



TRansition paths to sUstainable legume-based systems in Europe

Stakeholder perspectives on transition paths to legume-supported agri-food systems

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Agricultural innovation alone has not facilitated the transition to more sustainable legume-supported agri-food systems

Nitrogen (N) is essential for food production, yet agriculture's high GHG footprint (25% of total) is mainly a function of two gases. Firstly, nitrous oxide (N₂O) from the application of synthetic nitrogen fertiliser (SNF) - 50% of applied SNF is lost. Secondly, methane (CH₄), from SNF demanding crops that are fed to cattle. Inexpensive and easily accessible SNF drives the high-production and -pollution of intensive agriculture.

The wider food system also presents polarised capacities towards the processing of SNF-dependant commodities, and with negative impacts on public health through encouragement of unsustainable diets. With this socio-economic paradigm, is the demise of food systems supported by biological nitrogen fixation (BNF) via legumes. Yet, legume supported production can significantly lower GHG emissions and deliver higher quality food.

Also, it has become clear that agricultural innovation alone has failed to facilitate the place of legumes in the transition towards more sustainable agri-food systems. To help address this challenge TRUE has **European Legume Innovation Network (ELIN)** workshops, to hear first-hand the perspectives of agri-food system stakeholders who operate across the whole supply chain.

The perspectives of these people on the opportunities and barriers from the 1st year of engagement are summarised below alongside (highlighted) which of the 17 Sustainable Development Goals (of the Food and Agriculture Organisation of the United Nations, FAOUN) may be positively influenced.

There are three TRUE European Legume Innovation Networks (ELINs)



RESEARCH

More and better baseline in-field data

- for a wider range of grain legumes
- stronger focus on forages and cover crops
- optimise management of residual N
- environmental pathology & IPM strategies

More legume breeding

- Return legume breeding to government led research centres to ensure production of locally adapted types
- For more than yield such as: yield qualities (human and industrial); to ensure ecosystem benefits; more exploration of GM options; and, to ensure crop types matched to best soil microbes (rhizobia and AMF), biogeography & cropping system

Affordable Precision Agriculture

- More and more affordable options
- for sowing, managing and harvesting intercrops

SUBSIDIES, TAXES & TARRIFFS

Remove CAP

Keep CAP - develop a "reward based system"

- maintain financial incentive for legume product
- 'a food-system diversification strategy'
- 'rotation diversification strategy'
- for "carbon farming", "soil sequestration", "water quality"
- "Legume Aid", payment per hectare cultivated
- build into 'new farm entry' scheme
- CAP for return for more (whole farm yield) data

More stringent environmental protection measures

- nitrogen fertiliser use taxed or banned
- limits on N₂O and or methane emissions
- farmed animal payments (match herd size / husbandry)

Sliding tax-scale for some commodities (meat)

- based impacts of production and consumption

Control trade / imports / retail

- limit imports of legume & legume-based products
- production standards of imports—must match EU standards
- to balance imports, reduce cereal area with grain legumes
- ensure producer profit for food & environment benefits

EXTENSION SERVICES FOR SUPPLY-CHAINS

More independent support for legume producers & users

- especially catch-, forage- and understorey-crop management

Establish legume-growers practitioner-networks (by region)

- more government support for peer-to-peer learning
- highlight approaches of legume farming champions
- offer cultivation and processing master-classes
- resources available as on-line digital

Business planning support - for farm business diversification

- more help purchasing new equipment on-farm (using CAP?)
- including processing equipment, to enable short-supply chains
- precision agricultural equipment for inter-cropping
- post-harvest processing equipment

POLICIES

Mainstream a "Co-innovation Approach" to policy development

- involve all stakeholders, small and large holders

Create levy boards (to enable partnerships)

- seed certification legume cover crops
- Compulsory and higher grain legume levies
- government match-fund the levy

Develop specific policies for legume-based bioeconomy

- National and regional 'Plant Protein Plans'
- include (5 year) strategic legume research for regions
- inventorise legume processing and banking capacities

Policies to ensure green-public & -private Procurement

- safeguard access and affordability of legume based foods
- adjunct already popular products
- more vegan & ovo-lacto-veg. and GM-free options

EDUCATION

Basic education in food systems

- For all stakeholders across the supply chain (incl. policy-makers)
- public health education initiatives, pulses independent a
- in schools (all ages), - global food cultures and diets; cooking skills; environment and animal-husbandry implications of diet
- great awareness of legumes among (social-) media providers

National nutritional guidelines need rewritten for legumes

Better food-labelling in supermarkets

- more informative labelling of nutrition provision & env impact

See www.true-project.eu for more detailed reports on ELIN findings, and register for TRUE-newsletters

Forthcoming ELIN meetings:

- **Atlantic** - Jan. 2019, Denmark, & June-July, Ireland
- **Continental** - 2019, Slovenia,
- **Mediterranean** - 2019, July 9th, Portugal



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