MINISTRY OF FOOD,
AGRICULTURE AND
LIGHT INDUSTRY

REPORT ON
ASIA AND THE PACIFIC REGIONAL DIALOGUE ON THE INTERNATIONAL YEAR OF PULSES 2016

24–25 October 2016
Ulaanbaatar, Mongolia

Executive summary

1. SETTING

In the framework of the UN declaration of 2016 as the International Year of Pulses (IYP), the FAO Regional Office for Asia and the Pacific and IYP Secretariat HQ in collaboration with the Government of Mongolia organized Asia and the Pacific Regional Dialogue on the International Year of Pulses at the Best Western Premier Tuushin Hotel of Ulaanbaatar, Mongolia from 24 to 25 October 2016 under the title: "Pulses: Solution to human health and sustainable cropping system". The objectives were to understand/document the "state-of-the-art" on pulses in the Region in terms of opportunities and challenges, including the existing policy environment; to agree on common priorities for the advocacy and promotion of pulses in the region; and to identify knowledge gaps and research needs.

Fifty participants from 14 countries including Australia, Austria, Bangladesh, China, India, Iran, Mongolia, Myanmar, Nepal, Philippines, Republic of Korea, Sri Lanka, Thailand and Vietnam attended the meeting in addition to FAO officials, including government representatives, farmers' organizations and international organizations (Annex 1: Participant lists).

Bayartulga Lkhagvasuren, State Secretary of Ministry of Food, Agriculture and Light Industry of Mongolia opened the meeting and welcomed participants. Mr Bayartulga stressed the importance of pulses for the supply of a nutritious diet to millions of people (490 million) living in the Asia Pacific region that do not have access to a sufficient supply of dietary energy to live a healthy life and their contribution to sustainable cropping systems.

In her opening address, Amgalan Ariunbold, Plant Production Consultant, FAO Regional Office for Asia and the Pacific, highlighted the Asia Pacific region as the major determinant of global crop production trends, since the region is the planet's biggest producer of cereals, vegetables, root & tubers, fruits and pulses. She pointed out that pulses are the solution to the global challenge of increasing agricultural productivity in an environmentally sound manner while improving the availability of nutritious foods for a growing population. Unfortunately, many people think that pulses are for the poorest segments of the population and that developed countries tend to reduce pulse production, giving priorities to others crops. This ill-phenomenon is widely seen in the Asia Pacific region, especially in China, Japan, Thailand, Bangladesh and New Zealand.

Professor Dr Kadambot H.M. Siddique, from Australia and the FAO Special Ambassador for the IYP for the Asia Pacific region, presented the keynote speech which provided an overview of the numerous benefits of pulses, the changing regional patterns in pulse production and the global consumption and utilization of pulses. Ms Vaishali Bansal and Ms Prachi Bansal, researchers from the Society for Social and Economic Research of India, also gave a keynote speech highlighting that the Asia Pacific region accounts for 42% of global production, 45% of global imports and 30% of global exports of pulses. As a host, Dr Bayarsukh, Director of the Institute of Plant and Agricultural Sciences of Mongolia and Chairperson of the IYP for Mongolia, gave a keynote speech highlighting the development of pulses in Mongolia and the associated market demand in the animal feed sector for pulses.

Experts from Myanmar, Bangladesh and the Republic of Korea presented papers (Annex 2: Agenda). Country papers highlighted the successes and challenges to further development of pulses. A common issue is the relatively low investment in pulses for research and extension compared to grain crops in the region despite the substantial soil and nutritional benefits which accrue from greater pulse production and consumption.

2. COMMON CHALLENGES AND OPPORTUNITIES FOR THE PULSE SECTOR IN THE REGION

Some of the major problems that nations in the region are dealing with include food insecurity, malnutrition and land degradation. However, there is no single method or tool to address all these spatial issues. In this context, the identification and implementation of multiple approaches that can potentially contribute to enhancing food security, addressing malnutrition and reversing the impacts on the environment and natural ecology are crucial for the entire region. This was the main motivator for holding the regional dialogue on pulses as an efficient, cost-effective tool to address some of the inherent challenges faced by the regional countries. In doing so, the participants identified few opportunities and many challenges, including government issues, farmers favoring cereal crops over other crops such as pulses and legumes, and that people are not truly accustomed to take pulses, etc.

a. **Pulse production can potentially improve food security and soil fertility:** Increased pulse production and crop improvement in a range of pulses has improved soil quality due to their beneficial effects on soil biological, chemical and physical conditions, such as the biological fixation of nitrogen in the roots, if don't mention the efficiency of nitrogen fixation against fertilization. Once added to the food baskets of some developing countries, pulses may provide an intensive source of protein particularly to those in greater need, thus contributing to food security.
b. **To raise awareness on the role of pulses in farming systems and encourage pulse consumption:** Farmers in the region have little knowledge of the effectiveness of pulses in farming systems, including the diets that neglect the high nutritional value of pulses. Pulse crops will only have a competitive advantage if their profitability to the farmer is similar to or exceeds that of the dominant cereal crops. Without increasing consumption, the likelihood of growing pulses commercially is low.
c. **The current focus on pulse research, development and extension is weak:** The low profitability, resulting from the insignificant role of pulses in diets, low demand and the weak perception of pulse effectiveness, shifts the majority of investments and research efforts to more profitable crops like cereal crops.
d. **The production of pulses is constrained by both biotic and abiotic stresses:** Drought and heat stresses are major concerns influenced by climate change. Diseases and insect pests are major biotic constraints to pulse production. Varieties with built-in resistance or tolerance to biotic (pests and diseases) and abiotic stresses (heat and moisture deficit/excess) must be developed to achieve stable yield.
e. **Pulses have underpinned the development of genetics**: Nevertheless, many pulse breeding programs suffer from low genetic diversity and low rates of genetic progress. In recent years, whole genome sequencing has become an affordable and powerful tool to delineate genomic

information in core germplasm. Genomic information can be used to generate high-resolution genetic maps for important agronomic traits, develop molecular markers for breeding, and identify important genes for crop improvement.

f. **Inadequate availability of quality seed for farmers and at the right time**: The seed production system is weak and seed replacement is low in most countries in the region. Seed availability of new varieties needs to be enhanced. In addition to public seed corporations, seed societies and private companies should be involved in pulse seed production. Currently, the participation of the private sector is poor.

g. No links between national and international efforts in pulse research: Most of the activities held on pulse research in different states are largely uncoordinated. Even if there is some collaboration between states and international organizations, it is often limited and lacks broad cooperation.

h. **Human capacity for pulse research, development and extension is weak and fragmented:** Focusing on more profitable crops leads to extensive programs and investments to increase human and institutional capacity for non-legume crops, thus creating a gap for pulses. The lack of intra- and inter-state collaborations has major implications on pulse research and development which become less effective and fragmented.

i. **A yield gap exists:** The realized yields are often around half of what they could be. A spatial difference exists in pulse yields, in that the pulse growing communities have different levels of knowledge, practices, technologies and perceptions of the value of pulses. There is also inter-annual and temporal variability in yields. Climate change, seasonal variations and environmental factors are all underlying challenges to increasing the yield of pulses.

j. **Existing consumption of pulses is low:** Individual consumption of pulses is below the recommended intake of pulses set out by WHO. In many countries of the region, pulse consumption is not customary and is not part of the basic food basket of households. In some countries, pulse production occurs to varying extents, but mostly for non-consumption purposes, like fodder and the nitrogen fixation aspect of a plant in question.

k. **Pulse production is often neglected by States, despite their multiple benefits:** Pulses do not fall into the government priority of most nations in the region. Policy makers often consider pulses as secondary crops and favor other cereals such as rice, wheat and maize. Similarly, farmers' prioritize staple cereals because the governments provide support.

l. **Limited research on market development and policy on pulse adoption:** This challenge is related to many of the points above. Again, the lack of customary pulse consumption creates a market barrier for pulses. With the low demand and weak awareness of the multiple benefits of pulses, the government commitment to promoting the production of pulses and improving marketability will be weak. As a result, pulses are often planted by farmers for their own consumption in some countries.

m. **Poor mechanization of pulse farms:** The lack of mechanization, which plays a key role in the modernization of agriculture due to its improved labor efficiency and productivity, is another factor that affects the profitable cultivation of pulses and therefore their attractiveness to farmers.

n. **Access to new varieties and technologies is restricted:** There aren't many resources, in the form of improved seeds or better varieties, or modern technologies that are available to farmers. Even if they do exist, access is often limited. Often scientists produce varieties for publication rather than for farmers.

3. NEEDS IN PULSE SECTOR IN THE REGION

The participants of the Regional Dialogue identified some main action areas in the pulse sector that need government and relevant stakeholder responses, including:

- A coordinated and well-funded genetics and breeding program
- The translation of research findings to farmer's fields and bridging the yield gap
- The need for enhanced national and international collaborations including germplasm exchange
- The use of pulses in an integrated farming system including animals
- Policy development and market/trade research for enhanced pulse production and consumption
- The development of climate-smart varieties
- Public and private partnerships in pulse production and value-adding.

4. KEY RECOMMENDATIONS FROM THE REGIONAL DIALOGUE

It was highlighted during the regional dialogue that most major challenges lie around the lack of government and stakeholders including farmer awareness on the multiple benefits of pulses; the attractiveness of pulse sector, and restricted marketing opportunities in both domestic and international trades. In this context, the participants highlighted the importance of taking such actions to respond to existing challenges in the pulse sector:

1. **Increase education and public awareness on pulses in food and nutrition:** Public awareness of the role of pulses in the farming system and the human diet is limited and nutritional value is undermined. Therefore, the current consumption of pulses is low compared to WHO recommendations in most countries. Undertake educational and training programs to create awareness among school children (include in school curriculum), farmers and extension personnel on the value of pulses (human, animal and soil health).
2. **Encourage the procurement of pulses:** Governments should initiate public procurement of pulses, specifically for government food programs (e.g. army, refugee camps and prisons) to increase production and consumption. Consider incorporating pulses as an essential ingredient in national food security programs like midday meals.
3. **Conduct research:** Various research should be carried out to identify and develop labour-saving technologies (varieties suitable for mechanized cultivation), varieties and technologies for boosting resilience to climate change and enhancing nutritional quality attributes (protein, minerals, vitamins).
4. **Allocate funds to research programs:** Increase funds to various research programs on pulses, including those that strengthen infrastructure, build human capacity for pulse production and modernize research programs by using genomic resources, bioinformatics and other modern tools and advanced methods.
5. **Establish accredited institutions to monitor, forecast and communicate market signals:** FAO Food Price Index should include pulses.
6. **Development of a pulse value chain:** It is necessary to develop and/or upgrade the value chain of pulses by (a) promoting technology (post-harvest storage and milling, ICT for access

to information, mechanization); (b) organizing smallholder producers (contract farming, farmer motivation, curtailing the middleman in the marketing chain); (c) improving market information drawing on the different types of pulse value chains including indigenous value chains in the region.

7. **Minimize yield gaps:** The government and relevant stakeholders should prioritize bridging the yield gap that exists between farmers' fields and the results from research and demonstration programs to ensure sustainable yield across communities.
8. **Raise awareness on the role of pulses in the ecosystem and cropping system:** Especially that of nitrogen fixation which improves soil health and water efficiency, as set out in the sustainability agenda.
9. **Take advantage of existing opportunities:** Where appropriate, use the policies and capacities that exist for the enforcement of biosafety guidelines for confined testing and environmental release. Consider undertaking research on genetically modified organisms (GMOs) in pulses.
10. **Incentivize producers:** Develop incentive schemes for those who contribute to developing and promoting an organized and structured marketing system, especially producers and consumers.
11. **Insurance against crop failures**: Taking into account the high vulnerability of pulse crops to both biotic and abiotic stresses, design and implement appropriate crop insurance schemes as a hedge against crop failures.
12. **Conduct socioeconomic and policy assessments in the pulse sector:** Socioeconomic and policy research is urgently required to promote pulse production, consumption and marketing.
13. **Develop quality assurance mechanisms for pulse products:** To improve the marketability of pulse products, a proper quality assurance mechanism is needed, along with appropriate procedures for handling pulse products until they reach end consumers.
14. **Revise and/or simplify phytosanitary requirements for the export and import of pulses.**

These recommendations will be presented at the Global Dialogue on IYP, which will be held in Rome, Italy in November 2016.

5. Closure

The participants mentioned that the Regional Dialogue created valuable networking opportunities among pulse experts in the region who learned from each other.

In a closing address, Dr Kevin Gallagher, FAO Representative in Mongolia, thanked the participants for their fruitful discussions and valuable contributions. He also expressed his gratitude to the Ministry of Food, Agriculture and Light Industry of Mongolia for its willingness and support to the organization of the Regional Dialogue.

Annex 1

MINISTRY OF FOOD,
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Food and Agriculture Organization
of the United Nations

ASIA AND THE PACIFIC REGIONAL DIALOGUE
ON THE INTERNATIONAL YEAR OF PULSES

AGENDA
24–25 October 2016

Venue: The Best Western Premier Hotel, Ulaanbaatar, Mongolia
The Meeting Chair: Bayarsukh Noov, Director of the Institute of Plant and Agricultural Sciences and Chairperson of the International Year of Pulses for Mongolia

Time	Title	
DAY 1	**Monday, 24 October 2016**	
9:00–9:30	**Registration**	
9:30–10:20	Opening address	FAO RAP
		Ministry of Food, Agriculture and Light Industry of Mongolia
		Prof Kadambot Siddique, Special IYP Ambassador
	Tour de Table	All participants
	Emerging Pulses and Legumes in Mongolia	Dr Bayarsukh Noov, Director, Institute of Plant and Agricultural Science, Mongolia
10:20–10:40	Coffee break	
10:40–11:20	**Role of Pulses in the Region**	
	Keynote presentation: Pulses: Solutions to human health and cropping system sustainability	Prof Kadambot Siddique, FAO Special Ambassador for the IYP for the Asia Pacific region
	Role of Pulses in Asia and the Pacific Region and its contribution to food and nutrition security	Ms Amgalan Ariunbold, Plant Production Consultant, RAP FAO
	Questions & Answers & Discussions	
Lunch		
13:30–14:30	**Pulses Research & Development**	
	Pulses research and development activities in Bangladesh	Dr Md Omar Ali, Principal Scientific Officer, Pulses Research Center Bangladesh Agricultural Research

Time	Title	
		Institute, Bangladesh
	Pulses Research & Production and Future Opportunity in Myanmar	Dr San San Yi, Deputy Director, Department of Agriculture, Ministry of Agriculture and Irrigation of Myanmar
	Pulses variety development and research in the Republic of Korea	Dr. Suk-Ha Lee, Professor, Department of Plant Sciences, Seoul National University
14:30–14:50	Coffee break	
14:50–17:00		
	Identifying needs and priorities in area of pulses research and development working sub-groups	
	Reporting to Plenary and Discussion	
Reception at the hotel		

DAY 2	**Tuesday, 25 October 2016**	
9:00–10:30	**Policies, institutions and capacity**	
	Mainstreaming pulses into national and regional food security policy	
	Identifying needs and priorities in area of Pulses policies, institutions and capacity—working sub-groups	
	Reporting to Plenary and Discussion	
10:30–10:50	Coffee break	
10:50–12:20	**Pulses Market**	
	Keynote presentation: "Production Conditions and Trends in Export and Import of Pulses in the Asia-Pacific Region"	Ms Vaishali Bansal and Ms Prachi Bansal, Researchers, Society for Social and Economic Research, India
	Identifying needs and priorities in area of Pulses market and value chain—working sub-groups	
	Reporting to Plenary and Discussion	
12:20–12:50	**Review and finalize regional recommendations & Final discussions**	
12:50–13:00	Closing Remark	Dr Kevin Gallagher, FAO Representative Mongolia
Lunch		
14:00–18:00	Tour to Tsongin Boldog	FAO Mongolia

Annex 2: Participants lists

#	Country	Name	Organization
1	Australia	Professor Dr Kadambot Siddique	The University of Western Australia
2	Austria	Ms Undrakh-Od	University of Vienna
3	Bangladesh	Mr Omar Ali	Pulses Research Center, Bangladesh Agricultural Research Institute, Bangladesh
4	China	Mr Tianfu Han	Institute of Crop Science, Chinese Academy of Agricultural Sciences
5	India	Ms Prachi Bansal	Society for Social and Economic Research, India
6	India	Ms Vaishali Bansal	Society for Social and Economic Research, India
7	Iran	Mr Seyed Hossein Sabaghpour	Agricultural Research and Natural Resources Center of Hamedan Province, Iran
8	Korea	Dr Suk Ha Lee	Seoul National University
9	Mongolia	Ms Narantsetseg Ya	Institute of Plant and Agricultural Science, Mongolia
10	Mongolia	Ms Tuul D	Institute of Plant and Agricultural Science, Mongolia
11	Mongolia	Ms Saikhantsetseg	Institute of Plant and Agricultural Science, Mongolia
12	Mongolia	Ms Nyamgerel Kh	Institute of Plant and Agricultural Science, Mongolia
13	Mongolia	Mr Baljinnyam G	Institute of Plant and Agricultural Science, Mongolia
14	Mongolia	Ms Undrakh-Od Baatar	Institute of Plant and Agricultural Science, Mongolia
15	Mongolia	Mr Dorligsuren Erdenedalai	Institute of Plant and Agricultural Science, Mongolia
16	Mongolia	Ms Oyuntogtokh Bat-Erdene	Institute of Plant Protection, Mongolia
17	Mongolia	Ms Uuganzaya Myagmarjav	Research Institute of Animal Husbandry, Mongolia
18	Mongolia	Ms Batchimeg Togoobat	Institute of Plant Protection, Mongolia
19	Mongolia	Mr Dorj B	Mongolian University of Life Science
20	Mongolia	Mr Bayarsukh Noov	Institute of Plant and Agricultural Science, Mongolia
21	Mongolia	Ms Batzaya Ts	Swiss Development Agency
22	Mongolia	Ms Ariunaa O	Institute of Plant Protection, Mongolia
23	Mongolia	Mr Turmandakh	Mongolian Farmers Association for Rural Development
24	Mongolia	Mr Odonkhuu B	Ministry of Food, Agriculture and Light Industry, Mongolia
25	Mongolia	Mr Binderya Batsukh	Ministry of Food, Agriculture and Light Industry, Mongolia
26	Mongolia	Mr Choijamts A	Mongolian University of Life Science
27	Mongolia	Mr Chuluunbat G	Mongolian University of Life Science
28	Mongolia	Mr Gantulga G	FAO Mongolia
29	Mongolia	Ms Nyamsuren O	Mongolian University of Life Science
30	Mongolia	Mr Munkhbat B	Innovation and Business Development Center, Mongolia
31	Mongolia	Ms Munkhtsetseg D	Institute of Plant Protection, Mongolia
32	Mongolia	Ms Otgonjargal A	Mongolian University of Life Science
33	Mongolia	Ms Unursaikhan R	Ministry of Food, Agriculture and Light Industry, Mongolia
34	Mongolia	Mr Udaakhbayar J	MULD
35	Mongolia	Ms Ichinkhorloo D	FAO Mongolia
36	Mongolia	Ms Undarmaa D	MULs
37	Mongolia	Ms Dejidmaa Ts	Research Institute of Animal Husbandry, Mongolia
38	Mongolia	Mr.Nyamjav	"Elite Seed" Co., Ltd
39	Mongolia	Ms Jigjidpurev Sukhbaatar	FAO Mongolia
40	Mongolia	Ms Altantsetseg B	FAO Mongolia
41	Mongolia	Ms Solongo Tsogbadrakh	FAO Mongolia
42	Mongolia	Mr Kevin Gallagher	FAO Mongolia
43	Mongolia	Ms Amgalan Ariunbold	FAO Regional Office for Asia and the Pacific
44	Mongolia	Mr Bayartulga Lkhagvasuren	State Secretary, Ministry of Food, Agriculture and Light

			Industry, Mongolia
45	Myanmar	Ms San San Yi	Department of Agriculture, Ministry of Agriculture and Irrigation of Myanmar
46	Nepal	Mr Dharma Datta Baral	Seed Quality Control Center, Harihar Bhawan Lalitpur, Nepal
47	Philippines	Ms Doris Paz Discaya	Bureau of Plant Industry, Philippines
48	Sri Lanka	Ms AM Perera	Field Crops Research & Development Institute, Sri Lanka
49	Thailand	Ms Pornparn Suddhiyam	Chiang Mai Field Crops Research Center, Field and Renewable Energy Crops Research Institute, Thailand
50	Vietnam	Mr Nguyen Van Thang	Research Institute for Food and Food Crops