36TH CONVOCATION

TAMIL NADU AGRICULTURAL UNIVERSITY
COIMBATORE

17 August 2015

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Tamil Nadu Agricultural University

Coimbatore

36th CONVOCATION WELCOME ADDRESS

Dr. K. RAMASAMY

Vice Chancellor

TNAU, Coimbatore 641 003

His Excellency, Honourable Governor of Tamil Nadu and Chancellor of TNAU, Honourable Minister for Housing, Urban Development and Agriculture, Government of Tamil Nadu and Pro Chancellor of TNAU, Chief Guest of this 36th Convocation Function, **Dr. Susan R. McCouch,** Learned scientist, **Dr. Pedro Medrano Rojas**, Regional Director for Latin America and the Caribbean, New York, **Sri. Ashok Bakthavathsalam,** Founder and Director of KG Groups of Institutes and Distinguished Academicians and Officers, Members of Board of Management, Members of Academic, Research and Extension Education Councils, University Officers, Teaching and Non-teaching Communities of TNAU, Graduates of the year, Parents, Students and Members from the Press and Media, Ladies and Gentlemen.

Today, 17th August 2015 is indeed a very pleasant and a memorable day for all of us. As Vice Chancellor of TNAU, it is my great privilege to extend a warm welcome to His Excellency, Honourable Governor of Tamil Nadu and Chancellor of TNAU. His Excellency is an octogenarian, born from an agricultural family with

a long political career spanning over half a century. His student day's leadership paved the way for his political entry to serve as Finance Minister, Health Minister and Chief Minister of then Andhra Pradesh. His contributions from 2011 to till date towards the development of Tamil Nadu and Tamil Nadu Agricultural University are immense and are to be remembered.

I feel privileged to welcome Honourable Minister for Housing, Urban Development and Agriculture, Government of Tamil Nadu and Pro-Chancellor of TNAU, **Thiru. R. Vaithilingam.** The Honourable Minister for Agriculture is a man from farming family practicing agriculture from his childhood. With the practical knowledge he acquired from his childhood in the fi eld of agriculture and its transfer, I hope the University would make a phenomenal growth in Tamil Nadu's agricultural sector in the years to come.

I feel more proud and happy to welcome noted rice geneticist **Dr. Susan R. McCouch** who is the Chief guest of this occasion and going to deliver the convocation address and receive the *Honoris Causa* for her contributions in the field of Plant Breeding and Genetics and other two recipients of *Honoris Causa* **Dr. Pedro Medrano Rojas**, Regional Director for Latin America and the Caribbean, New York and **Sri. Ashok Bakthavathsalam**, Founder and Director of KG Groups of Institutes, Coimbatore.

My warm welcome to all the distinguished guests, Members of the Parliament, Members of the Legislative Assembly, Agricultural Production Commissioner and Principal Secretary, Members of Board of Management, Academic, Research and Extension Education Councils of this University, Officials of the

line departments, University Officers, Teachers, Scientists, all other staff members, senior professors, progressive farmers, students and personnel from mass media. I extend a warm welcome to all the graduating students and their parents on this day of celebration wherein you are graduating in your lives.

I feel proud in saying TNAU as an Institution of Excellence. From the day of inception in 1971, it grows and maintains its contributions towards education, research and extension in serving the student and farming communities of the state and nation. As said by late Bharat Ratna Dr. A. P. J. Abdul Kalam, Former President of India “Excellence is a continuous process and not an accident”, the Excellence maintained by TNAU is not by accidents and is because of continuous contributions from the students, scientists and staff of TNAU and the support from the Government of Tamil Nadu and other funding agencies. My congratulations to the contributors and sincere thanks to the supporters in sustaining the status of excellence.

Building Capacity and Capability

Capacity building in an Institute like TNAU needs perseverance, guidance and support to those who are associated with the process. There is no doubt that TNAU remains as one of the leading State Agricultural Universities (SAU) in India, its growth is continuous due to the support it receives from the Tamil Nadu Government. Having the goal of **“doubling the yield and trebling the income”** of Tamil Nadu farmers, Tamil Nadu Government is supporting TNAU in all possible ways for the capacity and capability building to execute the triple functions *viz*. Education, Research and Extension.

In maintaining the TNAU's excellence towards education, the Government of Tamil Nadu supported in establishing four new colleges, one Horticultural College for women at Trichy at a cost of Rs. 40 crores and three Agricultural Colleges at Vazhavachanur, Thiruvannamalai District, Echankottai, Thanjavur District and Kudumiyanmalai, Pudukottai District at a cost of Rs. 50 crores each.

Two new research stations were established for conducting research on grapes and citrus in the hotspots of grapes and citrus cultivation. Grapes Research Station and Citrus Research Station were established at Mallingapuram, Theni district and Sankarankovil, Tirunelveli District respectively.

In TNAU, though there are Technical Directorates which governs the activities of certain departments, most of these Directorates is located in the main campus at Coimbatore. Considering the interest and urge of the young scientists of TNAU for doing cutting edge research, Centres' of Excellence with different focus areas were created with the support from the Government of Tamil Nadu and these centres are distributed across TNAU. The six centres *viz.* Centre of Excellence in Molecular Breeding, Coimbatore, Centre of Excellence in Dryfarming, Chettinad, Centre of Excellence for Soil Health, Trichy, Centre of Excellence for Innovation, Madurai, Centre of Excellence in Oilpalm Research, Pattukottai and Farm Women Knowledge Centre, Trichy were established with a financial support of Rs. 22.96 crores from the Government of Tamil Nadu. A sum of Rs. 4.49 crores is sanctioned by the State Government for the establishment of Skill Development Centre–Operation, Repair & Maintenance of Agricultural

Machineries at the Agricultural Engineering College and Research Institute, Kumulur. Besides, the support from the State Government, Department of Biotechnology, Government of India, New Delhi facilitated the establishment of University Innovation Cluster in Biotechnology with a budget of Rs. 2.14 crores for a period of three years.

TNAU is a leading technology provider in Nanotechnology, a growing cutting edge science in the field of Agricultural Research. Recognizing the Department's contribution, IDRC, Canada has provided Rs. 6.66 crores for development of effective technologies and for developing nano formulations to enhance shelf life of fruits. Considering the strength of teachers and researchers of the University, many of the domestic and International Universities express their willingness to go along with TNAU for generation and dissemination of technologies for the welfare of farming community.

Excellence in Education

The leadership established by TNAU in the areas of education, research and extension is unique and a model across the country. The TNAU remains as the educational hub for thirteen undergraduate degree programmes which are being offered in its 14 constituent colleges and 14 aflliliated colleges across the state. TNAU ensures the quality of education in its affi liated colleges on par with its constituent colleges by its continuous monitoring.

During this year, there was a seesaw change in the response of students applying to TNAU for pursuing any one

of the undergraduate courses. TNAU received a total of 33219 applications of which 29469 were found to be eligible. Among the eligible candidates, 1610 were admitted based on the single window system of counseling and in this, 64 per cent were girls. The other innovative component in the under graduate programme is the introduction of “experiential learning” which is imparted through on site learning of viable agricultural technologies by the farm students so that they can remain as better service providers to the farming community.

Students of B. Tech. (Biotechnology) excelled in the All India Examination conducted by DBT-JNU for selection of students for DBT fellowship to pursue M. Sc., in Biotechnology. Twenty four students of B. Tech (Biotechnology) and Bioinformatics have secured three international admissions (AVRDC, Taiwan and Ecole Centrale, France) and 21 national fellowships from Indian Academy of Science, NIT, CCMB and NNMCB for carrying out their Biotechnology Work Experience programme. The four year B. Sc in Home Science has been reoriented as B. Sc in Food Science and Nutrition from this academic year onwards stressing on the importance of understanding the dynamics behind the food which supplies the required nutrition.

School of Postgraduate Studies offers M.Sc and Ph.D programmes in 33 and 26 disciplines which now admitted student strength of 433 and 148 respectively during this year in the first list. Moreover, four and 14 students were also admitted in the Integrated and Part time Ph.D. during this year. The performance of students of M. Sc., programme in Biotechnology has been recently ranked with ‘A’ grade by the Technical Expert Committee of Department of Biotechnology, New Delhi. A noteworthy change

in the postgraduate education in TNAU is the revival of trimester system replacing the semester system. While most universities in India operate on the semester system, TNAU wants to switch over to trimester system since the trimester system has diversity and flexibility by having more number of courses and the teacher has the independency of evaluating the students' performance on a continuous basis. Besides coordinating the postgraduate education of TNAU, the motivation given by this School in organizing the Agricultural Graduate Students Conference had succeeded during this year also with the contribution of students in organizing third in the series. In this Conference, more than 400 extended abstracts, posters and oral presentations in total were made.

Two students of CPMB&B received the prestigious Monsanto Beachel-Borlaug International Scholarship for pursuing Ph.D in Duke University, United States of America and Cambridge University, UK. The students of CPMB&B also received international fellowships such as Marie-Curie Fellowship, Rhodes scholarship and Lee Foundation Rice Scholarship to pursue Ph.D. in Germany and USA. Besides, students of Biotechnology are pursuing PhD in University of Tokyo, Japan. Seven students pursued dual degree in collaboration with Cornell University, USA. Post Graduate students of this centre are excelling in the All India level Agricultural Research Service examinations by securing top ranks.

More than 35 scholars belonging to minority communities were benefitted for doing their doctoral programmes from the fellowships made available from UGC Maulana Azad National Fellowship for Minority Students and Rajiv Gandhi National

Fellowship. Two scholars *viz,* Ms. Pritha Devi doing Ph.D in Bioenergy and P. Karthikeyan doing Ph.D in Soil and Water Conservation availed the support for their studies from Prime Minister's Fellowship Scheme for Doctoral Research. Four of the women candidates *viz*. Dr. S. Senbagavalli, Dr. S. Rani, Dr. S. Sakthirama and Dr. D. Murugananthi got the University Grant Commission's Post Doctoral Fellowship for women for doing their research in their respective fields of specialization.

Revitalizing the Research

Tamil Nadu Agricultural University is one of the largest and most productive State Agricultural Universities (SAU) in India. TNAU carries out fundamental and applied research involving the research communities of students and scientists to understand the problems, finding out the solutions and responding to the needs of social, economic and environmental relevance. TNAU creates a milieu for research-infused education at every level for maintaining its consistency, excellence and performance over years. The recent competitive ranking of agricultural institutions across the country indicated that TNAU has grown in its research performance and impact. The University Grant Commission's (UGC) ranking in 2010-11 for identifying the universities with high ranking positioned TNAU with h-index of 27. At present, TNAU has outperformed other SAUs and acquired a h-index of more than 50 based on Scopus profile and this brought TNAU from the category "D" to category "A" under the ranking of UGC. TNAU is highly regarded for its impact earning research. The TNAU scientists with their commitment to increasing demands of teaching make them very sincere and serious in harnessing research grant from various public and private funding agencies.

Besides the establishment of Centres of Excellence for doing focused research at TNAU, the Government of Tamil Nadu has sanctioned Rs. 36.25 crores Grant Support to TNAU through its Tamil Nadu Innovation Initiatives (TANII) for four schemes. The schemes are 1) Establishment of Rhizotron for root and rhizosphere studies (Rs. 9.00 crores), 2) Ultra High Density Orcharding for Mango, Guava and Moringa (Rs. 4.50 crores), 3) Integrated Seed Production Hub for Southern Districts of Tamil Nadu (Rs. 13.00 crores) and 4) Large area impact demonstration of fruit fl ies trapping technology to minimise yield losses to horticultural farmers in Tamil Nadu (Rs. 9.75 crores).

A significant development in the field of agricultural research in India is the formulation of All India Coordinated Research Projects (AICRPs), initially for the improvement of agricultural crops, but later extended to all aspects of crop husbandry. The first AICRP was started at this Institute on maize in 1957 with the active collaboration of the Rockefeller Foundation. A novel feature of this programme is that the central research institutes as well as agricultural universities and State Departments of Agriculture were brought to work together as a team to resolve research problems of the crop at national level. TNAU is one of the beneficiaries from the Indian Council of Agricultural Research (ICAR) by having more than 60 projects at various research centres. These projects facilitate the research activities of state and national mandate on 75:25 basis of financial support besides facilitating the exchange of scientific ideas at national level. During this year, ICAR has sanctioned five new projects worth of Rs. 8.04 crores which includes All India Coordinated Research Project on Home Science with grant of Rs. 4.00 crores.

Contributions made by the scientists in the AICRP programme have acclaimed a National status of eminence.

Besides the above mentioned financial support, the scientists of TNAU get a total of Rs. 98.15 crores as research grant from various funding agencies *viz*., Board of Research in Nuclear Sciences (BRNS), Department of Biotechnology (DBT), Department of Science and Technology (DST), Government of India (GOI), Indian Council of Agricultural Research (ICAR), University Grant Commission (UGC) and other national and international organizations. The research activities under these schemes are mostly towards exploring fundamental and applied aspects of exploiting various tools in biological sciences.

The success of reaching the goals of research cannot be achieved without having defined strategy, the right people, appropriate resources and the ambiance for doing research. In the past, TNAU research expenditure is mostly from the overall budget provided by the state government for doing triple functions of TNAU *viz*., Education, Research and Extension. The introduction of AICRP activities formed basis for having an exclusive research overheads for different disciplines. Over years, because of scientific and industrial growth coupled with the organized growth of TNAU, different agencies established elsewhere have started providing financial support to the scientists of TNAU for doing focused research on specific areas. Short term plan schemes were sanctioned from the state government for solving specific problems in the field of agriculture. In due course, resource crunch for doing research was solved because of overwhelming support from the International organizations

and philanthropic foundations. Now, TNAU has partnership with public and private organizations in extending their services for maintaining health of living things and environment. TNAU has evolved to the level of having the responsibility to protect and foster more than ever before the fundamental research which provides the basis for applied advances and brought out its research agenda for a specific period. In this evolution process, TNAU is maintaining its standards towards commitment to students' growth, earning of scholarship, academic rigour and the highest ethical standards in research.

TNAU's commitment to maintain excellence in research is mainly because of the cooperation extended by farming community to validate the newly developed technologies and their feedback to discern the odd from good. TNAU strives hard to maintain its supremacy by its research impact which satisfies the needs of the farmers of Tamil Nadu through improved varieties/hybrids of various crops and right combination of crop production technologies keeping the three major components *viz.,* 1) doing basic and applied research in an interdependent manner, 2) focusing long term benefit to the farming community and 3) integrating research with student's education.

TNAU's research activities are carried out with a bottom to top approach starting from individual department to technical directorate with a set of well established research agenda which is being centrally monitored by the Directorate of Research and the University's Research Council. The mode of TNAU's research agenda setting and assessing the impact of research activities are deliberated at three levels *viz.,* 1) Research

Council, 2) Annual Scientists' Meet and 3) Scientific Workers' Conference. The Directorate of Research has completed the following processes to streamline the ways and means for reaching excellence in research.

- Cataloguing of all the research projects across the University to have centralized monitoring.
- Revival of Regional Research and Extension Advisory Council (RREAC) meetings in the Regional Research Stations in all the Agro-climatic Zones of Tamil Nadu.
- Establishment of Project Proposal Scrutinizing Committee (PPSC) at the Directorate of Research for scrutinizing the research projects before the submission to sponsoring agencies.
- Establishment of Patent Technical Committee (PTC) for fi nalizing the proposals for patenting.
- Establishment of Institutional Germplasm Identification and Exchange Committee (IGIEC) for regulating the exchange germplasm between TNAU and outside institutes.

TNAU scientists involved in crop improvement activities have a long legacy of helping the farmers of Tamil Nadu through their improved varieties and hybrids of different agricultural and horticultural crops to sustain the productivity of the state. During the last year, TNAU plant breeders have released three rice varieties (TKM 13, MDU 6 and CR 1009 Sub1) and one each in Sorghum (K12), Wheat (CO W 3), Cluster bean (MDU 1) and Coconut (VPM 5). The Plant Breeding community of TNAU started exploiting

newer molecular tools from Biotechnology in understanding the genetic architecture of various crops, for introgressing specific genes into elite varieties through transgenic approach and marker assisted back-cross breeding (MAB). Introgression of Quantitative Trait Loci (QTL) for deep and thick roots and yield under stress from CT 9993 into IR 20, introgression of Saltol QTL from FL 478 into ADT 43 and CR 1009 and introgression of genes conferring to resistance blast, bacterial leaf blight and gall midge into CO 43, ADT 43, ADT 47 and ASD 16 are some of the known success stories and some of the improved lines are in the advanced stage of testing.

High level adoption of improved varieties of crops by the farmers depends upon the availability of quality seeds of those released varieties. The Breeder Seed Production Unit of Centre for Plant Breeding and Genetics and the Seed Centre take care of producing breeder seeds and other classes of seeds respectively for the benefit of farmers. Except pulses and oilseeds, the indents of paddy and millets are being fully met and even supplied in excess to The Department of Agriculture and Private seed producers. During 2014-15, a total quantity of 1,60,772 kgs of breeder seeds were produced and supplied to state, GOI and private agencies against the total indent of 1,60,234 kgs in agricultural and vegetable crops. Major portion of breeder seeds in paddy are being distributed to private seed producers so as to encourage the private seed industry to enter into the seed multiplication chain to help the Department of Agriculture. The seed centre besides its activities of producing foundation seeds and truthfully labeled seeds of crops varieties and doing basic research in seed science and technology, recently introduced new system of seed distribution

by installing seed vending machines in different places. There is a phenomenal response to this new method of seed distribution. The Seed Centre of TNAU has successfully co-coordinated the seed production activities thereby enabling the supply of 18,931 quintals of seeds and 27.46 lakhs planting materials during 2014-15. A state of the art, seed processing unit has been established at Agricultural Research Station, Bhavanisagar at a cost of Rs 25 lakhs for processing large quantities of seeds.

The scientists under the technical directorates *viz.,* Crop Management, Natural Resource Management, Crop Protection Studies, Horticulture, Water Technology Centre, Agricultural Engineering, Forestry and Home Science are concentrating on the fi ne tuning of critical technologies for crop production and value addition. The improved technologies had resulted in a surplus food grain production during the year 2014-15 in Tamil Nadu which had been due to the coordinated effort of Scientists and Extension Offi cials.

Integrated Farming Systems models were validated for different ecosystem and the IFS models suited to wetland, garden land and dry land ecosystems were developed. To enhance the system productivity, profitability and resource recycling in irrigated / dry ecosystem, crop components with horticulture, dairy, goat rearing, biogas and vermi-composting are recommended. Large scale frontline demonstrations were conducted to popularize the synchronized maturing of pulses varieties in order to facilitate mechanical harvesting for the benefit of the farming community. These efforts would certainly help in enhancing the overall production in Tamil Nadu in the years to come.

Making the technology available at affordable cost is one of the key features that make TNAU to be on the top. TNAU coconut tonic of 11,696 litres was supplied to the farmers which would have benefited 2,92,400 coconut trees. TNAU pulse wonder of 3,043 kg (expected to cover an area of 1,522 acres), TNAU groundnut rich 675 kg (to cover an area of 169 acres), TNAU maize maxim 481 kg (to cover an area of 80 acres), TNAU cotton plus 1,616 kg (to cover an area of 323 acres) and TNAU sugarcane booster 682 kg (to cover an area of 152 acres) were some of the initiatives taken by TNAU in directly improving the crop standards to sustain the livelihood of the farmers.

Identification, morphological characterization and documentation of insect pests and natural enemies are important for the agroecosystem based management of insect pests. Biosystematics Unit of the Department of Agricultural Entomology, Tamil Nadu Agricultural University has documented 6287 insect species from different families during last year. So far, 70,000 insect specimens belonging to 3000 species have been collected from different parts of South India. An Insect Museum is being established at our University at a cost of one crore funded by the State Government. The specimens collected from South India and different SAUs and ICAR centres will be displayed in the Museum for the benefit of researchers, farmers, general public and students.

Biointensive Pest Management (BIPM) practices have been developed using parasitoids, predators, pathogens, pheromones and botanicals for important pests of horticultural crops *viz.,* cauliflower, brinjal, tomato, curry leaf, tapioca, papaya, chilli and

sugarcane woolly aphid and internode borer to minimize the impact of harmful pesticides. Oil based formulation of *Beauveria bassiana* effective against onion thrips and sweet flag based formulation for the management of pulse beetle are being developed. Technologies for the management of rice false smut, alternaria leaf blight and tobacco streak virus in cotton and a system for the cultivation of oyster mushrooms in reusable polypropylene bottles and carton boxes has been standardized.

Energized Extension

Mere generation of technology will not yield fruits unless it is accepted by the intenders for whom it has been developed. TNAU is striving hard to develop time tested, cost effective and eco, econo and ergono friendly technologies which would improve the livelihood of farmers. Besides, equal importance is also given to popularize the technologies through organized demonstrations, field days, seminars, interactive meetings etc. In such case, a series of events have been organized during this year to popularize the TNAU bred technologies among the farmers.

Sixth Indian Horticulture Congress 2014 was organized during 6-9 November, 2014 in collaboration with the Horticultural Society of India, New Delhi. The Horti Intex 2014, an international Horticultural Expo was organised with financial support of Rs.2.50 crores from Government of Tamil Nadu. The event was conducted in association with the Department of Horticulture & Plantation crops, Chennai and CODISSIA from 7th to 9th November, 2014 at CODISSIA, Coimbatore. A plethora of events including exhibition depicting the horticultural wealth, improved varieties and technologies, processing, value addition, farm equipments,

field demonstrations, farmers interactive meetings were organised in which more than a lakh of visitors including farmers, entrepreneurs, banks and other stake holders participated and benefitted. Successful farmers in horticulture were awarded for their achievements.

As a measure of reaching the farmers directly by the scientists, Block Level Task Force was constituted in all the 32 districts of Tamil Nadu by Krishi Vigyan Kendras/Research Stations/College Campus so as to coordinate various activities of the TNAU and development departments. The 14 Krishi Vigyan Kendras functioning under the Directorate of Extension Education has organized a total of 4757 trainings, 431 Front Line Demonstrations and 145 On Farm Trials so as to transfer the latest farm technologies among the farming community. In addition, a total of 52 trainings was organized by the Training Division, Directorate of Extension Education for the benefit of 2010 participants of various development departments.

The Sourthern Regional Agricultural Fair and Farmers day 2015 was held at TNAU, Coimbatore from 06.01.2015 to 09.01.2015 involving all the five southern states *viz*., Tamil Nadu, Kerala, Andrapradesh, Telungana and Karnataka and two Union Territories *viz*., Puducherry and Andaman and Nickobar Islands. More than 5000 farmers participated and got benefited. Uzhavarin Valarum Velanmai, a popular tamil monthly magazine with 6,030 life members and 10,131 annual members has published special issues on sericulture, soil health management, bioenergy, forage crops, plant protection, drought management, seed production technology and role of youth in agriculture. The Educational

Media Centre has organized media management activities like production of 287 video programmes, telecast of 112 Doordarshan programmes and organizing 211 video shows. Farmers were also trained on specific aspects like Sustainable Sugarcane Initiative wherein 5000 farmers were trained.

AGRI INTEX 2015, another mega event to “expose to explore the technologies by farmers” was organized during July 17-20, 2015 at CODISSIA Trade Fair Complex, Coimbatore. Indoor stalls showcasing the frontier technologies of TNAU and outdoor stalls with live demonstration of Integrated Farming System, Micro-Irrigation Technologies, Medicinal Plants Garden, Nutritional Garden and Mushroom Production and latest farm machinery were arranged during the Fair. More than two lakh farmers from all over Tamil Nadu and neighboring states attended the fair. The Community Radio Station operated by the Directorate of Extension Education has recorded 464 Programmes besides broadcasting 4170 programmes. A total of 480 programmes were uploaded in the TNAU Agri Tech portal. Using the newspaper medium, a total of 1409 messages were published.

Under the Bachelor of farm technology programme, a unique degree started to improve the competency of farmers by simultaneously acquiring a degree, 160 candidates admitted during the year 2010 have completed six semesters in 24 subjects and were awarded with degree on the Graduation Day held on First July, 2015 by the Hon’ble Minister for Agriculture, Government of Tamil Nadu.

You are not the person you were when you came to TNAU. TNAU changed you and you will be a different person with new

goals in your life. Expect more so that you will be committed towards achieving the same. Tireless work will definitely pave the way for success when a spirit of fire is ignited in your mind towards achieving excellence. These moments will leave a happy dent in your life and later recognizing yourself as a alumni of TNAU would bring in boundless joy and happiness and you will be ever recognized with the tag of TNAU wherever you go. Best wishes for a bright future and always nurture the environment.

TAMIL NADU AGRICULTURAL UNIVERSITY

DEGREE OF DOCTOR OF SCIENCE

(*Honoris Causa*)

Conferred on Dr. Susan R. McCouch

CITATION

His Excellency the Governor and Chancellor,

I consider it a great privilege to present Dr. Susan Rutherford McCouch, Distinguished Professor of Plant Breeding and Genetics and of Plant Biology, for the award of the Doctor of Science (*Honoris Causa*).

Dr. McCouch is an eminent Professor of Plant Breeding and Genetics, Plant Biology, Biological Statistics and Computational Biology, serving as a faculty at the Cornell University, from where she received her Ph.D. Dr. McCouch has also spent a period of five years with the International Rice Research Institute in the Philippines. It is indeed an amazing transformation that from a graduation in Hispanic Literature and History, Dr. McCouch moved to a post graduation in Plant Pathology and then to a Ph. D in Plant Breeding and Genetics.

With a strong focus on rice, her research includes publication of the first molecular map of the rice genome in 1988, early studies on identification of Quantitative Trait Loci (QTL) associated with disease resistance, drought tolerance, maturity and yield, development of the essential repertoire of simple sequence

repeat (SSR) markers widely used as a genomic resource in rice genetics and breeding, cloning of genes underlying critical traits for rice improvement and studies on the evolutionary history of rice in both Africa and Asia. She is currently working on dissecting out the genetics of complex traits and understanding the genetic basis of transgressive variation in rice using genome wide association mapping.

Having trained scores of young scientists throughout the world, Dr. McCouch has been aptly honoured with numerous teaching and faculty awards including Chancellor's Award for Excellence in Scholarship and Creative Activities in 2012 and is recently elected a fellow of the American Association for the Advancement of Science.

To promote an interest in science and biology and enriching the biology curriculum in local area high schools in New York, Dr. Susan McCouch is also teaching hands-on laboratories in plant molecular biology in the Homer, Groton and Cortland high schools.

The Tamil Nadu Agricultural University feels proud to place on record the contributions of Dr. Susan Rutherford McCouch towards rice research for over two decades. On the recommendation of the Academic Council, Board of Management of this University and with the approval of the Chancellor, I deem it an honour to recommend Dr. Susan Rutherford McCouch, for the award of the Doctor of Science (*Honoris Causa*), to which, I pray she may be admitted.

August 17, 2015
Coimbatore

K.RAMASAMY
VICE CHANCELLOR

TAMIL NADU AGRICULTURAL UNIVERSITY

DEGREE OF DOCTOR OF SCIENCE

(*Honoris Causa*)

Conferred on Dr. Pedro Medrano Rojas

CITATION

His Excellency the Governor and Chancellor,

I deem it a great honour to present Dr. Pedro Medrano Rojas, former UN Assistant Secretary-General and former Director, World Food Program, for the award of the Doctor of Science (*Honoris Causa*).

Born in Chile, Dr. Medrano has spent more than three decades of his professional life to help eliminating world hunger and poverty. With degrees in Law and Social Sciences from the University of Chile, and Post Graduate studies from the University of Bonn (PhDc) in the Federal Republic of Germany and at the Catholic University of Louvain La Neuve (MA) in Belgium, Dr. Medrano proudly owns an impressive and enviable line of work.

The accolades achieved by Dr. Medrano are from his rich experience from the most prestigious and stateliest offices across the globe. He has been the advisor to the Chilean Secretary of Agriculture, an Assistant Professor of Economic Policy at the University of Chile and as an Executive Secretary of the International Jacques Maritain Institute.

Associated with the United Nations since 1983, at the Food and Agriculture Organization (FAO) in Rome, Dr. Medrano was responsible for the technical supervision of projects on rural

development and land tenure and humanitarian assistance to countries in Africa and Latin America. He has been the Program Officer of the UN's World Food Program (WFP) at El Salvador. As an Acting Country Director of WFP during the civil war in 1989, Dr. Medrano was duly honoured with a diploma and medal of recognition by the Human Rights Commission of El Salvador for being instrumental in the signing of Chapultepec Peace Accords that ended the war.

Dr. Medrano has been the Chilean Ambassador to El Salvador, Belize and Italy. As the Chairman of the Committee on World Food Security, he has organized the historic World Food Summit in Rome in 1996. He has been representing the WFP at the UN on issues including the fulfillment of the Millennium Development Goals, peace keeping operations, humanitarian and food crises, climate change, gender equality and empowerment of women. Dr. Medrano has been the Senior Coordinator for the UN Secretary-General for the Response to Cholera in Haiti.

The Tamil Nadu Agricultural University takes great pride in placing on record the excellent and incomparable professional expertise of Dr. Medrano and considers it a privilege to honour him, in recognition of his mission to reach out to the deprived lot.

On the recommendation of the Academic Council, Board of Management of this University and with the approval of the Chancellor, I consider it as a unique privilege to recommend Dr. Pedro Medrano Rojas for the award of the Doctor of Science (*Honoris Causa*), to which, I pray he may be admitted.

August 17, 2015
Coimbatore

K. RAMASAMY
VICE CHANCELLOR

TAMIL NADU AGRICULTURAL UNIVERSITY

DEGREE OF DOCTOR OF SCIENCE

(*Honoris Causa*)

Conferred on Sri. Ashok Bakthavathsalam

CITATION

His Excellency the Governor and Chancellor,

I deem it a privilege to present Sri. Ashok Bakthavathsalam, Founder and Director of CHIL-SEZ, Founder and Managing Director, KGDS Renewable Energy Pvt. Ltd., Managing Director, KGISL and Founder and Promoter of KGISL Educational Trust, for the award of the Doctor of Science (*Honoris Causa*).

A native of Coimbatore, with a B.E. from PSG Tech. and an M.S. from Syracuse University, USA, Sri. Ashok Bakthavathsalam is the proud Founder and Director of Tamil Nadu's largest IT Specific Special Economic Zone, Coimbatore HiTech Infrastructure Limited (CHIL), a premier destination in the IT map of India that has attracted enormous investment with huge employment opportunities. Sri. Ashok has single-handedly enabled the holistic and accelerated development in the Keeranatham and Saravanampatti Panchayats through Public Private Partnership providing livelihood opportunities and urban amenities to improve the quality of life in rural areas with focus on water supply, sanitation, physical infrastructure as well as knowledge connectivity.

As the Founder and Managing Director of KGDS Renewable Energy (P) Limited, Sri. Ashok has spearheaded research and

development of Concentrated Solar Thermal Power (CSP) generation, Biomass processing and Thermal Desalination technology. Aptly acknowledged by the MIT, USA, as one of the top technology innovations, and emphasized by the former President of India, Dr. A.P.J. Abdul Kalam, this Solar Desalination Project has proven a massive impact in rural villages in emerging market countries to provide power and water, especially from renewable energy. Sri. Ashok has literally pioneered the growth of the IT and BPO services in Coimbatore since 1996 through his KG Information Systems Pvt. Ltd., and has established the largest investor relations services division in India. In addition, his KGISL Educational Trust renders a laudable academic service to the society, which also caters to 12,000 Japanese schools. A member of the Task Force on IT of the State as well as the Central Governments and as a Convenor of the CII Tamil Nadu Panel, Sri. Ashok has been honoured with various awards including the Best ICT Entrepreneur Award for his services.

The Tamil Nadu Agricultural University is immensely pleased to place on record the outstanding achievements of Sri. Ashok Bakthavathsalam and takes great pride in honouring him, in recognition of his contribution to the IT industry and the society at large.

On the recommendation of the Academic Council, Board of Management of this University and with the approval of the Chancellor, I consider it an honour to recommend Sri. Ashok Bakthavathsalam for the award of the Doctor of Science (*Honoris Causa*), to which, I pray he may be admitted.

August 17, 2015
Coimbatore

K.RAMASAMY
VICE CHANCELLOR

Acceptance Speech of Dr. Susan R. McCouch

on Conferment of Degree of Doctor of Science

(*Honoris Causa*)

at the 36th Convocation of

Tamil Nadu Agricultural University

August 17, 2015

His Excellency, Honourable Governor of Tamil Nadu and Chancellor of TNAU, Honourable Minister for Housing, Urban Development and Agriculture, Government of Tamil Nadu and Pro Chancellor of TNAU, Vice Chancellor of Tamil Nadu Agricultural University, Dr. K. Ramasamy, Dr. Pedro Medrano Rojas, Regional Director for Latin America and the Caribbean, New York, and Mr. Ashok Bakthavathsalam, Founder and Director of KG Groups of Institutes Distinguished Academicians and Officers, Members of Board of Management, Members of Academic, Research and Extension Education Councils, University Officers, Teaching and Non-teaching Communities of TNAU, Graduates of the year, Parents, Students and Members from the Press and Media, Ladies and Gentlemen

I am extremely humbled and honoured to receive the honorary degree of Doctor of Science from the Tamil Nadu Agricultural University during this 36th convocation here in Coimbatore today. I deeply thank TNAU for bestowing this honour upon me. Tamil Nadu Agricultural University is among the world's top agricultural universities - a forward thinking institution whose faculty and stu-

dents are leaders in the development, dissemination and adoption of new technologies. TNAU educates its students to be innovators, hard workers and empathetic achievers in many fields of science and agriculture.

I have always felt privileged to work with TNAU and feel even more privileged to be recognized with this honourary degree.

Through the efforts of its faculty and students over more than 100 years, TNAU has transformed the lives of millions of farmers in the state of Tamil Nadu and across India. I admire the institution for its efforts and its achievements.

To receive this degree is both an honour and a responsibility. I look forward to fulfilling your trust in me. It is in the fields of rice research, molecular marker technology, and genomics that I know TNAU the best and feel I have the most to contribute. I am also sincerely interested in contributing to the education of the next generation of plant breeders, both men and women.

TNAU focuses on many agricultural crops, and one of the most important is rice. Rice is India's preeminent crop, the staple of most Indians and most Asians. India has the world's largest area under rice cultivation and is one of the largest producers of white rice, accounting for 20% of global rice production. Today, India is the world's second largest exporter of rice. And there are still improvements to be made.

TNAU has invested significant resources and efforts toward rice improvement and can proudly take its place among the world's premiere institutes for rice research. For this and other reasons, it is dear to my heart.

I started my career working at the International Rice Research Institute (IRRI) in the Philippines, and one of my very first PhD students was a TNAU graduate. I first visited this great university in 1990 and had an opportunity to know the activities of Paddy Breeding Station on 21.11.1990 and have always revered it. For the last 20 years, I have had the privilege of leading a rice research program as a professor of Plant Breeding and Genetics in the College of Agriculture and Life Sciences at Cornell. Because I live and work in a part of the world where no rice is grown commercially, I have established many international research collaborations that give meaning to my work, and also give students and young professionals the opportunity to participate in the global world of science that is so important to the future of rice as one of the world's essential food-security crops.

Several collaborative programs between Cornell and TNAU support research, curriculum innovations, faculty development, and student exchange initiatives.

One of the most prominent TNAU-CORNELL educational partnerships has been **Experiential Learning for Globalizing Agriculture**, in which some of you have participated. This course on international agriculture prepares graduates for leadership positions in global agriculture. This experiential learning program acquaints students with food security issues, using South Asia as a case study, and demonstrates how problems in these areas are being addressed by international, government, private sector and non-government agencies.

There has also been a Dual Degree Program between Cornell and TNAU. Thanks to the Tata Trust and the Cornell Sathguru Foundation, an innovative and unique collaborative

academic program was developed for graduate students in Food Science and Plant Breeding. This dual degree program was the fi rst of its kind and paved the way for future international partnership programs in agriculture. Over **40** students completed dual degrees from Cornell and Tamil Nadu Agricultural University, and many have secured excellent research positions in US and Indian universities and high profile jobs in the private sector.

Faculty Capacity Building has been another collaborative endeavor. Cornell University has provided training opportunities on its campus for TNAU faculty, while TNAU has provided teaching opportunities on its campus for Cornell faculty. The dual degree program facilitated the development of joint research themes and encouraged faculty and department coordination.

The Agricultural Biotechnology Support Project II, or ABSPII, is one of the flagship projects of USAID. It focused on biotechnology interventions for enhancing food production. TNAU was a major partner in the ABSPII consortium, led by Cornell University. It supported the development of pest and disease resistant brinjal (eggplant) of interest to small-scale farmers and worked to build local scientific, management and policy-making capabilities at every step of the product development and regulatory approval processes. TNAU and Cornell have facilitated several public-private partnerships that provide support for national research organizations in the areas of product development, intellectual property rights, technology transfer, bio-safety policy, bio-safety testing, and science communication.

I offer my most profound thanks to His Excellency, The Governor of Tamil Nadu and the Chancellor of Tamil Nadu Agricultural University; the Honourable Minister for Housing Urban De-

velopment and Agriculture, the Government of Tamil Nadu and Pro-Chancellor of Tamil Nadu Agricultural University; the Vice-Chancellor and Members of the Board of Management; and the Academic Council for conferring this honor on me. It is a day that I will always remember.

Finally, I extend my heartiest congratulations to all the students assembled here for your well-deserved degrees and awards! As we embark on our life's work, I extend my very best wishes for a bright and prosperous future and may we all be encouraged to work together to reach our potential.

Thank you very much.

Acceptance Speech of Dr. Pedro Medrano Rojas

on Conferment of Degree of Doctor of Science

(*Honoris Causa*)

at the 36th Convocation of

Tamil Nadu Agricultural University

August 17, 2015

His Excellency, the Governor of Tamil Nadu and the Chancellor of Tamil Nadu Agricultural University, Honourable Minister for Agriculture and Pro Chancellor of Tamil Nadu Agricultural University, Vice Chancellor, Tamil Nadu Agricultural University, Dr. K. Ramasamy, the Chief Guest Professor, Department of Plant Breeding and Genetics, Cornell University, USA, Dr. Susan R. McCouch, Chairman and Managing Director, K.G. Information Systems Pvt. Ltd., Coimbatore, Mr. Ashok Bakthavathsalam, Members of the Board of Management and the Academic Council, Faculty Members, Students, Representatives of the Media, other Dignitaries, Ladies and Gentlemen

I want to deeply thank Tamil Nadu Agricultural University for bestowing upon me the great honour of receiving the honorary degree of Doctor of Science during this 36th convocation here in Coimbatore today.

TNAU is among the world's leading Agricultural universities and its work has contributed to improving the lives of millions of

people, not only in Tamil Nadu but also in India and around the world.

In fact, a former student of this University and a son of Tamil Nadu, Professor M. S. Swaminathan, is worldwide known as the father of India Green Revolution and as an advocate of environmentally sustainable agriculture, sustainable food security and the preservation of biodiversity through an “evergreen revolution.” Thanks to his work, India became a country with a food surplus, and millions of people have been saved from famines and starvation. The work of Professor Swaminathan has inspired leaders around the world who fight to eradicate hunger and poverty.

The world was greatly encouraged by India’s success in multiplying food production and achieving food self-sufficiency. In 1996, the international community set the goal of reducing by half the number of hungry people in the world by 2015. I was the Chairman of the Committee on World Food Security which was responsible for preparing the World Food Summit in Rome at which the goal was set. Professor Swaminathan was there as a renowned expert, and although I did not know him then, I admired and respected his accomplishments.

Unfortunately, the target year of 2015 has arrived and the goal that was set in 1996 has not been met. There have been some setbacks. Now, the world knows that sustainable development and peace are not possible while people are hungry, and that it is economically self-destructive to ignore hunger. We have seen

that hunger, when left unchecked, contributes to civil wars, strike, massive migration and global instability.

About 10 years ago, I came to live and work in India as Representative of the World Food Program. In that role, I met and had the privilege of working with Professor M. S. Swaminathan and his Research Foundation.

We knew that there were three elements that make up food security: availability, access and absorption. That is, it is not enough to grow sufficient crops; you must also make sure that each person in India receives what he or she needs by means of efficient distribution, and that their bodies be able to absorb and biologically benefit from those nutrients.

One further refinement - and again, Tamil Nadu's native son, Professor Swaminathan, was at the forefront in calling attention to this globally - is the issue of nutrition and micronutrients. In addition to having an adequate quantity of food, it is of critical importance that a person have access to sufficient nutrients for a productive and healthy life, including protein, iron, iodine, zinc, Vitamin A, Vitamin B12 and other micronutrients.

As India had already become self-sufficient in food production in the Green Revolution, Professor Swaminathan and I, on behalf of the World Food Programme, focused on distribution, nutrition and micronutrients.

We undertook a detailed project. We prepared Food Insecurity Atlases of Rural and Urban India and The Sustainability of Food Security Atlas of India. These were meant to identify the

areas of food insecurity in India in order to take effective action to banish hunger from the country, and as tools for the formulation of appropriate public policies.

In our food security atlases, we identified the “hot spots” of food or nutritional deficiencies, and called attention to the so-called “South Asia Paradox” where a generous food supply co-exists with high levels of child and maternal malnutrition. This joint effort attracted the attention of other countries that have since published similar atlases.

Nutrition security is the new goal: not just to address food security by increasing crop yield but also to attain nutrition security. Nutrition security involves paying concurrent attention to undernutrition, protein hunger and hidden hunger arising from inadequate consumption of micronutrients. It also involves access to clean drinking water, sanitation, primary healthcare and nutrition literacy. This is the challenge we have ahead of us.

We see as well heightened awareness of waste in the food supply chain: even where there is sufficient food production, much perishes before it can be consumed.

In addition, in addressing sustainable agriculture, there are issues of environmental degradation and now climate change.

It is extremely satisfying to see that this university, a leader in the field, is already focusing on these issues. TNAU has just undertaken a new All India Coordinated Project for Special Research in Food Quality, sanctioned by the Indian Council of Agricultural Research, towards achieving the goal of food

and nutrition security, with attention to nutritional food quality, combatting food waste, and sustainable production. This is extremely important work, and I congratulate you for your vision and dedication.

Now, at a global level, there is a renewed commitment to combat hunger that will need all of us. The 193 Member States of the United Nations recently reached an agreement which is expected to be adopted this September by world leaders at the Sustainable Development Summit in New York. Sustainable Development Goal #2 is to "End hunger, achieve food security and improved nutrition and promote sustainable agriculture."

It is interesting to note that this Sustainable Development Goal is entirely in line with the criteria we developed when we prepared the Food Insecurity Atlases in India.

I would like to make a special plea to all the members of Tamil Nadu Agricultural University, and especially to the students: dedicate yourselves to the achievement of these Sustainable Development Goals. As the Secretary General of the United Nations said, *"This is the People's Agenda, a plan of action for ending poverty in all its dimensions, irreversibly, everywhere, and leaving no one behind."*

I am convinced that Tamil Nadu Agricultural University is in a position to play a fundamental role in achieving these goals, and thus to make a substantial contribution not only to India but to all humanity. History gives us abundant evidence that sustainable nutritional security is a central condition for development and for reducing poverty, preventing environmental destruction, and

reducing violence. In the work of Tamil Nadu Agricultural University, you are not only feeding your neighbour but contributing to global stability and world peace.

In accepting this Doctor of Science (*Honoris Causa)* from Tamil Nadu Agricultural University, which is a high honour that profoundly moves me, I would like us to remember what Mahatma Gandhi said at Noakhali in 1946: “To the hungry, God is Bread; this God should prevail in every house and hut in the country.” And I would add in the whole world.

Many thanks!

Acceptance Speech of Sri. Ashok Bakthavathsalam

on Conferment of Degree of Doctor of Science

(*Honoris Causa*)

at the 36th Convocation of the

Tamil Nadu Agricultural University

August 17, 2015

His Excellency, the Governor of Tamil Nadu and the Chancellor of Tamil Nadu Agricultural University, Honourable Minister for Agriculture, Government of Tamil Nadu and Pro-Chancellor of Tamil Nadu Agricultural University, Vice Chancellor of Tamil Nadu Agricultural University, Dr. K. Ramasamy, Dr. Susan R. McCouch, Cornell University, Dr. Pedro Medrano Rojas, Former UN Assistant Secretary-General, Members of the Board of Management and the Academic Council, Faculty Members, Students, Representatives of the Media, other Dignitaries, Ladies and Gentlemen:

I want to express my heartfelt thanks to the Tamil Nadu Agricultural University (TNAU) for bestowing upon me the great honour of receiving the honorary degree of Doctor of Science during this 36th convocation here in Coimbatore today.

I have always had the highest admiration for TNAU, one of the crown jewels of the city of Coimbatore, especially whenever I have passed by this campus on my infrequent trips to Maruthamalai. Only recently I realized that TNAU was the first ever Agricultural college to be started in India (as early as 1906). Over the past

100 years, it has grown in stature to arguably become the #1 Agricultural University in the country. It is internationally acclaimed and the students from this university have made their mark all over the world. An alumni of this institution's Biotechnology department is a member of the team which has been recently awarded the Nobel Prize for the peaceful use of Atomic Energy.

Most importantly, throughout its 100+ glorious years of history the University has had a tremendous and positive impact on agriculture by transforming the lives of millions of farmers in the state of Tami Nadu and across India for that matter. And so, this makes the honour that you have conferred upon me that much more overwhelming and meaningful.

TNAU Excellence

TNAU has several firsts to its credit. First and foremost, thanks in great measure to the dynamic and able leadership of the current Vice Chancellor Dr. K. Ramasamy, TNAU has brought about the much needed focus and paradigm shift to organic farming, the 2nd green revolution, which should bring sustained and improved prosperity to the farmers.

The present agrarian crisis is a result of dwindling profits from traditional agricultural practices accentuated by rising cost of inputs and dwindling human resources. I am sure this crisis will be mitigated by innovations from this University in the field of biotechnology, bio-fertilizers, bio-pesticides, farm mechanization and increasing the profitability to the farmer through value addition of farm produce, thereby aiding the producer and providing the consumer with a healthy and nutritious diet. I am sure this Institution will bring glory to the state and the nation by its continued contributions.

Secondly, something that caught my attention (coming from an IT background), is the **Agricultural Portal** which covers all aspects of farming which is a boon to the farmers. The marketing and weather advisory activities and the electronic extension greatly aid the farmers in the state and for this alone, TNAU is a role model for other agricultural universities in the country and Asia.

I truly believe we have only scratched the surface regarding the adoption of technology. It still has huge potential in accelerating not only the agricultural productivity in our country but the productivity of all other sectors as well.

On one side, we have seen farmers benefiting from price discovery, thanks to cheaper smart phones and pervasive mobile networks. In addition to anecdotal stories, quantifiable evidence of the tangible impact of technology has begun to emerge. Here's one case in point: the rapid adoption of mobile phones by Kerala's fishermen has resulted in improving their profits by 8 percent accompanied by a 4 percent decline in consumer prices!

And on the other hand, we are already witnessing the ominous signs of technology's dark side. Take the case of killer drones. A group of world-renowned entrepreneurs, scientists and innovators of the likes of Elon Musk, Stephen Hawking and Apple's co-founder Steve Wozniak have signed an open letter calling for a ban on the use of autonomous weapons. If proper regulations are not put in place, artificially intelligent devices that could "search for and eliminate people meeting certain pre-defined criteria" could be deployed within a matter of "years, not decades," the group's letter states.

For the Love of Technology

Nevertheless, it is the love for technology that has driven most of my own pursuits as an entrepreneur.

I am extremely fortunate to have been blessed with a supportive family who have constantly pushed me to pursue great things. My father Dr. G. Bakthavathsalam, a surgeon by profession, strongly backed my decision to pursue engineering studies instead of medicine. And subsequently, he would fully back me in all my entrepreneurial adventures, knowing fully well that any one of those adventures had the potential to wipe our family's net worth many times over.

I have also been extremely fortunate to have a wonderful team of trusting and trustworthy colleagues at KGiSL who have helped cause impact in diverse settings, including but not limited to:

- establishing Coimbatore's first and fastest growing medical transcription company at that time,
- establishing KGiSL as Coimbatore's biggest and longest running international BPO centre and leading BFSI software solutions provider to global investment banks and insurance companies,
- establishing one of the largest special economic zone (SEZ) in the rural villages of Saravanampatti and Keeranatham. The zone has attracted 1500+ crores of investment in world-class infrastructure including water, power and roads, generated direct employment of 20,000+ jobs, crossed cumulative exports of more than

7,500+ crores, and now accounts for at least 75% of all annual IT exports from the city,

- establishing the 6500+ strong KGISL educational institutions, including KGISL-IIM, KG College of Arts and Science and KGiSL Institute of Technology
- and last but not the least, establishing KG Design as the first solar thermal R&D Centre that has been recognized by the Government of India; since then it has won several National Level Awards for Innovation. KG Design's desalination system is 100% indigenous, and can be fueled by a mix of thermal sources (including solar, biomass) to generate potable water from the oceans in the most ecological friendly manner to serve the needs of coastal communities.

In all the above endeavours, the DNA of team KGiSL's operating culture is best summed up as follows: striving in areas far beyond our "comfort zone", a strong conviction even in the face of unnerving uncertainty and a creative flexibility to adapt the right strategies, all in the single-minded pursuit to make IT happen.

Dedication

Once again, I offer my most profound thanks to His Excellency, The Governor of Tamil Nadu and the Chancellor of Tamil Nadu Agricultural University; the Honourable Minister for Agriculture, the Government of Tamil Nadu and Pro-Chancellor of Tamil Nadu Agricultural University; the Vice Chancellor and Members of the Board of Management; and the Academic Council for conferring this honour on me. It is a day that I will never forget.

At this juncture, I recollect and offer my thanks to all my

teachers who instilled in me the yearning for learning. I am also fondly reminded of a great soul, a great teacher for the entire nation, who was a teacher literally until his last breadth. When he passed away, the entire nation grieved deeply that “Bharat has lost its Ratna”.

As this honour deeply motivates me to do more in the coming years, I humbly dedicate this honour to the memory of our former President Bharat Ratna Dr. A.P.J. Abdul Kalam, probably the greatest People’s President we will ever have.

We had the privilege of hosting the great man on five different occasions at our KGiSL’s Saravanampatti campus. Every time, he would leave a deeper and indelible mark on all of us. I still vividly remember the time when he had come over to inaugurate KG Design’s Solar Thermal Research Centre. He seated me beside him and triggered me with the powerful question: “What is your dream?” And as if to answer what he had asked of me privately, he would publicly remind me, as he has done of millions of Indians, that “A small aim is a crime.”

Therefore, to all the graduating students here, I have this to ask of you: Starting today, may you start dreaming those big dreams, may you rise to overcome challenges bigger than you, and through your heroic struggles may you accomplish big things far beyond your own imagination. Most importantly, every time you feel the fear, “feel the fear and do it anyway!”

My heartiest congratulations to all the graduating students for your well-deserved degrees and awards - I wish each of you the very best of health, happiness and prosperity in the years to come.

God Bless!

TAMIL NADU AGRICULTURAL UNIVERSITY COIMBATORE

36th CONVOCATION

CONVOCATION ADDRESS

Dr. Susan R. McCouch

Professor

Department of Plant Breeding & Genetics

Cornell University, Ithaca, New York, USA

His Excellency, Hon'ble Chancellor and Governor of Tamil Nadu, **Dr. K. Rosaiah,** Hon'ble Pro Chancellor and Minister for Housing, Urban Development and Agriculture, Government of Tamil Nadu, **Thiru. R. Vaithilingam,** Distinguished academician and Vice Chancellor of TNAU, **Dr. K. Ramasamy**, Dr. Pedro Medrano Rojas, Shri. Ashok Bakthavathsalam, Members of the Board of Management, Members of Academic, Research and Extension Education Councils, Graduates of the year, Faculty Members, representatives of the mass media, dear student scholars, Ladies and Gentlemen.

It is indeed a privilege and honour to be invited to deliver the 36th convocation address of this prestigious Tamil Nadu Agricultural University, Coimbatore. I most sincerely thank the Hon'ble Chancellor and Vice Chancellor for providing me this opportunity to share my thoughts with all of you. On this memorable occasion, I congratulate the graduating students for your many and varied achievements and wish you all possible success as you go forward to make your marks in the world.

I want to first acknowledge the long and distinguished history of your great nation of India, its rich and varied agricultural

landscape, its premier university system, and the talent, commitment, intellectual potential, energy and enthusiasm of the students gathered here today. You, the 2015 graduates of TNAU, have been educated at one of the world's top agricultural universities, and you must surely feel the weight of expectations on your shoulders. It falls to you, collectively, to help improve the productivity, sustainability and resilience of the agricultural system in your own state of Tamil Nadu, in India as a whole, and by extension, in the world at large. This is a tall order and a journey that we share.

As we bask in the warmth and good wishes of family, friends, teachers and colleagues, I will take a few minutes to consider the personal journey that awaits each of you, and to share stories from my own life that have led me to this moment here speaking to you today.

Looking back at the person I was at 18 when I initiated my university studies, I see a young woman who had a great desire to experience the world beyond her own borders, a young woman who wanted to get to know people from different walks of life, with different aspirations, from diverse social, cultural and religious traditions, and to find common ground among the differences. I had no idea where my education would take me, but I trusted that the pursuit of knowledge and discipline of the mind had its own trajectory and rewards.

As an undergraduate, I chose to study Hispanic language and history. At that time, I believed that learning another language was just a problem of vocabulary, learning to use different words to say the same thing. What I discovered was that learning a new language involved seeing the world through entirely different eyes. Learning to communicate in a new language involved

acquiring a new understanding of history, a new understanding of relationships, and projecting future aspirations in a new light. I found the same was true as a graduate student, when I learned to speak the language of biology - but more of that later.

Following graduation, I undertook a 21,000 km overland journey from Boston to Buenos Aires, Argentina. In a metaphorical sense, many of you will undertake similar journeys. I traversed the entire length of the Americas over the course of a year, communicating only in Spanish, with no internet and no mobile phone. I was indebted to the kindness of strangers. I learned a great deal about the Spanish language and the history and culture of distinctive Spanish-speaking people.

During that trip, I learned even more about humanity, about wealth and poverty, about urban and rural living, about food and agriculture, about generosity, and about the importance of giving and receiving. In short, I understood that empowerment comes from sharing what you have with others.

And that is such an important lesson that if you take only one message from my speech today, I hope it is that one: **empowerment comes from sharing what you have with others.**

I also learned that most disease is associated with poverty, a result of poor nutrition, poor sanitation, and lack of education. I learned that access to healthy food and clean water is more important to global health and prosperity than the vast majority of expensive medical and pharmaceutical interventions. I learned that generosity, both material and spiritual, enriches all concerned.

I returned to the US and entered a graduate program at

the University of Massachusetts in Agriculture and Life Sciences. I started with all the basic courses in Biology, Chemistry, Physics, Botany and Genetics, entry-level classes that any undergraduate would already have completed. Those classes invigorated and excited me, and awakened memories of my previous academic voyage into the world of language and literature. I was thrilled to learn the language of biology, a new vocabulary with an entirely different kind of literature behind it, one that promised to open new doors and allowed me to communicate with a different group of people about many different things. As time went on, I realized that once again, this new language coloured my world, gave me a new appreciation of history (now called evolution), a new understanding of relationships. Once again, I found myself seeing the world and my aspirations in a new light.

After I earned an M.S. in Plant Pathology and before I could get a foothold in my new career, my life took an unexpected turn. I met the man that I would marry. Like me, he had lived overseas, and his experience motivated him to pursue graduate studies in Veterinary Medicine at Cornell University. The move to Ithaca, NY determined the future course of both our careers. During his four years in vet school, I worked as a technician and we started a family, which was a very happy road for us both. Once my husband graduated and started working as a veterinarian, I decided to pursue a PhD in Plant Breeding and Genetics. Together we agreed to balance work and family equally. In those early days, it was a great adventure to be juggling child care, graduate studies, and the on-call schedule of a large-animal veterinarian.

The opportunity to pursue a PhD at Cornell offered me an extraordinary opportunity for personal and professional growth, and was one of the most exciting and rewarding periods in my

life. My studies revolved around developing the first molecular genetic map of rice, funded by the Rockefeller Foundation's International Program on Rice Biotechnology, a far-sighted and well-organized research network. That program trained an entire generation of rice scientists from all over the world, including many Indian professors and research scholars, some of the most prominent rice researchers in the world today. Molecular biology and genome mapping were in their infancy, and the new "green genetics" technology showed real promise for reducing the use of toxic pesticides, boosting yield, improving water and nutrient use efficiency, enhancing the nutritional content of staple grains, and improving the overall rate of genetic gain in breeding.

I was exhilarated by all that I was learning, by the promise of genomics to unravel the mysteries of quantitative genetics, excited by the people I was associated with, and by the sheer luck of finding myself within a network of people who embraced the ideal of "rice science without borders". I saw my road open up before me, and it has taken many twists and turns as I continue to follow it to this day, through the rice paddies of the world — including India's. I learned a great deal from rice farmers and rice breeders and fellow rice scientists, and I dreamed that one day I, too, would be able to develop a rice research program, with a focus on genome mapping and genomic-assisted breeding.

I knew that any future lab I would have would embrace the diversity of people and intellectual traditions, would celebrate distinctive rice cultures, and foster sharing of information in an open learning environment. It would also demand rigor and discipline as the foundation for innovation and creativity. I had no idea how all this would come about, but I believed that if I followed the road I was on with sincerity, humility, and an open heart, it

would lead me where I needed to go. And that is how I came to be standing before you today.

As my PhD program at Cornell came to an end, I was offered a position as an Associate Geneticist in the Department of Plant Breeding, Genetics and Biochemistry at the International Rice Research Institute, or IRRI, in the Philippines. My husband and I moved to the Philippines just after our second child, a son, was born.

Moving to IRRI was an important step in my career, and it was generous of my husband to accompany me, as his work situation in the Philippines was very difficult. While there, I was able to establish the first genome mapping lab at the institute, train a team of young scientists and technicians, and launch several graduate student careers in collaboration with the University of the Philippines in Los Baños. Many of my early students are today well-known researchers and research leaders, several are your professors and research mentors here in India.

Our collective work initiated the genome mapping lab and marker-assisted breeding program that laid the groundwork for IRRI's molecular breeding program. Early QTL mapping and more recent genome wide association studies identified scores of genes and QTLs underlying traits that are critical to crop performance and provide valuable targets for selection in breeding.

I left IRRI in 1995 to take a position as a plant breeder and geneticist at Cornell. In my role as professor and research mentor, my greatest joy and sense of accomplishment has come from my interactions with students and young scientists like the ones who sit here today. I have shared in the educational experience of many exceptionally talented and visionary young geneticists and plant

breeders. One of my favorite students of all time is sitting here in this audience today. Many years ago, he and his wife completed their studies at TNAU and came to IRRI with their young daughter. He arrived with support from the Rockefeller Foundation to pursue a PhD in rice genetics and breeding, and she came with hopes for a similar opportunity in her field. It took time, but ultimately, the road opened up and both were able to complete their PhDs and return to TNAU where they have contributed to the teaching and research excellence of this university. Our lives have been enriched for the last 25 years through visits and the sharing of experiences, both our struggles and our satisfactions.

In each case, I have encouraged my students to reach for the sky, to realize his or her own potential, to dream his or her own dreams. I encourage all of you to do the same. I have learned from each student. You extend my knowledge of the world and help me fulfill the great desire I had when I was a young student to swim in the ocean of life, to experience the world beyond my own borders, to know people from different walks of life, from diverse social, cultural and religious traditions, and to find common ground amidst the differences.

The educational process requires a generosity of spirit on the part of both teachers and students. Both of us must agree to participate in a process of mutual sharing that is designed to empower all concerned. By engaging in the educational process, we are transformed and enriched in ways that pay dividends for the rest of our lives. Generosity, both material and spiritual, enriches all concerned.

The educational process continues to underwrite my life's dreams and has brought me to speak to you today. I share the

journey of my life with you to encourage you all to open your hearts and minds to the journey that lies ahead for each of you.

Follow your convictions, with ingenuity and audacity. Address the challenges of the world in front of you. Potential is interesting, but it is through performance and achievements that legacies are built and remembered. Join together and with those who have gone before you to improve the lives of the billions of people who struggle to feed themselves, their families and their nations. Share what you have to empower others. Help make the world a better, safer and more secure place.

Thank you for your kind attention.

Centres of Tamil Nadu Agricultural University disseminating triple functions *viz*. Education, Research and Extension