

The BEAN MAN –

a dietary intervention on replacing red and processed meat with legume products in men

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The diversity of end uses for legumes, Webinar 27 April, 2021

Leg4Life



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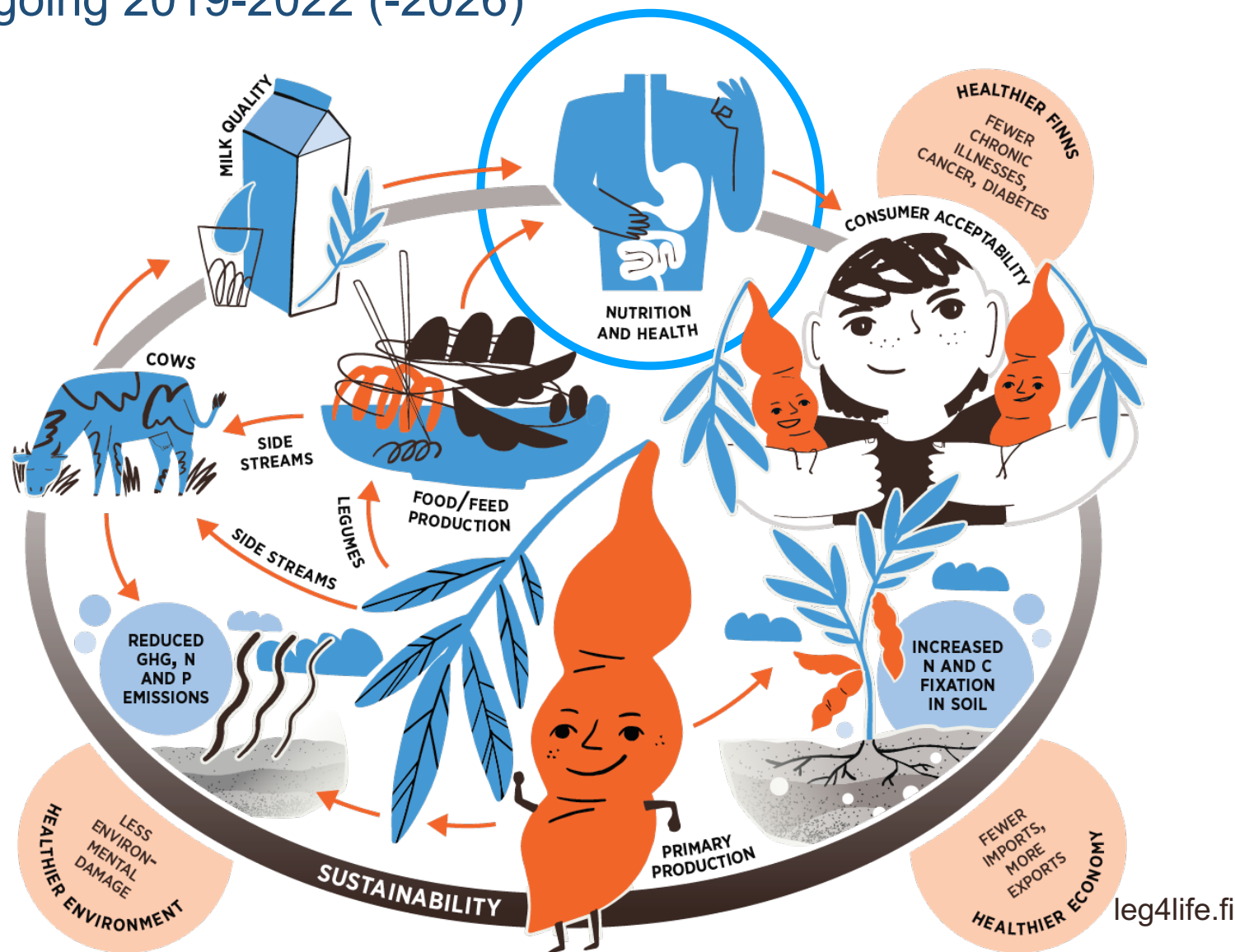
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Legumes for sustainable food system and healthy life (Leg4Life)

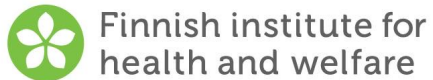
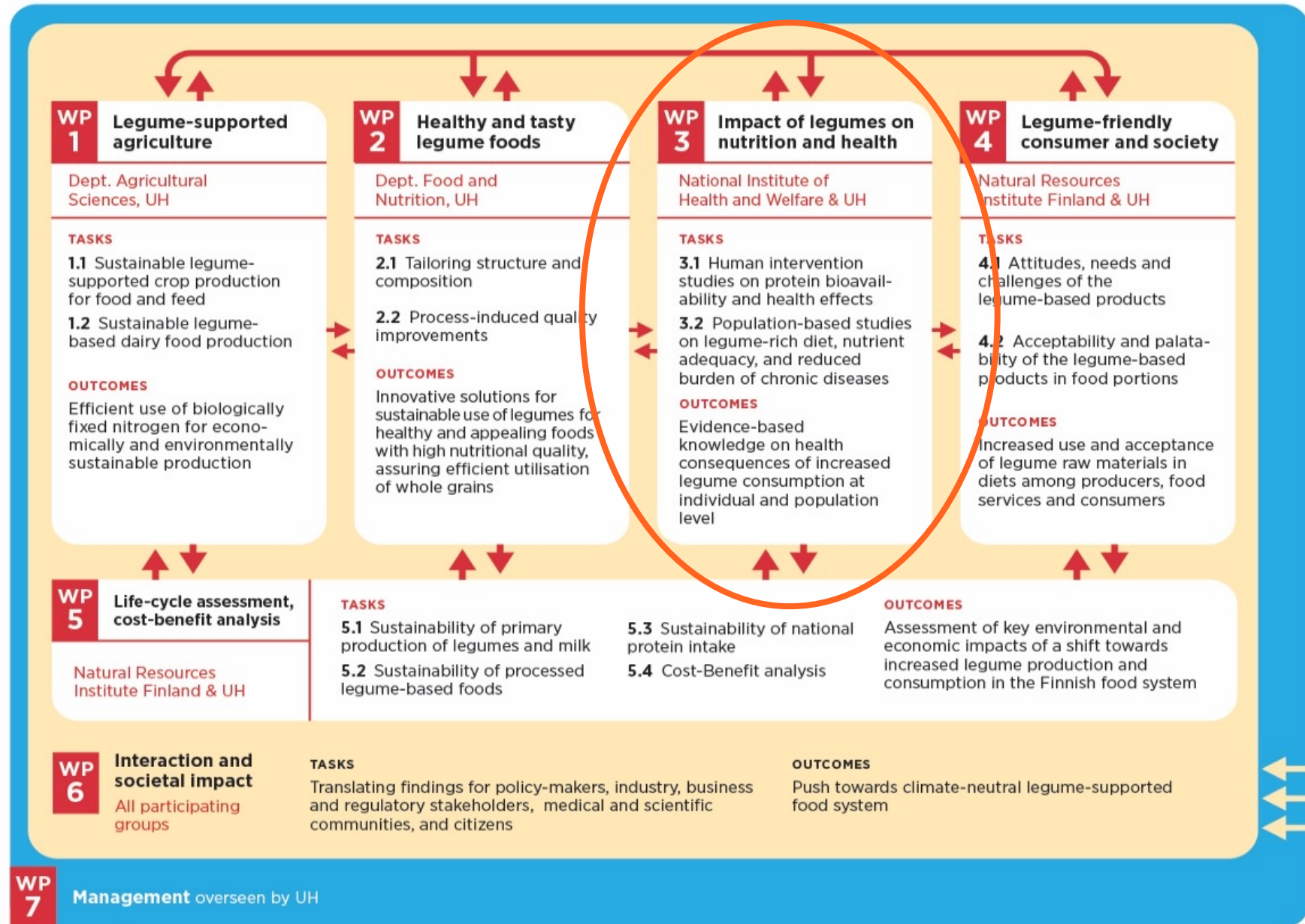
Towards a Sustainable, Healthy and Climate-Neutral Food System (FOOD) Programme ongoing 2019-2022 (-2026)

The general aim

- Increase the production and use of legumes both as animal feed and human food and take into account the side streams



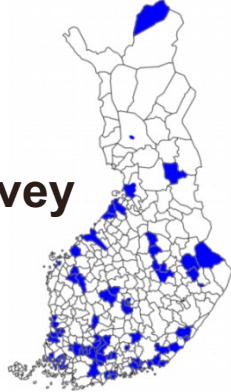
Consortium structure and work package interaction



Legume consumption in Finland is low



The National FinDiet 2017 Survey
Adults, 18–74 years



Healthy Diets From
Sustainable Food Systems
**Food
Planet
Health**

Legumes only, mean consumption

Men: 12 g/day

Women 13 g/day

Legumes only, mean consumption among users

Men: 29 g/day

Women 29 g/day

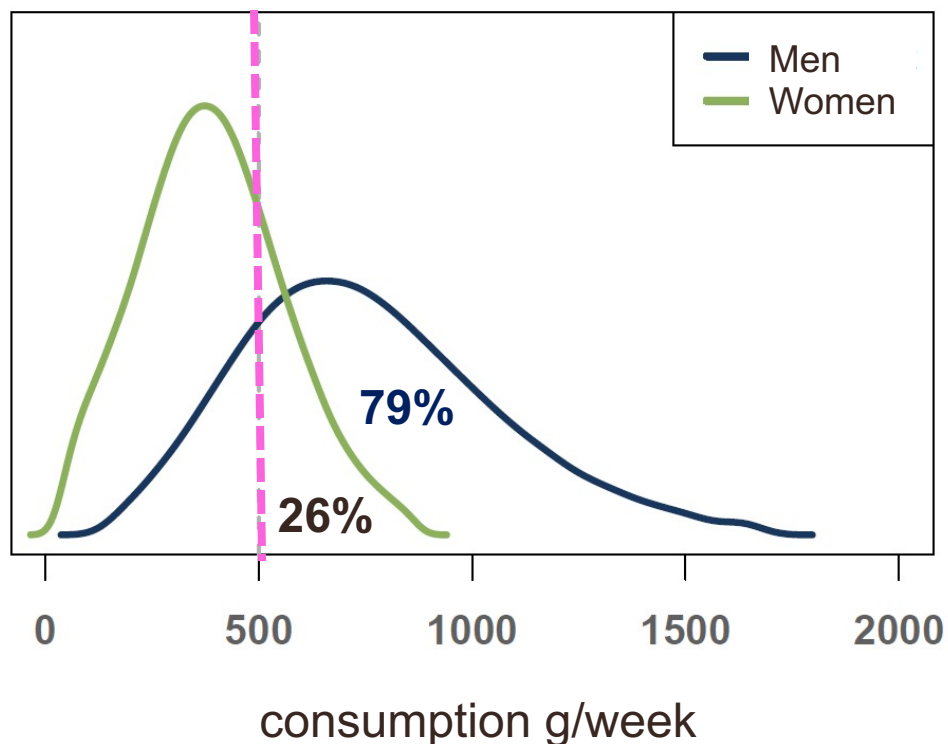
		Macronutrient intake grams per day (possible range)	Caloric intake kcal per day
	Protein sources		
	Beef, lamb and pork	14 (0–28)	30
	Chicken and other poultry	29 (0–58)	62
	Eggs	13 (0–25)	19
	Fish	28 (0–100)	40
	Legumes	75 (0–100)	284
	Nuts	50 (0–75)	291

Table 1

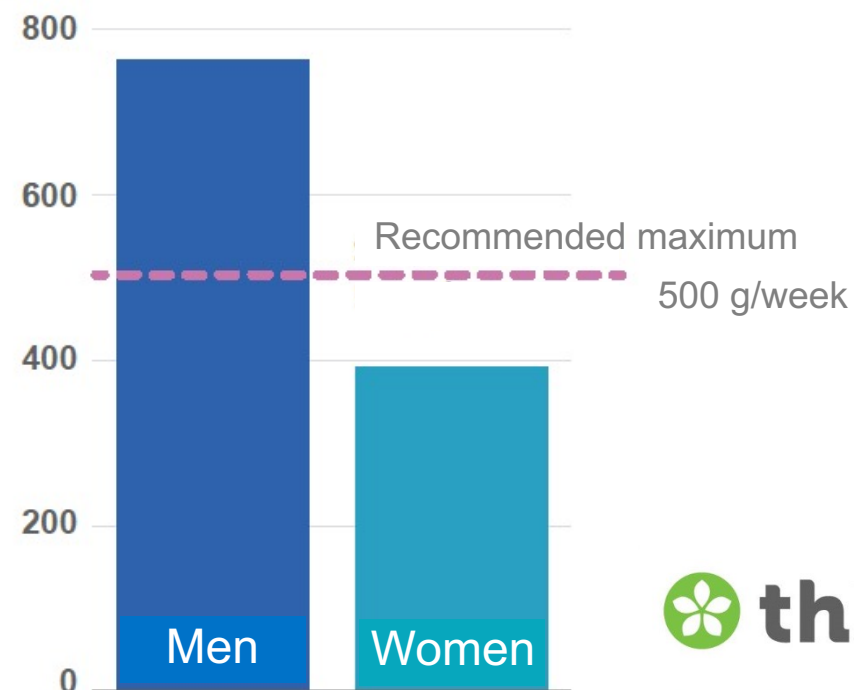
Scientific targets for a planetary health diet, with possible ranges, for an intake of 2500 kcal/day.

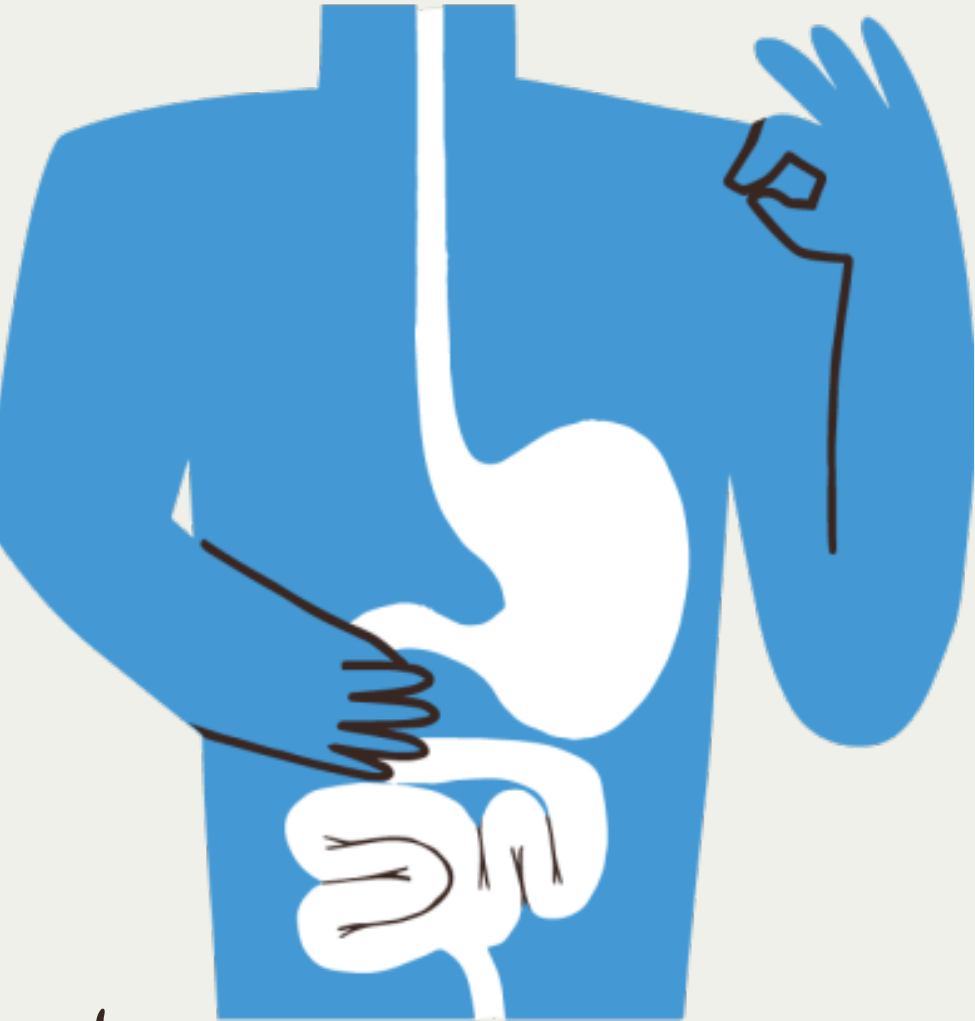
Especially men consume too much red and processed meat compared to recommendations

Usual intake distribution (SPADE modelling)



Mean consumption g/week





The Bean Man study: **research questions**

- **How does partial replacement of red meat with legumes affect...**
 - nutrient intakes and nutritional status?
 - Protein, fat, carbohydrates, and fibre?
 - Iron, vitamin B12, and folate?
 - food consumption?
 - the risk factors of chronic diseases?
 - Cardiovascular diseases
 - Colorectal cancer
 - Type 2 diabetes

The Bean Man: study design

Parallel design

- Healthy, working-age men were stratified by age and randomized to intervention groups for **6 weeks**

Intervention diets

• MEAT SUPPLEMENTATION

- 760 g of red and processed meat per week (weight as cooked and boneless); 25% of protein intake

• LEGUME AND MEAT SUPPLEMENTATION

- 200 g of red and processed meat per week: 5% of protein intake
- Legume-based products providing 20% of protein intake; products based on pea and faba bean



***The Bean Man* intervention was successfully carried out in autumn 2020**

- N=102 participants, (n=51/group)
- No drop-outs
- Mean age of participants: 38 years
- No differences between the groups at the baseline (with age, height, weight, BMI, and waist circumference)
- Screening visit, and research visits at the baseline and at the end
 - Sample collection: fasting blood samples, faecal samples, 24-h urine collection
 - 4-day food records at the baseline and at the end
- Weekly food delivery



Bean man study: analyses are in progress

- **Food records**

- Nutrient intakes
- Food consumption

- **Fasting venous blood samples**

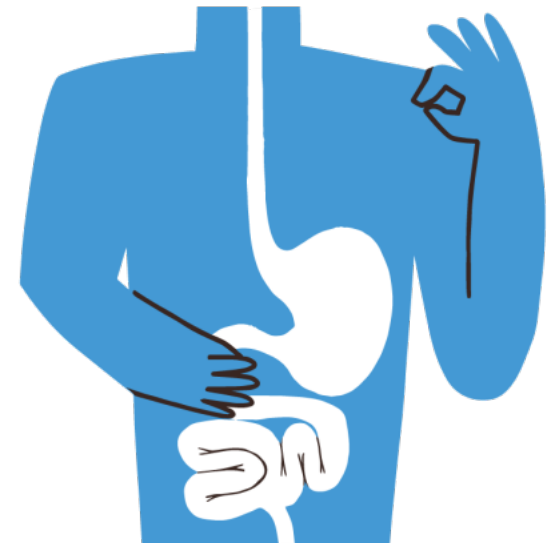
- Lipoproteins
- Biomarkers for iron status
- Serum folate and vitamin B₁₂
- Blood count
- Liver enzymes
- Glucose, HbA1c, insulin
- Inflammation marker hs-CRP
- Metabolomics

- **Faecal samples**

- Gut microbiota
- Bile acids
- N-nitroso compounds
- Short-chain fatty acids

- **24-h urine collection**

- N excretion



Thank you!

Stay tuned for research results of the Leg4Life study consortium

Leader: Assoc. Prof. Anne-Maria Pajari, University of Helsinki
Interaction coordinator: Dr. Marjukka Lamminen, University of Helsinki

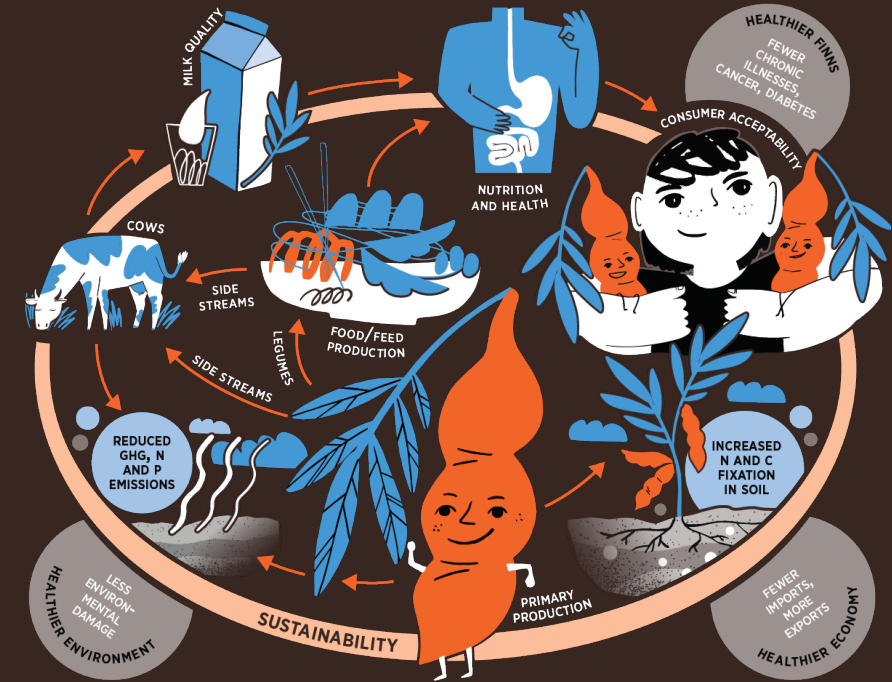
Work Package 1: Sustainable legume-supported agriculture
Leaders: Prof. Aila Vanhatalo and Dr. Asko Simojoki, University of Helsinki

Work Package 2: Healthy and tasty legume foods
Leaders: Dr. Kirsi Jouppila and Dr. Susanna Kariluoto, University of Helsinki

Work Package 3: The impacts of legumes on human nutrition and health
Leaders: Dr. Satu Männistö, Finnish Institute for Health and Welfare and Dr. Essi Päivärinta, University of Helsinki

Work Package 4: Legume-friendly consumer and society
Leaders: Dr. Toivo Muilu, Natural Resources Institute Finland and Dr. Hanna Konttinen, University of Helsinki

Work Package 5: Life-cycle assessment and cost-benefit analysis
Leaders: Dr. Anna-Liisa Välimaa, Natural Resources Institute Finland and Prof. Kari Hyytiäinen, University of Helsinki



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