Pulses for healthy guts: Global Opportunities

25th March 2021
tom.wood@niab.com
Pulse production

• High protein (20-40%), carbohydrates, fibre, rich in micronutrients, symbiotic nitrogen fixation
• Important source of nutrition and income in developing countries
• Marginalised, inconsistent yields, pests and disease issues
• Less investment in R & D than cereals and oilseeds
• Limited use of pulses, pulse products as foodstuffs in the UK
• 1/3 UK faba bean crop is exported as premium to N. Africa for human consumption
  - Over-dependence on soya
  - Limited utilization of ‘home-grown’ pulses
Improving pulse crops

• **Accessing and exploiting genetic diversity**
  - Natural diversity in gene banks, germplasm collections, landraces
  - Crossing, selection for novel phenotypes
  - Protein/starch content
  - Induced diversity: Mutagenesis, GM, gene-editing

• **Developing genomic tools, molecular breeding resources**
  Pulse Crop Genetic Improvement work (*V. faba, P. sativum*)
  - Public genetic markers, transcriptomics datasets
  - Mapping populations, Inbred line production
  - Screening diverse germplasm (>900 accessions)
  - Direct interaction with plant breeding industry
Opportunities

- Apply classical & novel breeding and analytical technologies to expedite improvement of legumes species (HTP genotyping, GWAS, Genomic selection, Speed breeding, CRISPR)
- Screen for natural diversity, pre-breeding for important traits
- Enhance productivity, quality, yield stability, disease/climatic resistance
- Preventing displacement of legumes in developing countries
- Improving fundamental understanding regulatory networks controlling quality characters

- Exploiting pulses constituents- protein, starch, fibre and oils
- Assessing health benefits, sustainability criteria to demonstrate benefits
- Enhanced functionalities?
- Viable soya alternatives?
- Development of new healthy, nutritious, consumer-focussed products
Opportunities

• How to add value across the supply chain?

• How to improve utilization to grow market, promote wider consumption of pulses?

• Continue to develop collaborative networks linking producers, researchers and industry to build viable production pipelines to deliver healthier food and ingredients

• Securing funding for new pulse work?