POLICY BRIEF / MAY 2021

Pulses on the Menu

TRansition paths to sUstainable legume-based systems in Europe

About TRUE

The EU funded project "TRansition paths to sUstainable legume based systems in Europe" (TRUE) is a balanced practice-research partnership of 24 institutions, which aims to identify the best routes, or “transition paths” to **increase sustainable legume cultivation and consumption across Europe** and includes the entire legume feed and food value chains.

April 2017 – September 2021

This policy brief addresses the vital need to **increase education and awareness of the role for legumes in improving health conditions and their positive impacts on the environment, starting from early years.**

Policy implications and recommendations

1

Studies show that consumers positively respond to sustainable food products (Yang et al., 2020). Hence, it is vital to **increase education and awareness of the role for legumes in improving health conditions and their positive impacts on the environment, starting from early years**. The correlation of legume consumption with the decreased risk of heart-related diseases and diabetes (Ferreira et al., 2020) can be a strong driver to promote these foods to consumers. However, these benefits may not be sufficient to trigger any significant increase in consumption as existing preferences, and cultural barriers may be hard to break. Hence, **culturally sensitive nutrition education and marketing** of novel, easy-to-cook, tasty and environmentally beneficial plant-based products may effectively increase legume consumption.

2

Our TRUE Delphi study also showed that stakeholders regard interconnected **nutrition, diet and health policies** and public campaigns as having high potential (impact and probability) to enable a transition towards legume-based food and feed systems. For that purpose, **customer-smart policies** that promote the diversity of leguminous plants and dishes that help the take-up of innovations in food technology would be desirable.

3

Consumption-focused policy needs coupling with incentives for short food value chains or to benefit domestic legume producers. Changing consumer behaviour, preferences, culinary traditions, and cultural habits is extremely difficult. Awareness-raising has limited impacts, especially if designed in a one-way awareness campaign and top-down communication format. Mainstreaming health and nutrition into education and cultural programs could increase youth awareness of healthy food choices.

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Policy implications and recommendations (cont.)

4

Incentives for legume production *via* the CAP are not targeted to meet recommended dietary guidelines. The disconnection between sustainable diets and farming incentives highlights the need for integrated agricultural, environmental, plus food and nutrition policies. Where they exist, direct payments coupled to legume production to realise legume-based food production has failed to increase legume grain-based diets and grain legume production over the long term. **"Ecological diets"** is the most widely acknowledged policy narrative that seeks to improve the wellbeing of the environment (including non-human lifeforms) and humans in an economically beneficial manner. It also has a potential to unify diverse stakeholders (policymakers, producers, food providers, consumers) (Vasconcelos et al., 2020).

5

Policy support and investment in **value chain development** for new legume-based products could further enhance biodiverse local agriculture and improve the livelihoods of legume producers. Therefore, it is equally important to increase investment in R&D and processing technology to create a market for high-quality plant-based products. Demand-side policy tools, such as standardisation, labelling, and public procurement, may create the necessary market-pull for legume-based products and ultimately lead to lower dependence on feed protein imports.

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Pulses on the menu: 100 grams per day

Legumes possess an array of unique nutritional benefits with positive impacts on human health. However, still, they are commonly misconceived as the "poor man's meat", posing time-consuming preparation methods, and presenting non-nutritive compounds and intestinal irritation.

Efforts to harmonise international strategies for communicating the nutritional benefits of legumes and their contribution to the nutrient density of diets have estimated that **100 g of cooked legumes per day** is a reasonable minimum serving size. This corresponds to about half a cup or about 30 g of dry legumes and, on average, provides approximately 115 calories, with roughly 20 g of carbohydrate, 7–9 g of fibre, 8 g of protein, and 1 g of fat, depending on the cooking method, legume type, and variety.

Nutrition and health

Legumes' nutritional richness has been associated with a decrease in numerous disease risk factors (Vasconcelos et al., 2020). Diets containing legumes can help improve both cardiometabolic health and obesity-related comorbidities, in part through better management of body weight, reduced oxidative stress, and improved inflammatory status (Ferreira et al. 2020). High legume intake has also been associated with a reduced risk of developing certain types of cancer.

Notwithstanding the presence of important micronutrients and bioactive compounds, the high-fibre content and protein (or amino acid) qualities have become defining positive characteristics of legume grains. The replacement of animal protein together with higher intestinal bacterial production of fibre fermentation end-products has been shown to positively affect health through gut microbiota profile improvements.

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What's in the pod?

High Protein Content

good coverage and levels of essential amino acids *e.g.,* His, Ile, Val, Thr, Trp, Lys, and Leu

High slow-release carbohydrates content

Dietary fibre and starch

30–40% of amylose, contributing to a low glycaemic index

Low in *fat*

with exceptions being soybeans and peanuts, given their significant levels of monounsaturated and polyunsaturated fatty acids, including the essential alpha-linolenic fatty acid.

Rich in **micronutrients**

e.g., B-vitamins niacin, folic acid, thiamine, and riboflavin

Rich in **minerals**

e.g., potassium, magnesium, calcium, phosphorous iron, zinc, and copper

Bioactive compounds

e.g., enzyme inhibitors, phytohemagglutinins (lectins), oligosaccharides, saponins, and polyphenols/tannins

Despite these beneficial nutritional characteristics, nutrient bioavailability in plant-based foods in human diets remains a topic that presents several challenges. Food technology must rely on a knowledge-based process for cultivar selection and utilisation. Studies on seed composition and nutritional profiling enable plant breeding programs to develop new varieties with exceptional health-promoting effects and novel functional foods adapted to different dietary needs (Santos et al., 2019).

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How to eat Legumes?

Minimal processing of legumes can usually improve their nutritional benefits, such as increasing levels of resistant starch (and protein) whilst also decreasing levels of bioactives compounds which may have detrimental effects, leading to important positive effects on human physiology management and gut microbiota modulation. Noteworthy, legumes may also present other bioactives which are detrimental to some consumers' well-being or health. However, these are normally inactivated by the routine and simple everyday cooking and processing methods. Off-flavours, such as bitterness and astringency, may also be associated with (later) gastric discomfort. Still, these may be reduced by dehulling (mechanical removal of the seed coat), soaking, washing, germination, fermentation, or heat processing – either alone or in combination.

Learning how to cook them

One of the reasons underlying legumes low acceptance by many Europeans is the lack of knowledge on how to cook them. Hence, developing legume-based recipes that are easy to prepare, affordable and adaptable to different consumer types and pedoclimatic regions would be a good starting point. To this effect, two recipe e-books have been developed within the TRUE project:

1. Easy peasy legume recipes for kids across the globe!, an e-book with child-friendly recipes collected from different European countries. These are easy to prepare and are accompanied by useful nutritional facts to break the barriers hindering legumes consumption in a fun and educational way and fostering time between parents and children. The e-book has been translated into ten different languages.
2. Legumes Europe's culinary treasures, an is an e-book collating traditional legume-based recipes across Europe. Nutritional value and carbon footprint are provided for each recipe.

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What policies support legume consumption?

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Currently, consumers have different expectations in terms of what they would like to find on supermarket shelves. Generally, they look for nutrition, a 'clean' label, wellbeing attributes (Mehlhose et al., 2021), and convenience associated with pricing, packaging, and flexibility. The main barriers are the lack of recognition of legumes' nutritional value, their high cooking time and the presence of bioactive factors which may have potentially negative effects (Duarte et al., 2020).

Legumes feature in many official dietary guidelines, although actual intake recommendations vary. Within some dietary guides, for example, from countries like Portugal or Kenya, legumes are even represented as an individual food group, highlighting the importance of consuming these foods regularly and independently from other staple foods. Some countries have other significant measures. For instance, in France, guidance for the general public provides recommendations based on the objectives of the French National Nutrition and Health Program and explicitly recommends the consumption of legumes at least twice a week (FAO - Food-based dietary guidelines - France). In addition, policies that require a mandatory vegetarian meal in public catering, *e.g.,* in public schools, may also indirectly support the inclusion of legumes more broadly, such as in meals targeted at younger consumers.

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FURTHER READING

Policy Briefs on: Environment (DOI:10.5281/zenodo.4911317)
Delphi (DOI: 10.5281/zenodo.4911276)
CAP (DOI: 10.5281/zenodo.4911263)

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