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Nepal agri R&D is plagued with funding crunch

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The physio-geographical location of Nepal has always favored agriculture as its main business. The country is highly dependent on the agriculture for sustainability of its economy and employment. However, the commercialization of agriculture hasn't paced up as expected, due to hesitation regarding application of modern technology in agriculture. Hence, its has become very important for Nepal to use biotechnological tools for the development of the crop varieties and the country is also looking to adapt robust crop varieties.

The Nepalese agriculture sector has been significantly influenced by India due to its socio-economic similarities, open borders and cultural ties. Hybrid and open pollinated seeds on vegetable crops, maize and rice are some of the popular imports from Indian seed companies. While Nepal's agricultural sector has tremendous scope for the development using modern biotechnology, in reality very few applications of such technology exist in the hill country.

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Few initial screening of crop germplasm using molecular markers have been started in some food crops, especially in rice, wheat, maize, barley, millets and other underutilized crops recently. Infact there have been many steps in the direction, including the initiation of the molecular marker assisted breeding or selection (MAB or MAS) for some major crops. The use of the tissue culture for development of disease free vegetables and fruit crops like potato and banana is already established in private and public sector. Similarly, mushroom seed production is another profitable business in Nepal.

Like India, Nepal too has its share of controversy, when it comes to genetically modified (GM) crops. There is no official release or registration of GM crops in Nepal. The release of GMOs in India put the pressure for the adoption of GMOs in Nepal too. Being the signatory to Cartagena Protocol on Biosafety and Convention on Biodiversity (CBD), Nepal has to

develop rules, regulations and technical capability before adopting GMOs.

As per National Seed Policy-Nepal (1999), Nepal needs a regulatory and monitoring system for conducting research, varietal development and commercial cultivation of GMOs within country. The provision of this system was established on National Biosafety Framework (2007). However, implementation of this framework to develop act, rules and regulations is still in waiting. Similarly, Nepal still can't develop its technical capability to meet the Cartagena Protocol on Biosafety for adoption and research on GMOs. Therefore, Nepal doesn't have any chances of adopting genetically modified crops anytime soon. However, most of the private companies in Nepal have been focused on micro-propagation of vegetable, fruit and ornamental plants such as potato, banana, orchid and strawberry. Few have also started to work on antibodies and molecular technology for food crops (indigenous fruit-Lapsi and cardamom).

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To support the growth of the agriculture sector in Nepal, the National Agricultural Research Council (NARC), Nepal's premier agriculture agency under the ministry of agriculture, has opened 57 offices across the nation including a Kathmandu-based headquarter. NARC has the mandate to take care of research and policy in the areas of plants, fisheries and animals. Apart from that, the country also has two National Agricultural Research Institutes and a large number of research stations spread across the country.

NARC is trying to overcome the challenges in commercialization of agriculture through focused research and has established the National Commercial Agricultural Research Programme (NCARP) in Agriculture Research Station at Pakhribas. The objectives of the program are to increase productivity of selected commercial commodities from five-to- 15 percent by 2015; to provide need based quality service in cost basis; and to conduct research on actual cost basis. In absence of enough funding for procuring cutting edge technologies, the Nepalese scientists who seem to have proved the proverb 'Necessity is the mother of invention' right, have been inventing their own conventional means to do research. The lack of enough electricity has also led the scientists to devise their own plans to tackle the problem.

Inspite of many challenges, the promising technologies generated through agricultural research by the local scientists have played a pivotal role in increasing productivity of rice, which is Nepal's most important food crop. Nepal has released fifty five (55) rice varieties with full package of growing practices in the last 40 years. The coverage by improved varieties is 85 percent of the total rice cultivated land.

Nepal is also a part of Global Cereal Rust Monitoring System (GCRMS) and the United Nations- Food and Agriculture Organization (UN FAO). In its current form, the GCRMS integrates and disseminates up-to-date information on stem rust incidence and severity, as well as races. In last few years, the number of countries working under GCRMS increased from 15 in 2009-to-20 by 2011. On a same pattern, the South Asian Association for Regional Cooperation (SAARC) toolbox has been created, of which Nepal is a member.

Despite the prevailing political instability in Nepal, the researchers in the country have not given up hope. As Dr Baidya Nath Mahto, chief scientist at Khumaltar Research station of (NARC), says, "We may have limited funding and resources but yet our morale is always high. We know that we have to catch up with lot many things but we will overcome difficulties one day."