Navsari Agricultural University

Navsari

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Address by

Prof. M S Swaminathan

Her Excellency, the Governor of Gujarat and Chancellor of Navsari Agricultural University, Dr. Kamalaji; Guest of Honour and Honorable Minister of Agriculture Shri Dileep Sanghaniji; and Honorable Vice-Chancellor, Dr A.R.Pathak; august members of Board of Management and members of Academic Council; invited dignitaries, learned faculty members; officials, staff of the University, esteemed guests; representatives of press and electronic media; dear students; ladies and gentlemen!

It is always a joy to participate in Convocations, since they symbolize valuable additions to our trained human resource. I feel particularly privileged to be here today, since this University has become within a short period of six years a leading one in the areas of Agriculture, Horticulture, Forestry, Veterinary Sciences and Agri-Business Management. Gujarat is doing our Nation proud by achieving a 9% rate of growth in agriculture per annum.

I am happy that this University is playing a key role in the implementation of innovative schemes like Krishi Mahotsava and Soil Health Card System of Government of Gujarat along with Government programmes like Water harvesting and Conservation, Jyotirgram etc has played a vital role for sustaining and enhancing agriculture growth in the state. You are also serving the farmers of South Gujarat comprising the districts of Narmada, Bharuch, Surat, Tapi, Navsari, Dangs and Valsad. I therefore congratulate the outgoing alumni for choosing this University as their alma mater. I congratulate you on

your outstanding academic performance and practical expertise. I also congratulate the parents of the alumni for the support and encouragement they have given to their children. The Vice Chancellor and the Faculty deserve particular praise for their commitment to academic excellence and social relevance in the various programmes of this University.

I am particularly happy that Gujarat, Home of Mahatma Gandhi, has followed the Gandhian principle of giving the greatest importance and respect to farmers and farming. While visiting the National Dairy Research Institute, Bangalore, on 27 June, 1927 Mahatma Gandhi wrote in the Visitors' Book "**Farmer**" against the column titled "occupation". He also used to emphasise that **Gram Swaraj** is the pathway to **Poorna Swaraj**. Lal Bahadur Shastri later gave the slogan **"Jai Jawan, Jai Kisan"** to stress that Jawans and Kisans are the two pillars of our freedom. **The extreme volatility of the price of food grains in the international market emphasizes that the future belongs to nations with grains and not guns**. We are therefore indebted to the Honourable Chief Minister Shri Narendra Modi and his distinguished colleague, Shri Dileep Sanghaniji for the primacy and priority they have given to agriculture in the development of this state.

For young people to take to agriculture, farming must be both intellectually satisfying and economically rewarding. This will call for a technological and managerial upgradation of farm operations. We have to harness the best in frontier science and marry it with the best in traditional knowledge and ecological prudence. Such a blend leads to the science of ecotechnology. In addition to ecotechnology, the University has to become a leader in biotechnology, space technology, nuclear technology, nanotechnology, renewable energy and management technology. **The University should enable every**

scholar to become an entrepreneur. I would like to share some thoughts on launching a **Youth for Agricultural Transformation Movement.**

During his recent visit to India, US President Barack Obama pointed out that India is fortunate to have over half of its total population of 1.2 billion under the age of 30. Out of the 600 million young persons, over 60 per cent live in villages. Most of them are educated. Mahatma Gandhi considered the migration of educated youth from villages to towns and cities as the most serious form of brain drain adversely affecting rural India's development. He, therefore, stressed that we should take steps to end the divorce between intellect and labour in rural professions.

The National Commission on Farmers stressed the need for attracting and retaining educated youth in farming. The National Policy for Farmers, placed in Parliament in November 2007, includes the following goal — "to introduce measures which can help to attract and retain youth in farming and processing of farm products for higher value addition, by making farming intellectually stimulating and economically rewarding". **At present, we are deriving very little demographic dividend in agriculture**. On the other hand, the pressure of population on land is increasing and the average size of a farm holding is going down to below one hectare. Farmers are getting indebted and the temptation to sell prime farmland for non-farm purposes is growing. Over 45 per cent of farmers interviewed by the National Sample Survey Organisation wanted to quit farming. Under these conditions, how are we going to persuade educated youth, including farm graduates, to stay in villages and take to agriculture as a profession? How can youth earn a decent living in villages and help shape the future of our agriculture? This will require a three-pronged strategy.

(a) Improve the productivity and profitability of small holdings through appropriate land use policies, technologies and market linkages; develop for this purpose a "4C approach", i.e., **Conservation, Cultivation, Consumption and Commerce.**

(b) Enlarge the scope for the growth of agro-processing, agro-industries and agri-business and establish a **"Farm to Home"** chain in production, processing and marketing.

(c) Promote opportunities for the services sector to expand in a manner that will trigger the technological and economic upgradation of farm operations.

Some years ago, the Government of India launched a programme to enable farm graduates to start agri-clinics and agri-business centres. This programme is yet to attract the interest of educated youth to the degree originally expected. It is hence time that the programme is restructured based on the lessons learnt. Ideally, a group of four to five farm graduates, who have specialised in agriculture, animal husbandry, fisheries, agri-business and home science, could jointly launch an agri-clinic-cum-agri-business centre in every block of the State. Agri-clinics will provide the services needed during the production phase of farming, while the agri-business centre will cater to the needs of farm families during the post-harvest phase of agriculture. Thus, farm women and men can be assisted during the entire crop cycle, starting with sowing and extending up to value addition and marketing. The multi-disciplinary expertise available within the group of young entrepreneurs will help them to serve farm families in a holistic manner. The home science graduate can pay particular attention to nutrition and food safety and processing and help a group of farm women to start a food processing park. The group should also assist farm families to achieve economy and power of scale both during the

production and post-harvest phases of farming. Such as integrated centre can be named "**Agricultural Transformation Centre**". I request the Vice-Chancellor and faculty of this visionary University to start such Agricultural Transformation Centres operated by farm graduates.

Opportunities for young entrepreuners are several. Climate resilient agriculture is another area that needs attention. In dry farming areas, methods of rainwater harvesting and storage, aquifer recharge and watershed management as well as the improvement of soil physics, chemistry and microbiology, need to be spread widely. The cultivation of fertiliser trees/plants which can enrich soil fertility and help to improve soil carbon sequestration and storage, can be promoted under the Green India Mission as well as the Mahatma Gandhi National Rural Employment Guarantee programme. **A few fertiliser trees, a *jal kund* (water harvesting pond) and a biogas plant in every farm will help to improve enormously the productivity and profitability of dryland farming**. In addition, they will contribute to climate change mitigation.

The **"yuva kisans"** or **young farmers** can also help women's self-help groups to manufacture and sell the biological software essential for sustainable agriculture. These will include biofertilisers, biopesticides and vermiculture. The Fisheries graduate can promote both inland and marine aquaculture, using low external input sustainable aquaculture (Leisa) techniques. Feed and seed are the important requirements for successful aquaculture and trained youth can promote their production at the local level. They can train rural families in induced breeding of fish and spread quality and food safety literacy.

Similar opportunities exist in the fields of animal husbandary. Improved technologies of small-scale poultry and dairy farming can be introduced. Codex alimentarius standards of food safety can be popularised in the case of perishable commodities. For this purpose, the young farmers should establish Gyan Chaupals or Village Knowledge Centres. Such centres will be based on the integrated use of the internet, FM Radio and mobile telephony.

In the services sector designed to meet the demand driven needs of farming families, an important one is soil and water quality testing. Young farmers can organise mobile soil-cum-water quality testing work and go from village to village in the area of their operation and issue a **Farm Health Passbook** to every family. Farm Health Passbook will contain information on soil health, water quality, and crop and animal diseases, so that the farm family has access to integrated information on all aspects of Farm Health. Very effective and reliable soil and water quality testing kits are now available. This will help rural families to utilise in an effective manner the nutrient based subsidy introduced by the government from April 1, 2010. Similarly young educated youth could help rural communities to organise gene-seed-grain-water banks, thereby linking conservation, cultivation, consumption and commerce in a mutually reinforcing manner.

Young farmers can also operate climate risk management centres, which will help farmers to maximise the benefits of a good monsoon and minimise the adverse impact of unfavourable weather. Educated youth can help to introduce the benefits of information, space, nuclear, bio- and eco-technologies. Ecotechnology involves the blend of traditional wisdom and frontier technology. This is the pathway to sustainable agriculture

and food security, as well as agrarian prosperity. **If educated youth choose to live in villages and launch the new agriculture movement, based on the integrated application of science and social wisdom, our untapped demographic dividend will become our greatest strength**.

Let me conclude by urging both this University and the outgoing alumni to initiate Agricultural Transformation Centres in all the blocks in this region and issue to every Farm Family a Farm Health Passbook. Mahila Kisans (Women Famers) and Yuva Kisans (Young Farmers) will determine the future of the agrarian and rural economy of this region. In the central budget of 2010-11, a ***Mahila Kisan Shasaktikaran Pariojana*** was introduced by the Finance Minister on my suggestion. I hope in the budget for 2011-12, the Union Finance Minister will help not only to intensify the Mahila Kisan programme in this region but will also initiate a ***Yuva Kisan Shasaktikaran Yojana,*** to help educated young farmers to organise Agricultural Trsnformation Centres. The Home Science graduates participating in the Agricultural Transformation Centre movement should also organise a **"Feeding Minds – First 1000 Days"** programme to ensure that there is no maternal and foetal undernutrition and that every new born child has an opportunity for realising its innate genetic potential for mental and physical development. Babies with low birth weight, as a result of foetal undernutrition suffer from hadicaps in brain development and cognitive ability. **Our desire to become a Knowledge and Innovation Super-power can be realised only by paying attention to nutrition and education on a life cycle basis, i.e., from conception to cremation**.

South Gujarat having a long coastline will have to prepare itself for meeting the challenges of climate change and sea level rise. I will like to briefly discuss how to checkmate the adverse consequences of adverse alterations in temperature, precipitations and sea level.

Addressing the World Climate Conference held in Geneva in 1989 on the theme, **"Climate Change and Agriculture",** I pointed out the serious implications of a rise of 1 to 2^{o}C in mean temperature on crop productivity in South Asia and Sub-saharan Africa. An Expert Team constituted by FAO in its report submitted in September 2009, also concluded that for each 1^{o}C rise in mean temperature, wheat yield losses in India are likely to be around 6 million tonnes per year, or around $ 1.5 billion at current prices. There will be similar losses in other crops and our impoverished farmers could lose the equivalent of over US $ 20 billion in income each year. Rural women will suffer more since they look after animals, fodder, feed and water.

We are now in the midst of a steep rise in the price of essential food items like pulses, vegetables and milk. The gap between demand and supply is high in pulses, oilseeds, sugar and several vegetable crops including onion, tomato and potato. Production and market intelligence as well as a demand – supply balance based an integrated import and export policy are lacking. The absence of a farmer-centric market system aggravates both food inflation and rural poverty. FAO estimates that a primary cause for the increase in the number of hungry persons, now exceeding over a billion, is the high cost of basic staples. **India has unfortunately the unenviable reputation of being the home for the largest number of undernourished children, women and men**

in the world. The task of ensuring food security will be quite formidable in an era of increasing climate risks and diminishing farm productivity.

China has already built strong defences against the adverse impact of climate change. During 2010, China produced over 500 million tonnes of food grains in a cultivated area similar to that of India. Chinese farm land is however mostly irrigated unlike us where 60% of the area still remains rainfed. Food and drinking water are the first among our hierarchical needs. Hence while assessing the common and differentiated impact of a $2^{o}C$ rise in temperature, priority should go to agriculture and rural livelihoods.

2010 was the **'International Year of Biodiversity'**. We can classify our crops into those which are climate resilient and those which are climate sensitive. For example, wheat is a climate sensitive crop, while rice shows a wide range of adaptation in terms of growing conditions. We will have problems with reference to crops like potato since a higher temperature will render raising disease free seed potatoes in the plains of North-west India difficult. We will have to shift from planting tubers to cultivating potato from true sexual seed. The relative importance of different diseases and pests will get altered. The wheat crop may suffer more from stem rust which normally remains important only in Peninsular India. A search for new genes conferring climate resilience is therefore urgent. **We have to build gene banks for a warming India**.

Anticipatory analysis and action hold the key to climate risk management. The major components of an **Action Plan** for achieving a **Climate Resilient National Food Security System** will be the following:

- Establish in each of the 127 Agro-climatic Sub-zones, identified by the Indian Council of Agricultural Research based on cropping systems and weather patterns of the country, a **Climate Risk Management Research and Extension Centre**.
- Organise a Content Consortium for each centre consisting of experts in different fields to provide guidance on alternative cropping patterns, contingency plans and compensatory production programmes, when the area witnesses natural calamities like drought, flood, higher temperature and in case of coastal areas, a rise in sea-level.
- Establish with the help of the Indian Space Research Organisation (ISRO) a Village Resource Centre (VRC) with satellite connection at each of the 127 locations.
- Link the 127 Agro-climate Centres with the National Monsoon Mission, in order to ensure better climate, crop and market intelligence.
- Establish with the help of the Ministry of Earth Sciences and the India Meteorological Department an Agro-Meteorological Station at each Research and Extension Centre to initiate a "Weather Information for All" programme.
- Organise Seed and Grain Banks based on Computer Simulation Models of different weather probabilities and their impact on the normal crops and crop seasons of the area.
- Develop Drought and Flood Codes indicating the anticipatory steps necessary to adapt to the impact of global warming.
- Strengthen the coastal defences against rise in sea level as well as the more frequent occurrence of **storms and tsunamis** through the establishment of **bio-**

shields of mangroves and non-mangrove species. Also, develop sea water farming and below sea level farming techniques. Establish major Research Centres for Sea- Water Farming and Below Sea-Level Farming. Agri-aqua farms will have to be promoted along the coast. 2010 marked the 80th anniversary of Gandhiji's salt satyagraha. Gandhiji emphasized that sea water, which forms 97% of the global water resources, is a social resource. We should have a large programme to convert sea water into fresh water through halophytes.

- Train one woman and one male member of every Panchayat to become **Climate Risk Managers**. They should become well versed in the art and science of Climate Risk Management and should help to blend traditional wisdom with modern science. The Climate Risk Managers should be supported with an internet connected Village Knowledge Centre.

A Climate Literacy Movement as well as anticipatory action to safeguard the lives and livelihoods of all living in coastal areas and islands will have to be initiated. Integrated coastal zone management procedures involving concurrent attention to both the landward and seaward site of the ocean and to coastal forestry and agro-forestry as well as capture and culture fisheries are urgently needed. A Genetic Garden for Halophytes is being established at Vedaranyam in Tamil Nadu. Biodiversity is the feedstock for a climate resilient agriculture and food security system.

Gandhiji pointed out long ago that the future of rural enterprises will depend upon our ability to marry intellect with labour. The Mahatma Gandhi National Rural Employment Guarantee Programme, which accords priority to water harvesting, aquifer recharge and watershed management, provides a unique opportunity for integrating brain

and brawn. MGNREGA workers should feel that they are working for the important cause of water security. I appeal to the dynamic Chief Minister to institute a "**Water Security Saviour Award**" to recognise and reward the best MGNREGA Team in the areas of water harvesting and Watershed Management.

JRD Tata once said, "**I do not want India to be a super-power; I want it to be a happy country**". Since charity begins at home, your motto should be a **Happy South Gujarat**. For South Gujarat to be happy, its farm and fisher families must be happy. They will be happy if you help them to achieve an Ever-green Revolution, leading to the enhancement of terrestrial and aquatic productivity in perpetuity without associated ecological harm. **I wish you all a personally and professionally satisfying life.** You have to shape the future of our agriculture by integrating technology with farmers' wisdom. **A heavy responsibility rests on your shoulders, since if agriculture goes wrong, nothing else will have a chance to go right in our country.**

Jai Hind