



Food and Agriculture  
Organization of the  
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# PULSES CONTRIBUTE TO FOOD SECURITY

## AFFORDABLE SOURCE OF PROTEIN AND MINERALS

In many countries meat, dairy and fish are expensive and thus out of the reach of many, especially the poor. These populations therefore depend on plant foods to cover their protein needs. Protein and energy deficiencies, in both quantity and quality, are often the culprit for widespread malnutrition, which is manifest in the form of stunting or wasting. In addition, iron deficiency is an important micro-nutrient deficiency worldwide, especially for people who do not have access to balanced diets.<sup>1</sup> These issues are further compounded as the world's population is growing rapidly and agricultural production must intensify accordingly, if it is to meet global food needs. However, increases in agricultural production must also be sustainable. Pulses are an important source

of accessible protein, especially for the smallholder farmers who consume part of their agricultural produce. In fact, the protein obtained from pulses is significantly less expensive compared to animal foods. In some countries, protein from pulses costs much less than the protein sourced from milk. Additionally, the iron absorption of pulses and the protein quality of the diet are enhanced when pulses are eaten with cereals and vitamin C rich foods.<sup>2</sup>

## LOW FOOD WASTAGE FOOTPRINT

Food waste is one of the main problems related to food security. It is estimated that one-third of the food produced for human consumption worldwide is lost or wasted.<sup>3</sup> Through the entire agricultural supply-chain, losses and wastage occur. In developing countries, most

losses occur during production or transportation while in developed countries, a large proportion of food is wasted at the consumption stage.<sup>4</sup> Since pulses are shelf stable, the proportion of food waste at the consumption stage due to spoilage is very low and thus, a very good option to ensure household food security.

FOR SMALLHOLDER FARMERS, PULSES ARE AN **IMPORTANT SOURCE OF AFFORDABLE PROTEINS** THAT ARE MUCH CHEAPER THAN MEAT.

## KEY FACTS

- Pulses are an **affordable source of protein and minerals** for a large proportion of rural populations in the world.
- Pulses have a **long shelf life**, which means they can be stored for long periods without losing their nutritional value.
- Many pulses are **drought-resistant** and are suitable for marginal environments.



SPLIT PIGEON PEAS (CAJANUS CAVAY)



## SUITABILITY OF SOME PULSES FOR MARGINAL AREAS

There are many drought-resistant pulses, such as pigeon peas (*Cajanus cajan* (L.) Huth), bambara beans (*Vigna subterranea* (L.) Verdc.) and lentils (*Lens culinaris* Medik.). These pulses can be cultivated in arid climates that have limited, and often erratic, rainfall of 300-450 mm/year. These are lands where other crops can fail or produce low yields. Additionally, drought-resistant and deep rooting species such as pigeon peas, are not only able to improve food security and nutrition of farmers in marginal environments, but pulses can also supply groundwater to companion crops when planted in intercropping systems.<sup>5</sup> Therefore, people living in dry environments, where food security represents a huge challenge, can intensify their production systems in a sustainable manner using locally adapted pulses. Nevertheless, appropriate policies and programs to support both the marketing of pulses in local trade systems and modern consumption habits, must also encourage production systems for pulses, in order to increase the availability and consumption of drought-resistant pulses.

### MORE CROP PER DROP

When mung beans (*Vigna radiata* (L.) R. Wilczek) are introduced in rotation with winter wheat and cotton during the short fallow period, farmers obtain an income increase from US\$1384 to US\$2907 from 0,5 ha of land.

Source: ICARDA

### SOURCES:

<sup>1</sup> Oppenheimer SJ (2001). Iron and its relation to immunity and infectious diseases. *The Journal of Nutrition* 131:616S-635.

<sup>2</sup> Fidler MC; Davidsson L; Zeder C; Hurrell RF (2004). Erythorbic acid is a potent enhancer of nonheme-iron absorption. *American Journal of Clinical Nutrition* 79:99-102.

<sup>3</sup> FAO (2013). Food wastage footprint: Impacts on natural resources. Summary report. FAO, Rome.

PIGEON PEAS, BAMBARA BEANS AND LENTILS ARE **PULSES THAT CAN GROW IN ARID CLIMATES** AND CAN ALSO SUPPLY GROUNDWATER FOR CROPS.

## LONG SHELF LIFE

If properly stored, pulses remain edible for several years. Farmers have learnt to store pulse seeds with low water content, in dry places, and to discard those seeds that have been attacked by insects or have spoiled. Additionally, pulses show orthodox seed storage behaviour, meaning that they are seeds that are able to germinate after being stored for a long period. In some cases, farmers can store their pulses and then plant them in subsequent cropping seasons.



MUNG BEANS (VIGNA RADIATA)

<sup>4</sup> Gustavsson J; Cederberg C; Sonesson U; van Otterdijk R; Meybeck A (2010). Global food losses and food waste. FAO, Rome.

<sup>5</sup> Sekiya, N; Yano, K. 2004. Do pigeon pea and sesbania supply groundwater to intercropped maize through hydraulic lift? – Hydrogen stable isotope investigation of xylem waters. *Field Crop Research* 86:167-173.

