34th Convocation

Thursday, 26th December 2013

Convocation Address

Dr. J. S. SANDHU

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Ministry of Agriculture & Cooperation, Krishi Bhavan,
New Delhi

Tamil Nadu Agricultural University
Coimbatore

Dr. Jeet Singh Sandhu

Born on 1st August 1955, Dr. Sandhu was graduated from University of Rajasthan, Jaipur in 1978 and obtained Master's in 1982 and Ph.D. degree in 1985 in Plant Breeding from Govind Ballabh Pant University of Agriculture and Technology, Pantnagar. He started his carrier as a Research Fellow at Punjab Agricultural University, Ludhiana in 1985 and worked there in various capacities before joining ICAR. He has developed 22 varieties of different pulse crops and his contributions in Chickpea and Vigna have been widely acclaimed. Dr. Sandhu has handled a number of projects including international projects and published 208 research papers in journals of national and international repute.

In March, 2010, Dr. Sandhu joined as Assistant Director General (Seeds), Indian Council of Agricultural Research, New Delhi and has contributed significantly not only in doubling breeder seed production in three years but also brought varietal replacement while phasing out old varieties in wheat and other crops. He has also developed breeder seeds lifting guidelines and policy planning related to seed. Besides, supervision of research programme and institute management of National Bureau of Plant Genetic Resources (NBPGR), New Delhi, National Centre for Plant Biotechnology (NRCPB), New Delhi and Directorate of Seed Research, Mau, Dr. Sandhu has also played important role

in drafting of Germplasm Exchange Guidelines. He has also helped in developing a number of MoUs and workplans for international collaboration. At present, Dr. Sandhu, as Agriculture Commissioner, is providing dynamic leadership to implement various development schemes with close linkages with department of agriculture of different states, National Agricultural Research System, International Agricultural Research Institutes and private organizations involved in agricultural production activities.

Dr. Sandhu is duly recognized for contributions, with awards and honors like CGIAR S King Baudouin Award 2002 and ICRISAT DOREEN MASHLER 2002 – PAU Team Award as national collaborator of ICRISAT, Plaque for best Research Worker and with a certificate for outstanding contribution in Research and Development by the PAU and with ISPRD Recognition award by the Indian Society of Pulses Research and Development (ISPRD), Kanpur. He also served the ISPRD as president & vice president. Dr. Sandhu is a member of various important committees like PPVFRA, RCGM, SVRC, Saarc Regional Gene Bank and Board of Management, MSKJUA&T, Banda etc. In 2013, the National Academy of Agricultural Sciences, New Delhi awarded Dr. Sandhu with Fellowship.

TAMIL NADU AGRICULTURAL UNIVERSITY
COIMBATORE

THIRTY FOURTH CONVOCATION

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CONVOCATION ADDRESS

By

Dr. J. S. Sandhu,
Agriculture Commissioner,
Department of Agriculture & Cooperation,
Ministry of Agriculture, Govt. of India,
Krishi Bhavan, New Delhi

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**, Vice Chancellor of TNAU, **Prof. Dr. K. Ramasamy**, distinguished academician and the special guests conferred with Honorary Degree of Doctor of Science, Hon'ble Members of Board of Management, Members of Academic Council, Research and Extension Education Councils, Faculty Members, Graduates of the year, Representatives of Mass Media, Dear Student Scholars, Ladies and Gentlemen.

I deem it as a great privilege and honour to be invited to deliver the 34th 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.

The TNAU, under the far-sighted and dynamic leadership of its Vice Chancellor Professor Ramasamy, has embarked upon several new initiatives and programmes relating to human resource development, knowledge generation, development and transfer of technology and unique outreach activities such as e-extension services, involvement in the implementation of NADP and TN-IAMWARM project, etc. The students of TNAU has excelled in the All India Competitive examinations especially during the recent ASRB selection among the 319 students selected 27 students from TNAU have obtained the top ranks. These, together with specific policy advocacy to the Governments at various levels, are the hallmarks of TNAU's contribution to the farming community and the society at large. I learn that the TNAU is closely working with the State Government's Agriculture Department, State Planning Commission and the related Departments such as Forestry and Irrigation in implementing various agricultural and rural development projects and programmes. At this moment of proud privilege for all of you graduates for having been graduated from this premier institution of glory and rich traditions, it is time for you to pause for a moment to reflect on and take stock of our agricultural past and to plan for our sustainable future. The past achievements notwithstanding, the future presents itself with unlimited possibilities but at the same with unlimited challenges with strong signals of uncertainty associated with issues such as climate change, acceptability of biotechnology, loss of biodiversity, etc..

Agricultural Development – Achievements and challenges

At the outset I would like to impress upon you that today, India is no longer synonymous with crushing poverty, recurring

famines, and starving people. It has become a country that has attained food self-sufficiency - and actually has done better than that: it has become a net exporter of agricultural production. On the global front, it has become a leading agricultural producer. In terms of cereals production, it holds third place after the US and China; second after China in both wheat and rice production, and first place in milk production.

Beginning in the mid 1960s, the Green Revolution led to the transformation of parts of India's agricultural sector. The Green Revolution utilized more readily available inputs (e.g., seeds, fertiliz-ers, mechanization, including irrigation) to make technology more widespread, for increasing agricultural production. It promoted agricultural research and extension messages. Agricultural growth took off: the sector grew at an annual rate of roughly 3 per cent.

The Green Revolution helped jumpstart a process of structural transformation of the agricultural sector. Trends that bespeak of such transformation are very much in evidence today: agricultural production is diversifying away from traditional crops and staples such as wheat and rice, towards horticultural and animal food products. Their share in the value of output of the agricultural sector, including animal husbandry and fisheries, is now close to 50 per cent, which is 17 percentage points higher than in the early 1980s. The private sector is becoming an increasingly important participant in agricultural research, agricultural production and agricultural marketing.

As India's economic growth continues and its prosperity increases, the country will experience a rapid, historically unprecedented rise in the demand for food. Even if the agricultural sector has performed sufficiently over the

past decades, the looming question is whether it can supply at the levels necessary to keep abreast of the anticipated demand. Simply stated, agricultural performance that is doing "well enough" might not be good enough.

The recent inflation in non-cereal food is a serious concern. India's poor still get more than 55 percent of their daily calories from cereals. Despite positive developments in the agricultural sector, the nutritional status of many Indians remains weak. There is still a need for diet diversification to improve nutrition among the poor, which, in turn, requires deeper agricultural diversification, particularly among small and marginal farmers and those in resource poor areas.

Another serious concern is the realization that India is reaching its physical resource constraints - thereby severely limiting the scope to expand agricultural production without significant improvements in productivity. India's water availability is especially worrisome. Water availability is already constrained, and is likely to worsen, as groundwater stores are depleted and the effects of climate change negatively impact India's hydro-geological situation. Land degradation has reportedly increased, in the form of depleted soil fertility, erosion, and waterlogging.

As the structural transformation of India's economy proceeds, the share of agriculture in GDP will likely continue to decline. Already it has declined significantly from above 40 per cent in the 1960s to around 12 per cent in 2011. And yet the agricultural and non-agricultural rural economy continues to provide a significant share of total employment, estimated at around 50 per cent in 2011. Hence, the livelihood of a significant share of Indian households depends on the performance of the agricultural and non-agriculture rural economy, both now and in the foreseeable future.

Agricultural Research

India's Green Revolution represents a process by which public resources were used to create the foundation upon which private actors were able to flourish. Fifty years later, people are calling for a Second Green Revolution to jumpstart a similar process, but with the added objective to benefit the parts of India's agricultural sector that were bypassed during the first round. This would serve the needs of a society that is becoming increasingly middle class and more urban.

The Governments in both the Centre and the State are giving due importance to strengthen the process of knowledge generation in agriculture through adequate investments in agricultural research and development. Beginning in the 1960s, the national agricultural research system made historic early contributions by way of improved varieties of cereals, pulses, oilseeds, fiber crops, sugarcane, potato, horticultural, and plantation crops. Besides evolving high-yielding crop varieties, improved soil and water management technology, and pest and disease control techniques to name but some of the solutions that were developed, the national system played a significant role in taking new technologies to farmers' fields. Despite these successes, by the mid-1990s, a sort of 'technology fatigue' set in, even in the agriculturally progressive regions that practiced intensive agriculture. According to policymakers, this was partly due to a 'business as usual' attitude that had crept into the public research system. Today, the aim is to rediscover ways to put public-sector research back on its path of former progress, and supplement it with private sector research and product development.

The Green Revolution helped parts of Indian agriculture to prosper, but, in retrospect, it appears that the boost from the Revolution mainly benefited the high potential areas. The dry lands and rain-fed areas, and those areas that might be called the 'periphery', did not benefit to the same extent and they continue to lag behind the other regions. There is, however, the example of Gujarat, the positive outlier. Its agricultural sector has prospered - and continues to outshine any of the other Indian states - despite its natural resource limitations.

Private agricultural research began to pick up some of the slack and, indeed, made important and growing contributions over the years. But the private sector goes where it sees a business case and thus may fail to focus on the needs of poorer and more marginal farmers. The private sector thrives on high-value, high-margin seeds such as vegetables, cotton, maize, and sunflower and focuses on hybrids in particular where (to maintain vigor) farmers periodically need to buy new seeds. Rainfed agriculture is neglected by both private and public agricultural research to this day - an important omission, since a sizeable share of Indian agriculture (currently about 55 percent of total net cropped area) will remain rain-fed for a long time to come. Strengthening rain-fed agriculture should therefore be a high national priority involving seeds development, the right kinds of fertilizer solutions, agricultural extension and other services, including farm credit and, above all, crop insurance to provide the kind of risk mitigation options farmers need before they can invest in productivity-enhancing purchased inputs such as improved seed.

Agricultural research policy must respond to a changing agricultural, scientific, and economic environment. The new paradigm underscores pluralistic institutional structures with dominant role for private sector, new sources and mechanisms for research funding, organization and management reform of public institutions, and management of intellectual property. The reforms are generally proceeding at slow pace in developing countries, where there is a large proportion of small-scale farmers and the public sector still dominates the research system. Thus the focus of research policy should remain on improving efficiency of the public research system and encouraging participation of the private sector where possible. Efforts should also focus on building partnerships among public agricultural research system in ICAR system, SAUs, CGIAR system and private sector. There should be an appropriate mix of division of labour as well as synergy and joint research among these institutions so that we can reap the benefits of both institutional specialization and inter-institutional sharing of knowledge and resources.

Natural resource management for sustainable growth

Poverty and malnutrition are already endemic in many regions. The destruction and degradation of agricultural and environmental resources is a major issue. Techniques for increasing production and conserving soil and water resources are already available but are not widely or systematically applied. A systematic approach is needed for identifying land uses and production systems that are sustainable in each land and climate zone, including the economic, social and institutional mechanisms necessary for their implementation.

FAO has emphasized that there are close causal linkages between reducing hunger and the sustainable management of natural resources and ecosystems. With world population expected to reach 8 billion by 2030, pressure on the environment will continue to mount. Use of renewable resources - land, forests, fresh water, coastal areas, fishing grounds, and air - has now exceeded the capacity for regeneration in many regions. In India nearly 45 per cent of the geographical area is under various kinds of degradation. Water erosion, water logging, salinity, acidity, wind erosion are some of the important ecological problems that restrict the sustainability of the food production systems.

Inappropriate and uncontrolled land uses are a major cause of degradation and depletion of land resources. Present land use often disregards the actual potentials, carrying capacities and limitations of land resources, as well as their diversity in space. The need to increase food production to meet the expanding needs of the population will put enormous pressure on all natural resources, including land. Land degradation is the most important environmental problem affecting extensive areas of land in both developed and developing countries. The problem of soil erosion is particularly acute in developing countries, while problems of salinization, waterlogging, soil pollution and loss of soil fertility are increasing in all countries. Land degradation is serious because the productivity of huge areas of land is declining just when populations are increasing rapidly and the demand on the land is growing to produce more food, fibre and fuel. Efforts to control land degradation, particularly in fragile resource areas, have had limited success to date. Well planned, long-term national and regional land conservation

and rehabilitation programmes, with strong political support and adequate funding, are now needed. While land-use planning and land zoning, combined with better land management, should provide long-term solutions, it is urgent to arrest land degradation and launch conservation and rehabilitation programmes in the most critically affected and vulnerable areas.

Increase in multi-sectoral competition for water highlights the need to formulate water policies and unbundle water resources management from irrigation service delivery. Other key priorities include: (i) modernizing Irrigation and Drainage Departments to integrate the participation of farmers and other agencies in irrigation management; (ii) improving cost recovery; (iii) rationalizing public expenditures, with priority to completing schemes with the highest returns; and (iv) allocating sufficient resources for operations and maintenance for the sustainability of investments.

Agricultural credit and crop insurance

Formal credit and insurance institutions can pool risks across large and diversified portfolios and, in principle, offer an efficient way of overcoming regional covariance problems and reducing the cost of risk management. These institutions, however, are rarely well-developed in the developing world and their absence amounts to a market failure.

Research on the reasons for this market failure has paid much more attention to supply-side problems that limit the spread of formal credit and insurance instruments than to the demand-side questions of whether there are financial instruments that farmers want and would be willing to pay for on a full-cost basis. If the latter can be demonstrated, then

governments may have a key role to play in both helping private banking and insurance institutions overcome supply-side constraints, or in offering these services themselves. The latter should not be confused with government programs that are essentially income transfers, e .g., relief employment food ration and subsidized crop insurance.

While there is undoubtedly a need for some of these programs in many poor rural areas, the focus here is on facilitating the spread of risk-management instruments on purely economic grounds. Of course, successful instruments would also help reduce the need for welfare assistance.

Droughts can have devastating effects on household incomes and consumption, especially for the poor. Rural households engage in many different risk management strategies - some mainly risk-reducing and some simply coping devices to protect consumption once income has been lost. An important limitation of these traditional risk management strategies is their inability to insure against covariate risks and they are also costly. The absence of formal credit and insurance institutions, which offer an efficient alternative by overcoming regional covariance problems and reducing the cost of risk management, amounts to a market failure. Past research has paid much attention to the supply-side reasons for this market failure than to the demand side question of whether there exist financial instruments that farmers want and would be willing to pay for.

Because of the catastrophic and simultaneous effects of droughts on all households over large areas, there is limited scope for spreading risks effectively at the local level. Either households must increase their savings significantly

(a problem with low average incomes and an absence of safe and convenient savings instruments), or more effective risk management aids are needed that can overcome the co-variation problem. Improved financial markets (with both credit and savings facilities) could be helpful, particularly if they intermediate over a larger and more diverse economic base than the local economy. Alternatively, formal drought insurance in the form of a drought (or rainfall) lottery might be feasible, and the results suggest that it could be sold on a full-cost basis.

Institutional and Policy Reforms

The challenges for the sector's future are both complex and daunting. Most observers of Indian agriculture believe that its problems have less to do with policies than with actual policy and program implementation. Fortunately, at all links of the agricultural value chain from extension services to storage facilities and marketing arrangements - private actors have started to complement public institutions, and are often providing better services. While the private sector is moving quickly to transform research, extension, and value chains according to its comparative advantage, most public sector institutions and programs for agriculture require urgent reforms, often along lines long recognized but not yet implemented. The public sector institutions must also concentrate more on areas that are not of interest to the private sector, and collaborate more with the latter.

The enormous challenges of agricultural growth, natural resource management, and social services for rural areas must be resolved with greater citizen empowerment and decentralization. Such reforms have long been discussed in India, but initiatives have so far failed to bring them about.

Reforms will have to be driven primarily by the states, with support from strong incentives and perhaps further legislative interventions from the center as well.The reforms will not come about without pressures from below as well as from the very top. Once again, like two generations ago, India's agriculture stands at an important crossroad.

The leadership must make the critical decision about which direction to take, then follow up that decision with effective implementation of the necessary policy and institutional reforms.

Institutional reforms of public sector agricultural programs will need to consolidate fragmented public programs and decentralize centrally sponsored schemes to the state or even the village. First-round reforms should consolidate fragmented, overlapping public programs. Second-round reforms should change public programs from centralized silo structures to block grants that go down to the state or possibly even local levels. Such decentralization would align incentives to ensure accountability and the flow of funds for the effective implementation of agricultural programs.

Roadmap for Future Growth

In order to reinvigorate agriculture and ensure a reasonable living standards for the vast majority of rural people, Indian agriculture must undergo an important transforma-tion on both the demand and the supply side, along three primary directions namely: (i) emphasizing higher-value outputs; (ii) increasing productivity; and (iii) redefining the roles of the public and private sectors.

Agriculture needs to be intensified to meet future demands for commodities and to avoid further expansion onto marginal lands and encroachment on fragile ecosystems. Increased use of external inputs and development of specialized production and farming systems tend to increase vulnerability to environmental stresses and market fluctuations. There is, therefore, a need to intensify agriculture by diversifying the production systems for maximum efficiency in the utilization of local resources, while minimizing environmental and economic risks. Where intensification of farming systems is not possible, other on-farm and off-farm employment opportunities should be identified and developed, such as cottage industries, wildlife utilization, aquaculture and fisheries, non-farm activities, such as light village-based manufacturing, farm commodity processing, agribusiness, recreation and tourism, etc.

I would like to emphasize that India will face a rapid expansion of food demand and major shifts in its composition, thereby requiring an acceleration of agricultural growth rates beyond the current 4 percent target rate, or a rise in imports. With limited land and water resources, the acceleration of agricultural growth requires a significant acceleration of productivity growth, and much higher water use efficiency in the context of continued irrigation growth. The public and private institutions responsible for research and extension and for irrigation will have to adapt to these requirements. Rapid agricultural and rural non-farm growth is important and will be driven by a combination of agriculture and spillovers from the urban economy. Subsidies will need to be reformed to be more efficient and will ultimately need to be accommodated within India's fiscal headroom. India's numerous agricultural and rural

development programs will need to be streamlined and reformed to deliver higher impact. Such major reforms will challenge both the central government and the states, which have the major responsibility for implementing agricultural and rural development programs. Effective implementation will overshadow new policies as the decisive factor. I shall now propose to sketch a broad roadmap for achieving the twin-goals of food and nutrition security on the one hand and sustainable management of natural resource base that sustains agricultural production.

a) Develop and disseminate to farming households integrated farm management technologies, such as crop rotation, organic manuring and other techniques involving reduced use of agricultural chemicals, multiple techniques for sources of nutrients and the efficient utilization of external inputs, while enhancing techniques for waste and by-product utilization and prevention of pre- and post-harvest losses, taking particular note of the role of women;

(b) Create non-farm employment opportunities through private small-scale agro-processing units, rural service centres and related infrastructural improvements;

(c) Promote and improve rural financial networks that utilize investment capital resources raised locally;

(d) Provide the essential rural infrastructure for access to agricultural inputs and services, as well as to national and local markets, and reduce food losses;

(e) Initiate and maintain farm surveys, on-farm testing of appropriate technologies and dialogue with rural communities to identify constraints and bottlenecks and find solutions;

(f) Analyse and identify possibilities for economic integration of agricultural and forestry activities, as well as water and fisheries, and to take effective measures to encourage forest management and growing of trees by farmers (farm forestry) as an option for resource development.

(g) Develop and implement programmes to remove and resolve the physical, social and economic causes of land degradation, such as land tenure, appropriate trading systems and agricultural pricing structures, which lead to inappropriate land-use management;

(h) Provide incentives and, where appropriate and possible, resources for the participation of local communities in the planning, implementation and maintenance of their own conservation and reclamation programmes;

(i) Develop and implement programmes for the rehabilitation of land degraded by water-logging and salinity;

(j) Develop and implement programmes for the progressive use of non-cultivated land with agricultural potential in a sustainable way.

Under this scenario, India would remain a top world producer in most agricultural products and could strengthen its export performance in some of them. Such a scenario can be achieved only with bold institutional, policy, and program changes encapsulated by four necessary, inter-linked, and simultaneous sub-transformations: (i) from traditional grains to high-value crops and livestock products; (ii) from production based on low labor costs, widespread subsidies, and price support to efficiency and productivity-driven growth; (iii) from wasteful to efficient water use; and (iv) from public support and protection to ever greater involvement of the private sector throughout the value chain.

Conclusion

Making the agricultural profession profitable and feeding the teeming millions are the biggest challenge of agriculture. Though the gloomy forecasts of Malthus proved wrong, we need to learn a lot from the Malthusian wisdom. Population growth, increasing food prices, 'fatigue' in green revolution technologies and degradation of natural resource have brought food security once again to the centre stage of the policy arena and it is the duty of the international community to address the issue earnestly. As professionals in the agricultural sciences, the graduates and post graduates groomed out of State Agricultural Universities you have it in your hands to make the national and international community alive and sensitive to these emerging and serious issues and also design and implement appropriate and innovative remedial measures.

"The nation has high hopes on agricultural graduates like you to rise up to the occasion to serve the betterment of farming community."

Thank You

Tamil Nadu Agricultural University

Coimbatore

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