



**A Nuffield Farming Scholarships Trust  
Report**

*Award sponsored by*

**The Richard Lawes Foundation**

**How farm safety can be  
improved**

**James Chapman MBE**

**July 2017**

**NUFFIELD  
UK**

## **NUFFIELD FARMING SCHOLARSHIPS TRUST (UK)**

### **TRAVEL AWARDS**

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Awards are open to those who work in farming, growing, forestry, or otherwise in the countryside, and sometimes to those working in ancillary industries, or are in a position to influence those who do. You must be resident in the UK. The normal age range is 25 to 45 but at least one younger candidate each year will receive an Award. You must have spent at least 2 years working in a relevant industry in the UK. Pre- and post-graduate students are not eligible for an Award to support their studies.

The Nuffield Arden Award is unique in that there is no age restriction and the subject is set by the Selection Committee. An Arden Award is offered every 2 years.

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Closing date for completed applications is the 31<sup>st</sup> July each year.

# A

## Nuffield (UK) Farming Scholarships Trust Report



*"Leading positive change in agriculture.  
Inspiring passion and potential in people."*

Date of report: July 2017

Title	How farm safety can be improved
Scholar	James Chapman MBE
Sponsor	The Richard Lawes Foundation
Objectives of Study Tour	To understand why agriculture has so many accidents and what can be done to reduce the rate of accidents in the UK and around the world.
Countries Visited	USA, Canada Australia New Zealand
Messages	<ol style="list-style-type: none"><li>1. Farmers don't recognise risk to health or safety</li><li>2. Correct safe working procedures are not always known for the tasks being carried out.</li><li>3. A lack of continuous development has led to a gap in safety knowledge.</li><li>4. Fear of the regulator is preventing engagement</li><li>5. Safety needs to be practical</li><li>6. Agricultural education needs to integrate safety at every level</li><li>7. A safe farm is a profitable farm.</li><li>8. Safety must be "sexy"</li></ol>

## EXECUTIVE SUMMARY

Farming is one of the most dangerous industries in the world. In the UK, 9.7 in every 100,000 workers employed on farms die each year. The next most dangerous UK industry is construction where the number of deaths is around 2.1 per 100,000 workers. Year after year the same accidents are occurring on British farms but the industry isn't learning or evolving.

In 2005 I was involved in a life changing accident where I became entangled in a PTO shaft and lost my left arm. Since then I have used my story to help educate others in the industry. This led me to apply for a Nuffield Farming Scholarship to learn how best to change UK farming's appalling safety record. I visited the USA, Canada, Australia and New Zealand to try and bring together best practices in the field of accident prevention and discover why farmers are still having farm accidents in their pursuit of feeding the world.

I have learned that farmers don't recognise risk to life in the same way other people do. As an industry we thrive on the risks associated with farming and relish the challenge of working in a dangerous environment. It must also be acknowledged that we have many pressures to deal with in farming, like time, finance and weather to name a few. As farmers we are very much multi-skilled. However, formal health and safety training isn't one of the skills we possess, leading to a lack of understanding around the subject.

I've learned that any safety initiatives need to be led by farmers for farmers. Safety also needs to be practical and easy to carry out: farmers don't have time for complex paper-based systems as the workplace is extremely dynamic. Safe practices need to be embedded in the minds of everyone involved in the business to allow autonomous safe working.

A culture change, which will take time but will have a longer lasting effect on the industry, is needed. To enable a culture shift strong and effective leadership is essential for us, both from our farming leaders and leaders in our own businesses. Farmers who can passionately promote safety should be identified to deliver peer-to-peer training on safe work procedures, and push clear and consistent messaging.

The use of independent auditors should be used to help farmers identify risks on farm to enable change. This could be done by farm assurance inspectors, insurance companies or even other farmers who can bring a fresh set of eyes to the workplace.

Agricultural colleges and universities must work on developing the next generation of safe farmers by integrating safety into every aspect of agricultural education to enable the long term goal of reducing accidents permanently.

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## **DISCLAIMER**

The opinions expressed in this report are my own and not necessarily those of the Nuffield Farming Scholarships Trust, or of my sponsor The Richard Laws Foundation, or of any other sponsoring body.

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Nuffield Farming Scholars are available to speak to NFU Branches, Agricultural Discussion Groups and similar organisations

*Published by The Nuffield Farming Scholarships Trust  
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## 1. Personal Introduction

My prosthetic arm cost over £21,000 and the piece of plastic that would have saved it cost around £100. This is the reality of my farm accident. The effect on my mental health however couldn't be put right with money.

I was born into a farming family in 1981. I started my life living on my grandfather's farm where my father was working until he took on a tenanted dairy farm when I was 6. After leaving school I attended Warwickshire Agricultural College where I completed a diploma in agriculture. I then went to work for a contractor, mostly driving balers. At the age of 21 I decided this contracting malarkey was easy so I set up on my own with a tractor and muck spreader, offering tractor and driver hire and labour-only when times were slack.

January 21<sup>st</sup> 2005 was the day I lost my left arm when I became entangled on an unguarded PTO shaft while working on a friend's farm. I was airlifted to hospital, where doctors kept me alive but were not able to re-attach the arm. Several months of hospital visits later I was signed off and left to get on with life. However I was struggling to carry on with my agricultural contracting business and eventually gave it up. My friends were very supportive and life was OK for a while until a relationship I was in failed and I found myself not going out as much and watching daytime TV, which is not good for the soul.



Figure 1: The author, James Chapman MBE

I found myself contemplating ending my life but fortunately my laziness kept me on the sofa. Eventually my friends came to my rescue and dragged me back into normality, and I can't thank them enough.

I was a member of Wolvey Young Farmers Club at the time and it was the friends within Young Farmers who helped me get through the tough times; they raised money to help me financially by holding a disco in a barn. It was that night that made me realise how much my friends in Young Farmers meant to me.

After the disco I decided to give something back to Warwickshire Young Farmers who had been so kind to me. I found myself sitting on the county committee, helping where I could and quickly became county chairman. I must like sitting on committees, either that or I liked the power, as I then became chairman of West Midlands area YFC and then became the first Warwickshire member to become YFC national chairman. This was a great honour and I had a fantastic year as chairman.



It was in this latter role that I became involved with farm safety; I was approached by HSE to help them with a farm safety campaign. They wanted me and two others to tell our stories of how a farm accident had affected our lives. The campaign went well and I was subsequently asked to talk to media, Young Farmers Clubs, NFU meetings and anyone who would listen to me.

In 2011 I was fortunate to be nominated for the Farmers' Weekly award "Farming Champion" which somehow I won. The awards didn't stop there; in 2012 I was given an MBE by HM the Queen for services to farming. This was extremely humbling and a very proud moment.

This all led me to apply for a Nuffield Farming Scholarship and the rest is history. I aim to use the Scholarship to help identify solutions to the growing problem around safety in agriculture.





## 2. Background to my study

Before my accident farm safety had never crossed my mind. It took a life changing event to open my eyes to the reality that working in agriculture meant I was 18 times more likely to die at work than I would have been if employed in any other industry.

The effect my accident had on my friends, and more importantly, family had more impact on me than the fact I had lost my left arm. Watching my brothers go through various emotions was and still is the worst thing about my accident. This has been the main driver for me to reduce accidents in agriculture. The results of a serious accident or fatality have an enormous ripple effect on those around the victim. The fatal injury statistics released every year by HSE aren't just numbers; they are our family, friends and colleagues. That is why **we must** make a change to our farming practices and why I decided to learn more about the subject.

It was only after being asked to help the HSE with their Make the Promise campaign that I really thought about how I can help the industry make farming safer: after all what can one person do? The fact is there are many "James Chapmans" out there who have had an accident or who have lost someone in the pursuit of farming but yet it was, and still is, difficult to get people to talk openly about what had happened to them.

I was soon being asked to talk to groups of Young Farmers, NFU meetings and college students about my experience of having an accident. Obviously I can relive my accident to others and in great detail, sometimes too much detail, and the shock of my story has a real impact on a person which then enables the safety messaging to stick in the minds of those listening. However I found myself being challenged by some as to how we can change the culture of risk-taking on farm and how do we make farms safer. At the time I didn't have any answers to the questions, so I decided to find out what other countries do to help farmers stay safe.

Looking at everything that is already being done with farm safety it occurred to me that not enough was being done to change the actual safety *culture* within agriculture. A culture shift is by far the hardest thing to achieve but long term it will lead to a safer industry.

My study therefore has concentrated mainly on ways to achieve a shift in culture; looking at barriers to change and also practical ways farmers can stay safe while continuing to work in an inherently dangerous environment.



### 3. My study tour

Initially I decided to travel to other countries around the world that had already addressed the problem of farm safety, and learn what worked best. Unfortunately I quickly realised that no single country was safer than the UK. My tour was then concentrated on countries with similar agriculture systems to the UK, with a similar level of safety intervention being undertaken.

#### **USA: June 2016**

To kick off my travels I went to Lexington, Kentucky, where I joined the annual ISASH conference (International Society for Agricultural Safety and Health). I had 4 days of networking and getting to understand the issues around farm safety across the world.

#### **Canada: July 2016**

My research found a number of standout safety initiatives in Canada and a host of great individuals making great headway in changing the attitudes of farmers. Due to the size and remoteness of the country it can be difficult to interact with farmers one to one, making a difficult job even harder.

#### **Australia: February 2017**

I wanted to see if the mining industry in Australia had made an impact within agriculture. Often on social media we see Australian farmers wearing Hi-Viz clothing which posed the question: why in Australia and nowhere else?

#### **New Zealand: March 2017**

The government had recently downgraded agricultural accident risk and I was interested to find out why, and what this meant for the farmers of New Zealand.



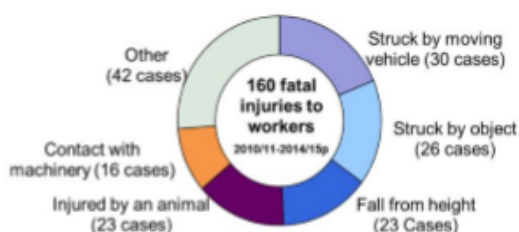
### 3. Causes of accidents

The causes of farm accidents have not really changed in the last 20 years. Most can be categorised into contact with machinery, contact with livestock, falls from height, electrocution and engulfment or suffocation. Unfortunately the same accidents are repeating themselves which indicates lessons aren't being learned. The Health and Safety Executive - or HSE - reports the worker fatal injury rate for agriculture in 2014/15 was 9.12 per 100,000 workers, and this figure hasn't significantly changed over the last decade.

#### Workplace Injury

#### Fatal injuries

Figure 5: Fatal injuries to workers in the Agriculture, forestry and fishing sector by injury kind, last 5 years



Source: RIDDOR

- There were 33 fatal injuries to workers in the Agriculture, forestry and fishing sector in 2014/15, broadly the same as the average for 2010/11-2014/15. This brings the total number of fatal injuries to workers in the sector over the last 5 years to 160.
- Figure 5 opposite shows the breakdown of these 160 fatal injury cases by injury kind.

Figure 6: Rate of fatal injuries to workers in the Agriculture, forestry and fishing sector per 100,000 workers, 2014/15p



Source: RIDDOR

- The worker fatal injury rate in the sector (9.12 per 100,000 workers) remains much higher than any other industry sector: around 6 times that in construction and 20 times that across all industries (1.62 and 0.46 per 100,000 respectively).

Figure 2: HSE website; Health and safety in agriculture, forestry and fishing in Great Britain, 2014/15  
(Source: RIDDOR)



My research has mostly focused on fatal injuries. This is because there is a major problem of under-reporting of non-fatal accidents within agriculture so it's difficult to get a true picture of the scale of that problem, whereas fatal accidents are very well notified.

As farmers we are constantly working with large, dangerous machinery, often with little, unsuitable or no training. Within the livestock sector farmers are often required to work hands-on with very large and unpredictable animals which can make managing risks associated with these tasks very difficult to apply. A wide variety of jobs need doing on the farm and it's long been a tradition among farmers to turn their hand to any job that needs doing, instead of employing specialist contractors: for example repairing a roof will often be attempted by farmers with little or no training on how to carry out the job safely. We also work very long hours at busy times of the year, which can often lead to even the most careful of workers cutting corners that could result in an accident. Farming also has the highest percentage of workers over the age of 65 and this ageing workforce can often take on jobs that might be beyond their physical capacity.

A number of people I've interviewed have cited lack of finance as the main cause of accidents on farm, and although this can be a *contributing* factor I disagree that it is a *limiting* factor. I have met some very good farmers who are clearly making a financial return but are still taking decisions that could result in an accident, or who actively chose to remove safety guarding to enable faster maintenance for example.

*Attitude to risk is also different within agriculture.*

Attitude to risk is also different within agriculture. Dr Rebbecca Lilly, senior research fellow at the injury prevention unit at the department of preventive and social medicine at the Otago University, New Zealand, has published a research article entitled "An outcome evaluation of a New Zealand farm safety intervention" in which she spoke of farmers being fatalistic. We accept it's a dangerous industry but we relish the fact it's dangerous. We normalise work-related injuries that many other industries wouldn't accept. We also don't see risk in the workplace. It isn't unusual to walk past a hazard every day without a worry until someone points out the danger.

We must not overlook the effect of peer pressure within the farming community; the fear of what our friends and colleges think of us has a massive role to play. We fear ridicule for being over cautious and thus less masculine. This could and should be used in the pursuit of a safer industry by *using peer pressure on those who follow unsafe practices*.

Dr Lilly told me that New Zealand farmers are good at privatising profit and socialising damage. I don't think that New Zealand farmers are unique. This might be a contributor to why we as farmers haven't changed the way we work. It's easy to blame others when an accident occurs but very difficult to take responsibility for our own management failures.

It's a natural reaction to apportion blame to the person on site when an incident occurs, but there's a need to consider causation up and down the management chain. Joe Schumacher, Health and Safety manager for Landcorp Farming/Pāmu Farms of New Zealand, told me '*owning accountability at all levels, rather than apportioning blame is the key*'. Ultimately, the organisation needs to learn from and take accountability for system failures and ensure measures are taken to prevent recurrence.



## 4. Recognising risk

One of the main barriers to improving safety on farms is quite simple. We as farmers don't realise farming is unsafe! Dr Tony Lower, honorary associate professor at the Australian Centre for Agricultural Health and Safety made the obvious statement that he is yet to meet a farmer who intentionally sets out to hurt themselves or a colleague. This is obvious but it begs the question: why don't we take safety more seriously? It's because we don't see risk in the same way other industries do.

Another problem is a culture of transferring risk rather than mitigating the risk. Professor Susan Brumby, founding director of the National Centre for Farmer Health in Australia, referred to farm owners or managers taking on the risky jobs themselves - as opposed to letting other workers carry them out – when they should have found a safer way to get the job done. Although this action is very admirable it does not prevent the potential accident from occurring.

*We as farmers don't realise farming is unsafe! ..... we don't see risk in the same way other industries do.*

There is also a theory that we as farmers don't want to face up to the reality that farming is dangerous as this might prevent us from doing the job we love. The probability of a major accident is low, but of course the severity of the accident can be very high. The under-reporting of near misses and more trivial accidents is also leading us into a false sense of security and preventing us from making the necessary changes before a major accident occurs.

So how can we help farmers see risk which will then enable us to reduce the danger?

Firstly we need to be able to realise when a near-miss has happened and record it without fear of ridicule or disciplinary action. A near-miss is a free lesson in safety and should never be overlooked. Documenting a near-miss or minor accident can be a powerful tool in reducing major accidents further down the line. During my travels I have come across many electronic reporting tools: most come in the form of an app for smart phones. This enables workers to instantly record a problem, sometimes anonymously, helping management to see where the potential problems are. This can be extremely useful on larger farms where there is a management structure but the same principle can be applied to individual farmers with no employees. It's very easy in the course of a day to lose track of any safety concerns and so never act on them. It's much easier to reflect on the problems after the work is completed if you have recorded the incident. A less technical, but equally effective system I have seen, is a simple white board put up in a prominent place - for example the workshop - where faults and issues can be recorded so as not to forget about them.

When employing staff on the farm it is very important that we empower our staff to speak up if there is a problem. Often workers will go on doing a job that's dangerous for fear of upsetting the employer. The employee also has a role to play. Tammy Barker, mining compliance manager for Aglime of Australia, explained about how in the mining industry they have a policy "if you see it you own it", putting the emphasis on workers who see a problem to report it or fix it.



Sometimes all that is needed is a fresh set of eyes on the farm; we become blind to the obvious problems. The idea of a professional safety inspector or auditor fills many farmers with dread but if it was an informal advisory inspection with only recommendations rather than enforcements I can only see this as a benefit. Here in the UK farms are already inspected for many things and, although unpalatable to begin with, we have become used to it and, in my opinion, the inspections have helped our image as world-leading food producers.

The same could work with safety but I'd be very cautious in going as far as to say you couldn't farm if you didn't meet the safety criteria. Such a dictatorial stance would destroy any positivity around safety in agriculture, and reverse any advances that had been made.



## 5. Safety initiatives

Here in the UK we have had a number of safety initiatives in the past to try and reduce the number of accidents on farms. Unfortunately the figures show little to no improvement over the last 20 years. Albert Einstein once said “*the definition of insanity is doing the same thing over and over again and expecting different results.*” As farmers we are very good at this. Year after year we plant the same crops and rear the same livestock hoping that next year the price will be better. However, using this approach in regard to reducing accidents is not going to save lives or limbs. We need a new approach to farm safety: no longer can we rely on government agencies or farming charities to save us from ourselves, we need to take ownership of the problem and start making a difference.

Currently the HSE run safety and health awareness days (SHADs) for farmers. The days consist of farmers attending an event run by safety professionals delivering messages on safe working practice on farm. There are working demonstrations and talks on why and how we can stay safe on farm. Over the last 19 years thousands of farmers have attended. For many farmers this is the only safety training they receive and it could be up to 5 years before a refresher course is delivered to them. During my travels I learned from Dr Lilly that a single intervention will struggle to have a deep and long lasting effect. Although the SHADs might make farmers more safety-aware for a short period, attitudes quickly revert back to previous thinking.

The other potential problem is the delivery of the training; it has become apparent to me that the difference between good training and bad is often linked to the person delivering the training. Thea Green from the University of Manitoba Farm Safety Program is a prime example of someone who can deliver training to a high standard - even if the subject matter is a little dry to say the least. Thea runs a farm safety program for the university that sits within the

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agriculture diploma course; she uses empathy and trust to engage with the students. Thea confesses she isn't an expert in workplace health and safety but she doesn't need to be, she's an expert at teaching people and that's where the success lies. Thea explained to me that her students have a wide range of experience and learning abilities. Most people who work or want to work in agriculture prefer hands-on learning and case-based learning with scenarios for them to solve. Thea uses this teaching method to great effect, proving that as practical people we learn new things differently to others who are more academically focused. There might also be a case, however unsupported, that many farmers might suffer with some form of learning disability making traditional learning styles ineffective. This needs more research but I think there might be justification for such a statement.

As farmers we also trust certain people and distrust others. For example as soon as you utter the 3 letters “HSE” you automatically turn some people off, mainly due to the fact that HSE are the regulator who dish out fines when things go wrong. For this reason, HSE aren't the best people to deliver training. In my opinion it would be more effective and better received if we were to train other farmers to become safety ambassadors and use them to deliver the messages: peer-to-peer learning.



Large and corporate farms also have a role to play, by setting a good example to the rest of the industry: like Landcorp in New Zealand who were a founder in the Agriculture Leaders H&S Action Group, an industry group set up to share and benchmark information and intelligence around H&S matters in agriculture. Joe Schumacher, Health and Safety manager at Landcorp Farming, New Zealand's largest farmer, with around 140 farms across the length and breadth of the country, told me about the project which was offering private farmers and other agricultural industry players the opportunity to participate in the Pāmu Safety Academy which delivers H&S leadership, behavioural and technical skills to people working in an agricultural setting. This could easily be replicated around the world.

For all this to happen, though, we need strong and clear leadership from all aspects of the industry, be it the farming unions, trade organisations or just we ourselves as farmers. I've witnessed the power of some farming unions around the world who have fought very hard for their farming members to reduce safety legislation in order to cut the burden of red tape for farmers. However, I'm not sure that this is in the long term interest of the industry. Strong leadership is needed to push us as farmers down the path that will lead to a safer industry.

There are many proactive initiatives that I've seen around the UK and the world that are delivering very good messaging and all are vital in providing a saturation of messaging in the industry around farm safety. Here in the UK we have the Farm Safety Foundation, better known for the work they do with the Yellow Wellies campaign, who deliver safety education to college and university students. The Farm Safety Foundation was established by the NFU Mutual to help deliver training to the next generation of farmers in the UK. They travel mainly to colleges and universities and deliver practical training to students by using mock accidents and encouraging the students to talk through what might have gone wrong and how it could have been avoided. Then a safety ambassador, who has encountered a farm accident first hand, will address the students and explain how the accident has affected their life. The Farm Safety Foundation is also responsible for creating "Farm Safety Week" in the UK and administers the activities for the week

Whilst in Canada I meet with Sarah Linde and Luree Williamson from Ag 4 Life, who head up an initiative very similar to the Yellow Wellies campaign. However they also work very closely with schools and offer a curriculum-based educational program. This scheme is very effective in Canada as there is percentage-wise a higher rural population and most children in rural schools have a close link to farming; however this is not often the case in the UK. Both projects are delivering messaging to the next generation of farmers and really making a difference in farm safety. The one barrier they both talk about is finding secure long term funding to carry on the delivery, as most projects have an end date attached. This is a problem that needs to be looked at; the success of this type of initiative is heavily reliant on long term funding to get long term results. Maybe as farm safety becomes more fashionable then the funding may become easier to find.





## 6. Regulation and enforcement

I've met with some people who take a view on tougher regulation and higher fines for when accidents happen; even I myself thought that the threat of larger fines might be the incentive needed by some to take safety seriously. My trip to Australia was to see if this was true. Australia has some very hefty fines when accidents happen, the highest being \$1.2million for the worst offences. I was expecting to see the effect of this apparent on most farms but the opposite was the case. Many Australian farmers are very conscious of risks they run in the form of drought and will take out crop insurance and diversify the business to enable them to spread the financial risks. However most farmers hadn't thought of making the farm safe to mitigate the risk of financial penalties in the event of an accident.

Dr Lower thought that more prosecutions plus using the existing legislation to drive the message that if you don't comply then you will be prosecuted was the way to drive change and force farmers to take safety seriously. This is obviously a very controversial thought but one that could happen if we don't take action to change the status quo.

A converse view from Al McCone, agricultural sector lead of Worksafe NZ, told me *"unless you are prepared to wield the big stick"* bigger fines and more regulation won't work, and looking at the accident rates in Australia where around 15 people per 100,000 employed are killed at work in agriculture, the higher fines don't seem to be working. The other problem with more regulation is enforcement; many countries already have regulation that can't be enforced, so adding more regulation won't have the desired effect.

Obviously there need to be legal consequences for people who allow others to be hurt or killed in the work place and I'm not suggesting that changes: but extra regulation won't work as a preventive measure or lead to a culture shift. Almost every farm I visited in the 4 countries I've visited has complained about over-complicated regulation that confuses many farmers, and of those that do understand the regulation, many complain that the practicalities of everyday farming mean that some of the rules imposed aren't followed due to impracticalities.

In Canada I meet Dave Kramer from SAFE Work Manitoba who understands that farming is slightly different to other industries with regard to enforcement and engagement, so he wasn't focused on "dotting the i's and crossing the t's"; he wanted to reduce the "risky behaviour" on farms and wasn't interested in wrapping farms up in cotton wool. This is a very interesting comment from someone who works for the regulator. Most farmers would assume that the regulator only wants to follow the rule book and prosecute you if you are non-compliant. But that's not always the case. At the end of the day all anyone wants is to ensure people can go to work and come home safe. It was very refreshing as a farmer to talk to Dave and hear his more practical view of the industry.

I am a great believer that safety needs to be practical. There is no point promoting safe working procedures that aren't going to be used in a working environment. Al McCone explained to me that if farmers aren't going to carry out every task in the way prescribed then we need to find a way for them to carry out the work in a safe way, to help give our messaging credibility with farmers.

The biggest barrier to farmers being compliant with legislation is often knowing where to start. I've come across a few organisations that are trying to help with interpreting legislation and assisting

*How farm safety can be improved ... by James Chapman MBE*

A Nuffield Farming Scholarships Trust report ... generously sponsored by The Richard Lawes Foundation



farmers make the first step towards becoming compliant with legislation. Dairy Australia is a good example of an industry group that are keen to see a change in farm safety.

Shane Hellwege from Dairy Australia was happy to tell me of all they are doing to try and bring change to the dairy farmers of Australia. Shane and his team have developed a Farm Safety Starter Kit which helps farmers easily assess their farm's safety. It allows farmers to firstly see where the problems lie, then helps them to rectify those problems. The guide also highlights what the individual is already doing to

make it safe. This can be a real confidence boost to farmers who think there is a massive hill to climb when actually they are already doing a lot of what is required. The starter pack is then followed by a Farm Safety Manual that enables the farmer, by using templates, to fully satisfy the legal documentation of the safety systems in place. As farmers we often like a bit of hand holding when faced with systems outside our skillset, so templates and guides are a great tool to help us.

There are also many electronic app-based tools that can help with interpreting legislation and stay legal as well as keeping us safe. We need to utilise every tool at our disposal to keep safety simple and effective.

*We need to utilise  
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## 7. Education and Training

The importance of further education to farm safety is paramount. Within the UK the vast majority of farmers and farm workers have been through some form of further education in agriculture. This gives us a very useful route to influence the next generation of farmers providing we are proactive and seize this opportunity. Currently UK agricultural students might receive a day's training a year on safety, often with outside organisations being responsible for the delivery. This again relies on outside funding which could disappear at any time. My experience of safety training at college consisted of one hour of our lecturer telling us that statistically one of us would be involved in a severe accident by the time we retired. Of course we all thought that someone else would be the victim and got on with college life. Unfortunately that person was me! There is so much more that can be done at colleges and universities but the system needs to change.

One great college I visited was Tocal College in New South Wales, Australia. Charlie Bell agreed to show me round and discuss how the college deals with farm safety. With around 2200 hectares of land, the college is a large commercial enterprise and every aspect of the college farm has to be run as a professional business. Safety is entrenched in every aspect of college life for the full-time students at the college studying entry level Certificate III and Certificate IV qualifications. This is highly evident with all students wearing Hi Viz shirts at all times and the staff wearing a different Hi Viz colour to differentiate the two. Every practical lesson begins with a safety talk about how the lesson will be run and how the tasks will be performed safely.



Figure 3: Tocal College, New South Wales, Australia

Bob Dunn, lecturer at Tocal, told me the key to having achieved a safety culture at the college was due to consistent messaging and routine with the students. The college runs courses in agriculture that consist of a safety element which can be around 21 hours of lectures, plus more informal talks and



risk assessments before practical lessons. Students can't pass the agricultural course unless they pass the safety element first.

Tocal College also delivers part time and external training in basic agricultural skills and management, and offers Diploma of Agriculture and Diploma of Conservation and Land Management via an online platform. All external courses also have a strong safety component with specific safety subject and safety components included across all areas.

The college also has students they call Trainees who are in employment and attend either week-long blocks of training at one of the college campuses, or 2-3 day short course in regional areas. It is probably too much of a generalisation to say these students "showed a lack of safety" compared to the full time students; but they tend to have more exposure to "bad habits" in the workplace, are not exposed to the same consistent safety message as the full-time students, and are thus more likely to be influenced by poor and unsafe practices than other workers or employers.

As previously mentioned, Thea Green at the University of Manitoba runs a 30-credit-hour farm safety lecture. The difference with this course, as opposed to Tocal College, is it isn't compulsory. Students on the diploma in agriculture course get to choose a segment within the diploma. In 2016, out of a total of 80 students the course limit of 40 enrolled, which shows how students are taking the matter seriously. Thea uses the lectures to cover every aspect of safety on farms. The students also create videos to promote safety in a humorous way. Distance learning is also used to get participants to think about the subject while at home on farm. The students also develop safety plans for their own farms making them ready for the real world. Thea told me her *"goal is to change behaviour at the farm level."* ... *"All the work I do in farm safety is designed to go past the awareness and knowledge phase of learning and focus on improving the behaviour and decision making of the farmer with regards to personal and farm safety"*.

Conversely to Tocal, Thea uses web-based learning to great effect, although she confessed there was definitely a need for face-to-face engagement. The students are sent videos provoking thought on how a farm task can be carried out safely, then the students are expected to comment in a chat room about how *they* would make it safer. The feedback from the students is very positive and after meeting one of the students I'm in no doubt the course will have a long lasting effect on those students who took it.

Both of these examples could easily be replicated around the world and certainly in the UK where a higher percentage of farmers attend further education.

UK agriculture has a high degree of certification already in place for the purposes of farm assurance and to satisfy insurance companies. Farmers/farm operators must hold certificates to spray crops, transport animals, drive telehandlers and even poison rats. The degree of competency is fairly consistent as we have training providers who must follow guidelines on delivery of the courses.

Yet we are still falling foul of safe working procedures. We need training providers to place a bigger emphasis on farm safety in every course they deliver, and maybe we should be looking at a certificate in farm safety that has to be renewed every few years. The construction industry has a system of continued professional development; workers must undertake appropriate training at set intervals to enable them to work on building sites. It is this type of system that helped the construction industry



reduce accidents. At the turn of the century construction had more fatalities per 100,000 workers than any other sector. Today the agricultural sector has inherited that mantle. A concerted effort was made by the construction industry to reduce this number; professional development helped them deliver the results. However, we need to be cautious when comparing agriculture to the construction industry. Big gains were made in the latter because such a major proportion of the workforce is employed by large companies. In agriculture only a minority of workers is employed by large corporate farms.

*At the turn of the century construction had more fatalities per 100,000 workers than any other sector. Today the agricultural sector has inherited that mantle.*

One cautionary note must be made about training. As previously stated, here in the UK we are fortunate to have a structured training programme. However during my travels I have come across several examples of poor training that at best won't increase the knowledge of the student and at worst could endanger life. One of the people I interviewed, who shall remain nameless, told me of the "race to the bottom" when describing pesticide-handling certification in their area. Legislation was passed stating that farmers needed to hold certification for a particular task, but then the training wasn't audited correctly. This led to unscrupulous training providers charging for certification without giving adequate training, resulting in farmers being officially qualified but unable to undertake the task correctly.





## 8. Safe farmers

In my role as a safety ambassador I often talk to farmers about farm safety and why we should all try to be safer on farm. I am often confronted with the same arguments:

*“if farming was more profitable we could implement a safer working practices”*

and *“the job needs to get done and these extra safety measures will get in the way.”*

So as part of my travels I very much wanted to meet some farmers who were implementing real safety measures on a commercial farm, and see how those safety measures were impacting the day to day running of the farm.

### 6.1 Jigsaw Farms

Mark Wootton owns Jigsaw Farms together with Eve Kantor, just north of Hamilton, Western Victoria, Australia. They produce lamb, Merino wool and used to breed cattle. They haven't come from a farming background but the passion for farming is very apparent. The farming enterprise covers around 3,378 hectares running 25,000 adult sheep and another 25,000 lambs plus around 600 hectares of forestry.



Figure 4: Jigsaw Farms, Australia

I only had an hour or so with Mark, but he made a big impact on me. The farm business is very professional and the farm is a wonderful place to work. Every employee is included in the running of

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the business, helping them feel like a real part of the team. Mark believes in bringing everyone with him in the business, he wants people to "get the business" and if by year 2 they don't understand what the farm is trying to achieve then they may as well leave.

New employees receive a full and detailed induction, especially on individual machines. Within the first year of employment all workers are offered any training they require to fill any skills gaps. Mark allocates Honda Side by Side ATVs and/or a farm vehicle to every employee. But each employee is responsible for making sure the vehicles are in good condition and is also responsible for the maintenance of those machines. Mark enables his employees to be responsible for their own safety: anything that is needed to work safely is either supplied or the workers are empowered to purchase the equipment themselves on the farm account. When they ran quads, the employees were told it was compulsory to wear a helmet. So the employees went to town and bought a helmet of their choice, and they owned it but Mark paid for it.

Mark showed me a number of improvements he has made to the farm, not only for safety but also for productivity; he believes the two go hand in hand. One big point he made was that there is always something to change or replace. *"You don't just wake up one day and the farm is safe"*. He knows that Rome wasn't built in a day. Mark was very open and he told me of a few accidents that had occurred in the past. Worksafe had investigated and, although recommendations for improvement were always made, the business had always been compliant. Mark says there is nothing to fear from the regulator, especially if you've done everything by the book.



Figure 5: Undercover sheep handling

When asked if being safe incurs extra cost or hindrance to the business he told me *"Far from it"*. Safety is integral to successful farm business; it's an investment that he's happy to make. The average worker stays 11 years and when employees do leave it is to move up the farming ladder somewhere else and he has no problem attracting new people. *"It's an investment in people and without the right people I can't run a successful business"*. *"I can farm from the office and choose what jobs I do because the*



*people I employ can run the farm as good as I can". Mark is a great operator and proves that a professional, profitable farm can be a safe farm and really proves that the two are not mutually exclusive.*

As an example, the sheep handling system at Jigsaw farms has the system under cover which helps reduce stress for both sheep and employees in the heat of summer. The insulation in the roof also helps to keep everyone cool in summer as overheating is a real danger.



Figure 6: Roof insulation to keep workers cool

Jigsaw Farms have made many changes to the farm to improve safety, but most improvements were carried out as and when a system was naturally due to be changed. Safety on the farm was ever evolving. It wasn't a case of spending a fortune one day on safety then forgetting about it. There were many things that the farm would like to see improved and they are always striving for more.

## 6.2 Mid-Man Farms

Mid-Man Farms Ltd in Carberry, Manitoba is the home of the McIntosh family. I met with Brock and his daughter Alysa. The farm is around 7,000 acres - or 2,830 hectares - growing mainly potatoes with wheat, rye and canola as break crops. On first arrival I was taken to the farm office where I was shown a very comprehensive safety plan that Alysa had created. All the documentation was very impressive but the main reason of the visit was to see if the theory worked in practice.

The business employs 5 full time and up to 11 seasonal workers during the year; with such a big enterprise safety is paramount but could be difficult to manage. On entering the staff lunch room the first thing I saw was a big notice board with all the safety notices pinned to it, plus all the insurance





documents and also a near-miss recording facility. In the same space was a first aid kit and eyewash station, just in case there was a problem.



Figure 7: Eye wash station at Mid-Man farms alongside first aid kit

Brock told me about the monthly safety meeting with the staff where any near-misses or problems that needed fixing could be talked about. Again here was another really good employer who empowered the staff to speak out if something was wrong. The workshop was very impressive with guards on things I didn't know needed guarding, and even underfloor heating; apparently it gets cold in winter!

The biggest risk on the farm is during potato harvest. The farm runs a large harvester which is capable of lifting 12 rows of potatoes at once. With so many potatoes coming into the store via a grader, the yard is very busy with trucks coming and going, and all the while there are a number of workers hand sorting the potatoes on the grader. There was always the potential for an accident in this set up so Brock introduced a few simple measures that not only made the task safer but also much more

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efficient. A one-way system was put in place for the trucks to follow, meaning the workers on foot knew where the trucks were coming from, and also there weren't any blockages in the yard.

The next obstacle to overcome was 2-fold. Workers often needed to get from one side of the grader to the other and it's a long walk around, so many would take a short cut by going underneath, putting them at risk of getting caught in the moving parts. The other problem was getting the workers to the rest room, which meant crossing the path of the many trucks bringing in the harvest. The answer to both problems was the fabrication of steel bridges over the obstacles. Now all workers can quickly and safely cross the grader and get to the rest room without risking their own safety.

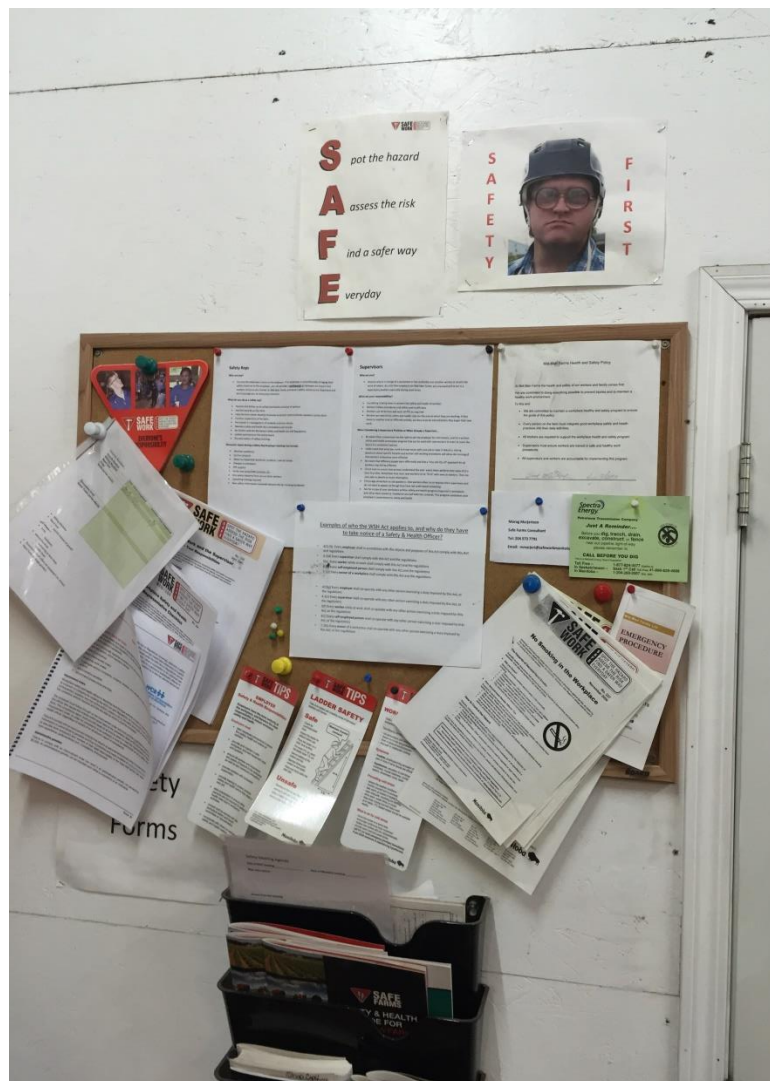


Figure 8: Safety notices and near-miss report forms available to workers.

The McIntosh family was led into a safety culture when Alysa hurt her hand and had to take a lot of time off to recover. During this period she was tasked by her father Brock to put together a safety program for the business. Alysa was attending the University of Manitoba where she enrolled on the farm safety course run by Thea Green.



Coincidentally a safety initiative run by Morag Marjerison who worked for Safe Work Manitoba, helped kick start a safer way of working. Morag brought together potato farmers in the area to work on farm safety plans for each business. Alysa credits Morag with the success of Mid-Man Farms' excellent safety plan that not only works on paper but practically on farm as well. There is a correlation between these two farm businesses. They are both very successful: both at farming and at *safe* farming.

Some will say that their success in business has enabled them to engage more in safety, allowing them to make the financial and time investment in safety. I disagree, I think both have a positive, professional attitude to farming and safety. It is not their business size that has dictated their ability to take the subject seriously: it is that same positive, professional attitude which has led to their becoming a large successful business.



## 9. Behaviour change

To gain long lasting safe behaviour on farms we must enable farmers and farm workers to automatically work more safely without the need to think about it.

There are three elements that must converge to enable a change in behaviour: motivation, ability and a trigger.

Dr BJ Fogg of Stanford University explains that if any of these 3 elements are missing then behaviour change won't occur (Source <http://www.behaviormodel.org/>). The three elements have subcomponents:

**Motivation:** pleasure/pain, hope/fear, social acceptance/rejection

**Ability:** time, money, physical effort, brain cycles, social deviance, non-routine

**Triggers:** facilitator, spark, signal

Dr Fogg describes how motivation and ability can be played off against one another. For example if motivation is high then ability can be lower. When we look at ability and the factors involved we see everything that farmers tell me is preventing them from working more safely. To gain a change in behaviour we need to break down these myths while highlighting the motivators. We must be cautious in our approach however; we must not use negative enforcement like pain, fear or rejection to motivate farmers. Instead we must highlight the positive motivators like pleasure, hope and social acceptance to enforce a positive behaviour change.

This method of culture change is being used by Syngenta Global as part of their Good Growth Plan to help farmers stay safe around the world. Peter Arkle, global stewardship lead at Syngenta explained to me how they are using the Fogg behaviour model as part of their drive to educate farmers around the world.

*... we must highlight the positive motivators like pleasure, hope and social acceptance to enforce a positive behaviour change.*

Past farm safety initiatives have mainly focused on the negatives. The use of fear and pain has been used to great effect in making people aware of the dangers in the work place and many brave people have come forward with their own stories of accidents and how their lives have been affected.

*the accident rate in UK farming hasn't altered much in the last decade*

However the accident rate in UK farming hasn't altered much in the last decade and, as I have already indicated, it's the same type of accident occurring. A new approach is needed; if we want to use fear and pain as motivators then we really need to remember the "ability" factors that will enable farmers to change behaviour. Most farmers will see money, time and physical effort as the main barriers to change. We must work

to provide low-cost, low-effort solutions to farm safety while continuing to push messages about the consequences of an accident.

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The social acceptance of other farmers is also a very powerful tool that should be used to encourage farmers to work more safely. At the moment “social acceptance” is working against us. As farmers we are very conscious of what our friends, neighbours and colleagues think of us. We fear standing out from the crowd and currently the status quo is of danger and risk taking. If we could reverse this thought process and encourage enough farmers to stand together and champion a safety culture then we might get some traction.

Currently as I write this report there is a campaign on Twitter called “#lensleg” that sparked a number of influential farmers on Twitter to make 30 safety changes in 30 days on their farm. The coverage on social media has been fantastic and it was all sparked from one person telling a personal story

*We are starting to see the shift in culture because it has been farmer-led*

about a farm accident. The messaging about safety has gone from safety professionals preaching the virtues of safety to farmers taking the lead and promoting it themselves. The difference has been massive. All of a sudden, farmers are learning from other farmers and the messaging has real credibility. We are starting to see the shift in culture because it has been farmer-led and so many people have become involved that others don’t want to be left out of the new “social group”.

*farming should be seen as a safe profession made dangerous by risky behaviour.*

Jeni Cross of Colorado State University talks about the 3 myths of behaviour change. Without going into all 3 myths - although I recommend looking up her presentation - she talks about “social norms” and how some advertising campaigns have actually had a negative result by enforcing negative social norms. She talks about an anti-littering campaign that shows people how much litter is dropped in that location. Inadvertently the advert reinforced the message that everyone else here drops litter so it’s acceptable to

follow suit. We are doing the same thing with many of our farm safety campaigns by enforcing the idea that we all take risks at work and that is the “social norm”. We must start using messages that dispel the risk-taking norm and start positive messaging that risky behaviour is far from the norm. (source, Youtube <https://www.youtube.com/watch?v=I5d8GW6GdR0> )

We can use the media, especially social media, to enforce the correct messaging. We must prevent the subconscious negativity that farming will always be a dangerous job. Instead farming should be seen as a safe profession made dangerous by risky behaviour.



## 10. Technology

Technology can be used in two ways to help save lives: proactively or reactively.

Proactive technology like the app from New Zealand-based Onside is designed to help farmers manage risk on the farm by identifying the risk and marking it on a digital map. The problem area can then be shared by all those registered to the farm or outside contractors who are given permission to visit the farm. It also helps the owner/manager to mitigate the risk by suggesting solutions to fix the problem. The app also allows visitors and employees to digitally sign in and out of the farm allowing the manager to know who is on site and where they are.

Another example of a proactive technology is the online service offered by the NFU Mutual to their customers. The online safety audit takes you through a process of tick box questions about your farm, and then the system uses your answers to suggest appropriate action required to bring the farm up to conformity. The system is very easy to use and the recommendations are broken up into easy-to-manage suggestions preventing the farmer from being overwhelmed.

Reactive technology is more for when things go wrong, but could save your life if the worst was to happen. Lone working is one of the most risky things we do; we often work away from the main farmstead on our own and often out of mobile phone coverage. When an accident happens in such a situation it is often the time it takes for help to find the victim that causes the fatality. Lone-worker devices are available that use GPS to send the location of the casualty to a computer system that then alerts the appropriate people.

*The use of  
technology in farm  
safety is very  
under-utilised*

The use of technology in farm safety is very under-utilised in my opinion. If we are to make safety practical and easy to use then we really need to embrace these aids, just as if we were precision farming. However, we must be cautious when using technology as we must not become complacent and rely on the systems alone. We still need to make the right decision at the right time, but the technology on offer can definitely help with record keeping, sharing information and helping identify hazards and how to rectify them.

The main barrier to adopting these technologies remains the same: recognising risk. If we don't *perceive* the job to be high risk then the appropriate precautions won't be taken.





## 11. Focusing my thoughts

My travels have focused my thoughts about how we can make farms safer, and also on what would negatively impact the progress of farm safety.

Increasing regulation or penalties will not have a positive effect on farm safety. The disconnect between the regulator and the farmer will only increase if more regulation is enforced. The existing laws are adequate to keep workers safe; however, a lack of knowledge by farmers of existing regulation has rendered these laws ineffective. A mistrust of the regulator is also hindering a working relationship between HSE and farmers which could otherwise prove beneficial in reducing accidents.

Strong leadership is needed within the agricultural industry to enable greater progress with safety initiatives. When difficult decisions need to be made our farming leaders, for the greater good of the industry, need to put farm safety ahead of what might be popular with farming members. We currently have safety partnerships in the UK that sometimes lose direction and focus. Strong chairmen are needed to keep the momentum that is created elsewhere with regard farm safety.

*Increasing regulation or penalties will not have a positive effect on farm safety.*

As farmers we sometimes find it difficult to recognise dangers on the farm, making it difficult to manage the problem. We need to encourage more training in safe working procedures and then follow the training with continued development to keep farmers up to date with new techniques. This could be carried out in a class room type scenario, trade shows or even through web-based learning.

Agricultural education can and should help with creating a culture shift. We need to be creating a generation of safe farmers who will shape the future of UK agriculture. Following the examples of Tocal College and University of Manitoba our agricultural education institutes can easily influence the next generation by instilling a safety culture from the start.

*many farmers don't take safety seriously for fear of ridicule by their farming peers.*

Social acceptance is a huge barrier to a shift in culture. We can start the shift at college and university but we must enable that culture to continue once the student arrives in the workplace. We must make safety “sexy”; many farmers don't take safety seriously for fear of ridicule by their farming peers. A core of influential farmers needs to be empowered to create a “safety is cool” culture, and

then the rest of the industry will follow, fearing exclusion by the new social group.

This group of “safe” farmers who are leading the way in safety will also be extremely good farmers, proving that safety won't hinder farming, but enhance the business. As I discovered both at Jigsaw farms, Australia, and Mid-Man farms Ltd in Canada, being a safe farm is also a good indicator that the business is professional and profitable. The “safe” farmers will also help mentor others and facilitate farm visits to help others visualise how safety works in a real life situation.



I found on my travels that safety needs to be practical; if it's difficult then it won't get done. As Dr Fogg describes, there are many barriers to change, some are perceived barriers but some are very real. We must keep it simple, low cost and with low physical effort. Farmers have already got a lot to think about day-to-day so any extra safe working practices need to be easily adopted with little cost.

This is where technology could come into effect by helping farmers recognise risk but then manage it. Providing the technology remains inexpensive and easy to use there is huge potential to aid accident prevention. Near-miss reporting is a free lesson in safety and needs to be utilised possibly with the help of technology to enable anonymous reporting. Alternatively we must empower farm workers to report near-misses without fear of ridicule or reprimand.

**As previously stated, however, our biggest barrier to change is the fact we don't always see our day to day farming activity as dangerous! How are we expected to change something we don't know is broken?**





## 12. Conclusions

1. Agricultural-related fatality rates remain the worst of any industry in the UK, with 9.12 deaths per 100,000 employed
2. Despite many previous farm safety initiatives to raise awareness of the problem the number of fatalities in agriculture has remained constant over the last decade.
3. Not recognising the dangers on farm is one of the main barriers to a safer industry; farmers need more help to identify the risks on their farm and so enable change to take place.
4. A multitude of tasks are carried out by farmers but often the correct safe work procedure is unknown.
5. Safety training is rarely offered to farmers, and most won't actively seek training in health and safety. When training is delivered the duration might be half a day every 5 years with no continued development.
6. When training is delivered the content and engagement with farmers will vary dependent on the person delivering the training, resulting in inconsistent uptake in the information. The wrong person delivering the training can be detrimental to changing behaviours.
7. A lack of near-miss or minor injury reporting is preventing the industry from making safety changes before a major accident occurs.
8. A fear of the HSE is preventing some farmers engaging with the regulator in a proactive way.
9. Farmers have very different learning styles and this need to be thought about when designing training.



## 13. Recommendations

1. Farmers like to learn from other farmers. Peer-to-peer learning must be encouraged at as many levels as practically possible including agricultural colleges, universities and HSE run safety, health, awareness days.
2. A network of working demonstration farms that focus on safety should be set up to allow other farmers to learn how a safe farm can be profitable while keeping workers safe.
3. Agricultural colleges and universities must integrate safety in everything they teach. Instilling a safety culture at a young age will drive a long term change in the behaviour of the next generation of farmers.
4. The use of independent safety audits will help farmers identify the risks on their farm without fear of prosecution. This could be carried out by farm assurance inspectors or even other farmers.
5. Farm safety leaders or ambassadors need to be identified and trained to aid delivery of consistent messaging and create a core of professional farmers whom others will respect and follow their example.
6. Strong leadership is required from our farming unions to make the sometimes unpopular decisions for the good of the industry.
7. Better use of technology should be encouraged to help make safety simple and inexpensive while also allowing for near-miss reporting to be collated enabling correct changes to be made before a major accident occurs.
8. We must all work hard to dispel the myth that being safe makes us less of a farmer; a change in culture will only occur if we make it socially unacceptable to be unsafe.
9. We must make safety sexy!



## 14. After my study tour - the next step

Now I have completed my studies I have a clear vision of how best to tackle the problems around farm safety. In the past I have used my personal story to help raise awareness of what life is like when the worst happens, but now I have a better understanding of the problems I can be more strategic in my delivery. For many years I have been asked to talk to discussion groups, NFU meetings and Young Farmer meetings and I now feel I can give even more to the discussion around safety and hopefully use my Nuffield Farming travels to help change farmers' behaviours.

I still plan on working with the Yellow Wellies campaign to educate agriculture students around the UK about why we must think safety at all times. Further to this I would like to engage with the colleges and universities directly to formulate a plan enabling safety to be embedded within the education of every student. I strongly believe that a long-lasting culture change will be led by the next generation, so getting them used to safe working at university is key.

Currently I sit on the HSE's Agriculture Industry Advisory Committee (AIAC) and using my new knowledge I'm currently helping to develop a new version of the SHADs. The committee discussed the future of the programme and decided that after 19 years very little progress had been made in reducing accidents so we are hoping to develop a new forward-thinking programme that will have an impact on the rate of farm accidents.

Through my work with HSE I aim to identify safety leaders within the industry to help us deliver the new SHADs and raise awareness within their local community. The creation of safety demonstration farms will also be part of my plan with the SHAD program, not only to aid in the delivery of the SHADs but also to allow farmer groups outside of the SHAD to carry on engaging with safety after the formal training as part of the continued professional development or CPD.

The use of technology within the farm safety sector is very underutilised and so I aim to work with providers around the world to help bring the technology to the UK and help farmers utilise it. Social media has already been used to great effect raising awareness of the issue and, although I'm not fantastic at using social media, I will encourage others to use it to greatly enhance our reach to the farming community. Social media will not only be used to raise awareness but will also be used to offer guidance to farmers looking to undertake a job but unsure of the safest way; also things they can do to improve safety without added cost.

Although my Nuffield Farming travels are officially over I still think there is a lot that can be learned from other countries. Using the contacts I have made around the world I will continue to bring new techniques to the UK while also communicating to other countries what has and hasn't worked here.

Finally I aim to make farm safety sexy! I hope to encourage the discussion around safety in a positive way, turning it from an almost taboo subject into something we talk about in the pub or in the livestock market.

### James Chapman

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## Acknowledgments and thanks

I would like to thank my left arm. Although I have missed it greatly since 2005, the loss of it has pushed my life in a very different direction. Without my accident I wouldn't have achieved anywhere near as much as I have and probably wouldn't have even thought of undertaking a Nuffield Farming Scholarship, so in a weird way I'm grateful for the accident.

As mentioned in the Introduction, my wife Anna has been the driving force behind me; this Nuffield Farming Scholarship belongs to her along with every other accolade I have ever received. Anna has been patient, understanding, supportive, the kick-up-the-behind when I have wavered and a travel companion at times. My life would be nothing without Anna!

I'd also like to thank my father-in-law, Mick Blythe, for picking up the slack on the farm while I've been away, and my boss Miss Mary Moreton for allowing me the time from work to complete this life changing experience.

A huge thank you must go to my sponsor The Richard Lawes Foundation. The financial support was invaluable to allow me to complete my scholarship but the moral support was just as valuable. Knowing Bobby was on the end of the phone if needed means the world to me and I can never thank you enough.

A massive thank you must go to Louise Manning and Anne Beckett for editing this report. Those who know me will be shocked by the professionalism of this report, it is all thanks to the wonderful editors Anne and Louise that make me look like a hero.

My family has always been a huge part of my life and I must thank Mum, Dad and brothers Jack, Tom and Ben for always being there for me.

I'd like to take this opportunity to thank everyone who gave up their time to speak to me in my quest to improve safety in agriculture and who hosted me around the world making me feel extremely welcome:

### USA

The members of the **International Society for Agricultural Safety & Health** for allowing me to attend their annual conference and making me feel so welcome.

### Canada

**Thea Green** (University of Manitoba) **Robin Anderson** (communications coordinator for **Canadian Agricultural Safety Association**) **Glen Blahey** (Agricultural safety and health specialist **CASSA**) **Marcel Hacault** (director **CASSA**) **Dave Kramer** (Safe Work coordinator, **SAFE Work Manitoba**) **Jeff Shaw** (prevention consultant, **SAFE Work Manitoba**) **Alysa & Brock McIntosh** (Mid-Man Farms Ltd) **Clayton Robins** (4-H Manitoba) **Sarah Linde and Luree Williamson** (Agriculture for Life, Alberta) **Corey Stevertson** (general manager Wester feedlots Alberta) **John Smith & Laura Laing** (Plateau Cattle Co. Alberta) **David & Mary Sullivan** (Agrisafe Network. British Columbia) **Brenda Schoepp** (2012 Nuffield Farming Scholar Alberta)



## Australia

**Bob Nixon** (2014 Nuffield Scholar Kalannie, Western Australia) **Wes Lefroy** (RaboResearch Agricultural analyst) **Stephen Carr, David Gartner, Tammy Barker** (Aglime of Australia, Perth) **Maree Gooch & Mike Norton** (Farmsafe Alliance, Perth) **Dr Tony Lower** (Port Macquarie, NSW) **Charlie Bell** (Tocal College, NSW) **Perri Timmins** (Safe Work Australia, Canberra) **Jeff & Robin Odges** (Mooroopna, Victoria) **Mitchell McNab** (2016 Nuffield Scholar) **John Keely** (2016 Nuffield Scholar) **Susan Brumby, Jacquie Cotton, Alex Robinson** (National Centre for Farmer Health, Hamilton, Victoria) **Mark Wootton** (Jigsaw Farms, Victoria) **Shane Hellwege** (Dairy Australia)

## New Zealand

**Graham Neat** (Onside health and safety management, Christchurch) **Al McCone** (Worksafe NZ, Wellington) **Joe Schumacher** (Landcorp Farms, Wellington) **Nick Hanson** (Federated Farmers NZ, Wellington) **Dr Rebecca Lilley** (Injury Prevention Unit, Otago University) **D'Arcy Palmer** (Farmers for Farm Safety Ltd, Rangiora) **Jessica Benesmann** (2016 Nuffield Scholar)

## UK

**Allan Bowie** (President National Farmers Union Scotland) **Gillian McLean** (Greens of Haddington) **Tom Price** (National Farmers Union) **Stephanie Berkeley** (Farm Safety Foundation, Yellow Wellies) **Jan Redpath** (2016 Nuffield Farming Scholar)



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<https://www.youtube.com/watch?v=I5d8GW6GdR0> )