



World Vegetable Center



Crops For the Future

ICARDA  
Science for Better Livelihoods in Dry Areas



## Regional Expert Consultation on Underutilized Crops for Food and Nutritional Security in Asia and the Pacific

November 13-15, 2017, Bangkok

### Concept Note

#### Background and Rationale

Despite Green, White and Blue Revolutions, poverty and hunger are still the twin challenges being faced globally. Though efforts were made since 1992, when as an outcome of Earth Summit, the United Nations had adopted Millennium Development Goals (MDGs) to reduce poverty by half. Yet, according to FAO estimates, around 795 million people were living below poverty line in 2014-2015, most of them in the developing countries with maximum concentration in South Asia and Sub-Saharan Africa. In general, South-East Asia and East Asia, including China, had done reasonably well to reduce poverty by half, as contemplated under MDGs. Besides poverty, the Asia-Pacific region faces major challenge of hunger and malnutrition to an extent of 63% of the world's chronically hungry people. Globally, around 30% of the world's population suffers from one or more micronutrient deficiencies. Further, around 10 million children die each year before they attain their 5th birthday and 2 out of 5 below the age of 5 years are stunted and malnourished. Thus, besides household food security, equally important is household nutritional security also.

In this regard, to continue the global collective actions more vigorously, the heads of nations had met and adopted jointly the renewed set of goals to end poverty, protect the planet and ensure prosperity for all as part of new Sustainable Development Goals (SDGs). The resolution adopted by the United Nations, in September 2015, has much broader inter-governmental agreement which, while acting as the Post-2015 Development Agenda, builds on the Resolution, popularly known as "The Future We Want". There are 17 aspirational "Global Goals" with 169 targets under SDGs. Among these, there are three goals which have direct relevance to agriculture. These are: 'No Poverty', 'Zero Hunger', and 'Climate Action'. In addition, the one on 'Life on Land' also indirectly relates to it. The three main objectives of food, nutrition and health care are to be addressed by each nation to achieve the SDGs at faster pace. In this context, agriculture assumes major role and be seen as an important sector to help achieve the SDGs. At the same time, agriculture is currently facing numerous challenges. These are - decline in the size of land holdings and natural resources (especially soil and water), adverse impact of climate change, factor productivity decline, rise in cost of inputs, fluctuating markets, and decline in farmers' income. Hence, they all make agriculture a risky proposition requiring urgently diversification, sustainability and resilience through good agronomic practices.

It is a strange fact that the global food security is largely dependent on a handful of crops. Over 60% of the global requirement for proteins and calories are met by just three crops - rice, wheat and maize. Though, there are over 20,000 species of edible plants reported in the world yet fewer than 30 species currently provide 90% of global food demand. On the contrary, there are hundreds of 'less known' and rather neglected underutilized edible crops/plants existing in the world that are potentially good source of food and nutrition. Such crop species have also been described as 'minor' and 'less utilized'. These are domesticated

plant species that have been used for centuries for food, fibre, fodder, oil or medicinal values, but they somehow lost attention over the years and remained underutilized. These have either been less researched, less recognized for their nutritional value, had poor consumer preference/awareness and continued with a tag of 'poor people's crops'. Some crops have even remained so neglected that they have been considered as lost.

As the demand for plant and crop attributes changes, these wild, semi-domesticated or fully cultivated species could overcome the constraints like higher production and use. Many neglected underutilized crops are now getting global attention. In the recent past, when UN declared 2015 as the International Year of Quinoa, the whole world became aware of its nutritional value resulting in its enhanced use. Some other examples are - finger millet, quinoa, amaranths, buckwheat, rice bean, etc. These crops generally are adapted to marginal and degraded lands and invariably suited to low input agriculture. Being nutritionally very rich, they have proved good potential for food and nutritional security, health and income generation especially for local communities. Hence, continued negligence of these species can lead to adverse consequences on the nutritional status and food security of the poor. On the contrary, this enhanced use could ensure better nutrition and fight hidden hunger. For example, vitamin A content of many underutilized and under-exploited leafy vegetable species is comparatively higher than the well-established vegetable crops such as spinach and the nutritional value of the Himalayan chenopod grains, *Chenopodium* spp., is superior to that of most major cereals. Growing market opportunities through value added products of these species may generate additional income to the resource poor farmers living invariably in less favoured environments. The use of modern science to improve their productivity, value addition and use by agro-industries are indeed new opportunities that need to be harnessed. In this regard, the greater the extent or types of uses, the better would be the opportunities for improving the status of underexploited species.

Further, the demand is growing for new crops of food and nutritional value using available biodiversity which can also adapt to changing climate. In the past, tribal farmers of Indian peninsula (Bastar in Chhattisgarh) used to grow 11 crops (mostly different small millets and pseudocereals) in the same field whereas in southern India's Kolli hills nearly 30 varieties of millets were grown together for many centuries being risk avoidance strategy. Today, these are sparsely grown since local communities have become dependent on rice, maize, etc. Similarly, far away in the Andes of South America, traditionally cultivated grains such as amaranth (*Amaranthus caudatus*) and quinoa (*Chenopodium quinoa*) were the natural source of protein and iron. Also, Sub-Saharan Africa is endowed with over 1,000 types of leafy vegetables and fruits rich in micronutrients. But somehow, these species are not given much importance to be part of diet unlike exotic cabbages and other vegetables. Ironically, tribal people possess these valuable food resources that are usually not much researched and even understood by those working in agriculture and health sectors. As a consequence, Global Health Index (GHI) of many nations has declined due to micronutrient and major protein deficiency, resulting in either stunting or even obesity among children needing urgent corrective measures through diversified use of underutilized yet nutritious food crops.

The Asia-Pacific Region (APR) possesses rich genetic diversity of large number of underutilized plants/crops that have great economic potential for exploitation. Crops that require urgent attention are pseudocereals - amaranths, buckwheat and chenopods; millets - finger millet, proso millet, foxtail millet and kodo millet; grain legumes - rice bean, adzuki bean, faba bean, moth bean and horse gram; tubers - taro (*Colocasia esculenta*), giant taro (*Alocasia* spp.), greater yam (*Dioscorea alata*), elephant foot yam; vegetables - hyacinth bean (*Lablab purpureus*), sweet gourd (*Momordica cochinchinensis*), cho-cho (*Sechium edule*), horse radish tree (*Moringa oleifera*), kangkong (*Ipomoea aquatica*) and garden cress (*Lepidium sativum*); fruits - bread fruit (*Artocarpus altilis*), longan, durian, rambutan, mangosteen, carambola, seabuckthorn (*Hippophe rhamnoides*), khirni (*Manilkara hexendra*), karonda (*Carissa congesta*) and khejri (*Prosopis cineraria*). These crops possess

exceptionally high food and nutritional value - higher amount of essential amino acids and minerals as compared to many cultivated crops. Hence, they are extremely useful in alleviating malnutrition which is so widely prevalent. Obviously, the benefits of these species are manifold - (i) contributing to poverty alleviation through employment opportunities and income generation, and sustainable livelihood as they can widen the food basket, (ii) adding nutrients to diet and sometimes convenient food for low income group people, (iii) adapted to fragile environments and can contribute to the stability of agro-ecosystems, particularly in arid, semi-arid, mountains and tropical forests, (iv) providing wider portfolio of crops for new market demands, and (v) assisting development through value addition and secondary agriculture. Lack of attention means that their potential value has been under-estimated as well as underexploited. Any further neglect would result in their continued genetic erosion leading to disappearance which we must not let happen.

Successful food systems effectively draw on locally available food, food variety and traditional food culture. This involves concerted efforts in research, public policy, promotion and required action in support of multi-sectoral and community based strategies linking rural producers and urban consumers with traditional and underutilized food systems. Paucity of agronomic and nutritional information, negative public perception towards traditional foods, policies not recognizing sufficiently their important role in food security and health programs and lack of markets are few important aspects which need attention. While the value of these hardy staples under climate change is clear, it is essentially required to give attention to underutilized cereals/pseudocereals, millets including small millets, legumes, fruits, vegetables and medicinal plants to promote more balanced diets so critical for good health. Working and promoting nutritionally-dense and hardy traditional crops in the past by Bioversity International (for example kodo millet - *Paspalum scrobiculatum* in India and *Digitaria* in Mali), Crops for the Future, FAO's Regional Office for Asia and the Pacific (RAP) on underutilized grain legumes and pseudocereals, and underutilized crops research program at the National Bureau of Plant Genetic Resources, New Delhi, also emphasize to initiate, strengthen and promote underutilized plants/crops and using wild relatives in crop improvement under 'Delhi Declaration' during International Agrobiodiversity Congress (2016) are some of the specific initiatives that have prompted APAARI to organize a Regional Expert Consultation on Underutilized Crops for Food and Nutritional Security in Asia Pacific.

## Objectives

The objectives of the Regional Expert Consultation are:

1. to create much needed awareness on the role and value of underutilized bioresources that have potential for diversification of food basket to ensure better food and nutritional security in Asia Pacific;
2. to share experiences and learn lessons to accelerate the use of underutilized plants as crops for the future; and
3. to assess R&D status on priority crops and policies that are needed to promote the use of these 'Crops for Future' in Asia and the Pacific region.

## Expected Outcomes

- The Regional Expert Consultation will provide a platform for sharing experiences/knowledge relating to underutilized plants of Asia and the Pacific that have food and nutritional value.
- Assessing the importance of most potential crops, status of their R&D for exploring the possibilities of their commercial use and eventual benefit to small holder farmers.

- Developing a Road Map to ensure sustainable use of underutilized crops, also known as 'Crops for Future', for food and nutritional security in Asia and the Pacific.
- Exploring the possibilities of establishing a regional network for knowledge sharing and AR4D collaboration.

### **Organizers/Collaborators**

The Regional Expert Consultation is being organized by the Asia-Pacific Association of Agricultural Research Institutions (APAARI) and Council of Agriculture (COA), Taiwan, in collaboration with World Vegetable Center. ICRISAT, Crops for the Future, ICARDA and Bioversity International have agreed to be co-sponsors.

### **Participation**

Around 50-60 participants including senior officials from organizers, participating NARS, CG Centres, experts in the fields of underutilized crops, representatives of research institutions, donors, private sector, NGOs and farmers.

### **Date and Place**

The Expert Consultation will be held from 13-15 November, 2017 in Bangkok, Thailand.