PROFESSIONAL UPDATE

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Agricultural training and the labour productivity challenge

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ABSTRACT

Brexit, if or when it happens, will be a structural break to the political economy of UK agriculture. Farm businesses that will survive the shock will be those able to offer competitively priced products at home and abroad under a new, currently unknown, environmental, food and trade policy environment. Competitiveness is driven by low unit costs of agricultural production, efficient supply chains and low transport and transaction costs. The cost of labour is a very significant part of unit costs of agricultural production, but it is labour productivity that provides the key to competitiveness and not necessarily low units costs of labour. As in other industries, capital investment in intelligent technologies, which supports decision making that optimises the use agricultural inputs within a sustainable framework and reduce output waste, are the key to high labour productivity. Agricultural training needs to provide new entrants to the industry, whatever their age, with the skills to use performance data for operations and performance management as well as to deliver technical excellence. The LEAN project at Reaseheath College, funded by the Education and Training Foundation, is giving the 2017/18 cohort of Agriculture students a head-start in lean management techniques for agriculture. Reaseheath College will be publicising early results of this project at the end of the 2017/18 academic year and would welcome offers from educators working in this sector to peer review their work. Although the funded project ends this November, the LEAN project itself will run for three years so that its impact on students and employers can be properly assessed.

KEYWORDS: labour productivity; competitiveness; lean management; agricultural training; vocational training; standard work

1. Background

In the political and economic uncertainty surrounding the British government's decision to leave the European Union (EU) in March 2017, those leading and managing farm businesses are assessing the ability of their businesses to survive under the different post-Brexit scenarios. The first negative impact from the decision has been the threat to the supply of imported agricultural labour. This has been driven in part by the depreciation of sterling that followed the June 2016 referendum on exiting the EU, but more importantly in the longer term, by the uncertainty over EU citizens' rights in the UK after it leaves the union. (House of Lords, May 2017)

This crisis provides an opportunity to address two questions:

- what type of labour do British farms need to survive commercially in the next decade;
- how can agricultural vocational training be improved to meet that demand for labour, whether the UK leaves the EU or not?

2. The long-term drivers of labour productivity in agriculture

A recent Food Research Collaboration Policy Brief (Devlin, 2016) provides a very good and comprehensive review of agricultural labour use in the UK. It looks at the long-term trends that have driven labour use patterns in the past and the challenges for the coming years. Three forces driving agricultural productivity and labour use stand out:

- the long-term substitution of capital for labour;
- the continually declining market power of primary producers in food supply chains;
- the ability of agricultural employers to repress wage rates relative to other economic sectors (although the introduction of a national minimum wage rate provides a floor when enforced).

These drivers are very unlikely to be reversed in or out of the EU. Under a liberalised trade policy, they would intensify. In the medium and longer term, therefore, all agricultural production systems can be expected to continue to

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see increased substitution of capital for labour, including increased use of intelligent technologies. The higher agricultural wages are relative to the value of output, the faster that substitution can be expected to be. In other words, demand for agricultural labour is likely to fall over time unless additional land is brought into agricultural production.

Production systems that currently depend on relatively low wages to be profitable, face the challenge of accessing a suitable labour pool in the short-term if migration flows are restricted in the UK after Brexit. In the medium and longer terms and to a lesser or greater degree, production will move to countries where wage rates are competitive. These sectors are the currently trade-protected, but non-subsidised sectors of horticulture, fruit, pigs and poultry production. Employed labour accounts for a higher share of total hours worked on these farms, compared to its share on other crop or livestock farms. (Total hours worked include employed labour and unpaid family labour).

Production systems that are less dependent on relatively low wages to be profitable – arable, dairy, beef and sheep production – will face a more traditional challenge to their commercial survival; this challenge is lack of competitiveness relative to imported products at home and in overseas markets. If our current trading arrangements with the EU and the rest of the world are disrupted, the costs of trading will increase – the mitigation for this threat is a reduction in unit costs of production. The good news is that these sectors have considerable efficiency gains to make through increased capital investment in intelligent technologies which support data-driven decision making and the management of those technologies. Brexit could be the wake-up call for businesses to target and achieve total factor productivity gains through capital investment and improved management. The investment will increase labour productivity by optimising the use agricultural inputs within a sustainable framework and reducing output waste, rather than just substituting capital for labour, simply mechanising routine tasks.

3. What type of labour will agriculture need in the coming decade?

If British agriculture is to succeed commercially in a policy environment which is likely to be less protective than the EU's common agricultural policy, farm businesses need to be led by managers who use capital investment and technology to improve total factor productivity and reduce unit costs of production. This is the only way in which their products will become competitive in markets open to them after Brexit, or even at home against imports. Some of these technologies will substitute for labour, but that will not necessarily reduce unit costs of production. The types of technology which will deliver total productivity gains are those that reduce output waste and support the optimal use of all inputs.

These technologies are heavy users of data and support technical decision-making, they do not substitute for it. The quality of farm management – or decision making – is the key to achieving productivity gains on farm, as it is in other production sectors. Long-term research into management practices and firms' success by the National Bureau of Economic Research in the U.S., using a panel of data covering 34 countries and 12,000 companies, found that 'better-managed firms are more profitable, grow faster, and are less likely to die' (Sadun, R; Bloom, N; Van Reenen, J, Sep-Oct 2017). 'Better-managed' in this context refers to the joint practices of operations management, performance monitoring, target setting and talent management. In summary, the three pillars most likely to support the survival of British agriculture are the appropriate use of labour-saving technology, the use of information technology to optimise technical decision-making and good labour management. There is evidence that this type of approach to farm management has delivered sustained profitability on UK dairy farms. (Carson, 2017). Labour management on these farms concentrates on training and coaching farm teams to use farm data to set targets and deliver on them through planning, daily operations management and frequent performance reviews.

4. Training the agricultural labour force for the future

Labour demand from agriculture in the coming years will therefore fall into two categories. In the short term, there will be a continuing demand for dependable workers without significant agricultural training, willing to work long hours for a relatively low wage and statutory benefits, in horticulture, fruit, pig production, poultry production, and some American-inspired intensive dairy systems. This demand, however, is likely to decrease over time as these tasks become mechanised or production moves abroad, unless wages fall significantly in the rest of the UK economy. On the other hand, there will also be an increasing requirement for a trained labour force capable of making full use of information technology for performance management and who are comfortable working under performance orientated management techniques.

Is the UK further education sector training an agricultural labour force which is not only skilled in practical tasks, but also knows to monitor and adapt its own performance to achieve operational targets? The Institute for Public Policy Research in a recent paper lists the shortcomings of the UK skill's system as follows (Dromey, J, McNeil, C, 2017):

The UK's skills system suffers from:

- low levels of demand for, investment in and utilisation of skills among employers;
- a lack of high-quality vocational training;
- a failure over decades to tackle persistent regional skills imbalances.

The first two of these shortcomings apply to agricultural training. An attempt at meeting these challenges is currently being put in place at Reaseheath College in Cheshire, through an Association of Colleges project, funded by the Education and Training Foundation. The LEAN Agriculture project aims to integrate the principles of lean management to its current curriculum offer. Working alongside local dairy farmers who have put in place formal labour management and performance management systems on their farms, the delivery of the Agriculture curriculum for the year starting in September 2017, has been revised to bridge the gap between training and high labour performance in the workplace. Every work scheme has been revised to achieve the following:

- every learning objective, whether delivered through lectures or practical sessions, is explicitly placed in the

context of the production process or system to which it belongs, whether within crop or livestock production;
- identifying the contribution of that day's teaching to value creation in the farm business;
- identifying the potential for waste creation in the process or system of production being taught;
- identifying the environmental impacts of the process or system of production being taught and the standard procedures needed to mitigate them;
- identifying the contribution of standard procedures to achieving high technical performance in the process or system of production being taught;
- identifying relevant quantitative measures and the use of electronic data management to manage technical performance daily.

Because the College delivers courses at several levels, the changes to the curriculum are appropriate to each level. The objective of these changes is to teach the learner the habits of standardised work, the importance of every task in adding value to the farm business, the importance of identifying opportunities to do things better, i.e. how to increase production, improve quality or reduce input use, alongside the technical knowledge which the College currently delivers.

However, just improving the delivery of vocational curricula will not create a productive workforce if employers do not utilise the employee's skills. To address that, Reaseheath College is working with the network of farmers who take students on their placement year, to offer students the opportunity to engage in a meaningful improvement activity on the host farm from September 2018. Improvements in this context are any changes to production processes that will result in increased output, improved output quality or reductions in unit costs without loss of product value. The student will be allocated time to identify and implement an improvement to the farm's operations, working alongside the farm team, and using lean management tools and techniques. This initiative is meant to challenge the farm teams as well as the students.

The College will be collecting data on students' performance and satisfaction throughout their courses and will disseminate its results starting at the end of the 2017/18 academic year.

5. Conclusion

The long-term drivers of labour use in UK agriculture are unlikely to change under any reasonable policy scenario post-Brexit. These drivers are the long-term substitution of capital for labour, the weak bargaining power of agricultural producers relative to that of its buyers and the ability of agricultural producers to contain agricultural wages. If British agriculture is going to succeed commercially in the coming decade, it will need to invest in intelligent technologies which have the capacity to increase total factor productivity and reduce unit costs of production. These technologies are heavy users of data for decision making and will demand a labour force trained in the disciplines of performance management. Empirical evidence shows that it is the ability of managers to train and coach work teams in the use of operational and business data for target setting, operations management and performance management which results in sustained firm profitability. Agricultural training, therefore, should be preparing learners to work in such a work environment. The LEAN project at Reaseheath College, funded by the Education and Training Foundation, is giving the 2017/18 cohort of Agriculture students a head-start in lean management techniques for agriculture. The introduction of lean techniques is not taught as an independent unit, but instead it has been integrated in the delivery of the current Agriculture curriculum offer. Reaseheath College will be publicising early results of this project at the end of the 2017/18 academic year and would welcome offers from educators working in this sector to peer review their work. Although the funded project ends this November, the LEAN project itself will run for three years so that its impact on students can be properly assessed.

About the author

Dr Carson is a farm management consultant. She has developed a management system for dairy farms using lean management principles to achieve high levels of operational efficiency. She works with farmers, growers and land colleges, training and coaching staff teams to improve operational performance by reducing waste and increasing value added. Dr Carson is the specialist consultant for the LEAN Agriculture project at Reaseheath College.

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