

**Convocation Address<sup>1</sup> by  
Dr. Harsh Kumar Bhanwala, Chairman, NABARD  
At the 46<sup>th</sup> Convocation of Acharya N.G. Ranga Agricultural University, AP**

His Excellency, the Governor and Chancellor of the University Shri E.S.L. Narasimhanji, Vice Chancellor, A.Padma Rajuji, other dignitaries present and dear young graduates.

It is a great honour to address this 46<sup>th</sup> Convocation of Acharya N.G. Ranga Agricultural University. I am thankful to the University and in particular to the Chancellor and Vice-Chancellor for inviting me here to this coveted occasion. This university has distinguished itself as a pre-eminent institution in the field of Science and Technology in Agriculture. It is your hard work, devotion to quality, dedication of your teachers and staff, and vision of your management, which is responsible for this notable achievement.

### **State of Indian Agriculture**

Agriculture in India, as in the past, continues to be in the frontage due to its dominance as the biggest employer, provider of food security, foreign exchange earner, etc.. However, agriculture of late, has been in news on account of the wrong reasons. As many of you are aware, the recent news about the spate of farmer suicides due to crop damage on account of untimely wet season and other related reasons occurring during March 2015, has been a hot topic in the media. While both natural and man-made factors have perhaps ignited such unfortunate incidents, we have to now look into the root causes and seek out remedial measures to prevent such unfortunate incidents. As viewed by our PM, *"At no point must the hardworking farmer think that he is alone. We are all together in creating a better tomorrow for the farmers of India"*.

Agriculture continues to be the major source of livelihood of a larger proportion of our rural households. With the marginalization of landholdings, limited access to resources, declining net income, limited weather proofing, lack of social sharing of risk, climate change related problems, agriculture has become more susceptible to distress. In Indian context, as has been experienced, crop loss has a larger nuance than

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<sup>1</sup> Convocation Address delivered in Guntur on September 09, 2015.

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a financial loss. More than the financial loss, is the consequential loss of human life and the socio economic issues associated with it. I fully endorse the view of our Prime Minister, that "*Nothing is more important than human life*" and I feel this is truer in the case of the poor farmer who is the sole breadwinner of a family, which is not supported under any of the social security measures.

In this brief exchange, I would like to flag certain issues that can make a difference in the fortunes of the farming community in India.

### **Making Labour more productive**

Development history, so far, has shown that the process of economic growth is featured by a substantially decreasing share of agriculture in output and employment. A glance at the Indian economy demonstrates that around 50 years ago, (in 1965) agriculture sector contributed about 50 per cent to the overall GDP and engaged more than 70 per cent of the labour force. The latest data indicates that the share has come down to roughly 17 per cent with an involvement of around half (48 per cent) of its labour force. However, a glance at the World Bank database shows that employment in agriculture as a percentage of total employment (in 2013) in most of the industrialized countries ranged between 2 per cent and 5 per cent.

The point that emerges is that there is a need to shift the (excess) labour in agriculture, which is disguisedly unemployed, to the productive sectors, to make agriculture a sector where labour is engaged gainfully. I am not tempted to use a famous quote on agriculture "*You can make a small fortune in farming - provided you start with a large one*", but it is reported that at least in some sectors, the state of Indian farmers is in conformity with the proverb, forcing a larger section to quit agriculture (which as unveiled by NSS Reports). We need to turn around this trend to retain the talented youth in the sector, for which educational centres like yours, can produce agriculture professionals to guide the farming community to modernize agriculture and ensure remuneration that is comparable to other sectors.

### **Enhancing yield level**

The country's net cropped area has been hovering around 140 million hectares during the last decade and there is very limited chance to expand it. We have to keep in mind

that we enjoy one of the best arable land to total geographical area ratio (52.5%) in the world, which was just close to 10 per cent in countries like China (11.3%), Brazil (8.7%) and South Africa (9.9%) and, I think, we should try to better manage the gifted area. The scope for increasing farm income, therefore, lies in increasing productivity of crop or diversification activities.

During the last decade, our agriculture sector has performed well among countries in similar developmental segment. World Bank<sup>2</sup> indices (2004-2006 =100) of growth in crop production show that in 2013, India's achievement is better (142) not only as compared to our neighbors' viz., Pakistan (107), Myanmar (122) and Bangladesh (138), but also compared to that of countries like Brazil (140), China (134) and South Africa (115).

However, even with this achievement, we have not reached the attainable heights or at least come near to it. If we take the case of yield, our record in case of major crops, as compared to other major producers in the world is very low. Yield of cereals (includes wheat, rice, maize, barley, millet, sorghum and mixed grains), for example, measured in terms of kilograms per hectare of harvested land in India is very low at 2962 kg as compared to Brazil (4826 kg), China (5891 kg), South Africa (3725 kg), even lesser than that of our neighboring countries like Myanmar (3641 kg) and Bangladesh (4357 kg) and less than half of developed countries like US (7340 kg), UK (6630 kg) and Korea (6489 kg). Yield growth will continue to be the dominant factor underlying increases in crop production in the future. In developing countries, it will account for about 70 percent of growth in crop production<sup>3</sup> in the years to come.

**Yield gap**<sup>4</sup> for major crops in the country as revealed by various studies is considerably high. Factors influencing yield gap viz. (i) bio physical factors such as nutrient deficiencies and imbalances (NPK, zinc, etc.), water stress, flooding, suboptimal planting (timing or density), soil problems, weed pressures, insects, diseases, seed quality, etc. and (ii) socio economic factors such as risk aversion habit, insufficient

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<sup>2</sup>World Bank (<http://data.worldbank.org/indicator/AG.PRD.CROP.XD/countries>)

<sup>3</sup>World Agriculture: Towards 2015/2030. Summary Report, FAO, Rome

<sup>4</sup>Estimated by the difference between yield potential and average farmers' yields over some specified spatial and temporal scale of interest.

credit, limited time devoted to activities, lack of knowledge on best practices, profit maximization approach, etc.<sup>5</sup>, need to be addressed.

We also need to address certain critical issues like adequate supply of **good quality seeds**<sup>6</sup>. Imbalanced **use of fertilizers** and widespread deficiency of micronutrients are some of the reasons for the decline in the crop response ratio. In this context, the Govt's initiative on Soil Health Card Scheme to improve soil fertility on a sustainable basis, holds utmost significance.

About 45 per cent of cropped area in the country is irrigated. Although the ultimate **irrigation** potential in India is estimated at about 140 million ha, the widening gap between the irrigation potential created and that being utilized is a matter of concern. Micro-irrigation, minor irrigation, rainwater harvesting and groundwater recharging are vital in optimizing the use of the existing resources and expanding the irrigation system in a sustainable manner. In this context, the Pradhan Mantri Gram Sinchai Yojana, introduced by the Central government aims to irrigate every farmer's field and improve the efficiency of water use to provide '**more crop per drop**' need further impetus.

**Watershed Development:** In a convocation address to agriculture graduates like yourselves, our beloved former President Dr. Kalam had quoted a beautiful paragraph by **Marcus Chown**<sup>7</sup> that captures the importance of conservation of soil and water as, *"Let us remember why we are here: because our farming ancestors learned the fine art of growing crops from the wild plants. **Man despite his artistic pretensions, his sophistication, and his many accomplishments, owes his existence to a six-inch layer of top-soil and the fact that it rains.**"*

Alongside tapping the natural resource to maximize the output, we have the responsibility to hand over a healthy environment to our next generation without damage. The experience of NABARD, with participatory investments in community-

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<sup>5</sup>Lobell, David B.; Cassman, Kenneth G.; and Field, Christopher B., "Crop Yield Gaps: Their Importance, Magnitudes, and Causes" (2009). NCESR Publications and Research. Paper 3

<sup>6</sup>Estimated that the quality of seed accounts for 20–25 per cent of productivity (Govt of India)

<sup>7</sup>'How farming gave us the iPhone' in New Humanist, March 2014.

based projects in dry land areas under the Watershed Development Fund, has shown that watershed projects, when designed, implemented and maintained through community participation and voluntary community labour, are better executed in terms of technical parameters and lead to substantial downstream benefits for all participants. 'Neeranchal', introduced by Government of India in 2014 with an initial outlay of Rs2142 crore, was aimed at imparting an additional impetus to watershed development.

The goal of increasing productivity without impacting environment can be attained through diversification and selection of inputs and management practices that foster positive ecological relationships and biological processes within the entire agro-ecosystem. With the help of participatory research and extension approaches these technologies can be developed further into location-specific sustainable resource management systems. The lack of information on agro-ecology and the high demand for management skills are major barriers to the adoption of sustainable agriculture<sup>8</sup> which can be attained only by skilling manpower.

### **Capital formation for the sustainability of agricultural growth**

The sluggish yield and growth of output in the agricultural sector have been associated with relatively low levels of investment compared to other sectors of the economy. Capital formation in agriculture is of critical importance. The gross capital formation (GCF) in agriculture and allied sectors relative to the agri-GDP improved from 13.5 per cent in 2004–05 to 21.2 per cent in 2012–13 at 2004–05 prices<sup>9</sup>. Given the vast investment needs of the sector, greater public investment would only help increase private investment, on account of high complementarity between them.

Public sector investment in irrigation, rural roads, power, telecommunications, marketing infrastructure, research, and extension services results in high growth of the agricultural sector and reduction in poverty. Considering the existence of fiscal constraints, the investment strategy in agriculture should be guided by the efficient and equitable use of resources with high payoffs. There is also a need to accelerate

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<sup>8</sup> FAO, World Agriculture: Towards 2015/2030. An FAO perspective. (<http://www.fao.org/docrep/005/y4252e/y4252e13.htm>)

<sup>9</sup> NABARD Annual Report 2014-15

the supply response in agriculture and save on large wastages in the supply chains. Large investments in supply chains, research and development, logistics processing and organized retailing are required to achieve this.

Towards this end, through one of our subsidiaries, NABKISAN, we are putting special focus on financing producer organizations. This took impetus when the GoI had created the Producers Organization Development and Upliftment Corpus Fund (PRODUCE) of Rs200 crore in NABARD to be utilized for building of 2000 Farmer Producer Organizations (FPOs) in two years to supplement NABARD's support from Producer Organization Development Fund (PODF). This initiative would address the initial requirements of the emerging FPOs, which would subsequently be able to avail of new business opportunities with the support of credit from financing institutions. In addition to the Warehousing Infrastructure Fund(WIF), the GoI has also set up a special fund , Food Processing Fund (FPF) of Rs2000 crore in NABARD to provide affordable credit support for establishing mega-food parks, as well as the setting up of individual processing units in these food parks.

### **Rural infrastructure**

It has been established through well researched studies that infrastructure creation generates larger social benefits<sup>10</sup> than price support mechanism<sup>11</sup>. Infrastructure in agriculture boosts growth through stimulating private investment, providing support facilities, reducing transaction and trade cost, improving access to and generating employment opportunities, etc. The Indian farmer has suffered not only due to restrictions on marketing and processing, but also due to poor infrastructure. The greatest challenge lies in reducing the transaction costs for farmers by providing them access to world-class physical infrastructure.

Rural Infrastructure Development Fund (**RIDF**) was instituted in NABARD by GoI 1995-96 with the sole objective of giving low cost fund support to State governments and State owned corporations for quick completion of ongoing projects relating to

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<sup>10</sup> Raisuddin Ahmed, 1979, Foodgrain Supply Distribution and Consumption Policies within a Dual Pricing Mechanism : A case Study in Bangladesh, IFPRI.

<sup>11</sup> Barker and Hayami, 1976, Price Support Versus Input Subsidy for food Self Sufficiency in the Developing Countries, American Journal of Agriculture Economics, November.

medium and minor irrigation, soil conservation, watershed management and other forms of rural infrastructure. Since then, RIDF has emerged as NABARD's major partnership with the state governments for the creation of a wide variety of rural infrastructure covering 34 activities.

As of March 2015, we oversaw a cumulative sanction of 5.68 lakh projects with loan of Rs2,30,951 crore since inception (including Bharat Nirman) with disbursements of Rs1,66,491 crore (cumulative). With majority of projects under RIDF, Warehousing Infrastructure Fund and NABARD Infrastructure Development Assistance (NIDA) being under agriculture, rural connectivity, storage and power sectors, NABARD could strongly demonstrate its commitment towards enhancing **public investment "for" agriculture**. A comprehensive value chain model covering innovations in farming, transportation, storage, processing, value addition and marketing can help farmers earn profit in a sustainable manner. NABARD through the **Warehouse Infrastructure Fund** provides affordable credit to the public and private sectors for investment in scientific storage and the food processing sector, leading to the overall development of post-harvest infrastructure in the country.

### **Research and development**

The power of Research and development in changing the face of agriculture is immense. It has been estimated that Brazil has received almost \$16 benefit from every dollar invested in research establishments by improving the yield level of major crops<sup>12</sup>. Several other studies across the world also highlighted that biological inputs including improved varieties and agronomical practices could claim 75 per cent for wheat, 50 per cent of growth in yield in maize, 85 per cent for soya-bean, and 24 per cent<sup>13</sup> in productivity gains. Your role in furthering knowledge and contribution in R&D should be acknowledged by the world in the years to come. Investment in basic research that creates opportunities for increasing production by bridging the yield-gap, to the extent feasible within the climatic zone, is necessary for a shift in the underlying production function.

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<sup>12</sup> Assessing and Attributing the benefits from improving the Varietal improvement research in Brazil, Philip G Pardey and others, Report 136, IFPRI, 2004

<sup>13</sup>Incentives for Private Investment in Agricultural Research. USDA

In our country, research strategy should be pro-nature and small farmer-oriented. There is a need to shift the focus of the research and development agenda from crop-centric research in irrigated areas to location-specific cropping systems in dry lands, hills and tribal areas, or for example towards horticulture crops, which are land and water-saving by nature. Efforts may also be made to harness remote sensing technologies to optimize the application of inputs, and explore areas in emerging capital-intensive biotechnology. Precision farming technique as advocated by **Dr M.S. Swaminathan** can play an important role for an '**evergreen revolution**'. Precision farming, if adopted by small and marginal farmers, can help cut costs, enhance net income and reduce the impact on nature.

### **Agricultural extension**

Dissemination of technology and hand-holding farmers to implement it, is equally important as R&D in agriculture. According to the NSS 70<sup>th</sup> Round Survey, about 59 per cent of farmers do not get much technical assistance and know-how from government-funded farm research institutes or extension services. The lab-to-land programme can be made effective by leveraging information technology and mobile applications. **Kisan TV**, set up by the government for real-time dissemination of information to farmers, was intended to provide farmers a direct interface with agricultural experts. NABARD's **Farmers' Club Programme**, implemented by banks and NGOs, aims to organize farmers to facilitate access to credit, extension services, farm technology and markets, information on weather and market prices, and crop advisory services through SMS on mobile phones etc.

### **Climate Change Adaption**

Climate change is one of the most important areas of concern not just for India but for the world today. It is foreseen that in the medium-term (2010–2039), it will have significant negative impact and yields will fall by 4.5 to 9 per cent, depending on the magnitude and distribution of warming. This loss in yield roughly translates to 1.5 per cent of the GDP per year. New and innovative measures to adapt to climate change include changes in : (i) agricultural practices to improve the fertility of soil and enhance carbon sequestration; (ii) management of water for more efficient use; (iii) agricultural diversification to enhance resilience; (iv) development of agricultural science and



technology, agricultural advisory services, and information systems; and (v) improving risk management and crop insurance.

Having been specifically accredited as the first national implementing entity (NIE) of the Green Climate Fund (GCF) of the United Nations Framework Convention on Climate Change, we at NABARD aim to leverage finance for addressing concerns related to climate change in the agricultural and rural livelihood sectors. We are still but a long way to go in this respect.

### **Positioning our youth in Agriculture**

With around 65 per cent of our population under the age of 35, we are one of the youngest nations in the world and expected to have the largest available workforce. The average age of an Indian in 2020 will be 29, compared with 37 in China and the US. This healthy placing of skill, talent and potent force lying to meet their potential, will be the driver of India's growth in the years to come.

Today, most careers in agriculture are actually either business or science related. There is still a huge pool of professional skilled food/agricultural scientists or in business related careers, such as marketing and merchandising to be filled. Broad areas of specialization within agricultural science including Food Science, Plant Science, Soil Science and Animal Science can be further explored. Banking, Education, Extension services, Agri clinics, Equipment and Mechanization are yet to be fully manned. We still require learned experts in agro sciences, livestock sciences/ management, agricultural economics, sustainability and climate change panels etc.

Development of skilled human resource is a must for realizing the potential of the agricultural sector and towards that end, sound agricultural education is the key.

To borrow the words of George Washington "*Agriculture is the most healthful, most useful and noble employment of man*". This cannot in any way be truer in ours than any other nation. In India agriculture has been since ancient times taught at the world-renowned universities of **Nalanda**. Yet over the years, we have not been able to maintain our position. Global recognition eludes our agricultural universities today. It is a reflection of our overall higher education system, which cannot boast of a single Indian institution in the top 200 universities in the world.

The interest of bright students in the agricultural profession has to be stimulated. For that, proper counseling at the most basic level has to take place. This would sow the seeds of interest and appeal amongst children in agricultural education. Agriculture has to evolve into a rewarding occupation for those who want to make it their career. This calls for steps at the institutional level such as stronger ties with the private sector, networking, internship opportunities, sensitization workshops and facilities for business incubators.

An innovative model of agri-business and agri-entrepreneurship could result in a boom not only for the food sector but for the rural economy as well and Agricultural Universities can consider offering programmes for the same.

**Conclusion:**

You are amongst the few who were fortunate to have had access to the experience at this renowned institution. At this juncture, you are awakened to the realities of a new stretch in life, intense competition and acquired capacity to take advantage of the possibilities ahead. While you may use this capacity to create wealth and welfare for you and for the institutions you might work for, it is also your bounded duty to strive for welfare of society, for reducing disparity therein and to empower those who are disadvantaged.

We have to reinvent and upkeep the conviction that *"Agriculture is our wisest pursuit because it will in the end contribute most to the real wealth, good morals and happiness"*.

In the end, I wish that you may achieve your goals in the domain areas you decide to engage in.

