BusinessCrops

K+S sees bigger role for potash as UK gets drier

The 'Cinderella nutrient' can give better water retention in soil and better water uptake by plants, **Chris Lyddon** hears at a K+S press briefing

Crack in clay soil in wheat last summer

Potash is often overlooked. It's easy to skimp on it when there might be no immediate yield penalty. But potash supplier K+S believes the nutrient can have a vital effect on soil's ability to retain water and plants' ability to take it up.

Richard Pinner, managing director UK and Eire for K+S, explained that the company is one of the leading suppliers of standard and speciality fertiliser.

"We're Europe's largest potash producer," he said. Potash has not gone up in price in the same way as other nutrients, it had been the most stable input cost for farmers for many, many years, he said.

K+S scientist Professor Andreas Gransee was over from Germany to explain the company's latest research. He described how the company had closed its research station in the early 1990s at a time of tight budgets for the potash industry. After that it had a policy of working with universities and technical institutes on research.

RESEARCH FACILITY

"Our managing director decided we needed our own research facility," he said. The problem with universities was they were not interested in field research. They're only interested in basic research."

The new institute put more emphasis on practical research, not only for Europe but worldwide.

"We'll have at least three PhD students," said Prof Gransee. "This should be only the start."

He said there was no need to discuss whether there was climate change or not. "Conditions for farmers in Europe for water resources, especially in spring and summer, are more and more unfavourable. The target is intelligent fertiliser management and the changing conditions.

"Maybe in Europe the annual rainfall is not decreasing, but the problem is the distribution," he said. "In the hot periods there is less water available."

Prof Gransee explained the role of potash as a lubricant, in effect the oil that makes the plant system run. "It's well-known that potash is linked to the efficiency of water use," he said. "You can't replace water by nutrients, but what you can do is teach the plant to cope with dry conditions better.

"If you have drought conditions the influence of nutrients becomes more important.

"The first reaction of crops to potash and magnesium deficiency is limitation of sugar transport from the leaves. Magnesium and potash control the transfer of sugar from the leaves to the other organisms including impacting the root growth. It's obvious that these plants aren't able to take up enough nitrogen and water, especially under dry conditions."

The effect of nutrient deficiency on roots could be dramatic. "That has a tremendous impact on yield," he said.

SOIL WATER STORAGE

K+S has also looked at the water storage of the soil under field conditions. Potash could help the soil produce bridges that help it hold water.

"These are clay minerals," Prof Gransee explained. "It's not clear at the moment if different clay minerals have a different effect."

There was also an effect on the shear strength of the soil.

"Shear strength, especially in sandy soils, is very important for soil structure," he said.

Adequate potash increases water availability

Jerry McHoul, K+S agronomist, explained how water is moving up the political agenda in the UK.

"Last year was the driest year on record in the Midlands and the second driest in the South-East," he said. "There's an increasing trend, becoming drier and warmer. The issue of compaction of soils is huge in the UK."

The use of bigger machinery and the widespread use of min-till were making the problem worse.

Dry conditions would spread, said Mr McHoul. "The arable part of England is going to be experiencing conditions like we have in Essex at the moment," he said.

The amount of water available per person in the UK was already less in a normal year than in Spain or Portugal.

"In a dry year, water capacity per person in the UK is less than in Ethiopia and Somalia," he said.

"The HGCA has estimated that 30% of UK wheat is grown in drought-prone areas. Officially, Cambridge this year was a semi-arid zone.

IRRIGATION

Mr McHoul had been surprised to find that 80% of irrigation comes from mains water. "The biggest cost of water is the application," he said. "Only 20% is the cost of the water itself." If you had to build and maintain reservoirs the cost would go up.

"Over the years, particularly since the end of the 1990s, potash applications have been in severe decline," he said. "People want to cut costs and take a nutrient holiday – 30% of UK soils are below target levels for potash, 6% of soils have an index of zero. There's not enough potash going back on fields," he said.

> **"In a dry year, water capacity per person in the UK is less than in Ethiopia and Somalia"**

"They call it the Cinderella nutrient. You don't always immediately see yield effect. Yield mainly comes about through nitrogen, and nitrogen needs potash to supply that yield."