

## Concept Note

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### Regional Expert Consultation on Agricultural Biotechnology - Scoping Partnership to Improve Livelihoods of Farmers in Asia-Pacific

Date: May 29-31, 2018

Venue: Rama Gardens Hotel, Bangkok

#### Background

In addition to an increase in the proportion of the world's population that suffers from chronic hunger, the number of undernourished people on the planet has also increased from 777 million in 2015 to 815 million in 2016<sup>1</sup>. It is worth recording that Asia-Pacific region as a whole not only met the Millennium Development Goals (MDGs) target of halving the proportion of people suffering from hunger but was also the region with the largest reduction in the number of undernourished people in the world. Nevertheless, 12% of the region's population still remain hungry and there continue to be large disparities among sub-regions and countries in this regard<sup>2</sup>. A world without hunger will be a challenging task by 2030 as committed under Sustainable Development Goals (SDGs), a resolution adopted by United Nations in 2015. However, this challenge is not impossible and can be met by appropriate and rational usage of available resources and science-led innovations and technology including the wide range of agricultural biotechnology. The Food and Agriculture Organization (FAO) of the United Nations organized an International Symposium on "The Role of Agricultural Biotechnologies in Sustainable Food Systems and Nutrition", on February 15-17, 2016, at Rome. The Director General of FAO underlined a statement during his welcome address to the above symposium "*We must count on a broad portfolio of tools and approaches to eradicate hunger, fight every form of malnutrition and achieve sustainable agriculture in the context of climate change*". He further added "*we cannot lose sight of the fact that biotechnology, knowledge and innovation must be available, accessible and applicable to family farmers. Otherwise, they will have a limited impact*"<sup>3</sup>. Thus, agricultural biotechnology will be continuing to play significant role to achieve 'zero hunger' (SDG 2). To achieve any goal strengthening the partnerships at global and regional level are equally important for sustainable development (SDG 17).

#### Rationale

Biotechnological products and processes have been widely used in increasing agricultural production worldwide specially in developed countries. The changes in socio-economic scenario

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<sup>1</sup> <http://www.fao.org/state-of-food-security-nutrition/en/>

<sup>2</sup> <http://www.fao.org/3/a-i6481e.pdf>

<sup>3</sup> <http://www.fao.org/about/who-we-are/director-gen/faodg-statements/detail/en/c/383121/>

has brought forth the new demands for the transformation of the region's agriculture through new technologies and innovations. Besides, 18 million farmers are using genetically modified (GM) crops, which is a sub-set of about 90% are small farmers, according to FAO definition<sup>4</sup>. Safety concerns of genetically modified organisms (GMOs) have been monopolized the debate world over, however, biotechnology is not to be considered as GMOs only, it is much more beyond the GMOs and agricultural biotechnology can be seen as a central component in necessary technological leap helping not only agricultural production but overall economic growth where technological exchange and partnership between countries plays an important role. In past years, biotechnology has brought promising prospects of a worldwide growth in agriculture sector. As a field of great importance to the whole of society, which could change the pattern of future industry and economy, biotechnology has been drawing increasing attention from every country of the world, so is the case of Asia and the Pacific. Out of 570 million farms in 161 countries, 70% share of farms belong to Asia-Pacific region with 84% farm size of  $\leq 2$  ha<sup>5</sup>. Many applications of agricultural biotechnology need to be adopted in Asia-Pacific region to improve the livelihoods of smallholder farmers. Several solutions from low-tech (tissue culture, biofertilizers, biopesticides, fermentation, artificial insemination, *etc.*) and high-tech (DNA-based methodologies including genomics and gene editing) agricultural biotechnologies have a great promise to enhance the production and productivity to ensure the sustainable food and nutritional security in the region.

Biotechnology requires a large initial investment in what is traditionally referred to as basic research. An understanding of the basics of biological process is pre-requisite to use the tools of biotechnology. Therefore, basic research questions are often a necessary component of resolving agricultural problems using biotechnology. As technology and basic knowledge advance, a regulatory system to be able to adapt to assess and manage the risks due to new biotechnology products which demands more research, modified existing regulatory system and developing new expertise and capacities. A committed research funding is required to address the risk analyses on the future biotechnology products. Generally, investments in agricultural biotechnology were foreseen from the national point of view to attain the food security measures at national level through contribution of generated innovations and technologies. At regional level also, to some extent, it is guided by domestic and foreign agricultural biotechnology community to generate and adopt new technologies for the farmers by making investments in areas of biotechnology. In the changed new era, be it low-tech or high-tech biotechnology, political, economic and business considerations (particularly return on investment) will also play an important role for taking the decisions for future investments. Asia-Pacific region has a few countries those can make large investments over a long period, many countries are resource poor in the region. Keeping the whole region in view, it is imperative to have partnerships and collaborations to move upward on the trajectory. It also includes the pooling the resources in order to not only generate and adopt the innovations generated through biotechnology but to

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<sup>4</sup> <http://www.fao.org/3/a-bt520e.pdf>

<sup>5</sup> Lowder et al (2016) World Development, 87, 16-29

develop the research and training institutions in form of 'Centre of Excellence' to conduct research and develop the capacities in various areas of agricultural biotechnology. This will help to harness the maximum potential of the benefits to the farming community through application of biotechnology in the different farming systems. In fact both funding and institutions are the foundation for progress in biotechnology. These two factors nurture and shape the development of new knowledge, the training of scientists, and the implementation of technical innovations.

As tools of biotechnology are adapted to solve the problems of agriculture, new demands will be placed on the existing arrangement of research institutions. Similarly, biotechnology also will influence patterns of funding for research and training and may alter the established pathways between research discoveries and applications. The pace at which biotechnology is applied to agriculture depends on how rapidly the R&D system can incorporate these changes for harnessing the full potential of agricultural biotechnology for benefiting the farming communities.

Public-Private partnership is considered very vital and is being advocated all over the world for successful transformation to a new economy through use of innovations and technologies in farming sector. Foundations<sup>6,7</sup> have played a significant role for supporting the innovative science programs in order to maximize their potential for having substantial influence of biotechnological tools in important areas of agriculture including bioprospecting of bioresources. Where public sector funding in agricultural biotechnology is essential, the role of private sector in investing in agricultural biotechnology is equally important. Generally, private sector invests in agriculture only if their investments are profitable; and that in turn requires investment in a wide range of public goods. The private sector's traditional emphasis on product development may not likely to change, even though there has been a dramatic increase since 1980 in private sector investment in high-risk basic research in agricultural biotechnology. Because public sector investment provides skilled manpower and the knowledge base for innovation, industry should act as an advocate for publicly supported training and research programs in agricultural biotechnology. Industry is also required to support biotechnology research through direct grants and contracts to organizations, cooperative agreements with laboratories at regional level, and education and communication strategies to inform the general public about the impacts of agricultural biotechnology.

## **Objectives**

The objectives of the Regional Expert Consultation are to:

1. provide a platform to explore initiatives and mechanisms of sustainable partnership and networking for capacity and institutional building, developing regulatory framework, communication strategies, enabling policies for application of biotechnologies including bioprospecting of bioresources at regional level;

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<sup>6</sup> <https://agriknowledge.org/downloads/0r9673780>

<sup>7</sup> <https://www.mcknight.org/>

2. share technical knowledge, experiences and learn lessons from public-public, public-private, and private-private partnership to accelerate the application of agricultural biotechnologies and establish the mechanisms to ensure continued exchange of information on experiences with agricultural biotechnologies;
3. identify important areas of agricultural biotechnologies and scoping the new and innovative ways of making investments to improve the livelihoods of farmers in Asia-Pacific region.

### **Expected outcomes**

- The Regional Expert Consultation will provide a platform to develop the sustainable partnership and networking between public and private sector for knowledge sharing on experiences and best practices, and AR4D collaboration to harness the potential of agricultural biotechnology in the region.
- New institutional public-private partnerships can be established for co-investment in agricultural biotechnology and way forward on innovative funding mechanisms.
- Identification of potential areas and donor/funding agencies to promote the agricultural biotechnology, bioprospecting, conservation and sustainable use of bioresources.
- Documentation of key deliberations and outputs which will be useful to develop the roadmap for the partnership at regional level in different areas of agricultural biotechnology.

### **Participation**

Participants includes researchers, representatives of various NARS organization (public sector) and private sector, CG Centre, advanced research institutes, funding/donor agencies, CSO, NGO and FO. Recognized experts will be invited to make presentations and participate in panel discussion.