

ALTERNATIVE PROTEIN CROPS FOR THE UK

The UK, along with most of Europe, is highly dependent on imported commodities (especially soybean/soya meal) as a protein source for both food and feed production. Faba bean and pea are both UK-adapted crops which offer immediate potential for displacing imports. There remains great scope for further diversifying rotations to include different legumes and other protein sources.



Can we make domestic soybean work?

Imported soya is so popular because it is readily available with a high level of high quality protein. Soybean has been tried as a minor UK crop for several years but there is no commercial UK-based breeding and current varieties are all bred overseas. Planting (late April onwards) and harvest (late September onwards) are both later than ideal for UK cropping. If we target cold tolerance, early vigour, early flowering, early maturity and select in the UK, can we make soybean work here?

Other grain legumes

- **Lupins** offer very high quality protein
- They can be grown in UK but are generally used for feeding on-farm, often as whole-crop, with little interest to date in food applications



- As cool-season legumes, **lentils** have shown some promise in recent NIAB/PGRO trials
- NIAB is also exploring the potential of **chickpea**
- Together with soybean, these all represent less-adapted, medium term prospects than established pea and faba bean crops.



Co-products from other established UK crops

- Defatted oilseed rape meal is a valuable co-product
- It is used for feed rather than food, and as a limited soya replacement, due to flavour taints and anti-nutritional factors
- DDGS, a cereal co-product from bioethanol and potable alcohol production, is another protein-rich animal feed
- Wheat gluten, produced by the starch industry, is used in milling and as the basis of 'seitan' in oriental cuisine
- Through a combination of improved processing and plant breeding, can these co-products be made more palatable and nutritious?



Longer term ideas

- Alternative oilseeds such as hemp and sunflower can both deliver high-protein meal
- Many leafy species (grasses, forage legumes) have a protein content of >20% dry weight
- Ideally, these would require local dehydration prior to transport for processing
- Pilot studies have shown that appreciable protein can be recovered from cereal and pea straw, sugar beet tops and even potato peelings.