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THE INTERNATIONAL YEAR OF PULSES

I. Introduction

1. The United Nations (UN) General Assembly, at its 68th session, declared 2016 as the International Year of Pulses (IYP) to further promote the use and value of pulses inviting FAO to facilitate the activities of the IYP¹.
2. Pulses² can play a crucial role in achieving food security, good nutrition and sustainable development due to their important nutritional, environmental and economic values. Therefore, they can make an important contribution to achieving many of the Sustainable Development Goals (SDGs), particularly SDG 1, SDG 2, SDG 3, SDG 12 and SDG 13. Pulses are inextricably linked to:
 - a) food security, as they are a critical and relatively inexpensive source of plant-based protein, vitamins and minerals for people around the world;
 - b) human health, as their consumption can prevent and help manage obesity, diabetes and other health conditions;
 - c) sustainable agriculture, as they are able to biologically fix nitrogen and free soil-bound phosphorous, which are very important for efficient resource management and ecosystem health; and
 - d) climate change adaptation and mitigation, as they can provide climate-resilient varieties and reduce organic and non-organic agricultural inputs.
3. In recognition of the contribution that pulses can make to human well-being and to the environment, as well as the need for promoting policies and actions to support their consumption and production, the UN General Assembly, at its 68th Session, declared 2016 the International Year of Pulses (IYP). The IYP will primarily seek to:

¹ UN (United Nations) 2013. Resolution 68/231: International Year of Pulses, 2016. (<http://www.un.org/en/ga/>). Accessed 9 May 2016.

² According to FAO, pulses, a subgroup of legumes, are crop plant members of the Leguminosae family (commonly known as the pea family) that produce edible seeds, which are used for human and animal consumption. Only legumes harvested for dry grain are classified as pulses.

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- a) Raise awareness of the contribution of pulses to food security and nutrition;
- b) Encourage all relevant actors to expand the production of pulses;
- c) Promote the consumption of pulses in the context of a balanced diet.

4. FAO hosts the IYP Secretariat and collaborates with a Steering Committee, co-chaired by Turkey and Pakistan and comprising representatives of FAO Members, FAO technical divisions, civil society, farmers' organizations, the private sector, research institutes as well as the other UN Rome-based agencies. FAO together with the IYP Steering Committee have prepared an Action Plan for the IYP, which includes the production of outreach materials and numerous other activities to raise awareness of the potential contribution of pulses to food security, nutrition and the environment (see section IV).

II. The Global Pulses Economy

Production

5. Since the early 1960s, world production of pulses has increased by about 1 percent per annum, surpassing 77 million tonnes in 2014. Production has made steady advances over this period in all the world's regions except Europe, where it had fallen during the past two decades. According to the latest FAO data, almost 50 percent of world pulse output is concentrated in Asia (India, Myanmar, China and Turkey), followed by 22 percent in Africa (Nigeria, the United Republic of Tanzania, Niger and Ethiopia), 19 percent in the Americas (Canada, Brazil, United States of America and Mexico), 9 percent in Europe, and the remaining 4 percent in Oceania. Low Income Food Deficit Countries (LIFDCs) account for 48 percent of global production and the Least Developed Countries (LDCs) for 23 percent, substantiating the importance of these crops in the most economically disadvantaged countries. For the past 30 years, the largest global producer of pulses has unwaveringly been India, consistently producing two to three times more than any other country.

Table 1. Pulse production – major players (2014)		
Country	Production (000 tonnes)	World share (%)
World	77 644	100
India	19 980	25.7
Canada	5 828	7.5
Myanmar	4 991	6.4
China	4 514	5.8
Brazil	3 306	4.3
Australia	3 070	4.0
Ethiopia	2 614	3.4
United States of America	2 402	3.1
Russian Federation	2 316	3.0
Nigeria	2 200	2.8
United Republic of Tanzania	1 822	2.3
Niger	1 652	2.1
Mexico	1 607	2.1
Turkey	1 097	1.4

6. In Asia, Myanmar increased its pulse production almost 20-fold during the period examined, becoming the world's third largest producer in 2014. In China, total pulse production dropped by more than half over the past 50 years, likely reflecting the shift in consumption towards more animal-based proteins, following increases in per capita incomes in the country. In the Americas, Canada stands as a

major producer and has witnessed a remarkable expansion in pulse acreage and production over the last three decades, with the bulk of the produce destined for exports. Similarly, Australia's export-driven pulse sector ships more than half of the production to foreign markets. In Africa, the main pulse producers – Ethiopia, the United Republic of Tanzania, Nigeria and Niger – have all boosted production significantly in recent years.

7. Analysis shows that pulses productivity (per unit of land) in developing countries has lagged behind that of developed countries. This can be explained by a number of factors: the largely subsistence nature of pulse production in developing countries, while in developed countries it is commercial; lack of investment in the sector because pulse cultivation is generally a small-scale activity not viewed as a sector capable of generating profitable returns; the expansion of irrigated land, which has pushed pulses into marginal areas with the better land used mainly to grow cereals; policies focusing on increasing the production of cereals; and limited research on pulse crops and farmers' lack of access to technology and improved varieties.

Consumption

8. World total utilization of pulses stood at nearly 68 million tonnes in 2010–11, with the bulk accounted for by human consumption. Food use of pulses in 2010–11 amounted to an annual average of 46.5 million tonnes, representing 69 percent of the total utilization. During this period, feed use of pulses amounted to 13 million tonnes or 19 percent of the total.

9. According to the latest FAO data, globally around 7 kg of pulses are consumed per person per year, supplying 65 calories and 4.0 g of proteins per person per day. The importance of pulses in human diets varies from country to country. For instance, dietary shares of pulses are highest in Rwanda and Niger, accounting for as much as 13 percent of the total consumed calories. In fact, pulses currently play a substantive role in diets in many LDCs.

10. The role of pulses in the diets of economically vulnerable countries has grown in importance in recent decades, a tendency shared by many regions in the developing world. Dietary shares of pulses at the regional level remain relatively minor, but the long-term trend of declining consumption witnessed in earlier decades appears to be in reversal. In the developed regions, particularly in Europe and Northern America, consumption growth has been slow.

Trade

11. International trade in pulses expanded by an average rate of about 5 percent per annum between 1961 and 2013, with the total volume of exports reaching 13.6 million tonnes in 2011–13 (three year average). Up to the 1970s, trade as a share of production was extremely thin relative to other crops, standing at under 5 percent. However, on account of growth in export-led countries, such as Canada, Australia and Myanmar, the share of production that is currently traded is around 18 percent – higher than most other staple crops – indicating a progressive integration of pulses in world commerce. The value of pulse exports has grown even more rapidly, rising from USD 2.5 billion in 1990 to USD 9.6 billion in 2013.

Table 2. Major exporters and importers of pulses (2013)		
Country	Volume (000 tonnes)	Share (%)
Major exporters		
Canada	4 994	36
Australia	1 417	10
Myanmar	1 388	10
United States of America	1 199	9
China	842	6
Major importers		
India	3 800	28
European Union-27	1 103	11
China	1 106	8
Bangladesh	817	6
Pakistan	434	3

12. The expansion of global pulse trade is mostly on account of increased demand in the traditional consuming markets of South Asia as well as rising demand in Europe for animal feeding. International trade in pulses is characterized by a relatively high concentration of both imports and exports among a small number of trading countries, with the top 10 exporters and top 10 importers accounting, respectively, for an average of 77 percent and 75 percent of global trade in 2011–13.

13. An emerging feature in the international pulse market is China's likely reversal from its historic position as a net-exporter to a net-importer, due to its growing use of dry pea protein to enrich vermicelli noodles and also the country's slow expansion of pulse production. At the current trajectory, China could overtake India as the number one importer of yellow peas in the coming years.

14. Since the mid-1990s, Canada has been the world's leading supplier of pulses to world markets, exporting mostly to India, Bangladesh and China. Australia and Myanmar, the second and third largest pulse exporters, respectively, mainly export to India and Pakistan. These destinations constitute the major importing countries, with India currently the largest buyer and accounting for almost one-third of global volumes. The European Union is also an important destination in world pulse trade.

15. For the future, international trade in pulses is likely to continue growing. Constraints to pulse production and productivity growth in the developing regions may not be easily overcome and, as a result, production would most likely lag behind demand. It is expected that many developing countries would continue to rely on imports to meet their domestic needs in pulses.

III. The Importance of Pulses to Nutrition and the Environment

Human health and nutrition

16. Pulses are some of the most nutritious crops on the planet. They have a high content of protein, fibre, vitamins, minerals and bioactive compounds, while being low in fat and sodium. Pulses contain about 20–25 percent of protein, i.e. double that of wheat and triple that of rice. When consumed together with cereals, the protein quality is significantly improved, providing a complete amino acid profile. Pulses thus represent an important source of protein for a large part of the world and can be used to substitute for meat protein. The combination of high fibre and slowly digested starch increases satiety and helps healthy weight control. Pulses are rich in iron, magnesium, potassium, phosphorus, zinc and B-vitamins. Because of the beneficial combination of components, pulses can reduce the risk of developing anaemia, cancer, diabetes and heart disease by improving gut

health and lowering blood cholesterol. Overall, eating pulses regularly can help improve nutrition and human health.

17. Additionally, as they are dried seeds, pulses can be stored for long time, increasing their year-round food availability and usability. Pulses can be stored for years without spoiling and still retain their nutrients, although the longer they are stored the more time-consuming and expensive it becomes to cook them. As a general rule, pulses will retain excellent quality for 18 months.

Sustainable agricultural production

18. In order to capitalize on the remarkable characteristics of pulses, some key bottlenecks need to be addressed. These include the lack of policies to promote the production of pulses, research and extension; the lack of access to local and global markets, including seeds; and the need to gather evidence on farming practices to improve pulse-based production systems, especially addressing family farmers and rural poor households. Between 1961 and 2014, world cereal yields grew much faster than those of pulses (1.85 percent per year on average, compared with 0.74 percent). There is also a large disparity between the yield of pulses in developing countries (cultivated mainly on small-scale farms) and that in developed countries (mainly on commercial farms). Consequently, reducing the yield gap for pulses is a primary challenge in countries where pulses play a significant role in diets.

Climate change

19. The inclusion of pulses in agricultural production systems can reduce the contribution of agriculture to climate change. Their cultivation helps to reduce greenhouse gases and provides increased carbon sequestration, which is good for the planet.

20. Because of their nitrogen-fixing abilities, their inclusion in crop rotations allows farmers to reduce the use of fertilizers (organic and synthetic) and, therefore, reduce greenhouse gas (GHG) emissions. In forage legume/grass mixtures, nitrogen is also transferred from pulses to grass, increasing pasture production. When pulses are included in feed for livestock, the food conversion ratio is enhanced and, thus, methane emissions from ruminants are reduced, leading to increased efficiency and a reduction in GHG emissions. Pulses can also play a role in adaptation to climate change: they have a broad genetic diversity from which improved varieties can be selected and more climate-resilient strains developed.

IV. Key Activities

21. An IYP Action Plan has been prepared by FAO in collaboration with the IYP Steering Committee. It comprises the following key elements:

a) Outreach activities, including information and dissemination through publications, the web and social media. A dedicated website has been set up with news, multimedia resources, links to factsheets and publications, promotional material and a blog that collects real stories about the importance of pulses in everyday lives. This is complemented by a social media outreach campaign on Twitter and Facebook. In June 2016, a book entitled “Pulses: Nutritious seeds for a sustainable future” was published by FAO. Part guide and part cookbook, it gives an overview of pulses and explains why they are an important food for the future. It also has more than 30 recipes prepared by some of the most prestigious chefs in the world. Other chapters illustrate how pulses can be grown at home with easy gardening instructions, and how pulses relate to various regions’ history and culture.

b) Regional and global awareness-raising campaigns, aiming at enabling discussions among different actors (civil society, farmers, private sector, government representatives and policy makers, researchers, etc.) and increasing their understanding of the fundamental role of pulses. The joint regional and global campaigns also aim at highlighting the crucial role that

pulses play as part of sustainable food production, the properties that make them a healthy food choice, and the contribution of pulses to sustainable diets and addressing climate change.

c) Regional dialogues, designed to identify region-specific obstacles hampering the improvement of production and consumption of pulses and a face-to-face global dialogue on pulses to recap on the year's activities/outcomes (including the regional dialogues, reports and academic papers); identify knowledge gaps and further research needs; agree on common priorities for advocacy and promotion of pulses globally; and set up recommendations for future years, in line with the SDGs.

d) A database on pulses comprising two parts: an analytical food composition database on pulses, which will hold analytical data collected from published and unpublished literature with special emphasis on biodiversity and the relation to agriculture and processing features; and an open access food composition database on pulses of selected varieties based on the importance of the pulse and the available data. This database on pulses will have a complete nutrient profile for selected foods and components.

e) A World Pulses Economy report, following a similar format to past FAO publications on different commodities, which will elaborate on the world pulses market situation and recent trends, including production, yields, utilization, international trade and prices, and also value chains. The report will analyse world production of pulses; global and regional trends in pulses consumption, including how they compare with other food commodities; value chains in the pulses sector in major pulse-producing and consuming regions; the patterns of trade and trade policies in major exporting and importing countries; and the structure of the global pulses market, including commodity futures and trends in prices. The report will be complemented by a chapter presenting projections for production, utilization and trade of pulses for the next ten years and a thematic chapter focusing on the importance of pulses for nutrition.

f) Two global online forums on FAO's Global Forum on Food Security and Nutrition (FSN Forum), an online platform that engages food security and nutrition stakeholders in policy dialogue and knowledge-sharing at global, regional and country levels. The FSN Forum is supporting awareness-raising and knowledge-sharing by organizing facilitated and open online discussions and webinars.

g) Other research/scientific papers and studies, such as a publication focusing on the nutritional role of pulses by-products for domestic animals that provide milk, eggs and meat.

22. In addition to these activities, and in line with previous successful experiences of international years, e.g. International Year of Quinoa (2013), International Year of Family Farming (2014) and International Year of Soils (2015), six IYP Special Ambassadors have been appointed by the FAO Director-General, one for each region, to raise public awareness and promote the benefits of pulses. The six Special Ambassadors, all prominent figures in their respective regions and chosen on the basis of their expertise, are: Jenny Chandler, for Europe, a writer and a teacher, author of three cookbooks; Kadambot Siddique, for the Asia-Pacific region, a researcher and leading scientist in the field of legumes; Magy Habib, for the Near East and North Africa, a well-known food stylist in her region and presenter of a cooking programme on healthy recipes; Elizabeth Mpofo, for Africa, an agro-ecological farmer and activist; Patricia M. Juárez Arango, for Latin America and the Caribbean, a producer and agronomist by training; and Joyce Boye, for North America, a leading scientist on plant protein and food allergies with a particular focus on peas and pulses.