

# Who will fix our high-tech farm machinery?

A big skills gap is opening up in the agricultural engineering sector, as colleges struggle to invest in modern technology. **Olivia Cooper** reports

**F**ixing farm machinery is not as simple as it used to be. Where once a set of spanners, a screwdriver and a pair of snub-nosed pliers would do, it's now a high-tech sector that requires skills in electronics, software and diagnostics.

That means manufacturers and dealers are increasingly reliant on getting a steady flow of good agricultural engineering students to meet their needs.

But with a shrinking number of colleges offering engineering courses, lack of investment and soaring machinery costs, the outlook for ag engineering in the UK seems bleak.

For students who do make it into the industry, it is an exciting and dynamic place to work. Read through the spec of a modern tractor and you'd be forgiven for thinking it had been designed by a Formula One team.

Features such as GPS autosteer, electronic spool valves, power-boost technology and stepless transmissions are becoming standard, and some high-end tractors now sport 17 on-board computers.

The problem is that training providers simply cannot keep up with the pace of change, meaning students are graduating without the skills required by tractor manufacturers. In fact, the gap has become so great that manufacturers have had to set up their own apprenticeships and training programmes to ensure sufficiently skilled labour.

At the same time, the availability of agricultural engineering courses is dwindling. Already one of the most expensive courses to run, the cost of

new technology and tight budgets mean many colleges have cut their losses and axed their courses.

Others are operating on a shoestring, keeping a couple of old tractors to teach the basics of farm mechanics.

Either way, the industry is facing a difficult future. Unless something changes, say some of those in the sector, in a few years farmers could have state-of-the-art equipment standing broken in a field because there will not be enough qualified engineers to fix it.

## SO WHAT NEEDS TO BE DONE?

John Palmer, training manager at Claas, says the whole industry needs to work together to find a common solution. Most manufacturers have already established links with some of the larger colleges, loaning them machinery and providing training days for lecturers. But where does that leave the smaller colleges?

"Many can't access modern equipment, and the staff may not have the familiarity and confidence with that equipment to teach the students effectively," says Mr Palmer. "It is a two-sided problem – lecturers need to understand modern technology and students need physical access to it on a regular basis."

"Those students who have only worked on Massey Ferguson 135s and Ford 3000s will be severely limited in what they can do in the workplace. There will still be work for them, but in terms of career satisfaction and pay prospects, would they rather be changing filters or working at the forefront of



**\* To work for a company that is producing cutting-edge technology is a thrill, whether you are working in Formula One or agriculture.**

*James Fermor, New Holland*

the industry?"

Of course, all the colleges offer similar qualifications, on paper at least. "But from an employer's perspective, the students' experience will be vastly different according to where they have studied."

"That's why most manufacturers support specific colleges, to raise a better technical profile for our employment pool. The majority of the time we select people from the colleges we work with, as they will

progress through our own training programme more quickly."

New Holland works in a similar way, supporting specific colleges and running its own apprenticeship scheme and in-house training at the same time. "If there wasn't an issue with skills, we wouldn't have to run the scheme," says training manager James Fermor. "The new technology is quite a challenge for youngsters, but if we're not careful to keep abreast of it there will be an even greater skills gap."

In Mr Palmer's view, there are too many small colleges with limited student numbers, trying to offer a course that they simply cannot fund properly. "It is an emotive point, but I think the colleges need to rationalise further, to justify the level of investment required. As manufacturers we can't support everybody; we need to be able to focus our resources on a limited number of sites."

In a bid to tackle the problem, land-based colleges, manufacturers, Lantra and the British Agricul-

## HOW DO YOU GET INTO AGRICULTURAL ENGINEERING?

- \* Approach manufacturers for work experience and placements before leaving school.
- \* After leaving school, join an apprenticeship programme and do vocational studies at agricultural college. 70% of employment prospects will be at vocational level.

- \* For higher education, leading into more research & development or management roles, apply to Harper Adams to study a specialist course in agricultural engineering.
- \* Manufacturers provide a lot of ongoing staff training to keep abreast of new technology.

tural & Garden Machinery Association have formed Le-Tec, a joint organisation that hopes to find a common solution to benefit the whole industry. "We can only hope the discussions prove fruitful," says Mr Palmer.

The Land-based Technician Accreditation (LTA) scheme is also in place to highlight and benchmark professional standards and specialised training.

"With high-value equipment you need high-value staff who can identify the problem on site and repair it quickly. Using LTA registered technicians will improve farmers'

prospects when they have a limited weather opportunity."

More than 2,500 people are now registered under the scheme, but only 47 are qualified to the highest level, indicating the training commitment and assessment standards required.

## COLLEGES ARE CHANGING, TOO

Even students graduating from Harper Adams – the only college offering higher education in agricultural engineering (as opposed to vocational training) – sometimes fail to meet manufacturer's needs, claims Mr Palmer. "Harper students

education department of agricultural engineering in the country, Harper Adams still has to rely heavily on manufacturer support, including funding for two of its new lecturers, says professor of engineering, Simon Blackmore. "There is a definite skills gap in the high technology area, and we are doing a lot to close that gap."

Having spent 10 years working outside of the UK, Prof Blackmore says there is a marked difference in uptake of new technology. "There is no doubt that Britain is some way behind. Farmers in Germany or Denmark are a lot more open to new technology than here, so there is more support and activity. We want to recruit people who can teach these skills, but there are not many in the UK to draw on."

However, he is optimistic about the future and hopes to set up a National Centre for Precision Farming as well as a field robot event similar to the Danish show. "I also think we should put on some training for trainers, to bring all lecturers to the same level."

The university already works with other colleges, accrediting their qualifications, and there is scope for further collaborative work, such as sharing lecturers or equipment, he adds. "The whole area needs a real shake-up and I am open to ideas."

## THE COLLEGES

### Reaseheath

\* Graham Higginson, secretary of the Association of Lecturers in Agricultural Machinery (ALAM), and a lecturer at Reaseheath College, Cheshire, says continual professional development is essential if tutors are to keep abreast of industry changes. "I've been out of the industry for 10 years, and I would be no good on modern tractors

are very sought after, because it is the only higher education provider we can turn to. But even they don't have sufficient technical expertise."

Following intensive discussion with manufacturers, the college has agreed to change its course to better meet industry requirements, and, with the help of sponsorship, is taking on three new lecturers to focus on mechatronics (electronics, hydraulics and control systems).

"They will be able to integrate precision farming systems, ISOBUS, CAN-BUS, and emerging technology," says Mr Palmer. "We probably won't see the benefits for five years or more, but at least they are aware of the problem and are seeking to change it."

"The next major hurdle to be faced is when the current lecturing staff in colleges come up for retirement, and there won't be the experience in the training side to push things forward. That will increasingly put the emphasis back to us as manufacturers."

Despite being the only higher



because it's all done on a laptop. We only hear about precision application through trade magazines or shows, so sometimes it would be useful to sit in with dealers."

ALAM organises training days with manufacturers, and is working with agricultural machinery trade body AEA to set up more comprehensive seminars. "We also need updating on some of the kit you put on the back of tractors; it's not just about the tractors."

Reaseheath has strong links with a number of manufacturers, including Case, New Holland, Claas and JCB, and trains about 65 full-time land-based engineering students and 125 apprentices. "We try and do the best we can with what we're given by the government – but we couldn't do it without the manufacturers."

## Bicton

\* Other colleges do manage to get by with rather different arrangements. Bicton College in Devon employs industry experts to teach on a part-time basis, and uses tractors from its own farm, and those of local contractors, to provide hands-on experience. "By using industry experts we are sure of being up-to-date," says course manager Chris Jaworski. "It would be nice for the manufacturers to support the colleges more, but they have their own training schools so there is always that conflict."

## Duchy College

\* Duchy College, Cornwall, has tailored its courses to try to give students cutting-edge knowledge. "We prefer to have students in work placements; that way they are working on up-to-date equipment, which we can't afford at the college," says lecturer Brian Kessell. They also mend local farm equipment.

"Farmers supply the parts and we fit them for free; everybody is happy. But we don't take anything



## WHICH COLLEGES OFFER AG ENGINEERING COURSES?

Askham Bryan College, Yorkshire <a href="http://www.askham-bryan.ac.uk">www.askham-bryan.ac.uk</a>	Hartpury College, Gloucestershire <a href="http://www.hartpury.ac.uk">www.hartpury.ac.uk</a>
Barony College, Dumfriesshire <a href="http://www.barony.ac.uk">www.barony.ac.uk</a>	Lackham College, Wiltshire <a href="http://www.wiltscoll.ac.uk">www.wiltscoll.ac.uk</a>
Bicton College, Devon <a href="http://www.bicton.ac.uk">www.bicton.ac.uk</a>	Myerscough College, Merseyside <a href="http://www.myerscough.ac.uk">www.myerscough.ac.uk</a>
Bishop Burton College, Humberside <a href="http://www.bishopburton.ac.uk">www.bishopburton.ac.uk</a>	Oatridge College, West Lothian <a href="http://www.oatridge.ac.uk">www.oatridge.ac.uk</a>
Brooksby & Melton College, Leicestershire <a href="http://www.brooksbymelton.ac.uk">www.brooksbymelton.ac.uk</a>	Otley College, Suffolk <a href="http://www.otleycollege.ac.uk">www.otleycollege.ac.uk</a>
Coleg Sir Gâr, Carmarthenshire <a href="http://www.colegsirgar.ac.uk">www.colegsirgar.ac.uk</a>	Plumpton College, Sussex <a href="http://www.plumpton.ac.uk">www.plumpton.ac.uk</a>
Duchy College, Cornwall <a href="http://www.duchy.ac.uk">www.duchy.ac.uk</a>	Reaseheath College, Cheshire <a href="http://www.reaseheath.ac.uk">www.reaseheath.ac.uk</a>
Easton College, Norfolk <a href="http://www.easton-college.ac.uk">www.easton-college.ac.uk</a>	Tralee College, Kerry <a href="http://www.ittralee.ie">www.ittralee.ie</a>
Greenmount College, Antrim <a href="http://www.cafre.ac.uk">www.cafre.ac.uk</a>	Warwickshire College Of Agriculture, Warwickshire <a href="http://www.warkscol.ac.uk">www.warkscol.ac.uk</a>
Harper Adams University College, Shropshire <a href="http://www.harper-adams.ac.uk">www.harper-adams.ac.uk</a>	

less than 10 years old as I don't want to step on dealers' toes."

Local dealers are happy to demonstrate newer equipment to help apprentices with their studies, he adds. "It's in their interest to help us. But since the recession, everyone has been tightening their belts, and some manufacturers have pulled the plug, leaving some colleges out on a limb."

## Brooksby & Melton

\* One such college is Brooksby & Melton, Leicestershire, which ran John Deere's apprentice programme until it was taken in-house last year.

"We lost quite a few students, but have worked hard to get people in from smaller franchises instead," says lecturer Phil Spencer. The college now works with Honda and Grimme, and relies on its own farm machinery as well as local farmers, contractors and dealerships for practical experience.

Chris Wiltshire, training centre manager at John Deere, says the firm decided to change its apprentice programme to better equip students for future employment in its dealerships. "Instead of coming out of college with the basics of engineering, we give on the job training

with up-to-date equipment and technology; they then have better earning potential and customer service for our dealerships."

Although some employees still come through the college route, the company prefers to use the apprenticeship scheme, with Babcock providing training and qualifications. "John Deere was fairly instrumental in developing links with colleges originally, but things are changing very rapidly; at the end of the day it's all about getting the best people."

So does this spell the end for agricultural engineering courses? "Colleges will have to keep upping their game, or other manufacturers may do as we have," says Mr Wiltshire. "I think it is important to try to raise the profile of agriculture and agricultural engineering; then we can attract more people into the industry, which will ensure a brighter future for everyone involved."

However, colleges insist they play an important role in the industry. "By working on a variety of brands our students are flexible enough to work on anything; it is dangerous to specialise too early on," says Paul Wilson at Humberside's Bishop Burton College. "There is always a leak of technical staff as they get promoted or move into other industries, which makes for a skills shortage lower down the ranks. If we weren't actively recruiting youngsters there would be an even greater shortage – and manufacturers need to be mindful of that."

## FWiSPACE

Are you interested in agricultural engineering? Have you studied it at college? What do you think about the demise of many courses? Have your say at [www.fwi.co.uk/educatingengineers](http://www.fwi.co.uk/educatingengineers)

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