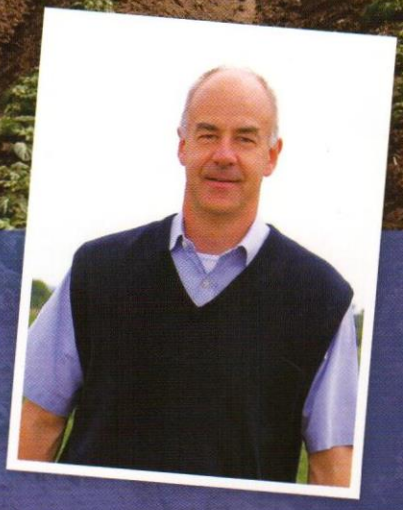
Precision potato power

Harnessing the power of precision technologies to achieve a better dynamic understanding of soil, water and nutrient interactions is set to make an increasing impact on UK potato-growing.



"GPS guidance, soil conductivity scanning and remote soil moisture monitoring – not to mention weather station-based disease forecasting and spray planning – are already playing a valuable role in helping growing teams more effectively match production to modern market requirements," explained Agrii Potato Development Manager, Nick Winmill.

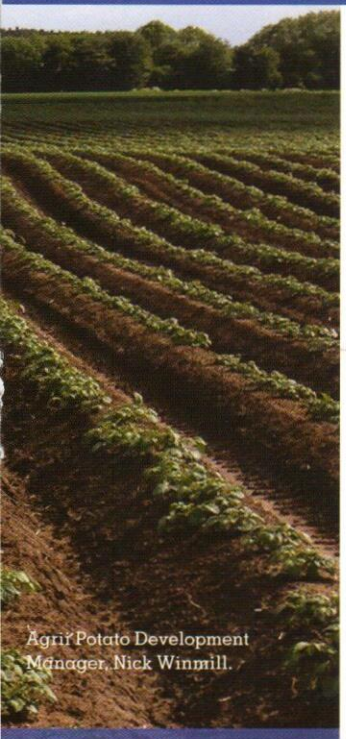
"But this is as nothing to the potential we see for integrated soil moisture and nutrient monitoring systems to maximise yields, improve crop quality, fine-tune inputs, reduce wastage and minimise diffuse pollution risks."

"Just like any other crop, yield is critical with potatoes," he stressed. *"But it has to be saleable yield within very tight quality specifications for markets with very different requirements and major penalties for failing to meet them. Such precise needs put the onus on precision in as many aspects of production as possible to counter inherently variable growing conditions."*

SoilQuest mapping based on 30 and 90 cm conductivity scanning and laser soil texture analysis is, Nick Winmill has no doubt, raising the bar in giving growers an accurate base on which to plan their potato production – from which areas of a field to crop to the most efficient planting layouts, most cost-effective P and K applications and most appropriate cultivations.

TAKE HOME MESSAGE

+ A lifetime of involvement in potato-growing convinces Nick Winmill that the secret of success with the crop lies in understanding what's going on beneath the soil surface. And only by doing so with increasing precision and in real time does he believe growers can ensure the most sustainable future for their businesses.



Agrii Potato Development Manager, Nick Winmill.

Adcon soil moisture station

It is also providing the most appropriate way of positioning the Adcon capacitance probes that form the basis of the IrriQuest soil moisture monitoring and irrigation planning service being used to increasing effect by Agrii growers.

"Our probes automatically transmit moisture readings at 10 cm intervals throughout a 60cm soil profile to our data centre every 15 minutes, allowing managers to monitor soil moisture levels from any internet device in near real time," pointed out Nick.

This means they can maintain the low moisture deficits important in minimising common scab in the critical 4-6 week period from tuber initiation. Then, facilitated by the root activity monitoring provided by our IrriQuest graphs, they can work to progressively higher deficits for yield-building as the season progresses.

"Linked to automatic rain gauges on our soil moisture stations, the probes further allow the extent to which known levels of irrigation and rainfall recharge the soil profile to be monitored for the most accurate fine-tuning of applications," he added.

"This ensures the precise irrigation needed to maintain the best tuber quality, make the most of limited water resources and reduce diffuse pollution risks."

Integrating real-time nutrient sensing into the mix as Nick Winmill and his Agrii team are now doing will take precision in potato management to a whole new level. Since 2013 they have been testing real-time soil nitrate sensors being developed by the John Innes Centre and, are also partnering Velcourt and the University of Cambridge in the Innovate UK-supported SoilSense project to develop 'smart' systems to finesse crop nutrient management.

"We know in terms of crop nutrition there's a window of around 40 to 60 days after crop emergence when applied nitrogen can really influence crop yields and quality," he said.

"So by monitoring key nutrients in the rooting zone alongside soil moisture levels in real time, we'll be able to understand and fine-tune potato nutrition dynamically to a far greater extent than has ever been possible to date.

"The potential for addressing the year-on-year and field-to-field inconsistencies that continue to be so damaging to potato profitability by using the latest precision technologies is huge. It's a really exciting time to be at the sharp end of developments." ■