33rd Convocation

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Convocation Address

By

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Coimbatore

TAMIL NADU AGRICULTURAL UNIVERSITY

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His Excellency, Hon'ble Chancellor and Governor of Tamil Nadu **Dr. K. Rosaiah**, Hon'ble Pro Chancellor and Minister for Agriculture, Government of Tamil Nadu, **Thiru S. Damodaran**, distinguished academician and Vice Chancellor of TNAU, **Dr. K. Ramasamy,** Members of Board of Management, Members of Academic, Research and Extension Education Councils, Graduates of the year, Faculty Members, Representatives of Mass Media, Dear Student Scholars, Ladies and Gentlemen.

I deem it a great privilege and honour to deliver the 33rd Convocation Address of Tamil Nadu Agricultural University, Coimbatore, a distinguished institution promoting agricultural education and research through its strong values of enterprise, reason and discipline. I sincerely thank the Hon'ble Chancellor and Vice Chancellor for providing me this opportunity and to share my thoughts with all of you.

In this solemn occasion, first, let me extend my warm congratulations to the graduating students for this great achievement and wish them well as they go out to face the trials and tribulations of the real world. This is an occasion not only for looking back, but more importantly for looking forward. The world opens up ahead of you, to re-enter with greater aspirations and confidence.

I understand that TNAU had its beginning way back in 1868 as an Agricultural School established by the British in Saidapet which was later upgraded into an Agricultural College at Coimbatore in 1908 and as a full-fledged University in 1971. It is significant to note that the educational system in TNAU is regularly updated and systematically redesigned. Besides regular courses, technology oriented courses (B.Tech.) on Agricultural Biotechnology, Horticulture, Food Processing Engineering, Energy and Environmental Engineering and Bioinformatics have been introduced in tune with the changing needs and there by taking academic leadership in Agricultural Education. It is also significant that in this information age, the University has been moving in the right path by designing and offering e-learning, online course modules to the students and ICT enabled weather data, price forecasts and e-velanmai (e-Agriculture) through agri portal to serve the farmers. It is impressive to note that TNAU is the pioneer in frontier research areas like nano-technology, technology incubation and dual degree programmes in collaboration with National

and International institutions. TNAU has an enviable record of providing not only quality education but also promoting farmer centric research and extension programs for the benefit of the farmers not only from the state of Tamil Nadu but also from the other states of the country.

Challenges of Indian Agriculture

Great efforts of agricultural scientists and farmers helped the Nation to achieve high agricultural production and productivity since late sixties and have been the main reason for attaining food security to the Nation. Agriculture and allied sectors account for 13.9 per cent of the Gross Domestic Product (GDP) in 2011-12. Its share in GDP declined rapidly in the recent past mainly because of higher overall GDP growth of 7.90 per cent during 2007-08 to 2011-12, compared to the 3.30 per cent growth of agricultural sector GDP.

For an inclusive economic growth, higher growth and development of agricultural sector is important to improve the living standards of large masses and to sustain overall economic development of the country. With global economic issues coming to the fore and having greater cross border economic impacts, the rural sector is being seen as a potential source of domestic demand to sustain economic growth.

Today, India ranks high in the production of various commodities such as milk, wheat, rice, fruits, and vegetables. However, the agriculture sector in India faces many challenges

with rising demand for food items and relatively slower supply response in many commodities resulting in frequent spikes in food inflation. The technological breakthrough achieved in the 1960s is gradually waning. Recent planning review documents have tagged some of the recent trends in their assessment regarding food security, farmers' income, and poverty including,

- Slowdown in growth.
- Widening economic disparities between irrigated and rain-fed areas.
- Increased vulnerability of agricultural commodity prices to volatility of world commodity prices.
- Uneven and slow development of technology.
- Inefficient use of available technology and inputs.
- Lack of adequate incentives and appropriate institutions.
- Degradation of natural resource base.
- Widespread decline in groundwater table, with adverse impact on small and marginal farmers.
- Increased non-agricultural demand for land and water as a result of the higher overall GDP growth and urbanization.

An expanding agricultural sector consequent to the introduction of new technologies increased the dependence of farmers on modern purchased inputs including labour and substantially increased the cost of production. But the increase in return has not been much higher than the increase

in real cost of production with dire implications for capital formation in agriculture and standards of living of farmers and agricultural labourers. Capital investment in agriculture as a percentage of the GDP has been stagnating around 14 per cent in recent years. The real challenge in agriculture sector is to enhance capital investment in the sector both by public and private sector in a sustained way.

Agriculture in Tamil Nadu

I understand that the agricultural sector of Tamil Nadu by and large faces similar challenges, besides its own potentials and issues. Tamil Nadu has about 5.96 per cent of Nation's population, occupies 4 per cent of the land area and has 3 per cent of the water resources. Tamil Nadu performs well in the all India scenario in productivity of major food crops. It ranked (2009-10) second in productivity of rice next only to Punjab. It ranked first in sugarcane, maize, groundnut and total oilseeds productivity. In case of productivity of vegetable and fruits, the state ranked first and second place respectively at National level.

In general, a decline of the relative share of agriculture in the overall economy should not give any cause for worry if there is a concurrent fall in the percentage of the total population dependent on agriculture. In Tamil Nadu however, nearly 56 per cent of the population continues to be dependent on agriculture and allied activities and hence, the falling

relative share of agriculture is a reflection of the severe challenge to the livelihoods of thousands of rural families. The crisis in agriculture is causing income deprivation among thousands of families of small and marginal farmers and landless labourers dependent on agriculture and accelerating the pace of an already existing rural-urban migratory trend. Some reflection of this can be found in the large number of persons who have turned up to register themselves under the Mahatma Gandhi National Rural Employment Guarantee Programme (MGNREGA).

The fact that nearly 56 per cent of the State's population which lives in rural areas is dependent on less than One-seventh of the State income raises serious distributional issues. Per worker productivity in the primary sector is less than a Fourth of per worker productivity in the non-primary sector in Tamil Nadu and the gap is widening.

Recently, issues related to agriculture have started to manifest in the form of increased food price inflation. Growing income levels of the rural population even with its distributional dimensions not yet effectively addressed have contributed for agricultural goods demand growth. The relatively weak supply responses to price hikes in agricultural commodities, especially food articles, in the recent past brings back into focus the central question of supply management and need for sustained levels of growth in agriculture and allied sectors. The only

choice before the Nation is therefore to invest more in agriculture and allied sectors with the right strategies, policies, and interventions. In this process certain imbalances in the programme planning and implementation need to be addressed.

For instance, the National Sample Survey Organization (NSSO) (2005) highlights the degree of exclusion of farmers. Only 5 per cent of farm households in India are members of SHG and only 2 per cent have membership with a registered farmers' organization. Hardly, 8 per cent of farm households have knowledge of bio-fertilizers and 29 per cent not even understand the meaning of Minimum Support Price. Only 4 per cent of farm households insure their crops and 57 per cent do not know about crop insurance. Only 29 per cent of farm households are members of cooperative society and 19 per cent avail service of credit, seeds or fertilizers. Fertilizers are available within their village for only 27 per cent farm households. Improved seeds are used by 46 per cent farm households and only for 18 per cent, the seeds are available in the village. The proportion of orchards and plantations in total farmed land is only 3 per cent showing the vast scope for diversification involving horticulture. Among the farm households using non-human energy for ploughing, 47 per cent use diesel tractors, 53 per cent use animal power. Among farmers using non-human energy for harvesting, 60 per cent use diesel-powered machines. In this backdrop, it is crucial to

examine how to make agriculture growth inclusive in tune with the growth process of the economy.

Sustainable Use of Natural Resources

Increasing biotic and abiotic pressures on the natural resources, especially land, water and biodiversity decreases their per capita availability. Though small and marginal farmers accounted for a major share of the total land holdings, their average size of holdings is very small. Overall average land holding size had come down from 0.95 ha. in 1995-96 to 0.83 ha. in 2005-06 resulting in increased marginalization of farmers. With the increasing population, the fragmentation of holdings has increased, resulting in smaller and unviable units of land holdings. To address the issue of fragmentation and small holdings, a clear policy with regard to transfer of agricultural land has to be formulated and implemented. Legislation needs to be enacted to facilitate the land utilization by making land transactions easier and facilitating leasing and contract farming. Besides, the technologies suited for such holdings have to be developed to increase the productivity of small and marginal holdings. I learn that Vision Tamil Nadu 2023 envisages functional consolidation of holdings through cooperative farming, contract farming and other mechanisms such as farmer groups, joint liability groups etc., to increase the penetration of modern agricultural technologies and improve output.

Highly degraded wasteland could exclusively be used for forestry, tree cropping or agro forestry. Rainwater harvesting and conservation has to get more attention so as to increase productivity of rainfed farmlands. Besides, utilization of irrigation potential has to be improved by encouraging conjunctive use of water, adoption of improved on-farm water management practices and also the use of water saving devices such as sprinkler irrigation system, drip irrigation system, etc., especially in the low rainfall areas.

Environment friendly technologies are the need of the day. Promotion of organic farming and utilization of organic wastes can reduce the natural resource degradation and impact of pollution. Promotion of farming system approach has to be encouraged since the integrated farming system approach is best suited for sustainable utilization of scarce resources and minimizing losses in the farming sector, by involving allied sectors like animal husbandry, forestry, fishery, etc., besides addressing the environmental issues.

Climate change is the new challenging dimension for future agricultural growth where small and marginal farmers in disadvantaged locations are most vulnerable. Investment options and policies are needed to provide incentives to small farmers for adoption of technologies, conservation agriculture and carbon sequestration, that can mitigate the impacts of climate change. Weather based crop insurance is crucial to

strengthen the farmers in order to offer food security for the nation in the wake of climate change. Currently MGNREGA and watershed development are two programs meant for the benefit of dry land farmers compared to a vast number of programs in irrigated areas. Dry lands comprising more than 60 per cent of the agricultural production area bear the brunt of climate change. Hence innovative programs such as Integrated Farming System, Bhuchetana (treating soils with micro nutrients), expanding drip irrigation, need to be herald.

Managing Agricultural Production

The key to ensure long-run food security lies in targeting cereals productivity to grow significantly faster than population so that adequate land becomes available for other agricultural use. On the supply side, this calls for action on several fronts and the precise mix varies from one agro-climatic zone to the other. This will require investment in infrastructure, particularly in power, logistics and marketing. I would like to briefly dwell upon some points of intervention on the production side as identified by the 12th Five Year Plan.

Water Management

The first and perhaps the most important need of the hour is an efficient water management regime/system. I need not emphasis more on this point to a State like Tamil Nadu especially at this point in time when monsoons have not been

helpful. One has to be resourceful to find innovative solutions to tackle water sector issues that are complex, multi dimensional, multi sectoral and spanning across States. Solutions are not necessarily always technological, they need the involvement of stakeholders at all levels, right from managing ground water through private investments, and surface flows through tanks, dams and canals through community and public investments. Micro-irrigation schemes that promote water access to more areas are the natural extension of the extensive efforts in this direction.

Soil Nutrient Management

Indiscriminate use of chemical fertilizers can seriously disturb natural soil ecosystem. Although there is still a need to increase fertiliser use in many parts of the country, overuse of chemical fertilizers in many other areas has resulted in severe degradation of soils. The way forward is to rejuvenate soils and restore soil health through addition of soil organic matter in bulk quantities and micro-nutrients. Balanced nutrient management will gradually ameliorate the effects of unbalanced/excessive use of chemical fertilizers. Support for soil amelioration and ecological/organic fertilization is now scattered under various schemes and requires a clear focus, along with better assessment of soil health and nutrient needs at the farm level.

Generation of New Technologies

Technology is the prime mover of productivity in agriculture. India's expenditure on agricultural R&D and education is currently about 0.6 per cent of the GDP from agriculture and allied activities and this definitely needs to be raised at least to One per cent. Technology generation in India is largely undertaken by the public funded National Agricultural Research System (NARS) and State Agricultural Universities (SAUs). The pace and structure of future-agriculture would be driven by the knowledge intensive technological approaches such as biotechnology, geo-system and IT applications, nanotechnology, etc. There is a paradigm shift in the generation and dissemination of agricultural technologies compared to the late 60s and 70s when the research outputs from the public sector institutions have fuelled the productivity growth in agriculture. In recent years, there is an increasing trend towards commercialization of private funded agricultural research output aided by the emerging intellectual property regime. Public sector technology generation is inadequate in some areas. Private sector research and the seed industry focus on crops which have adequate markets and sales. As a result, some crops/crop groups get little research attention. This phenomenon is most visible in predominantly rainfed crops like pulses and some oilseeds. An acceptable set of protocols and a clearly defined regulatory mechanism are required for fruitful and mutually reinforcing coexistence of public private partnership in research and extension.

Evolving Climate Smart Agriculture

Agriculture not only suffers the impacts of climate change, it is also responsible for 14 per cent of global greenhouse gas emissions. But agriculture has the potential to be an important part of the solution, through mitigation — reducing and/or removing — a significant amount of global emissions. The research agenda of the national agricultural research systems has to built-in these aspects in to the research programmes, to develop climate smart agriculture which sustainably increases productivity, resilience (adaptation), reduces/removes greenhouse gases (mitigation) while achieving national food security and development goals. Such an approach includes reoriented research objectives, identification of future risks and uncertainties, development of innovative institutions and processes to cope with these uncertainties.

Farmer-centred Approach to Investment in Agriculture

The FAO report on 'State of Food and Agriculture' released this month calls for a new investment strategy that puts agricultural producers at its centre. The farmers must be central to any agricultural investment strategy, as they are the largest source of investment in agriculture. But farmers' investments are often limited by unfavourable investment climates. Governments have a special responsibility to help smallholders overcome the constraints they face in expanding

their productive assets and to ensure that large-scale investments in agriculture are socially beneficial and environmentally sustainable. Government investment in agriculture is a crucial component of providing an enabling environment for private investments in the sector. Governments need to channel scarce public funds towards the provision of essential public goods with high economic and social returns.

Extension System

Technology dissemination is currently being augmented by extension reforms through the Agricultural Technology Management Agencies (ATMA) at district level. Presently, the experience has been somewhat mixed, with the model working well where the rest of the agricultural system is also working well and vice versa. The ATMA concept needs to be strengthened, although possibly not as a stand-alone scheme.

Rainfed Agriculture

Around 200 million hectares in India is under rainfed farming and represents the largest geographic concentration of poverty. These areas are characterized by frequent droughts, widespread degradation of environmental and natural resources, lagging productivity of agriculture and increasing population. Most visible aspects of this distress are farmer suicides and the rising extremism in some parts of the country.

But even with low productivity levels, rainfed farming accounts for 56 per cent of total cropped area, 48 per cent of the area under food crops and 68 per cent of the area under non-food crops. In terms of crop groups, 77 per cent of pulses, 66 per cent of oilseeds and 45 per cent of cereals are grown under rainfed conditions. As estimated by the Technical Committee on Watershed Programmes in India (2006), about 40 per cent of the additional supply of food grains needed to match the future demand will have to come from the rainfed segment of Indian agriculture. We need to develop crop varieties and livestock breeds that can resist temperature extremes, drought and disease. Policy should encourage the production and consumption of millets which is a rich source of nutrition, and has been a part of the traditional diets of communities in many parts of India.

Seed Systems

More than Four-fifths of farmers rely on farm-saved seeds leading to a low seed replacement rate. Concerted efforts are essential in ensuring timely availability of seeds as well as increasing the Seed Replacement Rate (SRR). It is necessary to review comprehensively the structure of subsidies and certification in the seed chain so that farmers have better choice and quicker access without diluting regulatory standards. In rainfed areas, wastage of seed due to prolonged dry monsoon spells is common and in such a situation maintaining seed diversity is important to reduce

rainfall risks. A programme of seed villages could ensure that a range of seed material is maintained within the village. A possible method of doing this is through creation of community level seed banks with buffer stocks of seed material for various crops. Over time, these seed centres may become autonomous and self-reliant one.

Promotion of IPM/NPM Practices and SRI

Successful adoption of NPM (Non-Pesticide Management) and SRI (System of Rice Intensification) in several rainfed and irrigated cropping systems in the past decade, has led to increased policy and research attention to these systems. Use of chemical pesticides in India jumped from 154 tonnes in 1954 to about 90,000 tonnes in 2008 at an average of 0.5 kg/ha. The liberal and continual use of pesticides has disturbing consequences on the farming system. Several organic and bio-pesticides have been found more effective in managing crops in an environmentally sustainable manner. However, there is a need to substantially step up investments in research and technology development in such options.

Land and Tenancy Reforms

Legislation regarding ceiling on land ownership has not had the impact to the extent that was envisaged. At the same time, there is need to give a fresh look to permit leasing of land where small farmers, who would otherwise be unviable, are

able to lease out their lands to others who are able to bring in the other inputs needed. The small or marginal land owner may even be employed on the land by the new tenant farmer. There is also need to record small and marginal tenants so that they can access credit without threatening future rights of the land owner. The key to both of these is that leasing should be possible without jeopardizing the property rights of the original land owner.

Linking Small Producers with Markets

The original idea behind Marketing Co-operatives is to aggregate smaller marketable surplus of small and marginal farmers and helps them reach bigger markets, where they can get a better price for their produce. But these models have limited success. Alternative models based on the idea of Producers' Companies and Commodity Interest Groups are now beginning to take off. The idea is to collect the produce of the members of the co-operative, producer companies or SHG federations, aggregate the produce, put it in the local warehouses and borrow from the banks against the warehouse receipts. The institutional structures, including a regulator, are now in place and it is expected that the Twelfth Plan period will see substantial volumes flowing through the system. Development of horticulture, dairying and expansion of cash crops provide the necessary wherewithal for greater market access. This is logically the domain of the private sector, but significant reform in the institutional set up and regulatory

mechanisms are necessary to attract investments and to realize the capacities.

Storage, Value Addition and Marketing

Basic infrastructure in rural areas for storage and marketing of produce needs to be set up to link producers with regularly functioning markets. Small multi-functional units like warehouses, providing value added services for the farming community, should be encouraged. Banks and other financial institutions in villages need to provide the required finance to the entrepreneurs in this field and may be motivated to extend credit to the setting up of such units. Opportunities for value addition of the aggregated produce should also be considered.

Crop Insurance

Crop insurance has come up as an important tool for risk mitigation for small and marginal farmers. Only less than 10 per cent of the farmers in India are covered with currently prevailing crop insurance products. The key weaknesses of current crop insurance products arise from the nature and distribution of risks associated with farming. Four crop insurance schemes are being implemented namely National Agricultural Insurance Scheme (NAIS), Pilot Weather Based Crop Insurance Scheme (WBCIS), Pilot Modified National Agricultural Insurance Scheme (MNAIS) and Pilot Coconut Palm Insurance Scheme (CPIS). States have the choice for notification of areas / crops under the schemes. Yet, the fact is

that not enough farmers are availing crop insurance schemes. The reasons are believed to be a combination of factors such as lower subsidy, delayed claim settlement, lack of awareness and operational issues.

TNAU: Forerunner in Agricultural Education and Research

It is proud to note that many of the TNAU graduates have achieved higher status in the National level/ international level. The performance of TNAU students in various National level competitive examination such as Junior Research Fellowship (JRF), Senior Research Fellowship (SRF) and ARS examination have been exceedingly well. The Alumni of TNAU have also performed consistently well in the All India Competitive Examinations. Currently, TNAU offers 13 under graduate (UG) degree programmes with an annual intake of 1190 students. TNAU offers dual degree programmes in both under graduate and post graduate levels in collaboration with universities in Canada and USA. In Post Graduate programmes, TNAU offers 29 M.Sc./M.Tech. and 26 Ph.D programmes in Agriculture, Agricultural Engineering, Horticulture, Forestry and Home Science.

I am delighted to note that TNAU is involved in many of the Centre/State sponsored development projects like Precision Farming, IAMWARM, NADP, NAIP, NHM etc. Despite strong competition from private sector hybrids/ varieties and technologies, improved varieties of crops and

technologies developed by TNAU were widely adopted by the farmers. Some of the high yielding varieties viz., ADT 36, 37, 38, 39, Ponmani, I.W.Ponni, TKM 9, Co 43, ASD 16 etc., released by TNAU are very popular throughout Tamil Nadu and continue to be in cultivation even after 15 to 20 years of release. A double cross hybrid COH (M) 4 and a single cross hybrid COH (M) 5 are popular ruling maize hybrids. In case of other crops, adoption of improved varieties resulted in significant yield gains, reduction in unit production cost, and yield stability. TNAU is committed to supply the required quantity of breeder seeds to the State Government, GOI and private seed producers for multiplication. In TNAU, a separate Seed Centre has been formed with the objective of strengthening the seed production programmes.

ICAR Vision for Agricultural Sector

I would also like to take this opportunity to emphasize the strategy and framework of ICAR's vision for the agricultural sector in the coming decades. A 5-point strategy would be adopted to accomplish the vision and the goals of the Indian Council of Agricultural Research and to enhance efficiency and effectiveness of the research resources.

- Improve efficiency of human and financial resources and effective utilization of infrastructure.
- Facilitate accelerated dissemination of improved technologies, knowledge and information.

- Enhance quality of human resource in agri-supply chain.
- Commercialization of technologies through organized intellectual property rights and benefit-sharing system.
- Promote effective, efficient and decentralized governance by introducing best management practices in the Indian Council of Agricultural Research.

Epilogue

Today we live in a global economy where change is so unrelenting that everyone is deemed a perennial student. You need to invest in yourself and always seek to become a better professional through lifelong learning. People who grapple with the complexity of the modern world quickly are the ones, most in demand in an increasingly competitive world. One has to advance his or her professional skills continuously and also beyond their broad interests.

According to a study at Massachusetts Institute of Technology, a working engineer will have four distinct careers and two of these in technologies that are not even known today. I believe this is true also in agriculture. Now fortunately, internet has made it possible for a student in a remote village to have access to the same world of knowledge, at the same instant, as any other student in the world. Many of you may regard leaving the college as a moment of freedom - but to be truly free in today's global economy you need knowledge.

Knowledge competitiveness gives you freedom to make your own choices. The message that I am driving in is that skills will get redundant extremely fast and they will have to be replaced as quickly as possible to be successful in life. Teamwork is the magic word today and you have to learn to become a good player in a professional team. Even research and development, once the domain of the great scientist locked away in an isolated lab, is increasingly becoming a team play. Individual entrepreneurship and collective enterprise are not mutually exclusive, but they are mutually dependent.

Lifestyles are changing and faster pace of living puts tremendous pressure on individuals and creates both constructive and destructive tension leading to high stress. So the mental and physical fitness are extremely important. Gone are the days we talked about only Intelligence quotient, in this modern competitive world emotional quotient is also equally important. You should be able to perform and deliver under stress and such a quality should be consciously imbibed through practice or formal training.

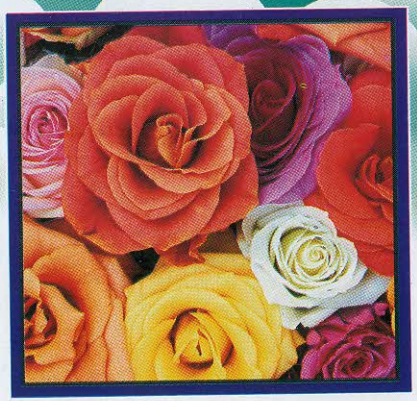
There will be times when you will encounter conflicts between the right thing to do to succeed, and what you believe in. Attitudes and values systems you cultivate are important in shaping a successful career. Establish your own set of values guided by science, reason and morality, and live by them. Ultimately you live longer with yourself than anyone else.

Before I conclude, I want to remind that all of us have an obligation to this great country and to the society.

Martin Luther King said, "I have a dream to fulfill". I hope you too have a dream, a dream that will bring welfare to yourselves and all fellow beings.

Good luck.

Jai Hind.



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