> *Both supply and demand could easily be doubled.*

Technical
Pulse progress

Pulse potential

Will pulse growers have a brighter future within the Government's new National Food Strategy? *CPM* investigates.

By Andrew Blake

The National Food Strategy 'field to fork' report is an in-depth examination of how the country's food production affects our health and the environment — but falls short when it comes to pulse crops, according to a number of industry experts.

There's little doubt that UK pea and bean growers could help meet the Government's goals of achieving net zero carbon emissions by 2050 and protecting 30% of the land for nature by 2030. But they need more encouragement and official recognition that not all legumes are the same, says Roger Vickers, chief executive of the Processors and Growers Research Organisation.

The National Food Strategy report mentions pulses many times, he notes. "We already have a history of being able to grow both peas and beans, with UK production ranging from 0.7-1.5 million tonnes over the past ten years, of which 250-350 thousand tonnes was used domestically each year.

"Both supply and demand could easily be doubled if farmers were encouraged to do so via the Environmental Land Management scheme and, if properly implemented, the ELMs will reward those farmers who are working to reduce the industry's carbon footprint."

Soya substitute

The UK uses more than 1 million tonnes of imported soybean meal each year for animal feed. Much of its production, for example in Brazil and Argentina, is controversial because land use changes there have a negative environmental impact in terms of greenhouse gas emissions and deforestation, Roger points out.

"Simply importing our protein merely exports our carbon footprint to other countries," he says.

There is plenty within the report acknowledging that pulses can make food production more sustainable, he adds.

"To see legumes recognised as potential sources of nitrogen and in terms of their ability to sequester carbon was particularly pleasing.

"Nitrogen is one of the big factors recognised in the report as having a significant impact on the environment and sustainability. It's mentioned 16 times.

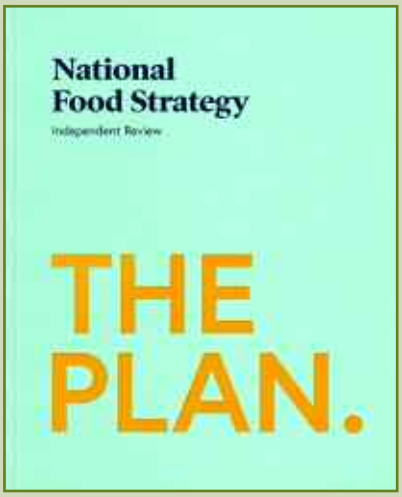
Roger Vickers is concerned that the National Food Strategy doesn't distinguish between legumes grown purely for environmental reasons and leguminous pulse crops such as peas and beans. It's a significant distinction when considering environmental actions for cropping as a whole, he stresses.

"The growth of UK pulses for human consumption has huge potential given the strategy's emphasis on the need for less meat consumption — but this will take time

Plenty of peas are needed for use in pet foods and livestock rations.

National Food Strategy

The National Food Strategy for England — good news, but opportunities missed *(https://www.gov.uk/government/publications/national-food-strategy-for-england).*



to be realised."

Pulses are severely neglected from a research point of view, but given much needed investment, they can deliver even more diverse rotations, he believes.

"Investment will be key to learning more about introducing alternative pulse crops to the UK, such as lentils and chickpeas, and how to grow peas and beans more effectively."

However, the NFS report does not distinguish between pulses and legumes, he warns.

"Not all legumes are pulses. The difference is that 'pulses' are specifically grain legumes, excluding soya, while 'legumes' encompass all leguminous crops including clovers, vetches, lucerne and several other crops used as forage.

"Those crops are increasingly included in environmental schemes and cover crop specifications. The report fails to recognise that while these non-grain production legumes can help deliver environmental benefits when grown in non-arable situations or as part of environmental schemes, they will not deliver the full suite of benefits that pulse crops can when grown commercially on a field scale."

The aim of Pulses UK, with its 51 member companies, is to increase the national area of pulses and raise their consumption.

"Our *modus operandi* aligns with the overarching objectives of the government's National Food Strategy review," says president James Maguire.

"Adding pulses to the UK's rotations will reduce the use of manufactured nitrogen fertiliser. They are crops traditionally grown in the UK with established end markets, which can sequester carbon dioxide. This satisfies the strategy's *Make the best use of our land* objective.

"Our work to influence consumers on the many health benefits of pulses, from the annual school events to the Dal festival, is also in alignment with the objective 4 *Create a long-term shift in our food culture* and objective 2 *Reduce diet-related inequality*," he adds.

"For years Pulses UK, or BEPA as it was known, has been strong in our messaging to consumers referencing the health benefits.

Fish farms need more beans, says Andy Bury.

Pulse UK's aims are in tune with the NFS's objectives, says James Maguire.

"Peas and beans are pretty amazing foodstuffs; they're great for the planet and great for us. They are high in vitamin A, vitamin C, folate, and iron, rich in protein, carbohydrate, and fibre. They're also low in fat.

"As an organisation we believe one of the key contributing factors to achieving net zero will be including more legumes in rotations.

"Through the proposed rural land use framework, we welcome the increased subsidy pulses could attract.

"The UK supply chain is already established, from seed production to consumption and export, and we've shown that we have markets and end uses for larger volumes of peas and beans for domestic use for both animal feed and human food, with almost unlimited export possibilities."

Given the National Food Strategy there has never been a better time for UK farmers to be growing pulses, believes Frontier's Andy Bury.

"Markets in the UK and abroad are constantly seeking supplies of feed and human consumption peas and beans.

"Recent supply chain issues due to Brexit or transport problems haven't hindered demand for pulses.

"Given ongoing inorganic fertiliser prices we may well see an increase in the pulse acreage, and buyers are ready for any production increase.

"The most recent and growing demand for feed beans is in the aquaculture feed industry. Salmon farming in Scotland and Norway now consumes over one million tonnes of feed a year. With 50% protein and 30% oils and fat the feed needs ▸

Countering practical concerns

If peas go flat and the field surface is stony and uneven, harvesting can be slow and prone to dragging soil into the combine, Roger acknowledges.

"Occasionally this is a problem, but improved headers and lifting methods, on machines such as the Sund and MacDon, have helped.

"Varieties are also getting stronger, although they're not guaranteed to be standing at harvest if the weather's wet at the wrong time."

With beans there are now significantly earlier ripening varieties, and while bruchid beetles can be troublesome south of the Humber, PGRO trials using legume trap cropping suggest the damage they cause to beans for human consumption can be reduced, he adds.

Earlier ripening varieties of beans have eased harvest.

▸ binding to hold the pellets together.

"Beans are excellent binders provided they're dehulled; and removing the skins' less digestible fibre raises the protein level to 28%."

Of the three plants in the UK dehulling beans, Frontier's in Nottinghamshire is the biggest with a capacity of 75,000t/yr, he notes.

"Beans from there are trucked to feed mills in Scotland or exported to Norway for direct shipment to coastal-based feed mills.

"A number of farmer milk contracts now insist that dairy cows are fed soya-free rations," he adds.

"The poultry industry demand for beans is for a cooked product of a 50:50 mix of beans and whole rape manufactured in specialist plants. These plants alone account for 100 thousand tonnes a year."

The UK is the world's biggest grower of field beans, producing about 700,000t/yr, he notes. Australia and the Baltic states are the other main producers.

Beans for food uses

"The world market focuses on Egypt as the biggest buyer of food beans. The country consumes 700-800 thousand tonnes a year, but with surprisingly low domestic production it is always looking for supplies from all over the world.

"UK beans are renowned for their colour and short cooking time, but unfortunately quality is often downgraded due to insect damage by Bruchid beetles.

"Over the past few years, with a network of quality cleaning plants, we have supplied up to 200,000 tonnes of beans for human consumption in bulk vessels and containers to Egypt, Sudan and the Middle East."

In the UK, beans unsuitable for human consumption are used by compound feed buyers particularly in the West of the country for dairy and cattle rations where the pressure on reducing imported soyabean meal is encouraging inclusion of more feed beans, he notes.

UK production of dried peas is much smaller — at around 150,000t/yr.

Peas destined as snacks for the Far East must meet exacting standards.

"Pea markets for human consumption are very specialised and require the product to be cleaned and colour-sorted to very exact standards for use in mushy pea or processed pea canning operations.

"UK peas are also exported to China and the Far East for use in snack production.

"The biggest demand for UK peas is for micronising where the peas are cooked for a short period and then rolled into flakes for use in pet foods and coarse ration mixes for young livestock.

"The UK is already a significant producer of faba beans as well as green peas, and any increase in production is eagerly sought by buyers for animal feed or human consumption in the UK and abroad." ■

Continued high N price could prompt pulse expansion

Lincolnshire farm manager Tom Garner already grows pulses in the shape of spring beans on the 1132ha of Scrivelsby Farms at Horncastle.

Pulses certainly have a good future, he believes. "Why import soya grown on cleared rainforest that locks up carbon and produces oxygen 365 days a year, when we can grow a protein source in our country with low food miles? We just need to get that across to the public and politicians."

His beans are grown mainly for feed. "But if they're bruchid-beetle free then the premium for human consumption is a bonus.

"They're a valuable nitrogen-fixing crop and leave a wonderful friable soil as a 'no till' lead into wheat."

On fields with a heavy blackgrass burden, they are a good second consecutive spring break crop, he adds.

Cropping on the mainly light land includes 310ha of wheat. He also grows forage maize and rye, stubble turnips, potatoes, parsnips, oilseed rape, sugar beet, triticale, fodder beet and grass.

"Generally, blackgrass peaks in the wheat. Spring barley followed by beans gives us a 'reset' to bring the weed back to acceptable levels."

On fields with less blackgrass the beans are used as a single-year break.

Given the farm's wide range of crops Tom is cautious about growing more pulses.

"I think our rotation has enough spring break crops, and we have 12% of the cropped area in spring beans; but if we need to, we may increase the area, especially if the nitrogen fertiliser price remains high.

"We used to grow another pulse crop — vining peas — and we could reintroduce them to the rotation if needed."

His main concern over expanding the pulse area is disease.

"Given nematodes and *ascochyta* and I wouldn't want to have a tighter bean rotation than we have at the moment."

Tom believes the key to consistent bean yields is to maintain a high seed rate.

"We aim for 50-55 plants established per square metre. It's tempting to cut rates because the seed, particularly of new varieties, can be expensive.

"To help keep costs down we tend to have our own crops tested for germination, stem nematode and *ascochyta*, and if the quality is good enough, we dress our own home-saved samples."

Homegrown pulses — better than soya grown in South America on cleared rainforest, says Tom Garner.