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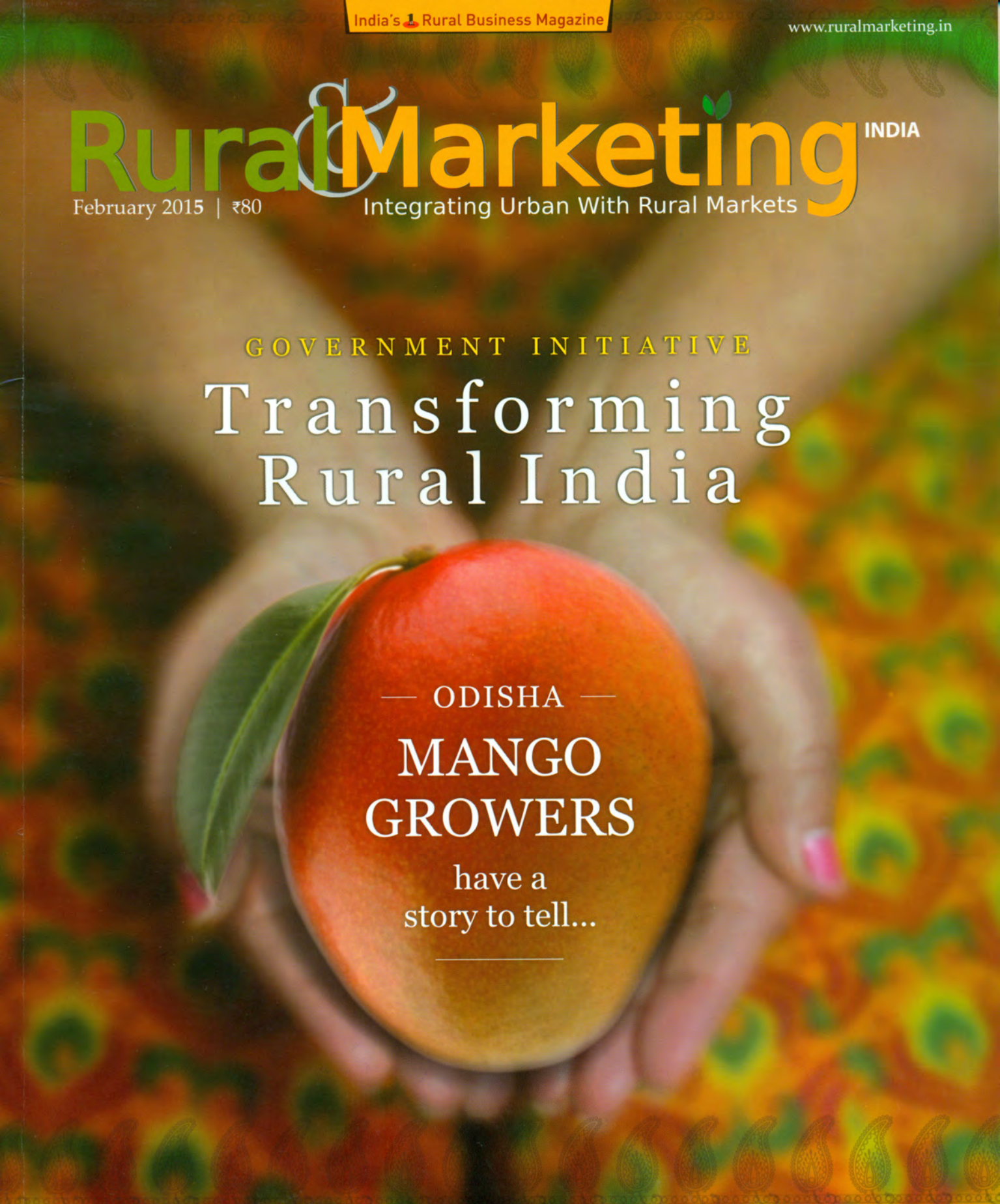

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Rural Youth:
The Key to a Food Secure Future

Agriculture is a least preferred profession which has been witnessing decline in interest from the youth. For educated youth to select agriculture as a profession, it has to become intellectually satisfying and economically rewarding.

Cooperative farming would be a boon to Agriculture: Dr. K. Ramasamy

Tamil Nadu Agricultural University (TNAU) has ardently been working in tandem with the Government of Tamil Nadu. As a result, the state produced 145 lakh tonnes of foodgrain during 2014-15 and has set a target of 170 lakh tonnes during 2015-16. Well groomed varieties, hybrids and management technologies developed by the university are the factors that have made the outcome possible.
DR. K RAMASAMY, Vice Chancellor of TNAU, discusses with **MOHD MUSTAQUIM** about agricultural education, research and its application in agriculture.

Please shed some light on the current status of agriculture education and research in India?

Agricultural education and research in India is guided, coordinated and managed with 100 ICAR institutes and 70 agricultural universities. The curriculum provides scope for ample field experience and rural exposure and also business industrial exposure. Experiential learning and greater amount of hands-on training are incorporated as a part of the curriculum for developing entrepreneurial skills. In any given year, more than 75,000 students are enrolled.

The coordinated agricultural system through its research and technology development has enabled the country to increase production of foodgrains by 5 times, horticultural crops by 9.5 times, fish by 12.5 times, milk 7.8 times and eggs 39 times since 1951 to 2014, thus making a visible impact on national food and nutritional security. Agricultural research in India is focused on irrigated agriculture and well-endowed regions and the investments in agricultural research is less than one percent of agricultural GDP. Although rice and wheat received enormous support, research support for pulses and coarse cereals need further improvement.

To address mounting pressure from increasing population, what measures should we take to ensure food security for all in the country?

Even though area under cultivation is shrinking, but due to increasing productivity and also growing high yielding varieties, India is now food secure. Indian foodgrains production increased from 50.82 million tonnes in 1950-51 to more than 250 million tonnes at present. But food security has to be examined in terms of availability, accessibility, utilisation and vulnerability.

Measures like crop diversification, integrated water management, integrated nutrient management, improved seeds varieties, improved technology adoption and awareness on population growth should be taken seriously.

How big a role agri education can play in ensuring food security?

Agricultural colleges and universities were initially assigned to disseminate scientific knowledge and skills to the farming community and to train them. However, these initiatives could not keep pace with the fast changing scientific and technical improvements and gradually failed in their objective.

Deterioration in quality in some of the universities has been, mainly, due to an imbalance in the academic staff structure. The recruitment policy, and also the policy of freezing new recruitment, needs to be reviewed, as presently about 40 percent of posts are lying vacant.

What challenges do you see in front of the sector in India and how can these be tackled?

Climate smart agriculture, research on biotechnology, nanotechnology, precision farming, organic farming and dryland agricultural research is required to augment agricultural productivity and make it sustainable.

Agriculture should become a profitable venture for a common agriculturalist, and for this, agriculture should transform from a way of life into an organised enterprise.

Agriculture sector in India faces the challenges of shrinkage of cultivable area, environmental pollution, climate change and food and bio-safety issues. To ameliorate these, climate smart agriculture is required. Also, research on biotechnology, nanotechnology, precision farming, organic farming and dryland agricultural research is required to augment agricultural productivity and make agriculture sustainable.

Migration and other job opportunities are pulling youth out of agriculture, creating labour shortage for agriculture sector. How can we attract them to the sector?

Migration from agriculture is a natural process as an economy develops. Thus, land consolidation and mechanisation should also happen simultaneously. However, in the light of further fragmentation of land holdings over the years, a group approach should be set in or promoted to ensure flow of capital to agriculture, mechanisation and volume of produce to satisfy market requirements.

Also, government intervention is required for this effort by promoting schemes like ARYA (Attracting and Retaining Youth towards Agriculture) and PURA (Providing Urban Amenities in Rural Areas) in a large scale. Agriculture should become a profitable venture for a common agriculturalist, and for this, agriculture should transform from a way of life into an organised enterprise.

Excessive application of chemical fertilisers and pesticides has harmed the soil health. How can we improve the situation?

Fertiliser consumption in India is less as compared to other countries. The problem of decline in soil health on account of fertiliser application is not a real threat. The real problem is imbalance in nutrient application and reduction in soil organic carbon content and micro nutrient deficiency. Hence, soil health can be enhanced through balanced fertilisation.

The threat of pesticide pollution thus, is not a serious one in India. However, even this level of residue can also be avoided by adopting the practice of using recommended pesticides of correct formulation at recommended dose. Adopting pesticides of high efficiency and integrated weed management can manage the soil health.

Erratic Monsoon poses challenges in agriculture, how can we overcome this problem?

To overcome this challenge we can rely on accurate weather forecast, crop planning, integrated farming system, pre-monsoon sowing, agronomic management, organic manures and fertilisers, rainwater harvesting and implementation of small irrigation projects. Supplemental irrigation, watershed management, development of

information system at local-level and crop insurance can also help us in addressing the challenge.

KVKs bring lab to the land. Farmers are regularly trained at KVKs on modern technologies with innovative training methods. But agriculture extension system should transform from providing know-how to farmers to being facilitators of services and supports like price and weather forecasts and post harvest operations to farmers. The KVKs are committed to vocational training, transfer of latest technologies, on farm research and thus, serving as the light house for overall rural development in the districts.

It is necessary to develop para-extension professionals in agriculture. There is a need to identify the categories of para-extension professionals such as farmer teachers, achiever farmers in various agricultural commodities. Hence, the role of KVKs is important for overall agricultural and rural development through its various research and technology transfer mechanism.

What technological transformation we can expect in the sector in the near future and what role does TNAU play?

Indian agriculture is going to visualise technology-led agriculture with nano technology, genetic engineering, geographical information system (GIS), information and communication technologies (ICT), weather-based forecasting and also, the human resource management to garner benefit from these technologies.

TNAU will act as an interface providing necessary technologies in improving the efficiency of different technological platforms. The university has equipped itself well with infrastructure and expertise in the frontier areas of research, namely, biotechnology, nanotechnology, geo-informatics and others. It will integrate all the advancements with multi-disciplinary approach and solve the problems in the field of agriculture.

It is said that the research done in the agricultural universities and institutes are not reaching the farmers. How can we make this happen?

By effective outreach programmes through mass media, awareness creation, forming farmers groups at village level through farmers participation, this can be achieved. There are many ways which can take the research to the farmers. Agriculture will become more innovative by enhancing farmers' capacity to utilise external information and promotion of direct interface between farmers and scientists. Regional committees of ICAR, zonal interfaces initiated by Department of Agriculture and Co-operation (DAC), national level pre-kharif and pre-rabi DAC-ICAR interface, state level bi-annual / annual meetings between line departments and state agriculture universities (SAUs) are all formally instituted mechanisms for improving research-extension linkages.

Eighty percent of Indian farmers are marginal or small, in this context how do you envisage cooperative farming?

Cooperative farming would really be a boon to farming community. Group venture efforts have already taken place in India and also in lending credit to self-help-groups and joint liability groups. Also, Farmer Producer Organisations (FPO) are coming up in Tamil Nadu especially the recent one started for Guava in Palani and Dindigul districts which visualised cooperation in production, processing and marketing. So, it needs the mindset of farmers to cooperate and control the results in trading of agricultural commodities.

Other institutional arrangements such as water users' association, contract farming, group marketing, marketing and processing of their farm produces can be strengthened.

How do you foresee Indian agriculture?

Although Indian agriculture has come a long way, there are certain implications that have to be addressed for food and nutritional security. India's population is expected to be 1.4 billion by 2020. The increasing population, coupled with growing income will generate increased demand for foodgrains and non-foodgrain crops. Therefore, Indian agriculture has to achieve a higher growth rate. Acceleration of growth of this sector will not only push the overall GDP growth upwards, it would also make the growth more inclusive. R&M