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SYSTEMIC BEHAVIOUR CHANGE: IRISH FARM DEATHS AND INJURIES

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ABSTRACT

While the Irish agricultural sector accounts for just 6% of the working population of Ireland, it consistently has the highest proportion of fatal incidents of any sector - generally ranging from between 35% and 45% of all workplace fatalities in any given year. This was again evident in 2014 where 55% (30 of the 56) of the fatal workplace incidents were in the agricultural sector. Agriculture has an ageing workforce with the average age of an Irish farmer now standing at fifty-seven and farmers are *eight times* more likely to be fatally injured in a farm accident than the general working population. Interviews were conducted with farmers and farm safety advisory bodies. The findings from this research show that a systems social marketing approach should be adopted to eliminate farm deaths and injuries and that interventions should be co-created with the farming community. A grass-roots mentoring system needs to be established to advise farmers on best practice. This needs to be modelled on 3 main pillars (individual farm visits, courses in safe farming, and group farm walks) delivered by and for farmers. Live testimonials from farmers who have been involved in farming accidents also need to be incorporated into all farm safety talks and demonstrations. These need to show farmers the physical, emotional and financial consequences of a farming accident. These farm accident victims should attend individual farm visits, courses in safe farming and group farm walks. Practical workshops need to be set up so farmers learn specific skills appropriate to their farming situation. Lecture-based teaching where farmers sit and listen about safe farming practices should be avoided as farmers like to learn by doing. The issue of farm safety needs to be addressed at a macro marketing level and needs to involve a broadening of the traditional 4Ps to include People, Policy and Partnership.

KEY WORDS

Farm safety, Attitude, Behaviour, Social norms.

1. Introduction to Irish Farms, Farm Types and the Agricultural Sector

The agri-food sector in Ireland contributes €24 billion to the national economy, accounting for 6.3% of gross value added, nearly 10% of Ireland's exports and provides 7.7% of the country's employment (GL Noble Denton 2014). More specifically, 58% of the agri-food sector's workforce comes from agriculture, forestry and fishing (GL Noble Denton 2014). The Irish Census of Agriculture 2010 estimated that there were 139,829 active farms in Ireland in 2010 employing 165,370 annualised work units (AWUs) and that in total, when family labour is included, it is estimated that approximately 400,000 persons are exposed to health and safety risks on Irish farms (Health and Safety Authority 2015).

Approximately 88% of farm holdings are male-owned (GL Noble Denton 2014) with 50% of the male farm owners being 55 years or older, and perhaps more significantly in terms of health and safety, 25% of all male farmers are aged 65 or older (GL Noble Denton 2014).

2. Background Statistics on Farm Deaths in Ireland

While the Irish agricultural sector accounts for just 6% of the working population of Ireland, it consistently has the highest proportion of fatal incidents of any sector generally ranging from between 35% and 45% of all workplace fatalities in any given year (Health and Safety Authority 2015). This was again evident in 2014 where 55% (30 of the 56) of the fatal workplace incidents were in the agricultural sector (Health and Safety Authority 2015). This compared to a total of 47 workplace fatalities in 2013 with 16 fatalities in agriculture (Health and Safety Authority 2015).

An analysis of fatalities by the Irish HSA (Health and Safety Authority) covering 2003 to 2012, showed that dairy farming and mixed farming accounted for the largest proportion of deaths (35% and 29% respectively) (GL Noble Denton 2014). Older workers were also significantly over-represented in fatalities with 41% aged between 65 to 99 years old, and 20% aged 55 to 64 years old (GL Noble Denton 2014). Perhaps reflecting the gender profile of farming as an industry, 95% of the fatalities

were male (GL Noble Denton 2014). Childhood deaths accounted for about 10% of fatalities with over half of these caused by tractors/machinery or other vehicles. Some regional effects were also apparent with a high number of fatalities occurring in Cork (29 deaths between 2003 and 2012), double the next highest county - Tipperary (14 deaths in the same period). It is noted that these counties have high levels of intensive dairy farming (GL Noble Denton 2014).

Table 1 shows the amount of farm fatalities in Ireland within a five year period (Health and Safety Authority 2015) and shows the number of farm fatalities declining every year from 2010 to 2013 but then a sharp increase in 2014, where the number of farm fatalities almost doubled in comparison with 2013. The spiking of fatal incidents (from 11 in 2009 to 30 in 2014) is alarming, as there had been a general downward trend from 1997. However, the significant increase in farm deaths in Ireland since 2009 is of grave concern and has interrupted and reversed this general downward trend to an alarming extent (Health and Safety Authority 2015).

INSERT TABLE 1 HERE

In the ten year period from 2005 to 2014, there were 193 farm fatalities, averaging over 19 deaths per year or 16 fatalities per 100,000 workers in the farming sector (Health and Safety Authority 2015). The fatality incident rate for 2013 in the agricultural sector was 15.9 fatalities per 100,000 workers in comparison with 2.1 fatalities per 100,000 across the general working population (Health and Safety Authority 2015). Put simply, there has been no significant reduction in the number of farm deaths, and farmers were *8 times* more likely to die working on a farm than in the general working population (Health and Safety Authority 2015).

In comparative European terms, Ireland has made considerable progress in terms of its farm safety record, currently ranking in the top 5 for lowest rates of farm fatalities (Health and Safety Authority 2015). The vast majority of these farm fatalities were potentially preventable (Health and Safety

Authority 2015). As with any workplace, the primary responsibility for farm safety resides with the business owner, in this case the farmer.

Figure 1 shows the major causes of farm deaths in Ireland in the years 2005 - 2014 (n = 193). It identifies that tractors, farm vehicles and machinery make up nearly 50% of the causes of death. Livestock contribute 13% to the cause of death, with drowning and gas accounting for 11%. The remainder of fatality causes were due to falling from a height (9%); timber related (7%); falling objects and collapses (7%); and electrocution (2%) (Health and Safety Authority 2015).

INSERT FIGURE 1 HERE

In relation to farm injuries, it is important to bear in mind that the statistics are more difficult to compile than those for deaths. This is due to the gross under-reporting of non-fatal incidents and injuries by farmers, with the average reported to the Irish Health and Safety Authority of just 100 per year, despite their legal obligation to do so (Health and Safety Authority 2015). The Irish Health and Safety Authority relies to a great extent on the findings of the National Farm Survey conducted by Teagasc (Irish farming advisory body) for trends in non-fatal incidents. The 2011 Irish National Farm Survey results estimated that Irish farm injuries increased by 35% to 2,459 injuries per 100,000 farms reported for the year 2010, compared to the previous survey estimate of 1,815 injuries per 100,000 farms in 2006. This is still a reduction in the numbers recorded in 2001 (3,000 injuries per 100,000 farms) and 1991 (5,000 injuries per 100,000 farms) (Health and Safety Authority 2015).

3. Farmer Attitudes and Behaviours as a Contributor to Farm Accidents

The environment, technology and the person (“farm safety trichotomy”) are three aspects of accident involvement in farming that are inextricably linked with one another, each influencing safety:

(1) Environmental characteristics include the type and size of the farm, farming activity, presence of children or elderly persons on the farm, etc.

(2) Technology involves the type and condition of machinery or vehicles and the type and condition of personal safety equipment for instance.

(3) Person relates to a person's perception of risk, their acceptance of risk, their attitudes and beliefs about behaving safely or unsafely (Finnegan 2007).

GL Noble Denton (2014) in their comprehensive report acknowledge the role of these three aspects, but focus on the person to understand how farmer attitudes and behaviours could be changed. As other researchers have concluded (Van den Broucke and Colemont 2011), injury in farming is due to behavioural factors such as the poor use of machinery or poor handling of animals (rather than non-behavioural risk factors such as farm characteristics and even demographic characteristics). The following sections present some of the key research relating to the person, involving social and psychological factors identified from the literature.

3.1 Risk-Taking as a Contributor to Attitudes and Behaviour on Farm Safety

Seiz and Downey (2001) cite how their small scale study found that farmers explained the causes of accidents in a number of ways, including risk-taking such as taking unwarranted shortcuts, doing makeshift repairs on machinery, acting carelessly, working without due concentration and fatigue, hurrying and impatience. These specific causes were understood by farmers to be under their control, compared to causes they perceived to be out of their control such as time pressures, poor weather and market forces.

3.1.1 Beliefs on Risk Taking as a Contributor to Attitudes and Behaviour

Gil Coury et al. (1999) report as cited by Finnegan (2007) that it was excessive self-confidence and carelessness that led to farmer accidents with their animals. This idea of a farmer's behaviour (when risk-taking) being linked to intrinsic identity markers (i.e. belief that they are expert in the use of tools or in their handling of animals) has been reported elsewhere (Mullen 2004), whereby individuals took risks or did not wear personal safety equipment because it reinforced to others that they were "tough"

or “macho”. As Murphy (1981) claimed, farmers may hold a belief that they should be tough and independent individuals, a belief that may discourage them from using safety equipment in case they are ridiculed by other farmers for being “soft”. He goes on to state that using safety equipment and following safety practices goes against the grain of many of these individuals.

3.1.2 Demographics as a Contributor to Attitudes and Behaviour towards Risk

Age-related differences in risk-taking were also proposed whereby younger farmers (e.g. below 30) were more likely to take risks due to their lack of training and limited experience, exposing themselves to greater risk of fatal injuries (Finnegan 2007). Older farmers may also take greater risks, as it has been shown that they often use older machinery/tractors which may be defective and neglect the use of protective devices (Collins McLaughlin and Mayhorn 2011; Finnegan 2007). They generally do not value technological safety measures such as ROPS (Roll-Over Protection Structures fitted on tractors) when compared to younger farmers (Collins McLaughlin and Mayhorn 2011), which was explained by the finding that older farmers may not see the benefits of new technology.

Finnegan’s (2007) research based on the Irish National Farm Survey found that 54 was the median age for injury in male victims. However, it is likely the aging process may explain increased injury rates for older farmers (Collins McLaughlin and Mayhorn 2011). For instance, declining visual acuity and auditory capability, as well as a range of physical/motor and cognitive impairments may lead to errors which result in injury. Medical conditions in older farmers have also been observed to be related to accident involvement (Collins McLaughlin and Mayhorn 2011).

3.1.3 Socialisation as a Contributor to Attitudes and Behaviour towards Risk

It is possible that whether or not a person is willing to engage in unsafe behaviour may be rooted in their experience (GL Noble Denton 2014). The role of “socialisation” (learning the social norms of a given environment) may be important, whereby family and friends can influence an individual to behave in a certain way (Phelan et al. 2007). Mullen (2004) argued that early socialisation of an

individual entering a workplace could have a key influence on shaping safety attitudes. Finnegan (2007) cites that attitude formation relating to safety begins in childhood, where cues are taken from the behaviour of others on the farm.

Farmers may “incorrectly assume that unsafe or careless behaviour is the norm, and refrain from healthy or safe behaviour, to comply with this perceived norm” (Colémont and Van den Broucke 2006, p. 229). Seen from the opposite end of the safety spectrum, Seiz and Downey (2001) suggested that farm parents could (and did) provide lessons in safe practices early on for their children, and were aware that they needed to be positive role models in the area of safety.

3.1.4 Safety Planning and Compliance as a Contributor to Attitudes and Behaviour on Farm Safety

It can be argued that having formal approaches to risk management is more likely to minimise the possibility of injury compared to an absence of such formalised procedures (GL Noble Denton 2014). However, as identified in Finnegan’s Irish National Farm Survey study, a large proportion of Irish farmers did not adequately engage in safety planning, with almost half reporting they did not always consider health and safety issues, either for themselves or others (Finnegan and Phelan 2003). This may in part reflect work cited by Stave (2005) who suggested farmers typically relied on an intuitive way of problem solving, rather than relying on detailed planning. This supports the idea that although farmers may carry out risk assessments, they are not always documented (HSE 2009). Moreover, farmers believed that documented risk assessments and procedures existed only to satisfy the regulator, and farmers with small farm holdings often believed that documented risk assessments were inappropriate in their work (Finnegan and Phelan 2003).

3.1.5 Fatigue as a Contributor to Attitudes and Behaviour on Farm Safety

A BOMEL (HSE 2009) study found that self-employed farmers believed that fatigue was a major health issue for them, particularly during specific times of the year, e.g. peak calving season. Often

the work is carried out alone in order to save costs on contracting. Administrative paper work was a significant feature for these farmers, and therefore compounded their sense of fatigue. No specific reference was made to how this affected safety in the study, but it is implicit that greater fatigue (both mental and physical) may increase the chances of an accident through inattentiveness, slowed reaction times, adopting shortcuts etc. (GL Noble Denton 2014). The results also found that farmers often had to work seven days a week with little chance of a holiday (HSE 2009).

3.1.6 Stress as a Contributor to Attitudes and Behaviour on Farm Safety

There have been high levels of stress reported in farming (GL Noble Denton 2014). Hope et al. (1999) found that in their sample of 170 Irish farmers, around 65% claimed to suffer from stress due to pressure at work, and also money worries. Stress in British farmers has also been identified as a problem for self-employed farmers mainly associated with financial pressures, but also pressure from increased paperwork relating to increased government bureaucracy (HSE 2009). It is often the case that farmers of smaller farms, who farm livestock, who are socially and physically isolated, are particularly prone to stress (HSE 2005). Walker and Walker (1987) found that financial stressors for male farmers were evident with other key stressors relating to time pressures, government policies, personal illness at peak times, weather, social isolation, work over-load, and pressures in staying abreast of new technology and products. However, it was also reported that stress levels could vary across the farming population based on age (younger) and type of farming (grain and livestock).

3.1.7 Previous Accident Involvement as a Contributor to Attitudes and Behaviour on Farm Safety

For farmers that had not experienced injury, there may be a level of indifference towards safety measures because such farmers may not fully recognise the value of adopting such measures (Finnegan 2007). Repeated non-injury from a series of risk-taking actions (such as not wearing personal safety

equipment) may reinforce risk taking because there is a sense that “I can get away with it” (Collins McLaughlin and Sprufera 2012; Glasscock et al. 2006; Mullen 2004).

Consequently, it might be expected that previous involvement in an accident leading to injury or near miss might make a farmer more risk averse or at least more acutely aware of the dangers in farming work (GL Noble Denton 2014). Some support for this came from analysis of the Irish National Farm Survey data (Finnegan 2007). Similarly, witnessing an accident or hearing about one, can impact a person’s risk appraisal such that they are less likely to tolerate risk (Mullen 2004). Research findings from a BOMEL study (HSE 2009) indicated that UK self-employed farmers believed that agricultural health and safety information would be more compelling if it illustrated the human cost of accidents, and that general awareness-raising of accidents could “never be overdone”.

3.1.8 Seasonal/Time Factors as a Contributor to Attitudes and Behaviour on Farm Safety

Finnegan (2007) cites that several farm studies in a number of countries have found seasonal distributions to accident occurrence, but generally the conclusion is drawn that frequency of accidents are associated with increasing farming activity, such as calving or harvesting periods during the year. Finnegan (2007) citing his own empirical work, confirmed the greatest incidence of injury occurred in autumn and summer periods. Furthermore, there is some evidence to suggest that late morning and early to mid-afternoon are particular times when accidents are more likely to occur.

Time pressures leading to the skipping of safety measures or adoption of “calculated risks” were also identified in farmers (Collins McLaughlin and Mayhorn 2011). Mullen (2004) in her review of the literature, stated that short cuts are taken when there are performance pressures as in the case of “role overload”. In effect, a person is less likely to carry out safe-working practices, when they feel under pressure to perform a task quickly. If this condition is repeated over time, it is suggested that short cuts or unsafe practices can become the normal way of working (i.e. habitual).

3.1.9 Farm Size and Profitability as a Contributor to Attitudes and Behaviour on Farm Safety

The size of a farm influences safety, with research supporting the idea that farmers of larger farms, are at greater risk of having an accident, partly because there can be more workload and exposure to risk (Phelan et al. 2007). However, other research supports the finding that farmers of smaller farms are more at risk. Murphy (1981) as cited by Phelan et al. (2007) found evidence for smaller farms adopting older technology in an “older environment” (i.e. aged buildings), which increased risk, especially when there were lower budgets for farm improvements, when compared to larger farms. In a review of Irish National Farm Survey data in 2006, it was found that just over half of the respondents who had experienced an accident on their farm, had a farm size of less than 20 hectares (McNamara et al. 2007).

3.1.10 Market and Societal Forces as a Contributor to Attitudes and Behaviour on Farm Safety

The influence on farming resulting from market forces has been illustrated in UK HSE research by the Policy Studies Institute (HSE 2005), whereby farmers recognised the power of supermarkets in dictating market prices. Consequently, farmers were aware they were competing with overseas producers of similar produce who could offer cheaper prices, leading to slimmer profits for farmers based in the UK. This had the effect of intensifying the farmer’s work to produce profit, such as producing more, using less contracted labour, increasing mechanisation and working longer hours (HSE 2005). The net result of such outcomes can influence risk especially for farmers of small farms, where much of the work is carried out by the farmer themselves (HSE 2005).

Similar to market forces, others have commented on society’s demand for produce at the cheapest prices that further reduces profit margins for farmers (Elkind 1993), a situation that can mean reduced money for farmers to spend on health and safety measures, as well as affecting the well-being of farmers in general. The influence of society was also captured by Murphy (1981) who commented that society generally believes farmers are “resilient” and “rugged”, which may shape the self-identity and beliefs farmers hold, that can impact on how they operate on their farms.

4. Methodology

Eleven interviews were conducted for the purposes of this research between October 2016 and May 2017. The researchers interviewed farmers who were victims of farm accidents and specialists within the area of farm safety. These interviewees were sourced from detailed discussions with the Irish Health and Safety Authority (HSA) in relation to who would be good to talk about farm safety. They advised that a number of farmers who had been involved in farm accidents had made an Irish HSA produced DVD on farm safety and were very interested in the area of farm safety. It was believed that these farmers would be good to interview as their knowledge and experience of how easily accidents can happen and how they can be prevented would be useful. This ensured the researchers gathered information regarding the farmers' personal beliefs and feelings surrounding the research topic.

It was also believed necessary to interview farm safety experts and individuals active in preventing farm accidents in Ireland to gain an insight into current best practice in farm safety education. These experts then pointed the researchers in the direction of a Swedish farm safety initiative that had yielded very positive results, so contact was made with the coordinator of this programme as well. The research objectives were as follows:

- What can be done to improve farm safety attitudes and behaviour among farmers?
- How important is a good social norm of safe farming practice among farmers?
- Are farmers involved in farm accidents more aware of safety?

5. Findings and Discussion

In many of the farming accidents that have occurred in recent years, complacency played a significant part, where the farmer became over-confident carrying out the same farm work every day. When farmers become complacent while carrying out farm work, concentration levels will drop and the

potential for farm accidents occurring will significantly increase. Most farmers think that farm accidents will never happen to them but this is not the case. One farm safety campaigner stated:

A lot of this farm work is common sense to farmers but they become very complacent. Farmers know the difference between right and wrong and it is like when you are driving a car, you know you should not be driving over a certain speed but you still take the chance. The more times you get away with it, the greater the chance you will do it again.

It is vital to educate farmers on farm safety before an accident occurs to them on the farm. The aim is to eliminate complacency and show that accidents can happen to anyone when performing farm work and try to establish strong social norms on farm safety to make safe farming practices the norm for all on the farm.

Parents must act as role models on farm safety to their children to ensure that no unsafe farming practices get passed on to their children. It is vital that parents are willing to adopt farm safety measures around the farm to ensure that their sons and daughters do not pick up any unsafe farming practices in the future. Children will very easily imitate the unsafe farming practices of their parents, if they witness unsafe farming practices from a young age at home. One farmer stated:

The problem with farming is we learn from our fathers on how to do certain jobs. They have the power to act as good role models and thus reinforce good behaviour or act as bad role models and reinforce bad behaviour.

There needs to be discussion among all members of the family to ensure strong social norms on farm safety are established within the farm. Having strong social norms on farm safety will lead to improved attitudes on farm safety among farmers and further lead to improved farming practices on the farm.

Primary, secondary and third level schools and colleges have a significant role to play in educating children and young adults on the importance of farm safety. When farm safety is brought into the curriculum in schools, this ensures that young people learn good farm safety practices and will then

have the opportunity to use this knowledge in a positive manner when farming at home. One farm safety campaigner stated:

The school is key because a young child will go home and say, "Dad that is dangerous" or they would say to their parents "you cannot be on the mobile phone when you are driving the tractor". This will encourage the parents to adopt safe farming practices.

The incorporation of health and safety into the Agricultural Science subject for the Irish Leaving Certificate exam (at the end of secondary school) in 2019 will be of great benefit to raise student awareness of the importance of farm safety. Farm safety education needs to become a primary concern for schools and agricultural colleges.

An integral part of what students learn in schools and agricultural colleges needs to be about farm safety. This should be accompanied by guest speakers who are victims of farm accidents - students can then see the real-life consequences of not implementing farm safety measures around the farm. More practical demonstrations surrounding the importance of farm safety need to also occur in agricultural colleges. One farmer stated:

I think practical demonstrations will stick in the head longer than reading about something or listening to a speaker. The aim is to make sure that the farmer that does not farm safely leaves with a change of attitude and will change his behaviour when on his own farm.

Many older farmers also work beyond the retirement age and still perform dangerous farming practices on a daily basis. It is important that older farmers are advised of their vulnerability to farm accidents due to their age, through informal visits from farm advisory bodies or fellow farmers, as they can point out the dangers on the farm. Older farmers are more prone to a farming accident as they become less alert of their surroundings on the farm while carrying out farm work. One farm safety expert stated:

The older farmer is a man who has done his farm work in the same way for years. He does not see the need to change his ways of farming. He represents a hard segment to reach with a farm safety message.

Older farmers also tend to use older and less maintained machinery which do not possess the latest up-to-date safety features compared to the more modern machinery available on the market.

It is important that farmers have good facilities on the farm to carry out farm work e.g. when handling dangerous farm animals. Every farmer needs to be vigilant of the hazards that are on the farm especially the risks associated with livestock that can be extremely unpredictable. Schemes like the European funded TAMS II (Targeted Agricultural Modernisation Scheme) and KT Scheme (Knowledge Transfer Scheme) are of huge benefit to farmers as they receive European grant aid to make farm safety improvements around the farm. For farmers to qualify for the schemes they must do a farm safety course. One farm safety expert stated:

If a farmer is applying under TAMS II, they must attend a half day training course solely highlighting the dangers associated with farming and go through the risk assessment procedures for the investment they are undertaking as well as the code of best practice.

This is of huge benefit to farmers as it makes them aware of the importance of farm safety. Live farm safety victim testimonials should be incorporated into these talks/courses. One farmer stated:

Victim testimonials come head and shoulders above everything else as a means of communication when dealing with farm safety. They have the most impact as they involve real farmers telling real stories. Each farmer then thinks that the accident could happen to them.

Mentoring programmes would be of huge benefit to farmers (both young and old) to teach them the importance of farm safety. Farmers will learn and improve their knowledge on farm safety in a social setting with other farmers. Practical training or demonstrations on farm safety appeal to farmers far more than classroom based learning, as it is action-learning. The social interaction among farmers where they can talk and learn about how important it is to implement farm safety features should be very worthwhile. One farmer stated:

More training courses for the older farmer showing them the consequences of what can happen through farm accidents are definitely needed. New farmers should be put on a mentoring programme where support and

advice is got from experienced farmers. The mentoring programme would target certain areas and bring ten to fifteen new farmers together where they would hear about best practice from an experienced farmer.

It is hugely important that victims of farm accidents attend and speak at the mentor programme, so farmers have the opportunity to see the physical, emotional and financial consequences a farm accident can have on the farmer and listen to how easy a farm accident can occur. Culturally, farmers need to change their way of thinking towards farm safety and ensure farm safety is an integral part of every aspect of farming life. One farm safety campaigner stated:

If 5 or 6 farmers who are neighbours and friends work together in a group with a coordinator or mentor to bring them together and visit each other's farms and constructively criticise each other in terms of getting the farm yard right, the machinery right, the handling facilities right, the safety of the younger and the older people on the farm right, well then that should be a recipe for success.

Mentoring programmes should be modelled on the hugely successful Swedish *Safe Farmers Common Sense* programme. The results of the Swedish *Safe Farmers Common Sense Programme* are impressive with 48,000 farmers participating (out of an estimated 71,000) and a reduction in farm deaths in 2013 to zero. Something similar to Sweden's *Safe Farmers Common Sense Programme* should be implemented in Ireland. There are three key issues to the success of this programme.

Firstly, the *Safe Farmers Common Sense Programme* involved the trained farm safety advisor (often farmers themselves) walking around the farm and together with participants looking at the various risks that existed on a farm. They would then visit six stations dedicated to a special concept. These farm walks were also designed as a family event where there were contests with prizes, and refreshments. Participation was free.

Secondly, the *Safe Farmers Common Sense Programme* involved individual farm visits with the trained farm safety advisor and the farmer walking around the farm and identifying the most important safety risks. They used a special education method that helps the farmer generate solutions for their own problems. The aim was to develop specific action plans to change the attitude and behaviour of that individual farmer towards farm safety. The Swedish farmers had to pay 250 SEK (€25) to get the

farm visit. Paying something was felt to be important to communicate that the programme was of value to farmers.

Thirdly, the *Safe Farmers Common Sense Programme* involved courses on farm safety. Three meetings were arranged to achieve “Safe Farmers Common Sense”. The aim again was to change attitudes and behaviour towards accidents with the goal that farmers would improve their own regular work environment. There were group discussions on safety; films about the risks towards safety; how to make the farmer’s own action plan; and how to make their own emergency plan. Materials and a free first aid course were provided to farmers and participation again cost €25.

The Swedish farm safety expert stated:

Farmers themselves were engaged in the process and some of the mentors were farmers with an interest in safety. There was a process put in place where one of these mentors visited the farm and advised on risks that existed. They then both developed a meaningful plan to make the farm considerably safer by fixing any issues.

The social interaction (between mentor and farmer, and between the farmers in the group) is key, where they discuss the risks that are involved in carrying out farm work. The local farmers are neighbours and friends who work together in a group with a coordinator or mentor to bring them together and visit each other’s farms and constructively criticise each other in terms of getting the farm yard right, the machinery right, the handling facilities right, the safety of the younger and the older people on the farm right. This impacts positively on changing attitudes and behaviour towards farm safety. The Swedish farm safety expert stated:

The Safe Farmers Common Sense programme was successful due to the fact that all agricultural organisations supported the initiative. We also got great help from the media (newspapers, radio and television). The concept was simple - through education and information, the accidents would decrease. We incorporated the farmers’ voices into the design of the programme. They had to decide how the counselling should be designed. We offered courses, farm visits and advice.

The farm visits (that are part of any mentoring programme) should have a farm accident victim speaking about how his accident happened, what the physical, mental and financial consequences of the accident are, and what can be done to avoid this accident in the future. The key importance of farm accident victims being used in educating farmers was stressed by all interviewees. Farm accident victim testimonials play a significant role in improving farmer attitudes and behaviour surrounding farm safety. They illustrate graphically to other farmers the consequences a farm accident and a farm injury can have on the family and the fundamental changes that must occur on the farm for the farmer to stay safe and keep farming. One farm safety expert stated:

The farmer always thinks economically and the financial cost of the injury should be stressed in any farm safety message. Reinforcing the financial benefits of working safely e.g. remaining injury-free, and thus being able to continue to be active, productive and able to provide for oneself and one's family, should be stressed in any victim testimonial.

Farm accident victim testimonials show other farmers how easily a farming accident can happen on the farm and if they had the chance again how they would ensure farm safety was implemented on the farm. Farmers are not just telling their personal story about the farm accident they encountered, they are also educating farmers on the importance of implementing farm safety measures around the farm, before a fatality or a serious accident occurs on the farm. Farm accident victim testimonials whether in person or on DVD need to be accessible to all farmers not just at various official IFA (Irish Farmer Association) meetings but at locations like local cattle marts, local farmer co-ops, the Irish Ploughing Championship, etc., as some farmers may not be able to attend IFA meetings due to pressure of farm work. One farmer stated:

I think the "Survivor Stories" DVD that the Health and Safety Authority (HSA) produced is good. They are real farmers telling real stories about real farm accidents. They show how easy farm accidents can happen and the life-long consequences of farm accidents.

Practical skills-based training would give farmers the opportunity to socially engage with other farmers and learn the importance of implementing farm safety around the farm. It is important that farm safety

training is developed for all farmers of different ages, so that the training is made relevant to the farmer's age and his needs. Farm safety training needs to be either free or at a subsidised cost for farmers to attend as the importance of farm safety needs to be stressed to all farmers, especially those under financial pressure. Training should have an effect on attitude and behaviour towards farm safety.

One farmer stated:

More training courses for the older farmer showing them the consequences of what can happen through farm accidents are definitely needed. New farmers should be put on a mentoring programme where support and advice is got from experienced farmers. The mentoring programme would target certain areas and bring ten to fifteen new farmers together where they would hear about best practice from an experienced farmer.

Practical workshops throughout Ireland are important to teach farmers the value of farm safety. Farmers work in small groups and the social interaction in the workshop will appeal to farmers far better than larger lecture type meetings. Farm workshops facilitate discussion among farmers about farm safety and show them the logic behind implementing farm safety measures on the farm. The workshops should involve training on all the most dangerous jobs on the farm that have resulted in farmers being killed or seriously injured. One farmer stated:

If we got farmers aged between 15 and 40 into a farm safety workshop in small groups of 7 or 8 discussing farm safety, that would have really positive effects on changing attitudes and behaviour among farmers. Sometimes, these big meetings where someone is talking at the top of a room are not as effective as the smaller hands-on workshop where skills are more easily transferred.

This training should include tractor driving skills, working from a height, working with livestock, agitating slurry and being in the presence of slurry gases, and the importance of maintaining machinery like making sure handbrakes and brakes are in good working order. Farmers should then leave the workshops with the required knowledge on simple and practical tips to implement farm safety on their own farm.

Workshops on the importance of farm safety can also be an effective tool to establish a social norm of good farm safety practices. When positive social norms around the importance of farm safety get

established on every farm, this will result in improved attitudes and behaviour on how important farm safety is and how to implement it while conducting farm work. One farm safety expert advised:

I think it is key to have that kind of learning involving applied workshops, where the farmer learns while doing the job. This will go down well with farmers and will ensure that the farmer takes home some valuable skills.

It is important that farmers are encouraged to participate in workshops on farm safety as this can influence best practice on farms. Even simple advice to farmers to always carry a mobile phone with them when out farming is important, so the farmer can ring someone if he is in trouble.

A retirement scheme would be a valuable programme to many older farmers as they might not have a successor to take over the farm. Older farmers are often reluctant to invest in more modern machinery that has more safety features. Many older farmers will continue farming the way they have done for years - this can often pose a challenge when educating older farmers on the importance of farm safety.

One farm safety expert stated:

Some farmers work ten to fifteen years longer than the average person and they are the cohort of people that are in real danger. I see them in real danger as they are doing the same unsafe things as they did years ago because they have become comfortable and complacent.

This shows the challenges faced by various farm safety organisations in attempting to improve an older farmer's attitude to farm work. The retirement scheme will give the older farmer the opportunity to transfer the land to a younger farmer knowing that they will have an income.

Farm safety campaigns at local cattle marts throughout the country would be very beneficial in getting the farm safety message out to all farmers on the importance of farm safety. Some farmers might not be attending official farm advisory meetings on the importance of farm safety, but may be attending the local cattle mart. There could be stands on farm safety as well as promotional material handed out at the mart. One farm safety expert stated:

Farmers learn informally when they go to the mart. They talk about cattle breeding, machinery and silage quality but the one thing that is often not in their vocabulary is farm safety. This can change and should be changed and the cattle mart represents an ideal forum to start this discussion.

High profile figures who are very involved in the area of farm safety like sports rugby player Sean O' Brien can play a major role in raising awareness on the importance of farm safety among farmers. More emphasis needs to be put on getting high profile figures from farming backgrounds to become ambassadors to promote farm safety. These ambassadors for farm safety need to be picked carefully so they appeal to the farming community. One farm safety expert advised:

The public love national figures. If you wanted to do a farm safety campaign and told farmers that Sean O' Brien (Irish rugby player) was going to be at the farm safety stand, the amount of farmers (young and old) that would turn up just to see Sean O' Brien would be huge, and they would also get the farm safety message as well.

These national figures need to have credibility within the farming community, otherwise the farm safety message will be lost. Linking the GAA (Gaelic Athletic Association - an amateur sporting organisation in Ireland) with farm safety messages is a good way to target farmers with the farm safety message. Many farmers (both young and old) follow the GAA and will be exposed to a farm safety message if it is linked to the GAA. One farm safety expert stated:

When we launched the Champions for Change campaign in 2015, Donegal played Tyrone in the first round of the GAA Ulster football championship. Donegal Creameries, owned by Aurivo were the sponsors of the Donegal GAA team. They did a one off special jersey with "Stay Safe on the Farm" written on the front of it.

These networks are very powerful ways of getting the message out to farmers on how important farm safety is for all people on the farm. The continuous repetition of the importance of farming safely through various networks is vital for farmers to improve their attitude and behaviour towards farm safety. This should ensure a strong social norm is created, among all farmers, to farm more safely.

6. Implications for Practice

Changing farmer attitudes and behaviour represents a huge challenge. A cultural shift in attitude is required to ensure that farmers engage in safe farming practices. This cultural shift in attitude should lead to safer behaviour by farmers but this could take a generation to achieve. It will only be achieved through multiple stakeholders delivering the farm safety message. There is an urgent need for a national farm safety mentoring programme to be set up in Ireland. This will require funding and commitment at both national and EU levels.

This should be modelled on the Swedish *Safe Farmers Common Sense* programme which had 3 main pillars – individual farm visits, courses in safe farming and group farm walks. This was so successful that it managed to reduce the number of farm fatalities in Sweden to zero in 2013. This educational farm safety mentoring programme will nurture a social norm of safe farming practices. This has enormous implications for the Health and Safety Authority and farm organisations in terms of lobbying the government, politicians and EU institutions to initiate and fund such a scheme, in view of the number of farm deaths and injuries, not just in Ireland but across the EU.

This national farm safety mentoring programme should involve talks from farm safety specialists, practical demonstrations, as well as live testimonials from farmers who have been involved in farm accidents. This programme has to be established with a view to incorporating the whole family and making it an enjoyable as well as an educational experience. The Swedish model should be used as a template for this national mentoring programme.

This process of farm safety mentoring can also take place at a local voluntary level, where neighbouring farmers would visit each other's farms and "advise" on farm safety hazards. This is especially relevant in the case of older farmers and farms where there is no successor identified to take over the farm. This should be set up by the various farm advisory bodies and done on an informal basis, where older farmers are advised on how to take precautions in view of their failing eye-sight, hearing and movement, when operating on the farm.

This farm safety mentoring programme should be set up in every village in Ireland. The aim should be risk awareness, risk assessment and risk avoidance. Behaviour change requires commitment and that change has to start at grass-roots level. Cultural change will only take place if all farmers take ownership of the farm safety debate. This will involve a bottom-up approach as much as a top-down approach. This should ensure a change in attitude as well as behaviour. This has implications for Government and the EU, in terms of who conducts this mentoring system and more crucially, how they conduct it.

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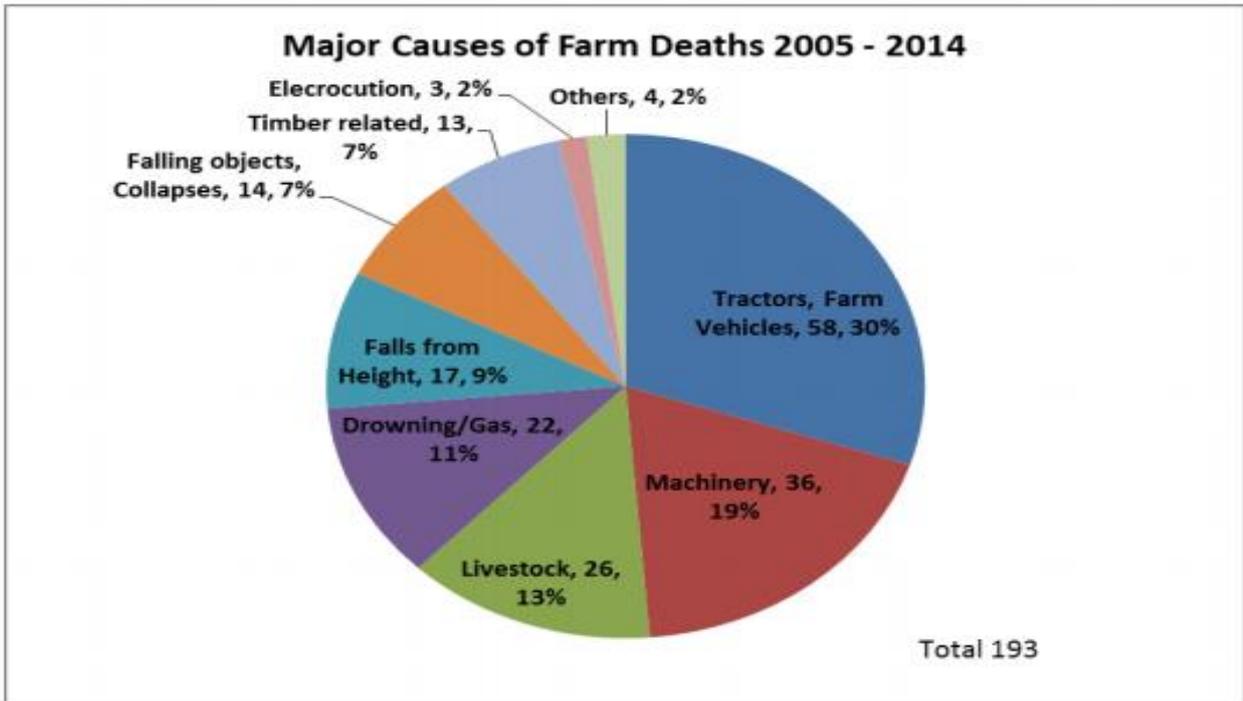
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Table 1: Fatal Incidents in Agriculture and Forestry (2010 – 2014)**Fatal incidents in Agriculture and Forestry sectors in the last Five Years:**

2010	25
2011	22
2012	21
2013	16
2014	30

(Health and Safety Authority, 2015)

Figure 1: Major Causes of Irish Farm Deaths (2005 – 2014)



(Health and Safety Authority, 2015)