerala's agriculture.
- The aim of this report is to identify measures to take Kerala to surplus milk production.
- Policy measures, infrastructural and institutional support measures, strengthening the cooperative sector, value addition of milk, etc. are suggested.

EXECUTIVE SUMMARY

The importance of dairying in Kerala's livestock sector cannot be overestimated. This is particularly true for Kerala. The dairy sector is critical to food security and agriculture in Kerala. The demand for milk is expected to rise over the next decade. A study by the National Council of Applied Economic Research (NCAER) in 2014 argued that the total demand for milk was 27.9 lakh tonne in 2009-10, which would rise to 32.9 lakh tonne in 2020, 34.2 lakh tonne in 2025 and 35.2 lakh tonne in 2030. Based on an interventionist scenario, the supply of milk was projected to be 31.5 lakh tonne in 2020, 35.1 lakh tonne in 2025 and 39.2 lakh tonne in 2030. However, with the reduction in milk supply after 2012, Kerala is lagging at least by 4 lakh tonnes with regard to the supply projections in 2020. Given an expected rise in milk demand, Kerala has to focus on raising its milk production by at least 50 per cent in 2030. The state should use the advantage of its higher productivity to achieve this objective through improved organisation of production.

In this document, Kerala's progress in increasing milk production over the past decade is assessed, and its sufficiency vis-à-vis the domestic demand for milk and milk products are examined. The impact of the pandemic on milk demand and supply has also been analysed.

The state's potential to generate surplus milk has also been examined, and several measures related to farm licensing, pollution control, cattle feed act, dairy policy, and FSSAI are suggested to enable this. In addition, the infrastructural and institutional requirements have also been analysed, and the suggested measures include starting milk powder production, promoting innovation, technology upgradation, provision of loans, etc.

In addition, methods to strengthen dairy cooperatives via diversification, setting up of energy efficient systems, quality management system certification, and diversification via value addition have also been suggested.

CHAPTER 1
INTRODUCTION

Background

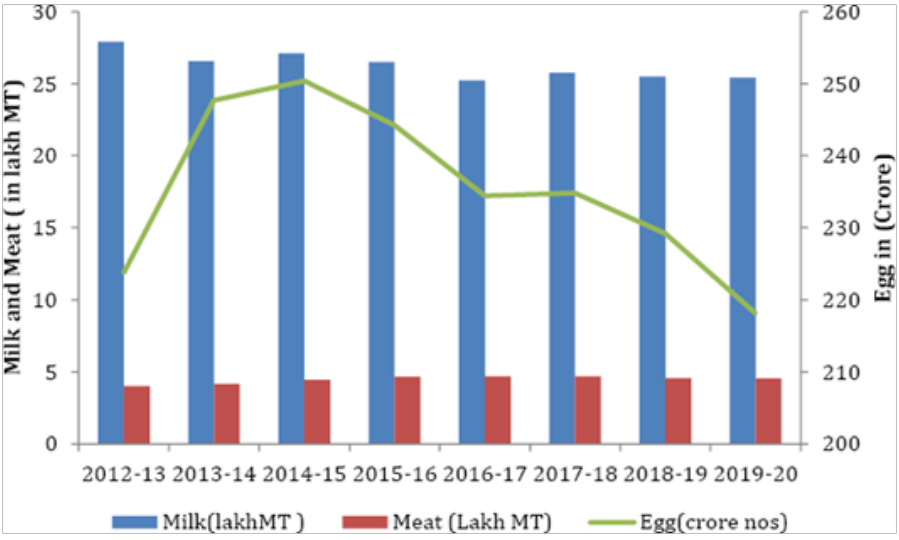
Livestock have been an integral component of the agricultural and rural economy across the world. They are valued as a source of food and other raw material/by products. The rate of increase in global demand for animal products is higher than most food items and consumption is projected to double by 2050. The livestock sector is a major livelihood provider to the world's poor. India's livestock sector is one of the largest in the world. As per 20th Livestock Census (2019), the total livestock population of the country is 535.78 million showing an increase of 4.6 per cent over the 19th Livestock Census, 2012. It includes 302.79 million bovine population, recording an increase of 0.93 per cent over the previous livestock census figures. The total number of cattle in the country is 192.49 million in 2019, showing an increase of 0.8 per cent over the previous census. Livestock plays an important role in the Indian economy as well. About 20.5 million people here depend upon livestock for their livelihood. Livestock sector contributes 16% to the income of small farm households and provides livelihood to two-third of rural community.It also provides employment to about 8.8 % of the population in India. India has vast livestock resources. The sector contributes to 4.11% of total GDP and 25.6% of total Agriculture GDP. In Kerala, the livestock sector is a prominent and one of the fastest-growing sectors of rural economy. As per the 20th Livestock Census (2019), the livestock population in the state was 38.36 lakh. It is 1.34 per cent less as compared to the 19th Livestock Census (2012). The reason for decline is the reduction in the population of other animals especially domestic dogs, rabbits, donkey and elephants (which form the major share) by 14.69 per cent. The share of livestock in Gross State Value Added (GSVA) at constant prices from the agriculture sector shows a marginal decrease from 26.97 per cent in 2018-19 to 26.67 per cent in 2019-20. Though GSVA at constant prices from the sector has increased in absolute numbers, its share in total GSVA of the State has declined marginally from 2.38 per cent in 2018-19 to 2.14 per cent in 2019-20.

India continues to be the largest milk producing country in the world. At the national level, the milk production has increased from 18.77 crore tonnes in 2018-19 to 19.84 crore tonnes in 2019-20 registering a growth of 5.7 per cent, sustaining the trend over the past three decades. The per capita availability of milk has been increasing in India over the years and increased to 407 gms in 2019-20. The species-wise milk production shows that nearly 35 per cent of total milk production is contributed by indigenous buffaloes followed by 26 per cent from cross bred cattle. The indigenous cattle contribute 11 per cent of the total milk production. The milk production in the country (2019-20) is 198.4 Million Tonnes (per capita availability – 407 gms per day). The role of dairying in improving the nutritional standards of the people, generating employment opportunities and enhancing income level in rural areas especially for small and marginal farmers and agriculture labourers has been well established. Over the years, India has maintained a growth rate of about 5.7 per cent per annum in milk production. In terms of the value of output, milk is now the single

largest agricultural commodity, way ahead of paddy and wheat. Based on the National Dairy Development Board (NDDB) estimates, the demand for milk is likely to reach 180 million tonnes by 2022. The same would be the situation in a 'consumer state' like Kerala. It would therefore pose a great challenge to increase milk production in the state vis-à-vis the ever-increasing demand for milk and milk products by improving the infrastructure of the dairy sector in Kerala. Milk, meat and egg are the major livestock products in the state. The production of meat, milk and egg in Kerala are 4.55 lakh MT, 25.42 lakh MT and 218 crores, respectively. The per capita availability of milk in the state is 189 gms per day. (Source : Economic Review 2020, Kerala State Planning Board)

The demand for milk is expected to rise over the next decade. A study by the National Council of Applied Economic Research (NCAER) in 2014 argued that the total demand for milk was 27.9 lakh tonne in 2009-10, which would rise to 32.9 lakh tonne in 2020, 34.2 lakh tonne in 2025 and 35.2 lakh tonne in 2030. Based on an interventionist scenario, the supply of milk was projected to be 31.5 lakh tonne in 2020, 35.1 lakh tonne in 2025 and 39.2 lakh tonne in 2030. Clearly, the supply projections went awry as the production of milk declined after 2012. Thus, Kerala is lagging at least by 4 lakh tonnes with regard to the supply projections in 2020. Given an expected rise in milk demand, Kerala has to focus on raising its milk production by at least 50 per cent in 2030. The state should use the advantage of its higher productivity to achieve this objective through improved organisation of production.

Figure 1 Milk, Meat, And Egg Production From 2012 - 2020



Terms of reference

1. To assess Kerala's progress in increasing milk production over the past decade, and its sufficiency vis-à-vis the domestic demand for milk and milk products.

2. To examine the potential of Kerala to produce a surplus in milk production and suggest measures for policy preparedness.

3. To assess the extent of infrastructural and institutional requirements to meet the challenge of surplus milk production in Kerala.

4. To suggest measures to modernise the functioning of dairy cooperatives in Kerala.

5. To suggest specific measures for diversification of milk into value added products.

CHAPTER 2
KERALA IN MILK PRODUCTION - A RETROSPECT

During the 12th plan period, milk production fell again by about 2.7 lakh tonnes. But in the 13th Plan period, the decline in milk production was arrested and there was a moderate revival in milk production. The dairy cooperative sector in Kerala has marked higher levels of self sufficiency during the past few years. As per the Economic Review Report 2020 (Kerala State Planning Board), the milk production of the state dipped by a small margin (0.28 %) during the year 2019-20 (25.42 Lakh Metric Tons) when compared to 2018-19 (25.49 Lakh Metric Tons). The Economic Review Report 2020 also says that the sale of milk by MILMA showed a decrease in the year 2019-20. In 2019-20, 6,789 lakh litres of milk was procured by the dairy co-operative societies in the state, of which 4,516 lakh litres were sent to the dairies, and 2,246 lakh litres were marketed locally by the societies. The average milk poured per day by Anand Pattern Co-operative Societies (APCOS) in 2019-20 was 1415 MT against the previous year average of 1528 MT. The procurement/day/society in 2019-20 decreased to 440 litres from 501 litres in 2018-19. The procurement and sale of milk by Kerala Cooperative Milk Marketing Federation (KCMMF) was 3940.76 lakh litres and 4466.27 lakh litres, respectively in 2019-20. Except in Ernakulam, Palakkad and Wayanad, sales of milk exceeded procurement. The shortfall between milk procurement and sales was met by arranging milk mostly from State Milk Federations of Karnataka, Tamil Nadu and the purchase of skimmed milk powder. But it may also be noted that the milk procurement through Dairy Co-operatives of the state marked a record figure during the year 2020- 2021 with 7.12 Lakh Metric Tons of milk procurement through Dairy Co-operatives during the year 2020-21 (Source : Dept. of Dairy Development, Govt. of Kerala). This hike could be the net result of various development interventions undertook by the Dairy Development and Animal Husbandry departments as well as by other associated agencies in the state aimed to nurture the sector. There are 3643 registered dairy co-operatives in the state (as on May, 2021) which ensures steady price and market to the producers. 3.94 lakh farmers are registered under the dairy co-operative sector (Source : Department of Dairy Development, Govt. of Kerala)

Out of 25.42 thousand MT of milk produced in Kerala, majority share is produced by cross bred cows (93.82 per cent). Indigenous cows produced only 1,949 MT of milk (0.08 per cent). The production of milk from goat is 1.28 lakh MT (5.02 per cent). The rest is contributed by nondescript cattle, indigenous buffalo and non-descript buffalo. 94% of cattle population is cross breed with an average milk production of 10.22 litres per day which is second best to Punjab in the country. In Kerala, 5 lakh out of 70 lakh families are dependent solely on livestock for their livelihood, while another 5 lakh depend on livestock as a subsidiary means for supporting their livelihood. More than 55 per cent of bovine keepers maintain 2–3 cow units, while about 32 per cent maintain one-cow units. More than 60 per cent of livelihood enterprises set up by Kudumbasree are in the Animal Husbandry sector. Out of 37 lakh women in the suburbs of the poverty line, 70 per cent opted for enterprises in the animal husbandry sector, as the major basis of livelihood. It

indicates that further progress in the livestock sector would directly be reflected in the balanced development and upliftment of the rural economy (Source : Economic Review Report 2020, Kerala State Planning Board).

The natural calamities during the last 3 years (floods of 2018, 2019 and 2020) and the new threat of Covid 19 Pandemic (both first and Second wave) has been a real threat to the progress of Dairy Development in the state. The loss of cattle, the loss of infrastructure, transportation problems, health hazard through Covid 19 Pandemic have all significantly affected the Dairying prospects of the state. Through the Dairy Development Department and other machineries, the State Government has implemented many relief programmes for overcoming the contingencies caused due to floods and Covid 19 Pandemic. One major lesson learned from the Covid-19 pandemic in the animal resources sector in Kerala is the need to attain a greater degree of self-sufficiency in handling animal produce. The pandemic has also reminded Kerala that the state is close to attain self- sufficiency in milk production. In the coming years, the state needs to prepare itself for handling a situation of surplus milk. Thus, Kerala needs a modern milk powder plant as well as an evaporator plant to convert and store surplus milk as milk powder and condensed milk.

The Dairy Development Department regularly collects data pertaining to milk procurement, local sales, procurement and marketing of KCMMF and Regional Unions including the purchase of milk outside the state pertaining to the cooperative sector in Kerala. The accurate data regarding supply and demand for milk and milk products in the state are presently not available with the department. Same is the case of estimation of state's milk production also. To calculate the per capita availability and demand for market milk, accurate milk production data is required. No data is available regarding the marketing of milk products, sales value of milk products, local production etc. It is high time that the department must conduct a survey and collect the data on milk production, procurement, utilisation, and consumption in the state. The work shall be undertaken by the newly set up Kerala State Dairy Management Information Centre.

Table 1 Milk Procurement Data And Per Capita Availability

Five Year Plan	Year	Milk Procurement Through DCS (LMT)	Milk Procurement Through DCS per Day (LLPD)	State Milk Production (LMT)	PER CAPITA AVAILABILITY grams / day / person
11th FYP	2011-12	4.52	12.39	27.16	
12th FYP	2012-13	4.89	13.39	27.92	216
	2013-14	5.27	14.43	26.55	203
	2014-15	5.57	15.26	27.11	206
	2015-16	5.97	16.36	26.49	200
	2016-17	5.94	16.27	25.20	189
13th FYP	2017-18	6.62	18.14	25.76	192
	2018-19	6.80	18.64	25.49	189
	2019-20	6.79	18.60	25.42	
	2020-21	7.12	19.50		

(*Source:* Dept. of Dairy Development, Govt. of Kerala, Economic Review)

It is expected that there will be around 6 % increase on the average milk production during the 14th FYP and in commensurate to that, fluid milk sales may not reach the 6% level owing to stiff competition with cheaper milk inflow from neighbourhood states mainly by the private players. It is recommended to increase the APCOS' share of value added products from the present 29% to 35% of the total revenue. Newer products suiting to the state and local markets may be developed through effective Research & Development collaborations with institutions like KVASU and CFTRI.

Co-operatives in Milk Sales over the period 2015-2020

Milk marketing through the Kerala Co-operative Milk Marketing Federation and local sales of Primary Dairy Co-operatives in lakhs litres per day is shown below

Table 2: Co-operatives in Milk Sales over the period 2015-2020

Name of Agency	Milk Sales in 2015-16 (lakh litres per day)	Milk Sales in 2019-20 (lakh litres per day)	%increase
Primary Dairy Cooperatives	5.80	6.15	6.03
KCMMF (MILMA)	12.69	13.29	4.73

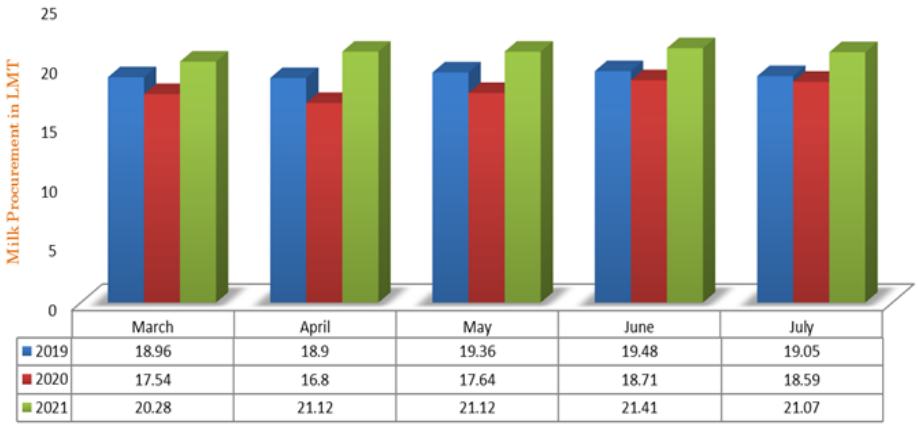
Source: (Dept. of Dairy Development, Govt. of Kerala and Annual Reports of KCMMF)

Covid-19 pandemic and Kerala dairying

India reported the first case of Covid-19 on 30th of January 2020. By 26th of April 2020, the Ministry of Health and Family Welfare, Government of India confirmed a total of 26,496 cases, 5,804 recoveries and 824 deaths in the country. The pandemic has affected global food systems, disrupting regional agricultural value chains, and posing risks to household food security. The food supply chain is a complex web that involves producers, consumers, agricultural and fishery inputs, processing and storage, transportation and marketing, etc. As the virus spreads and cases mount, and the preventive measures to curtail disease spread were taken, the food systems at almost all levels have been badly strained. Challenges in terms of disrupted logistics were mounting day by day during the lockdown period.

The livestock sector witnessed reduced access to animal feed and diminished capacity of slaughterhouses due to logistics constraints and labour shortages. Blockages to transport routes were particularly obstructive for fresh food supply chains and even resulted in increased levels of food loss and wastage. Milk(both processed and raw) and milk products, Meat and Poultry products, Fresh fish and aquatic products, which are highly perishable and therefore need to be sold, processed or stored in a relatively limited time were at particular risk. Transport restrictions and quarantine measures impeded farmers' access to markets, curbing their productive capacities and hindering them from selling their produce. Shortages of labour, disrupted production and processing of food, notably for labour-intensive industries (e.g. high-value crops, meat and fish). While there has been an uptick in international prices for some key staples such as rice, food prices were more broadly declining as key demand factors subdued as a result of declining incomes and the prospect of a global recession. The closure of restaurants and street food outlets diminished a key market for many producers and processors that produced a temporary glut or triggered upstream production cuts as seen in the fish and meat sectors. It was also observed that urban supply and demand for fresh produce showed a declining trend owing to lockdown restrictions and aversion behavior shown by traders and consumers. Almost all the sectors have received a setback in the Covid- 19 pandemic; industry and agriculture are no exception to this. Financial instability and unemployment was an outcome of this pandemic.

Figure 2 : Milk Procurement Through DCS - Impact of The Covid Pandemic



	March	April	May	June	July
2019	18.96	18.9	19.36	19.48	19.05
2020	17.54	16.8	17.64	18.71	18.59
2021	20.28	21.12	21.12	21.41	21.07

(*Source* : Dept. of Dairy Development, Govt. of Kerala and Annual Reports of KCMMF)

The dairy sector suffered due to Covid-19, especially during the first wave when the system was least prepared, but later on there were signs of growth and more entrepreneurs came to this field. The departments of Dairy Development, Animal Husbandry, Milma and other agencies in the livestock sector took several measures during the pandemic period inorder to facilitate complete milk procurement through milk societies, to facilitate effective marketing of milk through dairy societies and Milma, to ensure availability of cattle feeds through Milma, Kerala Feeds and other leading private feed companies, to facilitate supply of green grass, straw and silage through the dairy cooperative societies and to facilitate door step veterinary care to the extent possible for the benefit of dairy farmers in the state. Under the Government of Kerala Special programme on Covid Relief, during the lockdown period, milk was supplied by Milma to Community Kitchens, Anganawadis and Guest Labourer camps. The field departments have opened helpdesks and call centres at district and state levels. Cattle of those farmers who were infected with Covid-19 and those under quarantine were taken care by the respective dairy cooperatives. The Dairy Development department has submitted various projects for livelihood support to dairy farmers like Support for Integrated Dairy Farming with Agriculture, Projects for Rehabilitation of Expatriates with the support of NORKA, Kisan Credit Card Campaign etc. Inorder to avoid the crisis of management of excess milk during the lockdown period, a powder factory is planned to start under the MRCMPU (Milma) at Malappuram District and the infrastructure work has already been started.

CHAPTER 3
THE ROAD MAP - KERALA – GEARING UP FOR SURPLUS MILK PRODUCTION : MEASURES FOR POLICY PREPAREDNESS FARM LICENSING AND POLLUTION CONTROL

Farm licensing and pollution control

Kerala should tap the potential of rural entrepreneurship and to popularise establishing larger commercially-run dairy farms in Kerala in dairying-friendly zones. The possibility of licensing commercial dairy farms can be explored. The system of farm licencing and registration needs to be simplified and made farmer-friendly. There is a need for a single-window system for the entire process in collaboration with contributing agencies, and the upper limit for herd size should be increased from 20 cattle to 100 cattle for farm licensing. At present, limited landholding and hostile neighbourhoods hinder the expansion of herd size and licensing formalities, mainly due to inherent environmental pollution problems. To address this issue and facilitate ease of licensing, producers are to be subsidised and provided hand-holding support to establish waste disposal systems, including Effluent Treatment Plants, biogas plants, composting units, dung dewatering units and dung/urine value addition units. The establishment of proper effluent treatment facilities at procurement/ processing centres enables environment-friendly milk collection and processing.

Cattle feed act in the making

The pioneer Cattle feed ordinance is promulgated in the State. The Ordinance envisages to regulate manufacture, storage, distribution, sale and import of feed stuff, livestock and poultry feed and mineral mixture in the State of Kerala to maintain production standards and to ensure availability of safe and quality feed for livestock and poultry in the state, to check adulteration and misbranding of feed stuff, livestock and poultry feed and mineral mixture. According to this Ordinance, all the manufacturer, stockists, distributor etc. shall hold a valid license. Animal Husbandry and Dairy Development Departments shall implement the Act. The authorised officials shall collect the samples of feed stuffs of cattle and poultry and mineral mixture and the same will be tested at the Analytical Laboratories. If the sample is substandard, the adjudication procedure shall be initiated. Adulteration and misbranding are being seriously viewed in the Ordinance which may lead to the suspension of license, penalties and even punishable with imprisonment according to the offences committed by the licensee. The proposed Act will ensure the quality of cattle and poultry feed stuffs and mineral mixture in the state and leads to endure the health and productivity of cattle and poultry which ultimately catalyse the milk, meat and egg production in the state.

State Dairy Policy

A state dairy policy should be established with a vision towards 2050. Kerala will have to improve the "Ease of Doing Dairy Business" through the consciously designed dairy policy. The dairy policy for the state should enable the convergence of three factors : high yielding milch cattle, fodder or feed availability and marketing facilities. The Government

can explore the possibility of higher subsidies for cattle feed and electricity as well as offer tax exemptions to new dairy processing units. Kerala, as a state, has immense potential to attain surplus milk production, but the biggest hurdle here is the ever-escalating cost of milk production. Hike in the selling price of milk would not be wise as consumers would be badly affected and will accelerate cheaper milk flow from other states to Kerala. In such a situation, the Government is not getting any tax benefits from the private milk processors/marketers. It is suggested that the Government may explore the possibility of either imposing an entry tax to them or to regulate in such a manner that the private players who at present, source cheaper milk from outside, process it and sell at the prevailing market prices shall have to source a minimum of 50% raw milk from within Kerala against their sales volume in the state. MILMA and other traditional dairy co-operatives running processing plants in Kerala may be encouraged to increase their value-added products share eyeing on a possible surge in milk production and procurement in the 14th FYP.

Interventions can be made during the 14th FYP to support dairy farmers in reducing their milk production cost. Production input subsidies would be a good option to support the milk producer. Subsidised compounded cattle feed to farmers, paddy straw, maise fodder and maize silage, 50% subsidy for milch animals insurance and subsidised mineral mixture, veterinary medicines etc. to farmers pouring milk to dairy cooperatives throughout the year may be considered. Direct Beneficiary Transfer (DBT) of production subsidy to dairy farmers as followed by the Govt. of Karnataka may be studied for its viability and acceptance here in Kerala.

There is a need to explore the possibility of instituting an 'incentive scheme' whereby cooperatives are compensated for their additional losses owing to milk surplus. It may be provided based on the milk conversion costs incurred (Total Solid basis).

FSSAI – delegation of powers

Presently, FSSAI is the authority for sampling, testing and reporting of milk and milk product samples. They do it as one among the thousands of other food samples, which does not turn effective many times. The Dairy Development department has fully equipped laboratories for testing milk and milk products, with technically qualified officials. Lack of statutory powers entrusted with the Dairy Development Department Officials for testing of milk and milk products (Quality Control Officers for sampling, testing and initiating legal action against defaulters) is a cause of concern in the enactment of law against defaulters and for ensuring safe and quality food to consumers of the state. Delegation of Powers to competent technical hands in the Dairy development department would enable more effective quality checks at the field level.

Need for streamlining of various departments and agencies

Government departments like Animal Husbandry Department, Dairy Development Department and Public sector undertakings associated with these departments like Kerala Livestock Development Board, Kerala State Poultry Development Corporation, Kerala Feeds Limited, Meat Products of India and Kerala Co-operative Milk Marketing Federation (Milma), Kerala Dairy Farmers Welfare Fund Board are involved in undertaking various

programmes for ensuring the progress and prosperity of livestock and poultry sector in the state. The Academics and Research aspects, including professional human resources development, Extension and Entrepreneurship development in Veterinary Science and Animal Husbandry, Dairy Technology and Poultry Science, are taken up by the Kerala Veterinary and Animal Sciences University. According to their core competencies, there must be well-defined roles for departments and agencies in the sector to avoid duplication and more effective utilisation of public money for the benefit of farmers, entrepreneurs, and consumers in the state.

A monitoring cell need to be established at the Regional Union level and State level for monitoring milk procurement and marketing, surplus handling, and crisis management. Such a monitoring cell shall include Higher Government Officials, Regional Union Managing Committee Representatives, Experts from Research institutions like KVASU, Reputed Management Institutions,etc.

It is also suggested that a Centre for Dairy Market Intelligence and Policy Research be set up as an independent entity and a 'think-tank' on matters of milk pricing, market intervention strategies, comparative market studies, incentivisation, dairy business promotion policies etc. Such a system would emerge as an advisory body to the Government and the other stake holders of the dairy sector in providing quality inputs for policymaking.

CHAPTER 4
INFRASTRUCTURAL AND INSTITUTIONAL SUPPORT FOR HANDLING MILK SURPLUS IN KERALA

Milk powder factory

The reduction in milk consumption during the Covid lockdown period and the movement restrictions led to reduction in the sales of milk, but the production and procurement remained relatively high. This necessitated the conversion of surplus milk into milk powder. Nearly 1.2 to 1.25 lakh litres per day of milk was sent for conversion to neighbouring states. Due to the above reasons, a Milk Powder Factory of 10 MT capacity is being established in the Malappuram district this year. Now the civil works of the liquid milk plant has almost finished and expected that the powder factory will be commissioned during the year (2021- 22). This powder factory is expected to play a key role in handling the excess milk by converting milk to milk powder. It is vital to ascertain the availability of a sufficient quantity of milk throughout the year to run the powder plant in the best possible economical manner.

Promoting an 'innovation ecosystem' and dairy-based entrepreneurship in the state particularly in the domain of milk value addition.

Commercial dairy farms with more than 10 milch animals need to be encouraged and established statewide. Phased shift from substantive farming model with 2-3 milch animals to commercial farming is the need of the hour. Dairying needs to be treated both as a livelihood support programme and a commercial/entrepreneurial venture. There is immense scope of promoting entrepreneurship especially women entrepreneurship in the Milk Value Addition sector. FPOs, too need to be encouraged in the dairy sector, especially in better utilisation of by-products like cow dung, urine etc., thereby ensuring more avenues for milk producers to double their income. Every Government project/scheme to be rolled out in the 14th FYP should be so that it supports ventures to become role models in the sector, ensuring better prices with accountability for the milk producer. Young agripreneurs are always looking for some role models. There should be healthy competition among the different players in milk and milk products processing and marketing within the state, especially in surplus milk handling.

During the 14th FYP, it is vital to promote an innovation ecosystem in the State, linking the field departments and research institutions like KVASU to set up viable commercial units for milk products manufacture.

Upgradation of technologies from 'Farm to Fork'

Newer technologies and automation should be utilised and rolled out across the state so as to ensure the best quality product from the most scientifically run farms to the prudent end-consumer. As the decade ahead calls for 'Value Addition and Strategic Marketing', effective use of modern technologies like Machine Learning, Artificial Intelligence, Blockchain Technology, Robotics etc. are inevitable for a more competitive dairy industry in Kerala. The Government should undertake a study of the marketing and supply chains in the state's dairy sector and to initiate measures to remove bottlenecks from the producer to

the consumer. The use of modern Information Technology (I.T.) infrastructure, to develop the marketing network of milk and milk products in the state should be encouraged. This includes the linking up of all dairy cooperatives in the state under single inter-connected software.

Possibility of granting loans against the stock of SMP/butter/ ghee (long shelf life dairy products)

The credit institutions can think of devising lending schemes wherein the stock of long shelf life products may be considered as a security for granting short-term loans to the processing units. Another move in this aspect would be mooting for setting up regional dairy vaults by agencies like NABARD or NDDB where milk powders/ghee/butter/ cheese can be deposited as security for granting credit to the dairies.

Performance-based financial support scheme

It is suggested that a performance-based financial support scheme shall be put in place to accommodate the addition of new members in milk cooperatives, particularly during the flush season, thereby supporting those cooperatives in the expansion of their milk procurement base.

CHAPTER 5
MODERNISATION OF CO-OPERATIVE DAIRYING IN KERALA DIVERSIFICATION

Our dairy co-operatives need to move beyond the classical business models to introduce commercial and competitive elements. The cooperative sector here now faces stiff competition from private players who are more professionally managed. Diversification of Dairy Cooperatives will help them to increase their profitability and social status. It is suggested that suitable schemes be designed and implemented to financially support women entrepreneurship initiatives taken up by dairy co-operatives (MILMA and traditional dairy co-operatives) in the state. Such schemes may include marketing support schemes like financial assistance for purchasing freezers, autorickshaws, etc., and setting up milk parlours on the highway side to sell dairy products manufactured by MILMA and other cooperative milk processing units in the state.

Energy efficient systems

Presently the electricity cost is very high in the DCS as well as in the BMCCs. Installation of Solar energy conservation system will help to reduce the cost of electricity. One of the pressing issues in case of Bulk Milk Cooling Centres (BMCC) is the waste water disposal. Both APCOS and Traditional Milk Co-operatives running processing plants can think of setting up solar plants, low-cost effluent treatment plants etc. for better energy efficiency and minimising milk solid losses.

Quality management system certification

In the present condition, people are more aware of the quality aspects. So Quality management system certification like ISO, HACCP etc. should be introduced in all performing milk cooperatives in the state. Quality assurance is vital concerning the handling of milk surplus and its marketing. There should be a robust quality assurance system to ensure this, and Quality Control activities need to be strengthened at the field levels of Dairy Development and MILMA.

Implementing unified software system

At present, there are 3643 Dairy Co-operatives registered with the Dairy Development Department. With an objective to bring more clarity in the day to day activities of the Dairy Co-operatives and for improving the administrative and functional effectiveness and efficiency, it is proposed to implement unified accounting software in all Dairy Co-operatives of the State. This will increase the acceptability of the DCS among the public and members and will in-turn add to the improved financial stability of farmers.

Newer technologies for improving raw milk quality at the society level

Adoption of proven and reliable milk quality screening technologies in all DCS results in a more transparent milk pricing system and immediate display of quality parameters, thereby creating increased trust among member farmers on the milk pricing policy. Incentivization

of raw milk with superior microbial quality can also be explored. In advanced nations, milk pricing is based on milk quality, which encompasses chemical parameters (fat and protein content and absence of inhibitory substances) and microbial and somatic cell counts. It is high time to revisit the two axes pricing system followed here.

A point to be seriously viewed is that a good quantum of fresh, unprocessed milk is sold at the co-operative society level as Local Sales. A small segment of the market depends on local sales from dairy cooperatives as well. This trend for 'affinity towards farm-fresh milk' needs to be scientifically endorsed, given that milk's microbial and chemical quality are matters of public health concern. If such issues are addressed, marketing of farm-fresh milk in the rural areas and suburbs could be promoted. Such a move would address the issue of milk surplus and would ease the additional burden on cooperative dairies resulting from surplus milk procurement.

Diversification of milk – suggested measures

1. **Enhancing the Export share of dairy products** from Milma to Middle-East, SAARC and African countries will boost the product conversion rate of fluid milk. We should also aim to develop production systems for manufacturing value-added commodities such as cheese and yoghurt of international quality standards. Export-oriented business would require more effective value addition systems - strengthening the milk product manufacturing units under Regional Milk Unions and creating advanced product diversification facilities in the existing dairy plants.

2. Food and Beverage markets in the post-Covid scenario are witnessing an increase in demand for processed and packaged foods (food safety and hygiene), **functional foods and nutraceuticals**, smaller single serve packs ('Work From Home' mode). Entrepreneurial opportunities are immense in these and the sector would witness spectacular growth in the value addition domain in the years to come. Schemes/ programmes devised and rolled out in the state by Government departments and agencies should stress these aspects. Such a move would result in the realisation of more profit per litre of milk produced by the farmer/entrepreneur.

3. Understanding of **market for each product and executing better product management strategies.** Based on a well-structured market survey in the state, it is required to identify the most acceptable and fast moving products in a specified area and accordingly, suitable selling strategies can be adopted.

4. A total revamp of the milk and milk products marketing system under the cooperative umbrella in similar lines of GCMMF (Amul) and KMF(Nandini) is the need of the hour. There should be a **centralised marketing wing** responsible for all decisions related to market development and customer management of Milma products in the state as a whole. The state- level milk federation (KCMMF) may focus on the product marketing and sales activities while the three regional unions may capitalise on the marketing and sales aspects of the fluid milk business.

5. The possibilities of **better Technology Transfer propositions** with institutions of

eminence like CFTRI, KVASU etc., need to be explored to release newer value-added products suiting the Kerala market situation. Research and Development support from institutions like KVASU, KAU and CFTRI for developing market-friendly milk products must be effectively tapped. There should be avenues for seamless transfer of commercially viable technologies from 'labs' to 'land' and 'industry' considering the dairy sector's backward and forward integration aspects. Plan fund support may be earmarked for such 'Transfer-of- Technology' interventions in the dairy processing sector.

CHAPTER 6
THE WAY FORWARD

For many decades, the dairy sector in Kerala has been acknowledged in policy circles as a source of rural livelihood and not that of generating economic value. That concept poses risks around attracting talent and introducing new practices and innovations in the sector. It is therefore essential to change the way this sector is looked upon. Considering the immense market opportunities offered by the dairy industry, the perception needs to be reoriented to bring modernisation and upgradation of its status. The situation calls for transforming small 'livelihood family farms' in Kerala into highly competitive market-oriented small to medium-sized farming units. Simultaneously, large commercial farms, at least one in each district, need to be promoted. At present, the classical cooperative model is dominating the organisational structure of the sector. Surprisingly, many developing countries and even the Anand Pattern Co-operatives in different parts of our country have moved beyond the classical co-operative models to introduce commercial and competitive elements. The cooperative sector now faces stiff competition and is threatened to lose ground to more nimble yet professionally managed competitors. The co-operative sector also is responding by adapting its business model and legislation to the 'New Generation' models. In India, cooperative forms of enterprises can now be registered as farmer producer companies under the Company law. Many cooperative societies (including Anand) have been in the transitional phase. There is a need to promote producer companies in the dairy sector in Kerala also. Graduating from subsistence, smallholder milk producers to small, commercial dairy farmers will be fundamental to the strategy. There is an urgent need to collect data about the milk processing capacity of the private sector in the state. The processing capacity added by private sector has witnessed a significant growth and expansion in the last two decades. But it is yet to be captured through data. This will help the Government in formulating strategy for augmenting processing capacity in the next decade.

In Kerala, the demand for protein food is forecasted to increase manifold in the years to come. The state should take a strategic route forward, encompassing changes to improve productivity while maintaining environmental sustainability. Marketing its products both within the state and outside are vital. This involves heavy investment in physical infrastructure so that the state can tap benefit from the value addition of its livestock produce, mainly milk, meat and egg. Farmers/entrepreneurs need to be trained to increase productivity and learn sustainable practices from a field-level perspective. Milk producers need to be firmly integrated with robust and reliable marketing networks to reap the increased benefits of their efforts. Standard codes, integration farming techniques and waste management techniques are critical for the development of this sector. All policy interventions must be oriented to raise the demand for food "Made in Kerala".

. APPENDIX 1

PROCEEDINGS OF THE MEMBER SECRETARY
STATE PLANNING BOARD
(Present: Sri. Teeka Ram Meena IAS)

Sub: - Formulation of Fourteenth Five Year Plan (2022-27) – Constitution of Working Group on Animal Husbandry and Dairy sectors – Revised Proceedings - reg.

Read: 1. Note No. 297/2021/PCD/SPB dated: 27/08/2021
2. Guidelines on Working Groups
3. This Office order of even number dated 08.09.2021

ORDER No. SPB/342/2021-Agri(2) Dated:14.09.2021

As part of the formulation of Fourteenth Five Year Plan, it has been decided to constitute various Working Groups under the priority sectors. Accordingly, the Working Group on **Animal Husbandry and Dairy sectors** is constituted. For the smooth functioning of the Sectoral Working Group (SWG), it is decided to split the Working Groups into Expert Sub Groups (ESG). Hence the Working Group is categorized into Five Expert Sub Groups as indicated in the proceedings. The names of the members of the SWG are indicated under each ESG. The Working Group shall also take into consideration the guidelines read 2nd above in fulfilling the tasks outlined in the ToR for the Working Group.

1. PREPARING KERALA FOR A SURPLUS IN MILK PRODUCTION: A PLAN

Co - Chairperson

1. Dr P. Sudheer Babu, Registrar, KVASU
2. Mr. K. S. Mani, Chairman, MILMA

Members

1. Dr G. R. Jayadevan, Assistant Professor, Dairy Technology, KVASU
2. Dr Archana Chandran, Asst. Professor, Dairy Technology, KVASU
3. Ms Mini Ravindradas, Director, Dairy Development Department
4. Sri K Sasikumar, Joint Director, Dairy Development Department
5. Mr.Prakash, Joint Director (Rted), Dairy Development Department
6. Ms V. S. Harsha, Assistant Director, Dairy Development Department
7. Dr Denny Franco, Assistant Professor, Agriculture Economics RARS, Ambalavayal, Wayanad
8. Mr K. R. Mohanan Pillai, Karthika, Kottara, Kollam - 691537
9. Dr B. N. Shaji, Assistant Director (Rtd), Animal Husbandry Department
10. Mr Biji.V.Easo,Joint Director(Rtd), Dairy Development Department

Terms of Reference

1. To assess Kerala's progress in increasing milk production over the past decade, and its sufficiency vis-à-vis the domestic demand for milk and milk products.
2. To examine the potential of Kerala to produce a surplus in milk production and suggest measures for policy preparedness.
3. To assess the extent of infrastructural and institutional requirements to meet the challenge of surplus milk production in Kerala.
4. To suggest measures to modernise the functioning of dairy cooperatives in Kerala.
5. To suggest specific measures for diversification of milk use into value added products.

2. INCREASING PRODUCTIVITY AND PROFITABILITY IN LIVESTOCK: CHALLENGES AND PATHWAYS

Co - Chairperson

1. Dr M. R. Saseendranath, Vice Chancellor, Kerala Veterinary and Animal Sciences University
2. Dr Jose James, Managing Director, Kerala Livestock Development Board

Members

1. Dr Patil Suyog Subhashrao IFS, Managing Director, Milma
2. Dr C. Latha, Dean KVASU
3. Dr P. T. Suraj, Associate Professor, Livestock Production Management, KVASU
4. Mr V. S. Padmakumar, Kerala Karshaka Sangham, Anitha Bhavan, Edavakkode, Sreekaryam
5. Mr Koshy K Alex, Deputy Director, Dairy Development Department
6. Dr K. Sindhu, Director, Institute of Animal Health and Biologicals, Palode
7. Dr Murali. Managing Director, Malabar Milk Union
8. Mr N. K. Subramanian, Naduvil Purakkal Veedu, Mullassery P.O, Thrissur
9. Dr Shajil, Assistant Director, Animal Husbandry Department
10. Dr Easwaran, Deputy Director (Rtd), Animal Husbandry Department
11. Dr Binu Prasanth,Assistant Director, Animal Husbandry Department

Terms of Reference

1. To assess the productivity in Kerala livestock sector over the past decade.
2. To suggest measures to improve Kerala's productivity in livestock farming to the levels of best performing states, including through better breeding, feeding and management.
3. To assess the demand and supply of fodder in Kerala and suggest measures to increase fodder production in the short-term and medium-term.

4. To suggest measures to increase investments in larger livestock farms in the State.
5. To suggest measures to improve the system of registration of all livestock in the State, especially dairy animals.

3. EASE OF ENTREPRENEURSHIP IN ANIMAL HUSBANDRY: REFORMS IN POLICY AND ADMINISTRATION

Chairperson

1. Ms Tinku Biswal, Secretary, Department of Animal Husbandry

Members

1. Dr A. Prasad (LPM, KVASU)
2. Dr Sajith Purushothaman, Assistant Professor, KVASU
3. Dr Syam Suraj (AP, DBM, KVASU)
4. Smt. Rejeetha, Deputy Director (IT), Dairy Development Directorate
5. Mr C. P. Shyjan, Niranjana, Vayalambalam Temple Gate P.O, Kannur 670102
6. Dr. C.V. Thomas, Cherukarakunnel, Kalaketty P.O
7. Dr Pradosh, Assistant Director (Rtd), Animal Husbandry Department
8. Dr Selvakumar,Assistant Director,Planning, Animal Husbandry Department

Terms of Reference

1. To suggest a broad quantitative framework to regularly assess ease of entrepreneurship in animal husbandry in Kerala.
2. To identify the constraints to the flow of entrepreneurial capital into the processing and value addition segments in animal husbandry.
3. To suggest short-term, medium-term and long-term measures to improve the ease of entrepreneurship in animal husbandry.
4. To suggest legal and administrative measures to be initiated at different levels of governance, including LSGIs, to improve the ease of entrepreneurship in animal husbandry.

4. INCREASING MEAT PRODUCTION IN KERALA: THE ROLE OF PUBLIC POLICY

Co - Chairperson

1. Dr A. Kowsigan IAS, Director, Animal Husbandry Directorate
2. Dr B. Sunil, Prof & Head, Department of Livestock Products Technology KVASU, Mannuthy

Members

1. Dr.N.Ashok, Director of Academic, KVASU
2. Dr V. N. Vasudevan, Assistant Professor, Department of Livestock Products Technology KVASU, Mannuthy

3. Dr A. Irshad, Assistant Professor, Department of Livestock Products Technology KVASU, Mannuthy
4. Dr A. S. Bijulal, Managing Director, Meat Products of India
5. Mr A. Krishnaprasad, Chairman Brahmagiri Development Society, AIKS
6. Mr M. Sukumara Pillai, Plamoottil, Pathiyoorkkala, Keerikkad P.O. Alappuzha 690508
7. Dr Janakidas, District Epidemiologist, Animal Disease Control Project, Pathanamthitta
8. Dr T. R. Jayakrishnan, Veterinary Surgeon, Animal Husbandry Department
9. Dr Chandrababu, Veterinary Surgeon, Animal Husbandry Department

Terms of Reference

1. To assess the progress made in Kerala in increasing meat production over the past decade.
2. To assess the overall demand and supply of different types of meat in Kerala, and the level of dependence on inter-State trade.
3. To prepare a roadmap – a Meat Sector Strategic Plan (MSSP) – for increasing meat production in the next decade comprising production, processing and marketing of meat and meat products.
4. To suggest requirements of infrastructure and investment in the development of a value chain in meat, including aggregation, slaughtering, processing, integrated cold chains and retail outlets.
5. To suggest specific policy measures to prepare the State for better hygiene, quality and food safety in the meat sector.
6. To identify specific research gaps in the meat sector and suggest measures to improve the research-extension linkages.

5. THE POULTRY SECTOR IN KERALA: CHALLENGES TO GROWTH AND POLICY SUGGESTIONS

Co - Chairperson

1. Dr P. A. Peethambaran, Professor (Rtd) (KVASU)

Members

1. Dr P. Anitha, Professor & Head, Department of Poultry Science, KVASU, Mannuthy
2. Dr. Harikrishnan, Assistant Professor, Department of Poultry Science, Mannuthy
3. Dr R. Sudhi, Veterinary Surgeon, Animal Husbandry Department
4. Dr Binoj Chacko, Assistant Professor, KVASU
5. Dr Prakash T, Joint Director (Retd), Animal Husbandry Department
6. Dr Vinod John, Managing Director, KSPDC
7. Mr Mohandas, Panavilakom Veedu, Thirupuram P.O, Neyyattinkara -695133
8. Dr A Sajeev Kumar, Programme Officer, Animal Husbandry, Kudumbashree
9. Dr Sunil Kumar, Additional Director (Rtd), Animal Husbandry Department

Terms of Reference

1. To assess the progress made in Kerala in increasing chicken and egg production over the past decade.
2. To assess the overall demand and supply of chicken and egg in Kerala, and the level of dependence on inter-State trade.
3. To prepare a roadmap – as part of the Kerala Chicken Project – for increasing chicken and egg production in the next decade comprising production, processing and marketing.
4. To suggest requirements of infrastructure and investment in the development of a value chain in chicken and eggs, including production, aggregation, processing, integrated cold chains and retail outlets.
5. To suggest specific policy measures to prepare the State for better hygiene, quality and food safety in the poultry sector.
6. To identify specific research gaps in the poultry sector and suggest measures to improve the research-extension linkages.

Convener

Mr. S.S.Nagesh, Chief, Agriculture Division, State Planning Board

Co- Convener

Ms. Kumari Sangeetha K.R, Deputy Director, Agriculture Division, State Planning Board

Terms of Reference (General)

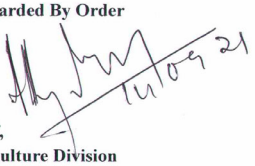
1. The non-official members (and invitees) of the Working Group will be entitled to travelling allowances as per existing government norms. The Class I Officers of GoI will be entitled to travelling allowances as per rules if reimbursement is not allowed from Departments.

2. The expenditure towards TA, DA and Honorarium will be met from the following Head of Account of the State Planning Board "3451-00-101-93"- Preparation of Plans and Conduct of Surveys and Studies.

The order read as reference 3 is modified to this extent.

(Sd/-)
Member Secretary

Forwarded By Order



Chief,
Agriculture Division

To

The Members concerned

Copy to

PS to Vice Chairperson
PA to Member Secretary
CA to Member (Dr.Ramakumar.R)
Economic Advisor to VC
Chief, PCD,SPB
Sr. A.O, SPB
The Accountant General, Kerala
Finance Officer, SPB
Publication Officer, SPB
Sub Treasury, Vellayambalam
Accounts Section, File/Stock File