Tribute to Dr. K.N.Shyamasundaran Nair

Dr. K. N. Shyamasundaran Nair was an outstanding agricultural scientist, eminent planning expert and able administrator. His contributions to the progress of agriculture of the state will be remembered for long. His meritorious services as member of the State Planning Board of Kerala and as Vice-Chancellor of Kerala Agricultural University are praise worthy.

He was born on 16th February 1936. As an exceptionally illustrious student of his times, he was committed to secure the degree of B.Sc. (Hon's) with high esteem from the Central College of Agriculture of the University of Delhi during 1956. After rendering seven years of agricultural services else were, he had under gone higher studies to obtain the post graduate degree of Master of science in Farm Management in 1965. Later on, his continued pursuit in Agriculture enables him to earn the Doctor of Philosophy degree in Agricultural Economics from the Indian Agricultural Research Institute, New Delhi in 1972.

Thereafter, he served in the State Planning Board as Deputy Director and Chief of Agriculture between 1973 and 1980. Subsequently, being ap[illegible] Economist under FAO Programm[illegible]

during 1980-1989. It was also to his credit that he could function as a renowned Agricultural Management Expert in countries like Afghanistan, Bhutan, Nepal and China. Besides, he was also identified as a distinguished fellow of the Centre for Research on Sustainable Agriculture and Rural Development, Trivandrum and M.S. Swaminathan Research Foundation in view to fulfill his desire to promote sustainable agriculture.

Recognising his abilities and managerial expertise, the Govt.of Kerala inducted him as a member of the Planning Board during June, 1996. He also adored prominence as the most humane Vice-Chancellor of the Kerala Agricultural University between March 1998 and February 2001. The most cordial atmosphere prevailing during this period prompted him to conduct the first ever convocation in the University. The 'Centre for Gender Concerns in Agriculture' was also established in the University with the long term perspective to develop it as a national model for excellent academic pursuit. The University also played a very prominent guide role participating tn the implementation of 'Peoples' Planning Programme' of the Gov. of Kerala during this period.

After demitting the Vice-chancellorship, he served in the Kerala Commission on WTO and Agriculture as Vice Chairperson. The Commission chaired by Prof. M.S. Swaminathan was able to identify and bring out the emerging consequences and impact of WTO agreements in Kerala Agriculture.

He was a person of sterling qualities with lovable nature. Always with a smiling face, he was kind and considerate to all and sundry. Always, his inclination was to do selfless services and he sincerely worked for the betterment of the deprived groups. This cardinal aspect of his character most often enabled

to identify himself as the friend, philosopher, and guide of the subordinates wherever he served. In this respect, he was more a practical person than merely a theoretician. Besides, it is undisputable that irrespective of the positions he adorned, he was endeared by one and all in the true sense of the term. This single trait alone is enough to excel the humbleness he showered in every walk of life.

As the rule of destiny unfailingly operates, his towering personality bid farewell to this mundane world on 24th July , 2005 after a brief period of illness. While mourning his sad demise, it is fitting and proper to commemorate the signal services rendered by him for the progress of agriculture and welfare of the masses in India and abroad for about four decades. In short, his name will be enshrined in the annals of history as one among the lovers of mankind who strived hard towards developing an egalitarian society overcoming hurdles. Let us console with a prayer that posterity will take spirit to emulate his high thinking, simple living and dedicated services while discharging duties for the national progress. Such kind of an attitude and commitment is inevitable to accomplish his dreams into reality.

AGRICULTURAL DEVELOPMENT IN AN EMERGING NON-AGRARIAN REGIONAL ECONOMY : KERALA'S CHALLENGES

K. P. Kannan

I feel greatly honoured to have been invited by the Kerala Agricultural University to deliver this lecture in memory of a dear friend Dr. K.N. Shyamasundaran Nair who was a passionate agricultural researcher, planner and educationist. When he was the Vice Chancellor of this University I do recall my close association and interaction with him as a member of an expert committee appointed by the Government of Kerala with him as the chairperson to examine the state of paddy cultivation in Kerala. But my association and friendship with Dr KNS dates back to the mid-seventies when both of us, along with a few other professional colleagues, wrote a book titled *Keralathinte Sampathu* (Kerala's Wealth) edited by him and Dr M P. Parameswaran as a basis for popular education and debate on Kerala's developmental challenges. Later on, we co-authored another book in Malayalam titled *Keralathile Krishi* (Agriculture in Kerala) for a more focused debate and discussion on this particular theme. Our forays into social activism with development as the focus were made possible by the Kerala Sastra Sahitya Parishad that I always preferred to call Kerala's People's Science Movement. Since then the Kerala economy and society have gone through considerable transformation but the theme of agricultural development continues to be a major challenge. Had Dr KNS been here with us, I have no doubt that

he would have participated in it with his characteristic passion and given us much food for thought and action. It is in this spirit that I have chosen a subject that was very dear to Dr KNS till his very end.

While the Kerala society has a vibrant record in discussing and debating its challenges in economic development, there is something which is yet to catch the public imagination. This relates to the ongoing structural transformation in the Kerala economy from an agrarian one dominated by agriculture in terms of both income and employment to one of a non-agrarian economy dominated by non-agricultural activities (see Table 1). In terms of text book knowledge such a transformation occurs only at a much higher level of income than the one Kerala presently enjoys. In 2004-05, agriculture and related activities accounted for only 22 percent of state income and 37 percent of employment compared to 22 percent and 57 percent for India as a whole. Recent data for 2008-09 show that in Kerala the share of agriculture and related activities in state income has come down to just 11 to 12 percent and, I would hazard, that employment share could be around 30 percent. While the Kerala scenario is certainly a more desirable one in terms of employment, does it mean that agriculture should no longer be considered a priority issue in its development planning? Certainly not. This is because agriculture and related activities have an important role in ensuring the availability of food for the people as well as supplying raw materials to a variety of agro-based industries. However it is important to remember that Kerala is only a part of a much larger country. Historically this has enabled Kerala to specialize in the cultivation of high value crops and thereby higher incomes from agriculture. It is in this larger context that we need to examine the challenge of agricultural development in Kerala.

The current challenge is to arrest the increasing inter-sectoral inequality in sectoral product per worker arising out of a fast growing non-agricultural economy and a stagnating agricultural one (see Table 2). This new stagnation in agricultural production has been preceded by an impressive growth performance for a little more than a decade; as such the current phase of stagnation has occurred at a higher level of productivity than before (see Figures 1 to 4). A concomitant feature of this situation is not only the decline in the share of workers/ households engaged in agriculture (which is not an undesirable one given the low land-man ratio) but also a steady exodus of the younger age group to non-agricultural activities. This seems to have resulted in an absolute decline in the gross cropped area (see Figure 5). The central challenge therefore is to transform agriculture to a level of productivity and income that will sustain a critical minimum of workers and households.

In this lecture I want to start with refuting at least three myths that in my opinion are ingrained in popular imagination. The first one is that Kerala is not food secure. This fly at the face of empirical reality that has been documented in several studies including the recent food security atlas published by the M.S. Swaminathan Research Foundation (see *Report on the State of Food Insecurity in Rural India* 2008). This latest study has reported that Kerala was the only state in India that was Least Food Insecure during 1998-200; it has retained its position in 2004-06 as well with two more states – Punjab and Himachal Pradesh - joining the league. This is because it is now well accepted that food security is not entirely dependent on production but more importantly by the ability to access food by all sections of the people and its proper consumption in terms of nutritional and related health outcomes. Viewed from this larger perspective Kerala has not only a very high purchasing

power in India (being the first among the Indian states in terms of per capita consumer expenditure since the late nineties) but also a relatively well-functioning public distribution system (e.g. distribution of rice at subsidized rates through ration shops, free mid-day meals for school children up to the 7th standard, and supplementary nutrition for pre-school children and pregnant mothers through *anganawadis*) to make food available to the relatively poorer sections of the people. In addition, it also has a better record in sanitation and care of the children. As such producing food locally is not a *sin qua non* for ensuring food security.

The second myth relates to a popular impression that agriculture is not viable in Kerala. This is also not empirically correct because available evidence shows that Kerala stands second highest in terms of value generated per hectare of land followed by Punjab. In terms of net income it is the third highest (see Table 3). What this means is that Kerala farmers are quite efficient in making the best use of the limited land available here through crop selection, mixed cropping as well as application of modern technology.

A third myth relates to the oft-repeated statements to the effect that Kerala workers are either lazy or unwilling to do agricultural work. This is an oversimplified understanding without taking into account the totality of the dynamics of socio-economic conditions in Kerala. I must point out here that an overwhelming proportion of the younger generation in Kerala are now better educated than the earlier generation. In fact most of those belonging to the younger generation – below 35 years – have at least ten years of schooling. An increasing proportion are now completing the twelfth standard and above. This has raised the aspirational level of younger generation searching for

'jobs' that offer regularity in employment and social security. In sum, they are seeking jobs and not work of a casual kind that that are often associated with low labour status. This is reflected in the fact that over 80 per cent of those registered in the employment exchanges have at least an SSLC. This should also be juxtaposed against the increasing opportunities in the non-agricultural sector especially in services for employment with higher wages and salaries for the relatively better educated. For Kerala there is the additional attraction of the labour market in Gulf countries with much higher levels of earnings even for those with only high school level of education. All these continue to contribute to a movement of young people away from agriculture. That is why Kerala is now witnessing a steady flow of migrant labour from eastern and central India for a variety of unskilled manual work with wages that are two to three times the wages in those regions.

All these arguments are not intended to convey that agriculture development is not a problem in Kerala. On the contrary, my main purpose is to emphasize the fact that Kerala's agriculture has to move further to a higher level of productivity through the adoption of appropriate modern technology facilitated by appropriate organizational and institutional arrangements. What should be worrying the government as well as the people is that Kerala agriculture has got into another phase of stagnation since the late nineties preceded by a period of growth since the mid eighties. If we take the last four decades, the period up to the mid-nineteen eighties has been one of stagnation in agricultural production followed by an impressive growth performance till the late nineteen nineties. This is now followed again by a period of stagnation. But the overall growth performance of the Kerala economy since the second half of the nineteen eighties has been quite impressive reaching an

unprecedented growth rate of 7.8 percent per annum during the last decade led by both the secondary and tertiary sectors (see Table 2). In the context of the Kerala economy growing to a high rate of growth since the late eighties, the poor performance of the agriculture sector has resulted in increasing the intersectoral inequality in income thereby further pushing people away from agriculture. Since it is the better educated who find it easier to move out of agriculture, the agricultural sector also lags behind other sectors in terms of educated people. However I must add here that the average education of those engaged in agriculture in Kerala are much higher compared to all other states in India. Correspondingly Kerala has much higher potential for increasing agricultural productivity and thereby income and consequently to retain the required number of people in agriculture assuring not only livelihood security but also a decent income. It is the realization of this potential that has emerged as a major challenge in the present context of Kerala.

Favourable factors for agricultural development

The first and foremost favourable factor for further agricultural development in Kerala is the fact that the Kerala economy as a whole is in a stronger position to support agricultural development than before. As I said earlier this is because close to 90 percent of income in the economy is generated from non-agriculture which makes it easier for the Government to protect and support agriculture. This is also the historical experience of most of the developed countries where only a very small proportion of the work force is engaged in agriculture. In countries such as Japan, United States and those in the European Union, the high level of financial and other support to agriculture basically comes from the capacity of the non-agricultural sector that is chanalized by the governments in a variety of ways.

A second favourable factor in my view is the relatively high level of educational attainment of farmers as well as agricultural labourers. This is a necessary condition for absorption of modern technological practices in agriculture. Whenever innovative technology and practices are introduced the learning curve for the educated agricultural work force is likely to be much shorter than a less educated one. This perhaps explains why Kerala farmers usually respond more positively to new crops, new practices and related modern technological advances.

A third favourable factor relates to the high density of organizations among farmers. As we can see in Table 4, the *Situation Assessment Survey of Farmers* carried out in 2003 by the National Sample Survey Organization revealed that nearly 60 percent of the farmers had membership in co-operative societies compared to just 30 percent in all India. Nearly 20 percent of the farmers were members of registered organisations of farmers; my own impression is that there are also innumerable unregistered associational organisations such as *Padasekhara Samitis*.

A fourth favourable factor is the existence of a vast network of primary agricultural credit societies, primary co-operative agricultural and rural development banks supported by Central and apex co-operative banks. This is in addition to the regional rural banks as well as the wide network of commercial banks which also disburse loans for the agricultural purposes. Also co-operative credit societies in Kerala have a much better record of functioning compared to the rest of India. There is no doubt that they have to go a long way in terms of strengthening their activities and playing a more supportive role in increasing agricultural production and productivity.

A fifth favourable factor is the existence of a well spread out network of research, development and extension agencies in agriculture including veterinary, diary, fishery and other services. Of course, there is need to assess possible gaps between research and extension on the one hand and extension and absorption by farmers on the other. Based on my limited interaction with agricultural scientists, extension personnel and farmers, I would venture to hypothesize that the extension activities as well as the absorptive capacity of farmers and agricultural workers have not yet acquired a critical threshold as to make a perceptible difference in agricultural productivity. Had this been the case, the growth rate in agriculture sector during the last ten years would not have been as dismal as it has been.

A sixth favourable factor is the introduction and gradual institutionalization of the Panchayati Raj at the village, block and district levels to whom nearly 35 percent of the plan funds are handed over. I think strengthening this system will go a long way in changing the face of agriculture and related primary sector activities to a higher level of productivity facilitated by modern technology and introduction of innovative organization. The potential of the Panchayat Raj in Kerala has greatly been strengthened by the existence of such new organizations of women from poorer households as Kudumbasree who are now active in reviving a variety of agricultural activities through new forms of organizational interventions.

Unfavourable Factors

The importance of the favourable factors cited above should not be minimized especially against the background of the situation in a majority of other states in the country. In fact a majority of states in India are yet to attain these favourable factors. However, Kerala has a few but quite critical

unfavourable factors that need to be addressed as quickly as possible.

One is the failure of public irrigation systems in fulfilling its basic responsibility in water control measures especially irrigation. In fact only around 16 percent of the gross cropped area is irrigated with Government canals accounting for only less than 30 percent of this area. New methods of irrigation especially based on a decentralized framework involving efficient use of available water is yet to catch up on a significant scale. Kerala has paid a very high cost in terms of public irrigation facilities most of which have either not yet been completed or completed only partially with enormous time and cost over runs.

A second unfavourable factor from the point of view of farmers is the high cost of labour. The increase in wages for agricultural work has been much faster than the increase in labour productivity. This is because agricultural wages are largely set exogenously; first by trade union bargaining and then by shortage of labourers arising out of the pull of such high wage activities as construction. However, from the general point of view, high wages in agricultural sector also mean correspondingly higher income for the agricultural labour households contributing to a reduction in poverty. The only way to retain the farmers' profitability or even enhance it is to go for labour saving technologies that will raise labour productivity while enabling payment of higher wags. But this could also lead to crop selection away from more labour absorbing crops such as rice to less labour absorbing crops such as coconut and rubber. This is what has been happening during the last three decades.

A third unfavourable factor is the low level of skill and specialized knowledge of those who remain and work in agriculture. It goes without saying that the challenge of

introducing modern and environmentally sustainable technological packages in agriculture is also dependent on the availability of a skilled and trained work force.

A fourth unfavourable factor is the absence of an institutional mechanism to take care of the risks associated with agriculture (e.g.: crop failure) and the absence of an adequate social security cover to those who work in agriculture. In recent times these two concerns are being addressed but it has to go a long way in terms of coverage.

A last unfavourable factor perceived by many is the highly fragmented and small size of agricultural holdings. Eighty seven percent of the holdings in Kerala are Marginal with less than one hectare in size and another 8.5 percent are Small holdings with less than 2 hectares making a total of 95 percent accounting for 78 percent of output. For India as a whole the percentage of Small and Marginal holdings is around 84 percent accounting for only 46 percent of output (see Table 5). I must however point out here that the small size of holdings need not necessarily be a deterrent in realizing high productivity. This has been amply demonstrated by the historical experiences of such Asian countries as Japan, China and Vietnam. For example while the productivity of rice cultivation in Kerala is around 2.5 tonnes per hectare it is well over 5 tonnes in these countries with Japan close to 7 tonnes.

The Future of Rice Cultivation

I must digress here to make a short detour to the situation of rice cultivation in Kerala which continues to attract considerable public interest and even concern. At the current level of rice productivity it is extremely difficult to sustain rice cultivation for the farmers given the high cost of labour. In

those rice growing states/regions where the productivity is higher than Kerala (e.g. Punjab, Haryana and coastal Andhra) but without a corresponding high wage rate, rice cultivation is a much more profitable venture. In many other states, even if productivity is low, the labour cost is considerably lower and that also makes rice cultivation a more profitable one than in Kerala.

In the context of Kerala there is the additional factor in the form of stiff competition from substitutable crops such as coconut and banana and a variety of mixed crops. This is because the agro-climatic conditions in Kerala allow for the cultivation of a variety of crops in most parts of the state. In fact there is no other state where there is such high density of different crops as in Kerala. This is especially so when a large part of the cultivable rice lands can be put under mixed cropping systems as against the mono-cropping system in most parts of India. In addition, crops such as rubber were given special treatment through institutional support and it also happens to be a raw material for a number of growing industries. This has resulted in a continuous expansion in area under rubber and also in productivity. The expansion of area under rubber was mostly at the expense of coconut; but this in turn has led to the spread of area under coconut which was previously under rice. Of late the economics of banana cultivation has also posed a serious challenge to rice cultivation by taking away the area under rice.

To this one must also add problems associated with management of labour in terms of timely availability, supervision and related aspects. For farmers who are less inclined to devote time and effort for management of labour -- and there are many especially in those households with significant share of non-agricultural income - there is also this additional factor in

inducing them to shift to less labour absorbing crops which also happen to be more remunerative.

It is therefore not surprising to see that there has been as secular decline in the area under rice cultivation since the mid seventies (see Graphs 5 and 6). In fact the rate of decline has been much faster during the last fifteen years compared to the previous twenty years. The expert committee on paddy cultivation that I mentioned in the beginning, and which submitted its report in July 1999, had examined the issue in great detail and made a number of recommendations that basically focused on increasing productivity as well as income through integrating rice cultivation with other linked activities. The instrumentalities for realizing these two objectives included setting up of institutions and organizations for introduction of modern technology (not just mechanization) thereby retaining around three lakh hectares (net) of land under paddy with a cropping intensity of two making it possible to reach six lakh of gross cropped area under rice with an average productivity of 3.5 tonnes per hectare. But this was to be achieved by identifying Community Development Blocks (now known as Block Panchayats) which are most suitable and relatively high yielding for paddy cultivation. In fact such Blocks were identified and listed in the report. I am not sure whether the then Government or the one which came power subsequently had given serious attention to the examination of this report while formulating policies. I can only say that given the economic logic and the management constraints under which the farmers are operating, it is no wonder that the area under paddy has shrunk to just 8 to 9 percent of the gross cropped area compared to 28 to 32 percent during the seventies and sixties respectively.

While the economics of farming from the farmers' point of view may not favour rice cultivation, I suppose there are

powerful larger considerations that call for efforts in protecting paddy cultivation. Central to this perspective is the environmental dimension because the ecology of rice cultivation serves as a medium for water retention, seepage and consequent recharging of ground water and also as a natural drainage. Ecological and environmental scientists are of the view that filling up of such natural drainage systems for growing other crops or for purposes of non-agricultural use would seriously damage the ecosystem with adverse consequences to the society at large. If the Kerala society recognizes this larger and fundamental role of rice cultivation, then there is a strong case to pay an extra price for the preservation of rice cultivation in Kerala. I shall come to this later in a few minutes.

Elements of a Strategy for Enhancing Agricultural Productivity

I have already referred to the historical experiences of such countries as Japan, China and Vietnam to emphasize the fact that small size of holdings need not be a barrier for agricultural development. What these historical experiences suggest is the need for a 'group approach' given the fact that several operational decisions have to be taken jointly. Given the existence of associational organizations of farmers (e.g.: Padasekhara Samitis) it is not difficult in the Kerala context to bring about a group approach in agricultural operations. A 'group farming' approach was tried and tested for a brief period in the late eighties and early nineties but such an official policy later got relegated to the background. However, it is my understanding that farmers continue to practice such an approach arising out of objective conditions and what is needed is a policy to strengthen them through appropriate incentives. The central challenge seems to be to overcome the current – and the second

during the last four decades - phase of stagnation in agricultural productivity. While technological solutions are often given due recognition and importance, an equal weightage to organizational and institutional issues is often not accorded. It is therefore important to focus not only on 'farming' but also the 'farmers' emphasizing the two sides of technology and organization in the transition to a modern agriculture. The concept of modern agriculture has also undergone a change in its connotation. Today it is no longer considered desirable to encourage chemical fertilizers and pesticides given the long term damage that it might bring in to the soil condition as well as human health. Therefore alternatives in the form of bio-fertilisers and pesticides are being actively encouraged the world over. In many parts of Kerala, a beginning has already been made in this direction if one goes by the reports coming from the Village Panchayats. The challenge is to not only maintain existing levels of productivity but also to enhance it to meet the growing demand for agricultural products.

I must also mention here that when one talks about introduction of modern technology it is often confused with mechanization. Although experts in the field do understand the many sided nature of modern technology this has to be emphasized in public policy and popular understanding. In fact technological changes based on hydrology (for water resource management) and biology (such as high yielding varieties of seeds, tissue culture, bio fertilizers and pesticides) are more powerful than mere introduction of mechanical technology in enhancing agricultural productivity. However, the challenge here is not just the generation of modern technological solutions and their innovation but its diffusion resulting in absorption by those engaged in agriculture for increasing productivity. This calls for appropriate innovations in organizations and institutional

arrangements. An active and vibrant extension network is a necessary condition here. The existing organizational arrangements for land and water management have, as I mentioned earlier, has a dismal record. An alternative such as a decentralized system has only begun to emerge. Moreover the use of water in a more efficient way such as through precision agriculture, drip irrigation and so on are still in their infancy. The basic unit of planning for land and water management is the watershed which has made some headway in terms of mapping but a long way from tapping the potential and its appropriate distribution.

Here I see a great window of opportunity for taking advantage of the National Rural Employment Guarantee Scheme (NREGS). Although it is a social security scheme to provide some income through the provision of employment to needy rural households, it has demonstrated its capacity to create 'natural capital' through land and water resource development. In the Kerala context, as well as in the larger Indian context, this scheme could be combined, wherever feasible, with other schemes and projects relating to land and water management such as soil conservation, minor irrigation, schemes under the Rashtriya Krishi Vikas Yojana (RKVY) and so on. The synergy thus created could well exceed the sum of the benefits of such projects when taken up individually.

I would also like to flag an important gap that exists between research, extension and absorption of modern technology (see Table 6). This relates to the absence of a well trained and skilled work force engaged in agriculture and who could help apply modern practices. The existing system in my view is top heavy with highly skilled researchers and other professionals but it lacks a well trained army of technicians who

could work with the farmers and agricultural workers in the field. In the health care system the medical doctors are supported by an army of paramedical personnel starting with nurses to lab technicians, health inspectors and health workers. Similarly in the engineering services engineers are supported by an army of diploma holders and technicians coming out of industrial training and similar institutions. I am not sure such a gradation of an army of agricultural professionals and technicians exist in the system perhaps due to the absence of a policy framework resulting in the absence of training institutions for different levels of skills and technical expertise. This is something I think the planning process in Kerala should address itself to.

As already mentioned there is a scarcity of workers willing to work in agriculture. But such scarcity is often not felt when new technologies are introduced and new ways of performing the tasks are carried out such as mechanized transplanting and technology. This has to do with the notion of labour status and also the need for regular and secure employment. It is heartening to find that some Village Panchayats in Kerala have tried to overcome this constraint by encouraging and promoting the setting up of Labour Banks. On the other side, there is also the phenomenon of keeping the land fallow especially those under seasonal crops such as rice. In recent times and in many Panchayats the organization of women from poorer households called the Kudumbasree groups have come forward to lease in such fallow land for cultivation thereby enabling them to earn some income while contributing to agricultural production. The owners are given a sum of money that could be construed as a form of 'rent'. With some imaginative planning and promotional support along with innovative organizational interventions can contribute to the twin objectives of increasing agricultural production in the economy

and employment and income to the workers. I would therefore propose here the promotion of what may be called, Land-cum-Labour Banks (LLBs) in Panchayats where owners of idle land could deposit their land and the people who are willing to work in agriculture could deposit their surplus labour. By matching these two the LLBs could function in such a manner as to reward both the parties. Such an arrangement can ensure a degree of regularity of employment as well as social security as has already been demonstrated in some of the Village Panchayats where only the labour bank part has been attempted. They could also be the custodians of agricultural machinery and other tangible assets bought with the support of Government and its agencies. This will also overcome the constraints of introducing new machinery by the innumerable small farmers on an individual basis.

Ideally such LLBs can also function as agents of technological change by going for innovative methods in farming, livestock rearing, fish culture and similar activities. They can also deal with the banking system for accessing credit.

While such alternative organizational interventions could be pursued actively as a matter of policy, farming and related activities are likely to remain as private operations carried out by the households. The thrust of a new strategy therefore should be in the form of encouraging a 'group approach' whether in the matter of buying inputs, hiring mechanical equipments, carrying out agricultural operations or even the marketing of agricultural products. There are many examples of such group-based activities that need to be disseminated throughout the state to make a perceptible impact.

The basic objective of a new strategy in Kerala context should be to maximize the value per unit of land as well as per

unit of labour given the fact both these are in short supply. There is no doubt that this calls for a much higher level of public investment but also imaginative planning for inducing innovation and its adoption by farmers.

While there are several encouraging developments in a few Panchayats along the lines that I have indicated here, it is my firm understanding that Kerala has not yet reached a critical threshold in modernizing its agriculture that will assure a decent livelihood to those families who are engaged in it especially the Small and Marginal farmer households. From this point of view the objective of livelihood security and the attainment of a level of income to retain a critical minimum of population in agriculture should take an integrated view that will combine both farming and non-farming activities within the primary sector. Some of the well known examples that are already talked about are rice cultivation, fish culture and livestock rearing or strengthening mixed cropping to reduce the risks associated with particular crops along with agro processing based on such crops and so on. However, from the basic livelihood security point of view public policy has to provide for crop insurance as well as a minimum of social security to take care of contingencies such as sickness and old age.

The Special Case of Rice Cultivation

It is in this larger perspective of a new strategy for agricultural development that we need to examine the prospects of rice cultivation as a special case. At the current level of productivity of around 2.5 tonnes per hectare it does not seem to be an economically viable proposition. Currently area under rice is largely, if not only, concentrated in three regions where the agro-climatic conditions as well as the critical factor of land and water management are in favour of rice cultivation. These

are the Kuttanad region, the Alathur-Chittur taluks of Palakkad and the Kole land region in Thrissur where the reported yield is between four to five tonnes per hectare. At this level of yield the farmers have reported that rice cultivation is economically viable. Of course, a part of the cost is now borne by the rest of the society in the form of subsidies for various purposes. The challenge therefore is to raise the productivity of rice cultivation to around five tonnes per hectare per crop for a large area under rice. In fact a more focused approach targeting the Block Panchayats (and Village Panchayats within it) with favourable conditions for attaining this yield is worth pursuing as a matter of priority. If at least 3.5 lakh hectares can thus be retained under paddy cultivation and attain an average yield of at least four tonnes per hectare in the short run that would exceed the maximum production in Kerala that was attained in the latter half of seventies. It is with this objective that the planning process has to help introduce appropriate technological and organizational solutions. We need to remember that the current area under rice is only 2.34 lakh hectares and the proposed initiative will have to restore at least 1.16 lakh hectares under rice cultivation.

Public expenditure will have to primarily be directed at supporting production oriented activities because the constraints in enhancing productivity continue to be technological and organizational in nature. Price support and untied cash subsidies may be attractive in the short run but it will have to be kept to a minimum.

The question of the effectiveness of public investment for land and water management and development continues to be a critical one for rice cultivation. Alternatives to the currently wasteful expenditure in large irrigation systems will have to be

increasingly replaced by a decentralized system based on the development of watersheds.

The idea of LLBs can be easily applied to the restoration of rice cultivation with appropriate policy support and package of incentives within the framework of Panchayati Raj. Here I would also emphasize the urgent need for creation of a skilled army of agricultural technicians. Innovative rice farming methods such as single or double sapling farming, selection of seeds, application and control of water and a variety of similar practices will have to be explored and adapted through trial and error for wider dissemination. I have been told a few days ago that a breakthrough in rice productivity with a yield of five to six tonnes per hectare per crop has recently been attained in the Wadakkanchery Block Panchayat in Thrissur district. If that is the case, it calls for a detailed study of the technological, organizational and social processes by which such a result has been achieved for a Block Panchayat as a whole. It is such actually existing examples that need to be replicated in other suitable areas with appropriate adaptations.

If the Kerala society recognizes and accepts the ecological functions of rice cultivation, then an extra price will have to be paid for retaining as well as developing rice cultivation. This could be deemed an environmental tax or subsidy that the society is prepared to bear. Despite the various implicit and explicit subsidies that are now given to rice cultivation the decline in area under rice has been quite sharp as I mentioned earlier. What this points out is that all these subsidies put together are not sufficient to deter the farmers moving away from rice cultivation. Whether such decline is due to competition from other more profitable crops or the attraction of real estate value of land (despite a ban on such conversion) are important factors that call for detailed empirical investigation.

Some Tentative Conclusions

After a period of impressive growth in agriculture from the mid eighties to mid nineties Kerala seems to have got into yet another phase of stagnation since the late nineteen nineties. Unlike the earlier phase of stagnation, this one is characterized by a loss of 3,19,00 hectares of gross cropped area (between 1996-97 and 2008-09) compared to the 1,58,000 hectares earlier (1974-75 to 1986-87). The loss in the earlier period was restored during the period of growth (1987-88 to 1995-96); whether a similar restoration will take place this time would very much depend on the shape of policies and programmes. While Kerala's agriculture continues to be a high value one in terms of value generated per unit of land, it has to successfully confront this new impasse keeping in mind the fast-growing nature of the non-agricultural sector of the economy. In that respect, the current challenge is qualitatively of a different kind in Kerala's developmental history.

Given the favourable factors and the possibility of converting some of the unfavourable ones to favourable ones, Kerala is well equipped to move to a higher level of agricultural technology to realize its potential productivity. There are already many scattered examples of new technological and organizational solutions but they have not yet reached a critical threshold as to push agriculture to another phase of sustained growth. The role of Kudumbasree in restoring (since 2003) nearly 31 thousand hectares of fallow land to cultivation points to the possibility of overcoming this impasse.

The planning mechanism now in vogue in the state has to take a hard look at this state of agriculture especially with a view to identify its strengths and weaknesses and chalk out alternatives for further development. In such an exercise two

issues need to be addressed explicitly; one is the environmental dimension and the other is the need to create a skilled work force.

Public investment in agriculture and related activities call for careful planning and co-ordination so that synergies can be generated by combining several schemes and projects. It is high time to move out of the wasteful nature of public investment in water control (especially irrigation) and create appropriate alternative organizational mechanisms for a decentralized system in a multi-level planning and implementation framework.

Since the basic constraint is both land and labour, solutions will have to focus on raising agricultural productivity - since there is hardly any extensive margin in agriculture - and income of farming households through a combination of farming and non-farming activities.

Measures for covering risks in agricultural and related activities and providing adequate social security to those engaged in agriculture should form part of any new strategy.

Perhaps the time has come for a stock-taking of the entire gamut of issues for meeting this challenge of agricultural development in a fast growing Kerala economy and a concomitantly fast transforming Kerala society.

Growth Trend in Kerala Economy, 1970-71 to 2007-08 (Rs. Crore, at 1993-94 Prices)

Figure 1: Growth in State Income (NSDP)

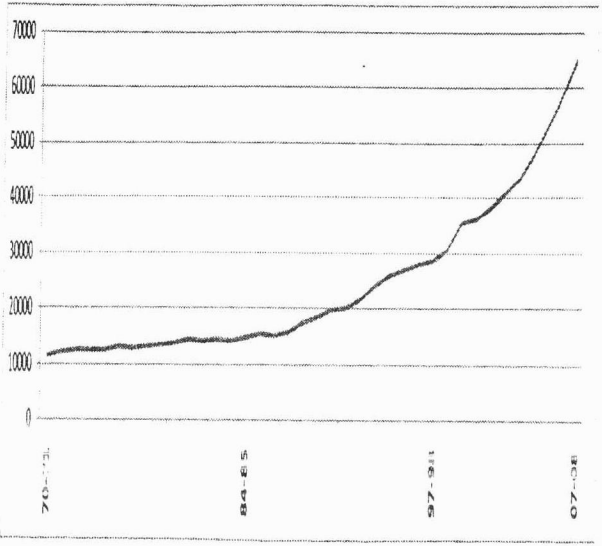


Figure 2: Growth in Primary Sector

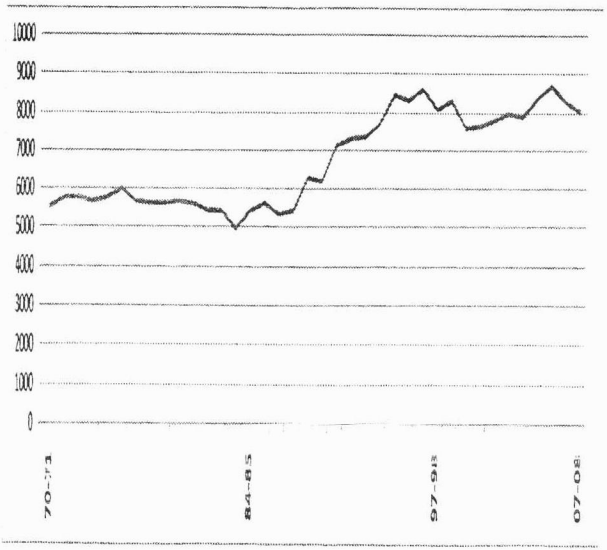


Figure 3: Growth in Agriculture (Crop

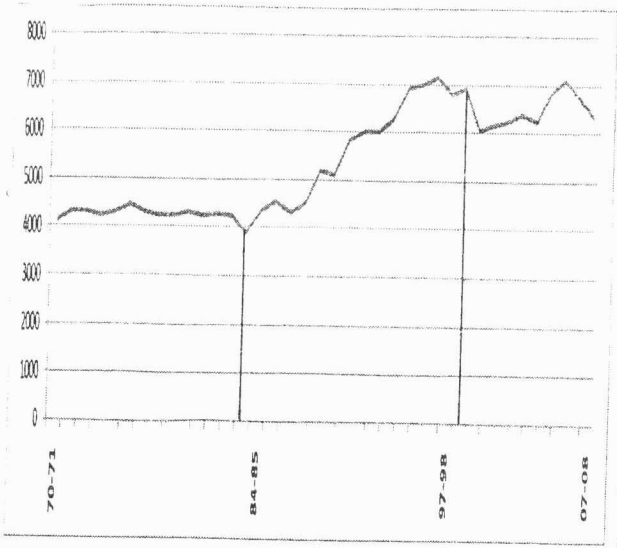
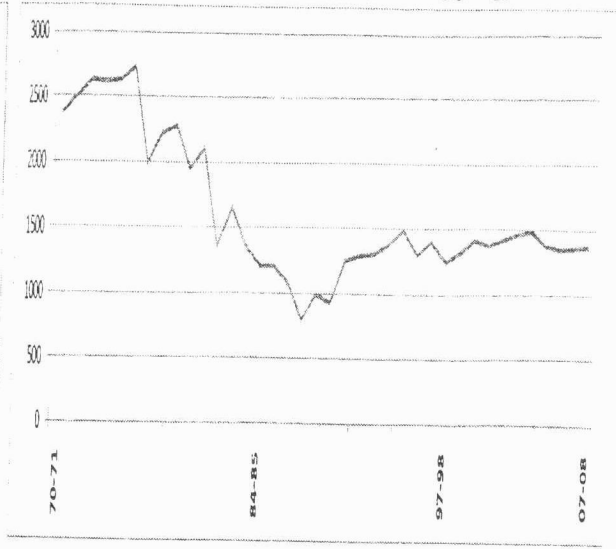
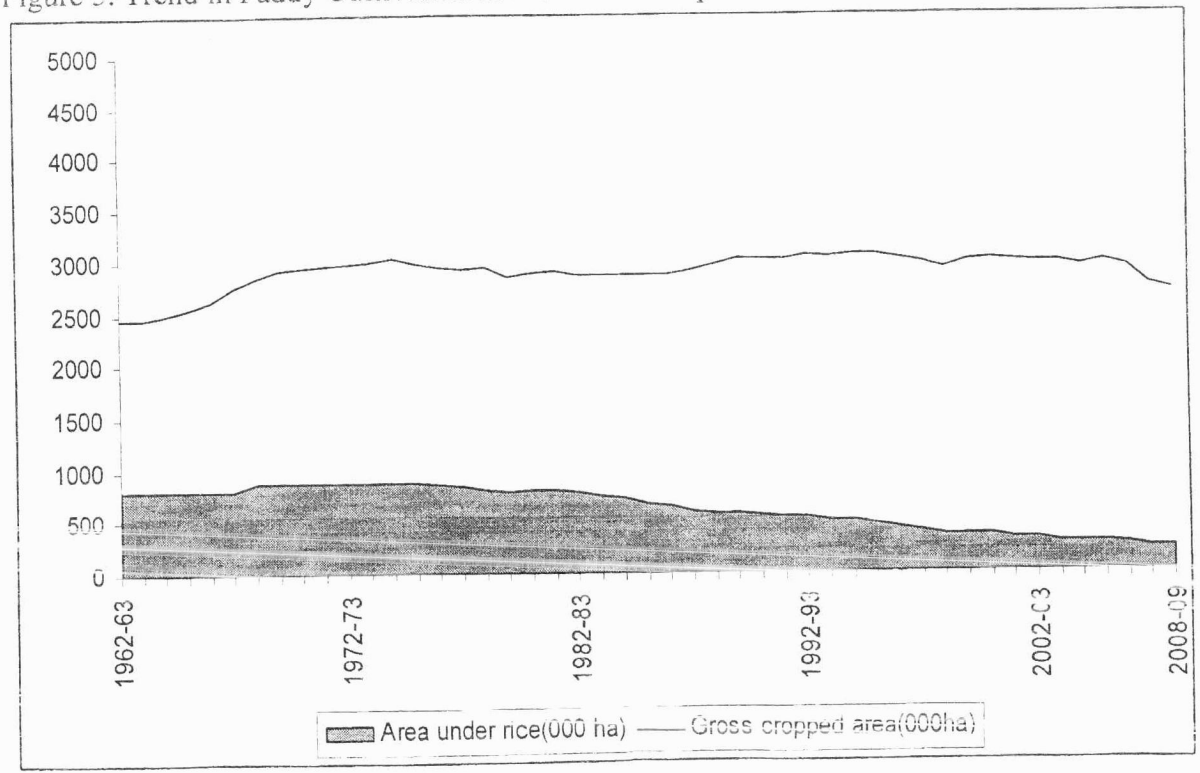


Figure 4: Growth in Primary Non-Agriculture (Livestock, Fishing, Forestry & Logging)



Source: Based on CSO's NSDP database, accessed from EPWRF (2003) and http://mospi.nic.in

Figure 5: Trend in Paddy Cultivation in Kerala for the period 1962-63 to 2008-09



Source: Kerala Economic Review. Various years

Figure 6: Area under rice in Kerala as percentage of Gross Cropped Area

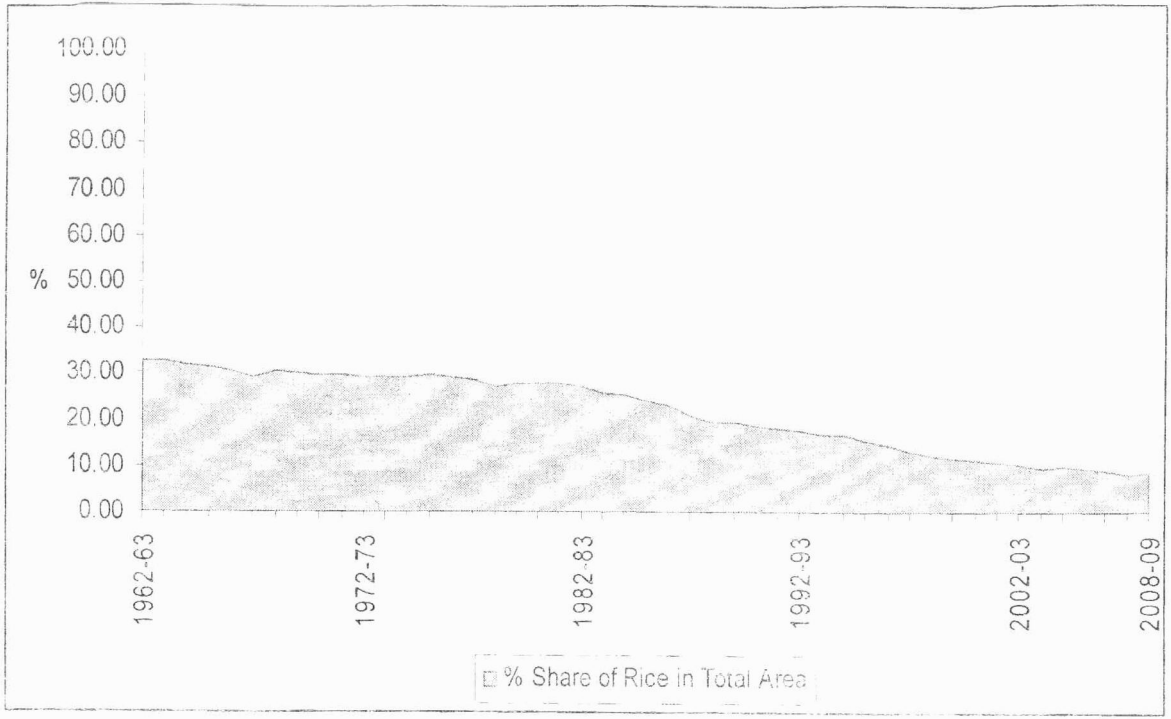


Table 1: Sectoral shares in income and employment and sectoral product: Kerala and All India

Indicator	Primary	Secondary	Tertiary
1993-94			
Income	32 (33)	20 (24)	48 (43)
Employment	49 (65)	21 (14)	30 (21)
Sectoral product	0.65 (0.51)	0.95 (1.71)	1.6 (2.05)
2004-05			
Income	23 (22)	21 (25)	48 (43)
Employment	37 (57)	25 (18)	38 (25)
Sectoral product	0.62 (0.39)	0.84 (1.39)	1.26 (1.72)

Note: Figures in brackets stand for all India.

Table 2: Sectoral Growth Rate (%) of Kerala Economy, 1970-71 to 2007-08

Sector	1970-71 to 83-84	1984-85 to 96-97	1997-98 to 07-08	1970-71 to 07-08
Primary: Agriculture	-0.24	4.64	0.21	1.67
Primary: Non-Agriculture	-1.88	3.52	1.75	0.48
Primary Sector (1+2)	-0.62	4.43	0.49	1.41
Secondary Sector	3.49	7.25	9.08	5.20
Tertiary Sector	3.35	6.15	9.78	6.07
All Sectors (3+4+5)	1.64	5.84	7.79	4.46

Source: Based on CSO's NSDP Database, accessed from EPWRF (2003) and http://mospi.nic.in

Table 3: Value of Output, Cost and Net Income, 2003 (Rs per hectare)

	Output	Cost	Net income
Kerala	27,197 [2]	10,276	16,921 [3]
Punjab	28623 [1]	11,991	16,632 [4]
Uttaranchal	25,536 [3]	4,178	21,358 [1]
J & K	23,214 [4]	5,147	18,067 [2]
All India	12,535	5,841	6,694

Source: NCEUS (2008), A Special Programme for Marginal and Small Farmers. Figures computed using NSS unit level data 59th Round on Situation Assessment Survey of Farmers, 2003.

Brief bio-data of Professor K.P.Kannan

K.P. Kannan, is Professor/Fellow (and former Director) of the Centre for Development Studies, Thiruvananthapuram, Kerala, India. During 2005-09, he was a Full Time Member of the National Commission for Enterprises in the Unorganised Sector constituted by the Government of India. He was Conference President-elect of the Indian Society of Labour Economics for its Golden Jubilee Conference in December 2008. In the same year he was conferred the VV Giri Award for his contributions in the area of social security especially for the informal workers.

He has served in various national and international bodies. During 2002-03 he worked as an Expert Member in the Technical Secretariat of the World Commission on Social Dimension of Globalisation constituted by the International Labour Organisation, Geneva. He served as a Member of the Expert Group on Human Resource Development for Asia and Pacific constituted by the UN/ESCAP, Bangkok during 1997-99. He was a member of the High Level Committee on Unorganised Labour constituted by the Government of Madhya Pradesh in 2001. During 1995-97 he worked as the Professor of Development Studies and Research Director at the Cambodia Development Resource Institute in Phnom Penh and helped establish a research division for the study of Cambodia's development issues. Professor Kannan is a member of the Editorial Advisory Boards of two international professional journals viz., The *International Social Security Review*, and *Globalizations* and three national professional journals viz., *The Indian Journal of Labour Economics, Indian Journal of Human Development* and *Labour* and *Development.*

Professor Kannan took his Masters in Economics from the University of Bombay in 1973 with a First Rank and Gold

medal. After working for a number of years as an academic as well as a social activist, he took his doctorate in Development Studies in 1986 from The Institute of Social Studies, The Hague in The Netherlands.

His areas of specialisation are: human development and deprivation including poverty, vulnerability and social security, labour studies with special reference to the informal/unorganised economy and development policies and perspectives. Recently, a Human Development Report on Kerala (2005) was prepared under his leadership sponsored by the UNDP, India and the Indian Planning Commission and published by the Government of Kerala.

Professor Kannan has served as a visiting scholar in several universities and institutions abroad and has visited a number of countries as part of his professional work.

Professor Kannan has authored, co-authored or edited nine books, many of which deal with issues in human development and labour and development. He has written extensively on Kerala's development experience. He has also published popular articles in English and Malayalam.