

DOMESTIC PRODUCTION OF PLANT-BASED PROTEIN

Meat and dairy products are excellent sources of dietary protein, but many consumers are seeking alternatives for health, environmental, ethical, and social reasons. However, cultured meat, precision fermentation, insects, algae and plant-based sources are often subject to 'novel foods' legislation or heavily reliant on imports.

A real opportunity exists to improve crops for domestic plant-based protein production.

Target crops and traits

Many important UK crops (e.g. wheat, barley, oats, oilseed rape, pea, faba bean) are recognised as valuable protein sources, but still mainly pass into animal feed rather than food applications.

Alternative break crops including minor legumes (soybean, chickpea, lentil, lupin), grains (quinoa, buckwheat, millet) and oilseeds (sunflower, hemp) are being assessed for suitability. Significant protein and other valuable co-products can also be extracted from leafy crops, crop trash and waste streams through 'biorefinery' approaches, or by 'upcycling' crop products through fermentation.

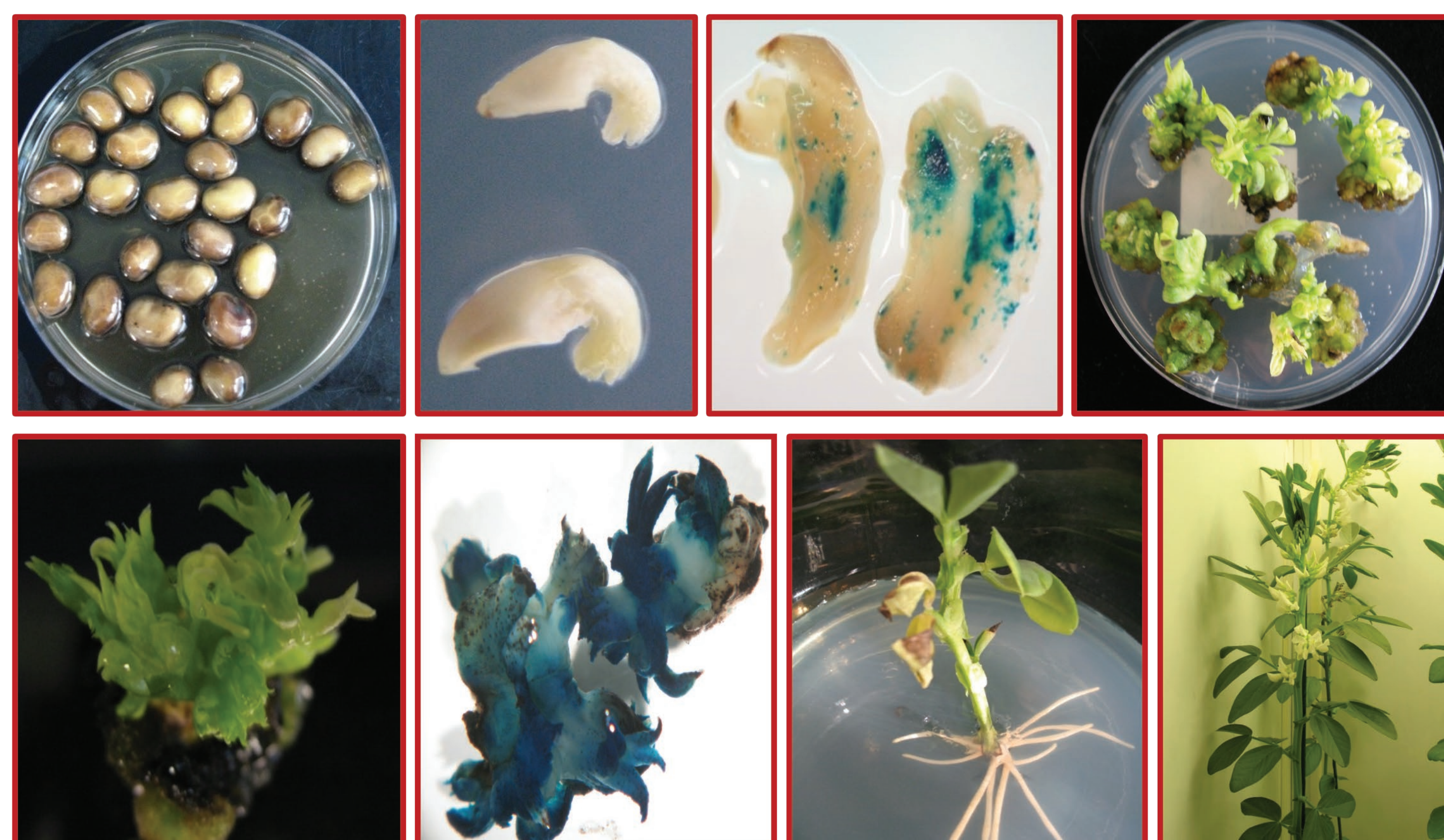
Better adaptation, yield, resilience, and resistance to pests and diseases are required to make these crops attractive for growers, while end-users have protein content, digestibility, texture and flavour as targets for improvement.

Focus on Niab research

Use both breeding and biotechnology to improve existing crops and adapt novel crops to UK conditions.

Support agronomy research into effective weed, pest and disease management, whilst supporting low emissions and increased biodiversity.

Work closely with end-users and consumers to emphasise processing, functionality, nutrition and flavour traits.



Transformation and regeneration in faba bean



Contrasting maturity between soybean varieties in 2025 Niab trials



Harvesting 2025 Niab lentil trials



Harvesting 2025 Niab industrial hemp trials

Niab research on protein crops is supported by several sources including Bezos Earth Fund, Defra (Pulse Crop Genetic Improvement Network), Defra/Innovate UK (10052996, 10164962, 10174827) and BBSRC (BB/W019221/1)