Convocation Address

31st Convocation of MPKV, Rahuri

Dr. Trilochan Mohapatra

Secretary, Department of Agricultural Research and Education
and
Director General,
Indian Council of Agricultural Research, New Delhi

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MAHATMA PHULE KRISHI VIDYAPEETH
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CONVOCATION ADDRESS

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Hon'ble Minister for Agriculture and Horticulture, Govt. of Maharashtra and Pro-Chancellor of MPKV, Rahuri, Shri. Pandurang Ji Fundkar; Hon'ble Minister of State for Agriculture, Horticulture and Marketing, Shri. Sadabhau Khot; Dr. K.P. Viswanatha, distinguished Vice Chancellor of MPKV; Members of the Executive Council; Members of Academic Council, Learned Faculty Members; esteemed guests; students; farmers, representatives of the press and media, Ladies and Gentlemen !

2. I deem it to be a matter of personal honour and privilege to participate and Address the 31st Convocation of this prestigious Agricultural University, named after great social reformer of the nation, Mahatma Jyotiba Phule. Mahatma Jyotiba Phule is one of the most respected social reformer, educationist and crusader of Maharashtra in nineteenth century. Mahatma Phule worked for the cause of the downtrodden and for the equality of women in the society who strongly believed in their education. He and his wife Smt. Savitribai Phule are known for establishing the first school for the girls as early as 1848. He was instrumental in inclusion of agricultural subjects, including water and soil conservation in the formal education curriculum in the schools. I take this opportunity to offer my humble tribute to Mahatma Phule Ji, true Son of the Soil.

3. I heartily congratulate students for their richly deserved degrees and awards that are conferred upon them. I also convey my deep appreciation to faculty

and the staff of the University who worked hard to ensure that the students are enriched with latest knowledge in the field of agriculture and also provided an enabling environment to the students for academic pursuits and personality development.

4. The MPKV, Rahuri has established itself not only as a centre of higher learning in agricultural education, research and extension but also as a transformer of agriculture in Western Maharashtra. In this endeavour MPKV has developed over 240 varieties, several agricultural technologies and farm implements for the benefit of the farmers in the State. Some of the varieties/technologies are very popular and have contributed towards increasing the crop production of the State as well as in the country. I am happy to know that MPKV has made significant contribution in sugarcane research by developing varieties like CoM-86032 and Phule 265 which has made tremendous impact in sugarcane growing area of the state. A new variety, MS-10001 developed by MPKV is also another hope for sugarcane farmers. Likewise, MPKV has made remarkable contributions in crops like sorghum, pearl millet, chickpea, vegetables and tropical fruits.

5. It is also a matter of great pride that the students of this University are excelling in different competitions, academic and extra-curricular activities conducted by the Indian Council of Agricultural Research (ICAR). I am happy to learn that in recognition of excellent work in the field of agricultural education, research and extension, the University was chosen for the Sardar Patel Best Institution Award for the year 2002 from ICAR.

6. Agriculture in India has probably flourished since antiquity and finds mention in our mythological and historical texts. It remains closely linked with our social, religious and cultural activities. An important reason is that our country is blessed with wide ranging agro-climatic conditions that are conducive to

grow varied crops and to rear different domestic animals. Harnessing this natural benediction through application of scientific and technological developments, our country has made rapid strides in enhancing agricultural productivity and production. As a result of concerted all round efforts we are now globally, among the leading producers of rice, wheat, fruits, vegetables, spices, milk, eggs and fish.

7. The Indian agricultural system is predominantly a mixed crop-livestock farming system, with the livestock segment supplementing farm incomes by providing employment, draught animals and manure. India ranks first in milk production, accounting for 18.5 per cent of world production, achieving an annual output of 146.3 million tonnes during 2014-15 as compared to 137.69 million tonnes during 2013-14 recording a growth of 6.26 per cent. The per capita availability of milk in India has increased from 176 grams per day in 1990-91 to 322 grams per day by 2014-15. It is more than the world average of 294 grams per day during 2013. Fisheries constitute about 1 per cent of the GDP of the country and 5.08 per cent of agriculture GDP. The total fish production during 2014-15 was 10.16 MT, an increase of 6.18 per cent over 2013-14.

8. Even though we have made considerable progress in achieving self-reliant food security but still the estimates of prevalence hunger in the country remain a cause of concern. In this context I would like to cite two reports. One report, State of Food Insecurity in the World, 2015 of the FAO, shows that India has the second highest number of undernourished people at 194.6 million persons. The second, 2016 *Global Hunger Index* (GHI) report—the eleventh in an annual series, released a few days back, estimates that globally, about 795 million people are chronically undernourished, while roughly one in four children is stunted and 8 percent of children suffer from wasting. In the 2016

rankings of 118 countries, India is ranked 97. Needless to say that the situation warrants immediate attention. Besides, with 27 per cent of the population below the poverty line, the rise in prices of food impacts the poor adversely, with a greater proportion of their household incomes being spent on food. Therefore, along with provision of food subsidy, stability in agricultural commodity prices is essential for making the poorer sections food secure.

9. In the recent years, horticulture and animal husbandry including fisheries have emerged as important components of agriculture and *inter alia* the national food and nutritional security. Moreover, an accelerated growth in these sectors is necessary to diversify agriculture and to boost the income level of farmers. I am happy to know that MPKV has contributed significantly in horticulture and animal husbandry in addition to contribution in the field crops.

10. In recognition of the fact that Maharashtra is potential agricultural state, the Council has established 44 Krishi Vigyan Kendras, crop specific research institutes as on cotton, grapes, pomegranate, onion and garlic, citrus fruits, floriculture, fisheries education, a bureau on soil resources and more recently a state of the art institute on managing abiotic stresses keeping in view the changing climate and further supports the State Agricultural Universities.

11. India has emerged as one of the major table grape growing countries in the world. About 2.59 million MT grapes are annually produced in the country most of which is table grapes. It is typically tropical viticulture as more than 95 per cent of vineyards, of 1.19 lakh ha, is in tropical climate in Maharashtra, Karnataka, Tamil Nadu, Telangana and Andhra Pradesh. Grapes in Maharashtra is another horticulture crop which is helping the farmers of the State. The record production of grapes in Maharashtra during 2015-16 in spite of severe drought in the last three years in the State is an indicative of the

combination of technology and efforts of the farmers which has not only boosted the export of grapes but also helped to increase the income of many farmers. The presence of ICAR-NRC grapes in this region and the role of MPKV is worth mentioning.

12. Diversification for value addition is exploited very minimum in Indian grapes industry. Some of the red grape varieties are exceptionally rich in chemicals having medicinal properties. Research work on breeding varieties for higher amount of such compounds and developing technologies for large scale cultivation of these varieties to produce functional foods will add new dimension in viticulture. Attention is needed to reduce post harvest losses in table grapes in Indian markets. Technology of packing, cold storage and cold chain transport is very well established in India for export of grapes to Europe. The same is also used for storage of grapes for local markets too, on a limited scale.

13. In pomegranate research and varietal development, MPKV stands first in the country as 90% of the pomegranate area in the country is occupied by the varieties developed by MPKV. The Centre of Excellence supported by Indo-Israel Project at MPKV and the presence of NRC-Pomegranate at Solapur which is playing a complementary role in pomegranate research, value addition and marketing not only in the state but also the entire country.

14. The record production of onion during 2015-16 in the state in spite of drought is another example of the integrated role of technology and varietal development in onion by MPKV. I am happy to mention that NRC on onion and garlic is also working with the University in boosting the production and productivity of onion in the country.

15. The era of globalization and rapid urbanization has boosted the importance of floriculture which is another source of income for the farmers. In view of this, ICAR has sanctioned the Directorate of Floriculture at Pune which is an another example of co-ordination between University and ICAR which will help the floriculture in the region and can play a very important role in boosting farm income in future.

16. A key concern for agriculture in general and horticulture sector in particular, in India is in the form of post-harvest wastages and losses. As per a Ministry of Agriculture report on Post Harvest Technology and Management, farm mechanization has significantly contributed to the overall productivity of food crops but post harvest losses have always denied the legitimate benefits from accruing to the farmers. Our country as a whole is, reportedly incurring post harvest losses of Rs. 2 lakh crores per year only in fruits and vegetable crops, which is largely due to the absence of processing units, storage facilities and an effective strategy for tackling post harvest losses. The post harvest losses estimated in food grains amount to 12-16 million metric tonnes annually, valued at more than Rs 50000 crores. The reasons for such losses are: inadequate infrastructure in the production catchment area, long distances between the areas of production and storage facilities, reluctance on the part of the small producers to pay rental charges as many of them depend on more frequent sales for incomes, and also difficulty in accessing large markets.

17. Similarly, a study by the Central Institute of Post-Harvest Engineering and Technology (CIPHET) from 2010-15 shows that wastage occurs at all levels of the value chain-at the levels of farmer, transporter, wholesaler and retailer. Wastage and losses occur due to crop damage, improper harvesting techniques, poor packaging, poor transportation, poor handling, multiple handling, storage, grading sorting, and moisture loss at various stages of the

value chain. Though there are 51,858 post-harvest infrastructures and 1,106 market infrastructures established so far in 2015-16, the cumulative wastage is very high and ranges between 5 to 20 per cent in the case of horticulture crops. Starting from the plucking, initial processing at the farm level, sorting and grading, transportation to the market, storage in the farm and subsequent levels, warehousing, which could be located near the mandis, there is loss of freshness, moisture, handling and other wastages. The answer lies in minimizing the wastage at all stages, to enable farmers to get remunerative prices, and can be done by improving practices and facilities at each stage including the transportation stage.

18. In the rapid pace of development we have inflicted serious damage to the natural resources and consequently now we are faced with questions as Where is that ***Sujalam*** *(*clean water*)* ? Where is that ***Suphalam*** *(*healthy crop*)*? and, where is that ***malayaja shitalam*** *(*refreshing air*)*? The availability of quality water is the most pressing problem the world over. There is now a growing awareness of such problems of food and environmental safety, and extensive efforts have been initiated to develop appropriate technologies for plant protection. Of course, to realize the dream of *'suphalam'* understanding and cooperation among the researchers, farmers, industry and traders both at, national and international levels is essential. The approach to food safety now needs to be considered within a global context that is constantly evolving and dynamic. Globalization of food trade would require the development of a more integrated and preventive approach within food safety systems.

19. Climate change is now another challenge for Indian agriculture. Uncertainty of harsh weather events coupled with frequent droughts along with global warming is the main challenge that the farmers have to face in future. In view of this, research should be focused on developing climate resilient crop varieties that can

withstand and produce yield in high temperature and low moisture conditions. The ICAR has launched National Innovations on Climate Resilient Agriculture (NICRA) a network project that aims to enhance resilience of Indian agriculture to climate change and climate vulnerability through strategic research and technology demonstration. The key components of the project include critical assessment of different crops/zones in the country for vulnerability to climatic stresses and extreme events, in particular, intra seasonal variability of rainfall and research on adaptation and mitigation covers crops, livestock, fisheries and natural resource management as well as attention to livestock and fishery sectors including aquaculture which have not received enough attention in climate change research in the past. In particular, the documentation of adaptive traits in indigenous breeds is the most useful step. At the same time up-scaling of the outputs both through KVKs and the National Mission on Sustainable Agriculture for wider adoption by the farmers. In this direction, the presence of National Institute of Abiotic Stress Management at Baramati can play a major role with agricultural Universities in the state particularly with MPKV in intensifying the research for finding the solutions for problems of climate change.

20. This year, 2016 as all of us know that we are celebrating International Year of Pulses. India is the largest producer, consumer and importer of pulses. The pulse production in the country is not enough to feed our huge population as recommended by WHO i.e. 70gm/person/day. There is need to increase the productivity and production of pulses in India. I wish each one of us should involve in achieving this great task of increasing the pulses production in the country. MPKV has a great responsibility in this endeavor. Seed is the main input of production and productivity and hence should be given top most importance. ICAR has launched a major program of seed hubs across the country to boost the seed production of pulses. I am happy to know that MPKV has taken the responsibility of seed production through these seed hubs.

21. In the context of a holistic agricultural development and ensuring household food security, role of biotechnology is going to be of vital importance. It offers uncommon opportunities for improvements in genetic potential of plants and animals by introduction or removal of gene or genes that regulate a specific trait. The conventional breeding methods can be complemented by an array of biotechnology, including tissue culture, DNA fingerprinting, molecular breeding, diagnostics, transgenics, genomics and bioprospecting which can be effectively utilized to augment agricultural production by saving on precious time and resources. The potential benefits could be in form of development of crops and animal species that are more resistant to biotic and abiotic stresses, enhanced nutritional level of food items, enhanced shelf life of perishable farm produce, conversion of organic waste into biofuels etc. Some apprehensions have been expressed about the negative effects of biotechnology, especially with regard to human and animal health and environment. These fears have to be dispelled by increasing awareness among the users. The issues of bio-safety and environment need to be addressed along with application of biotechnology in agriculture.

22. The country has a long way to go with respect to biotechnology in general and transgenics, genomics and bioprospecting in particular, both in terms of product development as also in building public opinion about their environmental and consumer safety. India has made a beginning in plant genomics as one of the global partners in the International Rice Genome Sequencing Project and has successfully carried out gene sequencing in the case of important crops and animal species. There could be myriad positive implications of genomics with respect to food, nutrition and environmental security of the nation.

23. The capital-intensive biotechnologies demand highly trained and motivated human resources, besides investment on institution and capacity building. If we do not take an active lead in biotechnology research, we would be perennially dependent on technologically rich developed countries. The biotechnology capacity would be one of the most critical components in agricultural transformation of the country.

24. Manual labour in agricultural operations is accounting for major share of cost of cultivation in any crop production due to increase in labour cost as a result of inflation. Mechanization is the only solution to reduce cost of labour in agriculture which is need of the day. But the fragmentation and reduced size of holdings among Indian farmers are the main limitations while adopting mechanizations in agriculture. Though attempts are being made to solve this problem by way of custom hiring and co-operative farming, it is most essential to develop mechanization technology that suits small and marginal farmers who constitute about 85% of the farmers in India.

25. The future technology would call for far more integration of disciplines. We need to appreciate this fact and strive for judicious integration of disciplines to harness their synergy. One needs to remember that excellence in science will come by pursuing the goals in a disciplinary mode, but technology, certainly in interdisciplinary mode. I wonder if we are proliferating or really enhancing our capacity with scarce resources in complementary manner to excel in science? In fact, research in basic science is becoming greatest casualty in our country. In the existing and emerging IPR regime, basic science is going to be vital to harness the fruit through research and technology development. Hence, it would require pinpointed attention.

26. Agriculture extension services have to be revitalized by making it more relevant, useful and timely in order to improve agricultural productivity. The improvement need not take the form of implementing a new scheme or additional outlays in existing schemes. It needs to take the form of a one-stop-shop that offers both hardware and software solutions to raise the incomes of farmers, especially small and marginal farmers.

27. Students , please remember that the opportunities are awaiting for you. It is for you to make serious efforts. I want you to dream and make all out efforts to make your dreams a reality. But also keep a space for yourself as a person. Think about what you are, what you want to be, what your personal objectives are and what interests you.

28. The government has initiated the "Start-up India, Stand up India" campaign to promote financing for start-ups and offer incentives to boost entrepreneurship and job creation. The success of this initiative will depend on how innovatively we can use the technology as well as human resources available in our country. I call upon you, the young technologists, that instead of looking for job opportunities, you may aim to become entrepreneurs, who create job opportunities for people. Through your start-ups and entrepreneurships you can create enterprises, which will create wealth for the nation, society and people. Through this, you can become job creators instead of job seekers. This will be your biggest contribution to inclusive and sustainable development of our country.

29. Our Honorable Prime Minster has called for doubling the farmers income in next 5 years to encourage agriculture and to boost the morale of the farmers. In this context, it is necessary to integrate agriculture, horticulture and animal husbandry in a very planned and systematic manner supported by suitable post

harvest technology (PHT) and value addition. I call upon the young and enthusiastic agricultural graduates to shoulder the responsibility in all these fields as young entrepreneurs.

30. Friends, education is life time process. Graduation is not the end but a milestone in your journey of learning. You have to keep learning in order to remain up to date in knowledge in the modern society. I may inform you that higher education has a beginning but not the end. A new chapter is now to begin in your life, come face to face with difficult situations and at times become disappointed. However, what they should remember is that while life cannot always be soft and rewarding it is not always hard or frustrating. The success of a university is to make students learn how to develop a positive attitude towards life and to put their education to the maximum use.

I wish you all the best for success in shaping your future career. Remember that whatever you do and wherever you are-you shall always be an Indian and more so an alumnus of this University. Your doings and deeds shall bring credit both to your motherland and your mother *alma mater*. Plan your career with care and caution. Nothing is impossible to achieve. May god be with you.

Thank you.