

# Organic Agriculture & Pulses



**ORGANIC AGRICULTURE** is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved.

## WHAT ARE PULSES?

Pulses, a subgroup of legumes, are plant species members of the pea family that produce edible seeds, that are used for human and animal consumption. Some of the most widely consumed types of pulses include kidney beans, navy beans, faba beans, chickpeas, dried or split peas, mung beans, cowpeas, black-eyed peas, and several varieties of lentils. There are also many less-known species of pulses such as lupines and Bambara beans. Only legumes harvested for dry grain are classified as pulses. Legume species when used as vegetables (e.g. green peas, green beans), for oil extraction (e.g. soybean, groundnut) and for sowing purposes (e.g. clover, alfalfa) are not considered pulses.

## PULSES

**Improve your health:** Eating pulses regularly can help improve human health and nutrition because of their high protein and mineral content.

**Improve soil and increase yields:** Including pulses in intercropping farming systems and/or cultivating them as cover crops enhance soil fertility by fixing nitrogen and freeing phosphorous. Therefore, in pulse-cereal crop rotations, subsequent cereal yield and crude protein concentration can be increased due to the residual nitrogen provided by the previous pulse crop. Pulses help increase organic matter and microbial biomass and activity (e.g. bacteria, fungi) in the soil and improve soil structure and water retention capacity while helping to reduce wind and water erosion.

**Enhance food security:** Their dried seeds can be stored for long periods without losing their nutritional value, allowing for flexibility and increased food availability between harvests. Some pulses like pigeon peas and Bambara beans can be cultivated in very poor soils and semi-arid environments where other crops cannot be grown. Crop residues from grain legumes can also be potentially used as animal fodder, and the heightened protein concentration from these residues improves animal health.

**Help mitigate and adapt to climate change:** It is estimated that there are hundreds of varieties of pulses, including many local varieties that are not exported or grown worldwide. Their broad genetic diversity from which more climate-resilient varieties can be selected and/or bred is an attribute particularly important for adapting to climate change. Many pulses often promote higher rates of accumulation of soil carbon than cereals or grasses. By using pulses in crop rotation, you can avoid the energy intensive manufacturing of fertilizers.

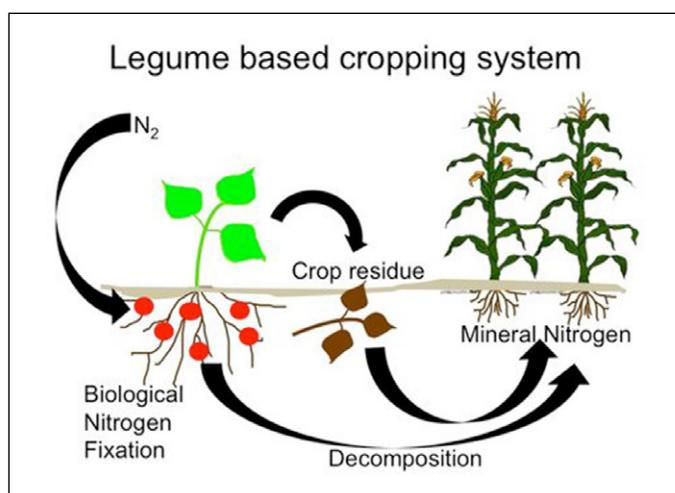
**Help fight poverty:** They offer a shelf-stable supply of food or can provide additional income to producers by being sold and traded. Pulses are high-value crops, usually getting 2-3 times higher prices than cereals. Local processing of pulses can also offer further employment opportunities in rural areas. Additionally, they reduce dependency on expensive chemical fertilizers and pesticides.

**Contribute to sustainability:** Farming with pulses can lead to the use of less fertilizers and pesticides.



## IMPORTANCE OF PULSES IN ORGANIC AGRICULTURE

- Pulses, in symbiosis with certain types of bacteria (e.g. Rhizobium, Bradyrhizobium), are able to convert atmospheric nitrogen into nitrogen compounds that can be used by growing plants. It has been estimated that legumes, of which pulses are a subgroup, can fix between 72 and 350 kg of nitrogen per ha per year.
- Some species of pulses are able to free soil-bound phosphorous, which also plays an important role in the nutrition of plants and food we eat.
- Crop rotations play an important role in organic farming and rotations that include leguminous crops allow the continued future production on the same plot of land.
- Pulses in intercropping systems allow a higher underground utilization efficiency due to their root structures and, as intermediate plants, help weed control and protect from diseases and pests.
- Deep rooting pulses such as pigeon peas can supply groundwater to intercropped companion species.
- The versatility of pulses allow them to be used in organic systems in different ways: rotations, intercropping, ley farming and as a cover crop.



*Biological Nitrogen Fixation provides nitrogen fertility in legume-based cropping systems.*

**Figure credit:** Nape Mothapo, North Carolina State University.

## WHAT CAN BE DONE IN THE INTERNATIONAL YEAR OF PULSES?

**GOVERNMENTS** as well as **DONOR AND DEVELOPMENT AGENCIES** should develop and prioritize programs and policies aimed at making crop rotations that include pulses, part of agricultural systems. Organic farming should be adequately rewarded for the provision of climate and other ecosystem services. Campaigns raising awareness on the importance of rotations contributing to farm resilience and sustainability should be conducted.

In accordance with the proposed Sustainable Development Goal 2.4 and 3.9, **UN BODIES** should encourage governments to adopt rotation-based land management techniques including those used in Organic Agriculture to eradicate hunger and poverty as well as to combat and reverse land degradation. The use of pulse species and varieties adapted to local environments should be encouraged in these.

**RESEARCH INSTITUTES AND NETWORKS** should do their best to preserve the genetic diversity of pulses. They should collect, process and make data available on the real contribution of pulses to household food security and nutrition.

