

Irish Meeting 2011 on Agricultural Occupational Health and Safety

22nd - 24th August, 2011

Castleknoch Hotel, Dublin, Ireland

Organised By

Health and Safety Authority,
Metropolitan Building James Joyce St, Dublin 1, Ireland

www.hsa.ie

and

Teagasc, Head Office, Oak Park, Carlow, Ireland

www.teagasc.ie

Organised in association with the Farm Safety Partnership which is the statutory advisory committee to the Health and Safety Authority for the agriculture sector.

Organising Committee: Chairman: Professor James Phelan, Dean, School of Agriculture and Food Science, University College Dublin. Mr Patrick Griffin, Senior Inspector, Irish Health and Safety Authority, Mr David Meredith, Researcher, Rural Economy and Development Centre, Teagasc. Dr Catherine Blake, School of Physiotherapy and Performance Science, University College Dublin, Secretary: Mr John McNamara, Health and Safety Officer, Teagasc.

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Foreword

The Health and Safety Authority and Teagasc are pleased to host the Irish Meeting on Agricultural Occupational Health and Safety in Dublin from 22nd to 24th August 2011 and thank you for your support.

We welcome all delegates to this meeting and we assure you that your contribution to the meeting will be particularly valued as improving occupational health and safety in the agriculture sector represents a worldwide challenge calling for the sharing of knowledge.

We particularly welcome our international delegates from the Nordic countries (Denmark, Finland, Norway, Sweden) as this meeting is an occasional meeting on the rota of Nordic Meetings on Agricultural Occupational Safety and Health and from the recently formed International Consortium of Dairy Health and Safety Researchers including delegates from the USA, Germany and Sweden and delegates from Italy the United Kingdom.

During the Irish Meeting many innovative presentations will be given and these can be broadly categorised into the following themes: Health and Safety Management; Health of Farmers; Health and Safety Issues arising in the Dairying Sector; Livestock Safety and Learning and Knowledge Transfer in Health and Safety.

In Ireland, farmers have been subject to safety, health and welfare at work legislation since 1989 and active engagement among all parties (farmers, regulators, research and extension services) has taken place since then to reduce occupational injuries and ill health. This meeting will demonstrate what progress has been achieved in Ireland so far and consider strategies to target future progress.

We would like to thank members of the Farm Safety Partnership and farmers in Ireland granting access to their farms for visits along with University staff who supervise our post graduate students in health and safety for your support for this Meeting.

Informal meetings such as the Irish Meeting provide an invaluable opportunity for persons from many countries and backgrounds to interact and share knowledge and insights. This can lead to future contacts and possible collaborations, leading to progress.

We trust that you will find your visit to Ireland to attend the Irish Meeting both a valuable and enjoyable experience

Mr Martin O'Halloran
CEO,
Health and Safety Authority



Professor Gerry Boyle
Director,
Teagasc



Irish Meeting 2011 on Agricultural Occupational Health and Safety

Programme/Presenters

Monday August 22nd

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10.30 - 11.30	Registration	
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- 14.00-14.45 ‘Health and Safety in Agriculture - What approaches work best’ Panel D Discussion. Chair Professor James Phelan.**
- How can we increase Health and Safety work in agriculture in different countries?
 - How can we cooperate with authorities?
 - How can we develop better methods to promote safe work?
 - How can we cooperate internationally?
- 14.45-15.00 Presentation of Statement from the Meeting**
- 15.00-15.15 Closing of the Irish meeting**

International Comparisons and Evaluations in OHS

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Agriculture is one of the most hazardous industries, globally. In EU member countries, agriculture has about 6 injuries per 100 workers per year, and about 12 fatal injuries per 100,000 workers. Over 40% of agricultural workers feel they are in danger at work. More than half of agricultural workers report exposure to musculoskeletal conditions. Over 15% report exposure to skin and respiratory diseases. About 4% suffer from work-related respiratory illnesses. Over 20% suffer from noise exposure at work, and more than 40% suffer from too rapid pace of work. Occupational diseases are about twice as frequent in agriculture (58 / 10, 000 employees), compared to all industries (27.5 / 10, 000).

Various preventive strategies have been developed to reduce agricultural injuries and illnesses, including education, training, engineering, regulations, enforcement, incentives, and multi-faceted approaches. Agricultural occupational health service has been an important approach in Finland, approximately 40% of farmers are members. Norway has developed a similar OHS service with approximately 8,000 members. Sweden also had a similar program in the 1970's and 80's but due to lack of funding, this program is no longer active. In the USA, AgriSafe clinics and the Certified Safe Farm program use a similar approach. In other countries, such as Germany and Ireland, regulatory and enforcement approaches have had a stronger role. Many other countries exclude self-employed farmers from enforcement of safety regulations. Engineering interventions have included standards for new machinery. Due to global markets, such standards have increased the use of many safety features, including Rollover Protective Structures and machinery guarding. Safety education has been a traditional approach, utilizing various forms of training and working with the media to inform farmers about hazards. Incentives have been used increasingly to encourage the uptake of safety and health innovations. Given the broad range of interventions, and limited resources for prevention, it has become increasingly important to evaluate the effectiveness of these interventions. Two evaluation strategies are discussed in this presentation: systematic reviews of published literature and international comparisons of programs and outcomes.

The first major review (DeRoo and Rautiainen, 2000) identified 25 intervention studies. Eleven involved farm safety education programs, five consisted of multifaceted interventions that included environmental revisions and/or a farm visit. Nine papers described farm safety interventions including safety fairs, day camps, certification programs, workshops, and courses for farm families, youth, and agricultural workers. Multifaceted interventions were targeted to farm operators and generally involved farm safety audits, followed by environment or equipment changes, and/or safety education. Program evaluations assessed changes in safety attitudes, knowledge, and/or behaviors and generally involved pre- and post-test methodology. Only three studies examined changes in the incidence of farm injuries. Of the studies evaluated, most reported positive changes following the interventions. However, limitations in the design of evaluations make the results of many of the studies difficult to interpret.

The second major review (Rautiainen et al., 2007) used Cochrane Collaboration methodology. Only randomized controlled trials (RCTs), controlled before-after studies and interrupted time series (ITS) studies of interventions aiming to prevent injuries were considered. Five RCTs and three ITSs met the inclusion criteria. Six studies evaluated educational interventions and financial incentives and two studies evaluated the effect of legislation. Three RCTs on educational interventions with 4670 adult participants did not have an injury reducing effect, neither did two RCTs among children. Financial incentives decreased the injury level immediately after the intervention in one ITS. Banning Endosulfan pesticide in Sri Lanka led to a significant decrease in the trend of poisonings over time.

Legislation requiring rollover protective structures (ROPS) on all tractors in Sweden showed no reduction in injuries but the same requirement for new tractors was associated with a decrease in fatal injuries. The studies provided no evidence that educational interventions are effective in decreasing injury rates among agricultural workers. Financial incentives could be better means to reduce injury rates. Banning highly toxic pesticides could be effective. Legislation on safety devices on tractors yielded contradictory results.

A research team in Finland has an ongoing pilot study which compares agricultural health and safety programs and injury and illness outcomes in selected western countries. The main tasks of this study include identifying occupational health and safety resources and their effectiveness in Finland, and comparative analyses of international agricultural statistics, occupational safety and health systems and their resources. A survey was sent to several European countries to identify occupational health and safety programs, assessing their performance using available statistics on injuries and occupational diseases. We also intend to collect data from on-farm safety evaluations using the same checklist. Preliminary results of this study will be presented.

Overall to date, evidence of agricultural safety and health program effectiveness is limited. Only few programs have shown to reduce injuries and illnesses. The reasons for this lack of evidence could be two-fold: the programs did not in fact perform well, or, the programs achieved positive effects, but research was not able to measure those effects. Intervention effectiveness research is complex and involves many biases. Comparisons of national programs have challenges as well. Injury and illness statistics that are available from public sources are not easily comparable. Different data collection and reporting systems may introduce biases. Further work is needed to draw conclusions, but some examples of effective programs are emerging. Over time, most countries show a downward trend in injury and illness statistics. This is a positive indication that sustained long-term efforts do make a difference.

The geography and demographics of agriculture in Ireland and associated fatal farm injuries

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Farming in Ireland is the foundation of a €7 billion a year agri-food industry. In the period to 2020 this industry has the potential to grow to €12 billion per year. The strategy establishing this goal, Food Harvest 2020, foresees farms in Ireland increasing their volume of production whilst the food industry focuses on capturing greater market share and moving up the value chain. Growth in farm output will be achieved through increased productivity and continued restructuring of farm enterprises.

This paper provides an overview of farming in Ireland exploring in detail the structure and distribution of farm enterprises, the demographic profile of farmers and the characteristics of fatal farm incidents during the period 1993 - 2010. In doing so it highlights links between the spatial distribution of fatal farm incidents and the demographic structure of farming in Ireland.

Approaches used by the Health and Safety Authority to gain Culture Change/Compliance with OHS in the Agriculture Sector in Ireland

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Objective

To demonstrate the strategies use, their general outcomes and current approaches to improve health and safety performance and build a culture of safety in the agriculture sector since it first came under occupational health and safety regulation.

Legislation and Competent Authority

The Health and Safety legislation as enacted in Ireland over 20 years ago applies in full to farms as places of work, farming as a work activity and the farmer as a self-employed person or as an employer. Since its establishment in 1989 the Health and Safety Authority has continued to focus on agriculture as a key work sector, fully aware of the high injury and fatal accident rate therein.

Farming in Ireland is predominantly a family based enterprise and there was in the initial stages within the farming community an element of surprise/disbelief and even resentment that legislation relating to occupational health and safety should apply to their family farm. This view is no longer prevalent. All of the functions of the Authority are now exercised in the approach to raising the standard of farm safety and thereby reduce accidents and injury on Irish Farms. Due to the nature of the Agriculture sector as briefly outlined above the way in which the Authority's functions have been exercised have always been sensitive to the structures within farming.

Action and Approaches

Enforcement activities relating to Agriculture consist of proactive inspections focused primarily on self-employed farmers within identified counties, accident black spots and high risk farm types, with farm visits based on random calls. In addition to proactive inspections all farm fatalities are investigated. The level of other accident and complaint investigation in this sector is very low compared to other sectors, reflecting the low level of accident notifications and complaints received. Farm inspections are primarily conducted on a cold call basis (i.e. no prior warning to the farmer) and will be where possible conducted with the active farmer. This approach is designed to see the farm as is, and engage the farmer in the issue of farm safety.

Promotion

Bringing the health and safety message to the agriculture sector is resource intensive. The Authority has for many years recognized that due to the demographic nature of the agriculture sector that an approach based on partnership with other key stakeholders involved in the sector has the potential to maximize promotional efforts. An approach that is based on partnership where the efforts of all are directed at key issues at any one time has proven to be a way forward within the sector that maximizes the potential to raise safety standards with available resources.

A strategy was therefore built around the establishment of a partnership approach where all the major stakeholders would have a voice and a role in achieving improved safety standards within the sector. The current Farm Safety Partnership Advisory Committee (FSPAC) and its detailed and focused Action Plan 2009 – 2012, is an evolution of this approach.

While the achievements of the partnership approach are many and include in particular much higher compliance levels on the Safety Statement requirement, this has not achieved the necessary sustained reduction in death and injury. While awareness is high, taking the final steps to put things right and reduce or control the risks on the ground are generally not being taken. This is seen as a culture change issue and is now the focus for action.

Provision of Knowledge Transfer services to farmers in Ireland with particular reference to health and safety

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Objectives

This presentation describes how Teagasc currently develops and delivers usable knowledge or 'innovation' to farmers nationally to maintain and enhance their competitiveness and sustainability, with particular reference to occupational health and safety (OHS).

Methods

A review is given of the current resources available for knowledge transfer and the methodologies used. A SWOT analysis is undertaken related to the provision of OHS services to farmers.

Findings

The Teagasc model is based on integration of research with provision of advice and training and education and farmers have direct access to all three components of the services provided. In health and safety, Teagasc is committed to research to develop an evidence-base for progress. Currently seven PhD studies are in progress or have been recently completed covering a broad range of OHS topics.

Specialist advisers link all Teagasc service components for specific enterprises/disciplines, including OHS. They have the following roles: leadership; knowledge development and transfer; provision of staff in service training, stakeholder liaison and publicising and promoting the programme.

At a national level, Teagasc currently has approximately 45,000 clients and communicates with about 80% of the farming population (c110k farms). There are currently 3,800 students on training courses and 10,000 farmers attend a Teagasc short course each year. About 20,000 farmers have completed a half-day Training Course on the Farm Safety Code of Practice. Teagasc uses its publications – Today's Farm, Advisory Newsletters and regular Press Releases to regularly inform and motivate farmers to engage with OHS on a continuing basis. Teagasc has placed particular emphasis on New Zealand-type discussion groups where farmers learn from each other through discussion facilitated by an adviser.

A SWOT analysis related to Teagasc OHS services indicates the following: Strengths: provide a professional service, high client base, credibility, infrastructure and is evidence-based; Weaknesses - service is advisory or educational rather than mandatory; Opportunities – potential to extend services to non clients via other service providers, implement more discussion groups and ICT/social media services Threats - workloads and resource restrictions and, possibly, demotivation due to perceived lack of progress.

Conclusions/ Recommendations

The returns to investment in development of 'knowledge capital' is exceptionally high and is urgently needed in the area of OHS. Engaging farmers in OHS in a way which they find meaningful is crucial to gaining adoption as farmers ultimately decide what they will adopt (e.g.: Vancley, F., 2004 – Aus. J of Experimental Agriculture, 44, 213-222)

The State of Men's Health in Europe Report

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Paper presented on behalf of Dr Richardson by Dr David Evans, Health Service Executive West, Department of Public Health, Merlin Park Hospital, Galway, Ireland

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Objectives

The recently published first European men's health report provides a comprehensive overview of the state of men's health across Europe. It highlights the broad range of mortality and morbidity data arising from the many different health conditions that affect men in Europe, and does so through the contextual lens of men's lives.

Methods

Data from Eurostat, the WHO and other major data sources were used. The data presented in this report reflect issues regarding male-specific illnesses, principal causes of premature death, and those causes of death that are most influenced by lifestyle and cultural factors and therefore most amenable to preventive action.

Results

We see patterns emerging from the data that show marked differences between the health of men and women, and at the same time large disparities in health outcomes between men in different countries and within male populations in each member state. Overall there is a definite sex difference in mortality, with a male excess of deaths persisting across the lifespan. The peak male to female ratio occurs in the 20-24 age range with 3.36 time higher number of deaths. When the rates of death are considered, men have a 64% higher rate of death overall with 2.36 time higher rate in the 15-44 age range. Over 630,000 male deaths occur in working age men (15-64 years) as compared to 300,000 female deaths. Cardiovascular disease is the biggest cause of premature death, but this is rapidly being replaced by cancer. Men account for 95% of fatal workplace accidents. Higher suicide rates in men are linked to undiagnosed mental health problems.

Conclusion

This report provides the foundation for a wealth of activity in and around the emerging field of 'men's health' and it is hoped that it will provide the catalyst for inter-sectoral and inter-governmental responses at both an EU and a national level into the challenges men face at the start the second decade of the 21st Century.

Thermal discomfort for workers employed in livestock facilities with natural ventilation

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Objective

Agricultural workers are exposed to various risks: chemical agents, noise and many other factors. One of the most characteristic and less known risk factor is constituted by the microclimatic conditions in the different phases of work (in field, in greenhouse, etc). A typical condition of thermal stress due to medium and high temperatures is represented by the working operations in the cow barn with the natural ventilation. Object of this work is to assess the thermal discomfort through main microclimate-index: Predicted Mean Vote (P.M.V.) index and Predicted Heat Strain (P.H.S.) model.

Material and methods

The most reliable and precise procedure to evaluate stress in moderate and severely hot environments is the P.M.V. (ISO 7730) and P.H.S. described in the ISO 7933 standard. To survey environment parameters a microclimate unit is used, while the subjective parameters like the metabolic rate and clothing thermal characteristics are determined with visual analysis and interview with operators.

Conclusions

A series of microclimate measurements were performed in different kinds of cow houses in a farm in Viterbo (central Italy). The number of animals in the structures varied from 30 to 600. Measurements were made in summer and winter conditions with ambient temperatures from 20°C to +36°C.

The results showed that there were differences in microclimate depending on design of structures, outside temperature, wind and ventilation rates. Thermal discomfort is particularly derived from high temperatures during summer period. In any cases the risk is amplified due to the lack of acclimatization of the workers and the high temperatures.

Repetitive movements of upper limbs and risk of musculoskeletal disorders for workers during the cheese production in an Italian agro-food factory

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Objective

The objective of this work consists in the assessment of the risk due to biomechanical overload of upper limbs for people employed in working one of the most famous DOP products in central Italy: Roman Pecorino cheese. Besides, we also want to find out possible measures to reduce the risk for workers employed in specific mansions inside the same dairy.

Methods

To study the elements connected to the “*work-related musculo-skeletal disorders*” we have used a method officially recognized by the EN 1005-5:2007 standard: the OCRA Index (Occhipinti E., Colombini D., 1996). We have used the OCRA checklist both to find out the presence of risk and also for the successive phase to handle the risk.

Results and conclusions

The results in applying the OCRA Index method for people employed in working Roman Pecorino cheese in a dairy in the province of Rome have pointed out the presence of some tasks subject to a risk defined “slight” (yellow colour) while some tasks subject to “medium” risk (red colour).

At present the situation is as follows:

- for workers employed in salting (faggot opening): acceptable risk;
- for workers employed in salting (faggot predisposition): acceptable risk;
- for workers employed in salting (faggot pressing), acceptable risk;
- for workers employed in coating and marking: slight risk;
- for workers employed in packing and disposing on benches: acceptable risk;
- for workers employed in cutting “caciotte” and putting them in cases (cutting phase): medium risk;
- for people employed in putting “caciotte” in cases: medium risk.

The study also shows how it is possible to reduce risk better organizing the work and the ergonomics in the work place.

Adopting simple measures (with low cost for the employer) the risk could be reduced to acceptable levels for all the working phases.

A preliminary analysis of completion of a statutory farm safety code of practice document by farmers in Ireland

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Introduction

The Safety, Health and Welfare at Work Act 2005 in Ireland permits farmers with three or less employees to complete a risk assessment (RA) document as an alternative to preparing a written safety statement, required under the previous 1989 Act. A statutory code of practice (COP) incorporating a RA document, an explanatory document and a farm health and safety DVD was prepared by a statutory advisory committee to the Health and Safety Authority and then sent to farms, nationally. This research provide national estimates of the stated level of completion of the RA document and satisfaction with the COP documents.

Methods

An additional survey was conducted among participants in the National Farm Survey (NFS) during the second half of year 2007 where farmers were asked if they had completed the RA document. The population surveyed was 1,040 and this sample was weighted to represent a national population of 111,913 farms of at least 2 Economic Size Units (ESU) in accordance with NFS protocols (Connolly et al., 2008). Logistic regression analysis using SAS (2004) was used to model the NFS data available for a reduced sample of 991 related to completion of the RA document.

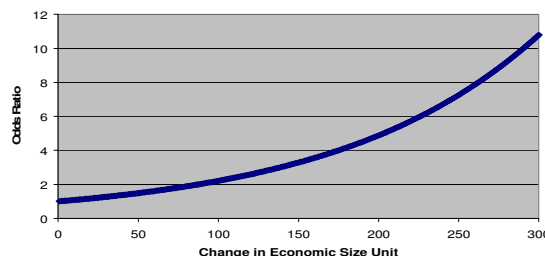
Results

The nationally weighted results indicated that 41.5% of farmers reported completing the RA document and of the 54.2% who gave an opinion on utility of the COP documents, 74% considered these 'excellent' or 'good'. The model fitting process selected Teagasc client ($p=0.001$) and economic size unit ($p=0.009$) as the main variables associated with completion of the RA document.

A quadratic relationship is indicated for the odds ratio between change in RA document completion for ESU (Figure 1).

Conclusions

The weighted survey results give national estimates of farmer use of the farm safety RA document, farmer perception of COP documents. The exploratory statistical analysis of the sample population indicates that completion of the RA document was predominantly influenced by whether farmers were Teagasc clients and economic size.



Developing the Role of Extension in Farm Safety and Health in Ireland

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Introduction

The Agriculture sector in Ireland and Internationally has a poor health and safety record. In Ireland, a National Initiative is in progress to develop a legal Code of Practice including a Risk Assessment document and to evaluate strategies that assist farmers to effectively complete and implement the legal requirements including the provision of a half-day (circa 3.5 hours) training course.

Methods

This paper presents the opinions of advisors or extension agents (27) on the utility of a pilot training course initiative for farmers on completing the Code of Practice Risk Assessment Document. It also presents agents opinions on the training they received to facilitate farmer training and estimates the level and nature of follow-up advice on safety and health provided to farmers who attended a training course compared to advice levels given by agents (32) who did not participate in a farmer training course.

Results

The pilot training initiative attracted high numbers of farmer participants (circa 1,500) and 89% of agents believed that farmers considered attendance at a course was worthwhile. Just 62% of agents were satisfied with the training they received with the main comment being that it was too short. A comparison found that 90% of agents who facilitated a pilot training course reported the inclusion of some aspect of health and safety in their work programme compared to 71% for non participating agents. This comparison was not statistically significant ($P=0.098$). Data for specific advisory activities indicate that for both advisers participating and not participating in pilot training courses providing advice occurred most frequently during advisory visits (85% and 59%), followed by an advisory event (67% and 53%), office consultation (40% and 35%), phone consultation (30% and 15%) and 'other' activities (5% and 15%) such as including the issue in newsletters or media articles. Forty eight percent of agents expressed the view that farmers give practical farm safety and health management a low priority.

Conclusion

The findings suggest that extension agents predominantly had a positive view of the farmer training course provided and to providing advice on safety and health. Participation in a training course by agents increased the level of health and safety advice given. However agents consider that farmers generally give health and safety low priority and further strategies such as promotion and on-going inclusion in extension work are required to assist farmers to implement health and safety changes.

Key Words: farm safety, health, training.

Economic impact of disability on Irish Farms - A comparative analysis

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Farmers typically operate within hazardous environments while conducting their day-to-day tasks, potentially resulting in accident, injury or disability. The acquisition of disability, whether from a farm accident, ill-health, or genetic sources, can be a major life-changing event for the farmer, the farm family and indeed the farm business. In Ireland the agricultural sector reported the highest incidence of disability relatively to any other (CSO, 2002), yet there is relatively little known on agricultural-based disability.

In 2007, a questionnaire was developed and appended to the Teagasc (Irish Agricultural and Food Development Authority) National Farm Survey (NFS) to gain some insight into the incidence and impact of disability on Irish farms in addition to identifying service/support requirements of farm operators experiencing disability. Almost 7.6% (~8,500) of Irish farm operators reported disability, often caused through Illness/Disease. Arthritis (31.4%), back problems (17%) and heart circulatory problems (12.5%) were most frequently reported. The lowest incidence of disability was found amongst dairy (3.8%) and tillage (4.0%) specialists, with the highest incidence among cattle specialists (9.1%). Farm operators primarily made operational changes, such as a change in farming enterprise rather than structural modification to farm buildings, facilities or machinery following disability. Family farm income (FFI) was lower on disability experiencing farms relative to non-disability farms (€105/ha), with a lower participation in off-farm employment also identified. Many farm operators (~20%) were forced to cease off-farm employment (OFE) following disability. Discontinuation of OFE can further precipitate FFI decline, but it can also place additional pressures on the farm business to provide sufficient returns to maintain an adequate standard of living if quality services/supports are not available. Irish farm operators experiencing disability perceived the provision of services/supports to be largely insufficient, across the entire service/support spectrum from when disability was first experienced right through to retirement. Awareness and issues surrounding eligibility were the primary reasons for failing to avail of currently available service/supports.

Given that awareness is the first stage of Roger's Innovation Decision Process theory, a service/support directory has been compiled. The directory encapsulates various sections relating to service/support requirements as identified by Irish farm operators experiencing disability.

How Do We Attract and Motivate People to Work as Employees in Large-Scale Dairy Farming?

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Swedish dairy farming has undergone considerable structural changes and this has led to fewer but larger farms with employed workers – and in Sweden it is difficult to recruit qualified workers. If agriculture should be an attractive occupation for people in the future, it is important to know what motivates them to work.

The specific aim of the study was to identify attraction and motivational factors important for students, employees and employers to choose to work in the profession as dairy farm workers. Furthermore, the aim was also to study if they had corresponding opinions.

A questionnaire based study was conducted during 2008-2009 to elucidate people's attitudes towards working in agriculture e.g. What will attract and motivate you to choose livestock farming as a profession? Furthermore, in order to elucidate the employer's view, they were asked the same question. The study comprised 194 students, 197 employed workers and 147 employers.

The students, employees and employers had comparable opinions of what attracts and motivates a livestock worker in his/her work. Although, the order of priorities of the factors was different, they agreed that - having fun at work, good leadership, feeling proud of their work, safe employment, good team spirit, living in the country, meaningful work, safe and healthy work place, flexible work tasks, the farm having a good reputation and feedback - were among the most important attraction and motivation factors. However, differences in opinions existed and especially between students and employers, and between male and female participants in the study.

The results showed that employees are predominantly motivated by intrinsic factors (refers to doing something because it is inherently interesting or enjoyable) and not by extrinsic factors (refers to doing something because it leads to a separable outcome). This corresponded to a large degree with the employer's perception.

Key words:

Motivation, Attraction, Workers, Dairy farming, Questionnaire

Musculoskeletal Symptoms and Physical Exposures Among US Large- Herd Milking Parlor Workers

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Introduction

Dairy production in the US is steadily moving to large-herd farms because of economies of scale and a host of other economic and social conditions. Productivity has been driven by advanced technological equipment and an industrialization of milking processes. Large-herd milking parlors are characterized by task specializations which introduce potentially hazardous physical exposures. Higher repetitions, reduced rest times, awkward upper extremity postures, and close-proximity interactions with the cow may increase the risk for musculoskeletal disorders and injury.

Objectives

The purpose of our study was to design and develop cost-effective intervention strategies that reduce musculoskeletal injuries among parlor workers. Self-reported symptoms and injuries as well as physical exposure metrics were used in the development of interventions.

Methods

A modified Nordic Musculoskeletal Symptom Survey was administered to 456 parlor workers representing 33 large-herd (>500 head) dairy operations in six US states. Surveys were administered on-site at each dairy by a bilingual dairy veterinarian. Eighty-two percent of survey respondents were male and 98% were Latino.

Results

Preliminary findings from the survey revealed 83% of parlor workers had been kicked by a cow during the milking process. Forty-six percent of parlor workers report having job-related pain in their feet during the previous 12-month period, 42% report symptoms in their upper back, 38% report symptoms in their shoulders, and 32% report symptoms in the wrists/hands. Parlor workers were asked to rate the level of difficulty of different aspects of parlor work on a 0 to 10 Likert scale. Highest mean rankings involved “Continuing to work when injured or hurt” (7.5), “Working in hot, cold, wet humid conditions” (7.1), “Working at or near physical limits” (5.8), “Bending or twisting back/trunk in awkward way” (5.7) and “Working in same position for long periods” (5.6).

Conclusions

Large-herd US parlor workers report job-related musculoskeletal symptoms in their feet and upper extremities. These findings may reflect having to work long hours standing on their feet, performing physically-demanding tasks involving the upper extremities. Parlor workers are also at increased risk of being kicked due to working in close proximity to the cow.

Recommendations

Additional research based on these findings is being conducted to design cost-effective ergonomic interventions that reduce the physical risks associated with injuries and illnesses in milking parlors.

Exposure to Endotoxin, Muramic Acid, Ergosterol and Effects on Pulmonary Function Among Western US Dairy Workers

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Objectives

Organic dust inhalation has been associated with adverse respiratory responses among dairy workers. Susceptibility to the adverse health effects resulting from agricultural exposures may be due to dust constituents, e.g. components of Gram-negative bacteria (endotoxins), Gram-positive bacteria (muramic acid), and fungi (ergosterol); intrinsic factors, e.g. genetic traits, immune system regulation; and extrinsic factors, e.g. smoking, obesity and work-related behaviors.

Methods

This study quantified breathing-zone personal work shift exposures and pulmonary function among 101 dairy workers during a variety of tasks. Inhalable dust was collected with Button samplers and analyzed for: endotoxin (recombinant factor C [rFC] assay), and 3-hydroxy fatty acid (3-OHFA), muramic acid, and ergosterol (gas chromatography/mass spectrometry). Pulmonary function tests before and after the work shift included: forced vital capacity (FVC), forced expiratory volume in 1 second (FEV₁), and the FEV₁/FVC ratio.

Results

Participants were 91% Hispanic/Latino and 88% male. Geometric mean inhalable dust levels were low (0.68 mg/m³), but highly variable (range 0.02 to 6.81 mg/m³). The highest dust exposures were during milking and re-bedding. Geometric mean levels of microbial markers were relatively higher; endotoxin (467 EU/m³), 3-OHFA (331.8 ng/m³), and Muramic acid (12.7 ng/m³). Ergosterol analysis is in progress. Endotoxin and 3-OHFA exposures were highest during milking, moving cows, birthing, medical, and re-bedding. Muramic acid exposures were highest during milking. Mean baseline FVC and FEV₁ were 95.7% and 96.7% of predicted respectively, and varied widely (FVC 75% to 121%, FEV₁ 68% to 125% of predicted). Mean cross-shift changes were slightly negative, but again were highly variable: FVC -1.3% (-21.5% to 15.6%) and FEV₁ -1.5% (-17.0% to 17.8%). The greatest mean reductions in cross-shift PFTs were found during: lagoon maintenance (-5.3%), moving cows (-4.6%), and repair tasks (-3.9%).

Conclusions

Exposures to microbial constituents of aerosols and reductions in pulmonary function were both quite variable and noteworthy for dairy workers involved in a few specific tasks. However, a simple association between increasing exposures and reduction in lung function (adjusted for age) was not found. Further analyses will include evaluation of the significance of additional factors such as smoking, obesity, other exposures (ergosterol, peak ammonia), work experience/duration, and genetic status.

Correlation between upper extremity musculoskeletal disorders of milking parlour operatives and the specific work place design

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The constructive work place dimensions in combination with anthropometrics and bovimetrics have a significant impact on comfort and efficiency. These were the results of two consecutive experimental studies carried out at our institute (Jakob et al. 2011 & Jakob et al. *submitted*). In consequence the optimal working height was defined when having the teats of the cow at shoulder height of the worker. Under working conditions the teat height varies from cow to cow. Therefore on farm measurements were carried out to collect bovimetrics (distance between udder and floor, distance between two teats diagonally, horizontal distance between the centre of the attached claw bowl and milking floor edge) as well as symptoms in the musculoskeletal system among the milkers on these farms.



Figure 1: Measurement of the distances between udder and floor (left), two teats (middle) and claw bowl and pit edge (right) using a foldable rule

Data collection was so far carried out on 14 German farms with an average herd size of 368 milking cows mainly HF breed and all held in loose-housing barns. Apart from the bovimetrics the 12-month prevalence of MSD was assessed using the Standardised Nordic Questionnaire (Kuorinka et al. 1987) which was filled in by the workers themselves.

Based on the distance of the udder from the floor and the individual shoulder height individual workload profiles were calculated. Those profiles of course showed a large variation. Due to the fact that within a herd the range between the highest and the lowest udder is at least 30 cm, but the optimum only embeds shoulder height ± 5 cm there cannot be a workload profile of all cows within the optimal working height. The possible calculative optimum ranged between 50 and 67% within one herd if the depth of the pit was optimised for the person.

The results from the Nordic questionnaire including 74 milkers brought up that 83 % did report pain in at least one body region. Nearly 50% of all milkers were absent from work due to musculoskeletal disorders.

A hypothesis for the idea of data collection was that the specific work place design might influence the occurrence of musculoskeletal symptoms in a specific body region such as attaching teat cups above shoulder height may result in pain in the upper extremities whereas attaching the cluster below shoulder height may result in pain in the lower back more often. This hypothesis is not supported by our data so far. The t-test showed that there is no statistical evidence based on the data of the farms included here. Nevertheless, the results show that there is a high need to focus on the health of milking parlour operatives to reduce the occurrence of musculoskeletal symptoms and disorders. Data collection is still going on and other influencing factors like work intensity, the horizontal reach and the arm length of the workers will be included.

Literature

Kuorinka I., Jonsson B., Kilbom A. 1987. Standardized Nordic questionnaire for the analysis of musculoskeletal symptoms. *Applied Ergonomics*; 18:233-237.

Jakob M., Liebers F. 2011. Potential of a quarter individual milking system to reduce the workload in the large-herd dairy operations. *Journal of Agromedicine*; Volume 16 Issue 4.

Jakob M., Liebers F., Behrendt S. The effects of working height and manipulated weights on subjective strain, body posture and muscular activity of milking parlour operatives – laboratory study. Submitted for: *Applied Ergonomics*, *current status under revision*

Case-control study of risk factors for injuries and occupational diseases among Finnish dairy farmers

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In this study we aimed to identify risk factors for compensated work-related injuries and occupational diseases among dairy farmers. With this information we aimed to identify specific target groups for injury and disease prevention. This study was funded by the Finnish Farmers' Social Insurance Institution (Mela).

Our target population was defined using the following inclusion criteria: a) active farming couples who b) had at least mid-sized dairy farm, c) were at least middle-aged, d) were Finnish speaking, e) were members of the farmers' occupational health service system, and f) had been insured by Mela for at least ten years.

The case group consisted of 19 couples where both spouses had at least four compensated injury or occupational disease claims during their tenure as insured farmers. The control group consisted of twelve couples who had no compensated claims (ever). Study subjects signed and returned informed consent forms regarding our combined postal and telephone survey. We had 92 questions regarding the technical and physical working environment, organization of the farm work, and personal behaviors and attitudes.

We first used univariate logistic regression modeling to identify risk factors for injury; 33 variables were significant at $p < 0.10$ level and 24 variables were significant at $p < 0.05$ level. Similarly, we found 21 ($p < 0.10$) and 14 ($p < 0.05$) variables associated with occupational diseases. Northern location of the farm (Middle or Northern Finland vs. Southern Finland) and a long tenure (over 25 years) as insured farmer were associated with both injuries and occupational diseases. We used these potential confounding variables in adjusted regression models in the second phase.

The following 12 variables were risk factors for injury in adjusted models (from most to least significant): declined current work ability compared with lifetime best ($\leq 6/10$ points); at least occasional alcohol usage (vs. non-use of alcohol); non-gender-specific division of physical farm work; existence of respiratory diseases, musculoskeletal disorders, or pain caused by them; lack of high school education; inadequate guidance for substitute workers; inadequate personal free-time; daily use of dry hay in the barn; active social life (visiting friends/hobbies/voluntary work weekly); occupational disease risk perceived as quite high or very high, cattle with horns; and daily use of any medicine. The odds ratios for these risk factors ranged from 5.03 to 33.33.

In the adjusted models, musculoskeletal disorders or pain caused by them, non-gender-specific division of physical farm work, daily use of any medicine, and active social life were significantly associated with elevated risk of occupational diseases with odds ratios ranging from 19.61 to 26.75.

These identified risk factors can be used to select sub-groups of dairy farmers with elevated risk of injuries and occupational diseases. Most of these risk factors may be relevant in other types of agricultural production as well. Based on this study, we recommend that the injury and occupational disease prevention efforts should be targeted to farmers particularly at risk in order to increase cost-effectiveness of prevention.

The role of Labour Studies in Ireland in leading change in the Dairy Industry

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Farming can be a hazardous activity which presents a range of threats to health and safety. Recent data suggests that the number of hours worked by farmers is a significant influencing factor in the occurrence of musculoskeletal disorders among the farming population. Labour availability, skill and cost are currently considered to be among the greatest challenges to farming. This is particularly relevant to dairying due to (a) the anticipated increase in national milk production by 50% largely through expansion on family farms and (b) the seasonal nature of milk production in Ireland. Thus reliable data on patterns of labour input and labour productivity are critical to allow identification of tasks where labour input could be reduced or strategies devised to improve labour efficiency.

A research project was undertaken by Teagasc to investigate labour demand on Irish dairy farms. Data was collected from 98 and 73 spring-calving farms over a two-year period across a range of herd sizes. Average annual total dairy labour input per cow was 49.7 h, 42.2 h and 29.3 h for small (<50 cows), medium (50-80 cows) and large (>80 cows) herd-size farms, respectively (e.g. 2,930 h per year for a 100-cow herd). Maximum labour input levels were observed in March and April and minimum levels in December and January (approximately 5 and 2.5 h/cow per month on large farms, respectively). Evidence points to key areas of milking, calf care and management (consuming 51% of dairy labour) where significant and rapid gains in labour efficiency could be achieved. The seasonal labour requirement of the large herd size farms has to be managed to reduce individual work load and mechanisms to achieve that include better facilities and technology, such as mechanised/automated completion of tasks and the use of contractors at times of peak labour demand. More specialized dairying with fewer tasks to be conducted per day may also have a positive influence on the labour requirement.

Thus, this study (a) identified critical factors that could allow time and space during the working day on-farm and (b) created an appreciation of both labour efficiency in carrying out farm tasks and free time outside of farm tasks. It is accepted that changes to address these factors will not all occur immediately, e.g. adoption of automation and technology. However, it is anticipated that a continuous progression in labour efficiency, such as reducing physical labour both in intensity and duration will, over time, lead to a safer workplace on farm.

Physical and Psychosocial Exposure and Health among Swedish Dairy Farmers and Workers

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Dairy farmers and workers are exposed to a variety of physical and psychosocial work-related factors that can affect both their physical and mental health. Sweden is moving toward fewer and larger dairy farms with increasing numbers of cows in loose-housing systems with milking parlors. This has possibly influenced the work environment and the health of the dairy farmers, employed workers and cows in many ways. However, the knowledge about work-related exposure and health in humans working in large dairy farms and about the relationships between dairy staff and cow health is limited.

The aim of the study was to study work-related physical and psychosocial exposure and health among dairy farmers and employed dairy farm workers. Furthermore, the aim was also to study possible associations between exposure and health of dairy farm staff and the health of their cows.

Forty-one dairy farmers and twenty employed dairy farm workers participated in the study. Mailed questionnaires comprising 29 questions were used to create four separate indices representing human physical and psychosocial exposure, and physical and psychosocial health symptoms. Cow herd health was operationalized by herd incidence rates of eight common veterinary-reported clinical diseases.

The study confirmed that exposures to physical and psychosocial work-related factors and health symptoms were not uncommon among dairy farmers and workers. The study also found that the farmers experienced more physical symptoms in herds with a *good* cow health, while more frequent or intensive exposure to negative psychosocial work-related factors among employed workers was associated with a *poorer* cow health.

The implication of the study was that dairy farming can be physically and psychosocially demanding and might put the health of farmers and workers at risk. However, they enjoy working with their cows. An improved working environment with a lower physical and psychosocial work load would be beneficial for both humans and animals. In the future it is important to continue to integrate the needs of the farm staff and the animals in the design of livestock barns, and in choosing and developing a management style that best serves the demands of the humans and the animals.

Keywords. Dairy farmer, Employed worker, Cow health, Exposure, Health, Physical, Psychosocial, Questionnaire

Animal-related Injuries: Interviews with Swedish Dairy Farmers

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Animal-related accidents are among the most common occupational injuries in agriculture. Studies have shown that animal-related injuries are more costly and result in more time off work than other causes of agricultural injuries. Cattle has been reported as first or second (after horses) most commonly involved animal, and especially dairy cattle appear to be involved frequently in occupational accidents in agriculture.

Despite the large number of documented animal-related injuries in dairy farming, the issue has had relatively limited attention in the scientific literature. Research in this area is needed to establish a foundation that might suggest interventions to reduce the risk of these injuries.

The aim of this study was to give insights to Swedish dairy farmers' own experiences, perceptions and attitudes towards animal-related occupational accidents, risk and safety issues, and prevention efforts. This study is the first part of a PhD project with focus on prevention of occupational accidents in dairy farming.

The data collection was conducted through semi-structured in-depth interviews. Dairy farms were selected based on milking system, geographical location and farmers' gender and age, to ensure a representative sample. A total of twelve dairy farmers participated in the study.

The farmers identified specific hazards of different working activities and also what preventive measures to take to decrease injury risks and increase safety. The farmers believed the handler's behaviour to be the factor of most importance. Farmers meant that being calm around the animals had a great impact on safety. As soon as the handler gets stressed, he will be more prone to unsafe decisions and risk-taking.

This study indicated that Swedish dairy farmers are well aware of the dangers in working with cattle. However, even though safety is acknowledged by the farmers as an important and relevant issue, in the end safety is often forgotten or not prioritised.

Findings of research in Ireland on the Human – Animal Relationship and Safety with Cattle

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The specificity of fear responses in housed beef heifers' were investigated over time using four behavioural tests; flight, docility, fear and chute tests. The flight, (time to join peers and avoidance distance), docility (isolation and handling) and fear (4 phases; responses of isolated heifers in i), the absence ii), the presence, of food and responses to a stationary human iii) without and iv) with visual contact with their peers) tests were carried out over three consecutive days, in that order, commencing on day 30 and again on day 80 post-housing. The chute test (movement through a race and agitation of heifers during blood sampling) was performed on day 84 post-housing. Scores (higher scores meant less fearful animals) were assigned to the fear responses. Heifers had the lowest ($P < 0.05$) scores during phases i) and iii) of the fear test and the highest scores ($P < 0.05$) during phase iv). The fear scores were stable over time for the docility test but decreased for the fear test. When heifers were restrained, the fear scores were not all correlated with other scores except for the agitation score. A Principal Component Analysis (PCA) identified that two components (avoidance of stimulus and agitation) contributed to 49% of the total variation. In conclusion, this study showed that fear responses of heifers can vary over time and that fear is not unitary but multidimensional. Consequently, fear responses were condition specific and tests assessing fear should consider their specificity.

The influence of the dominant and flightiest animals within a group on the responsiveness of animals during the avoidance test was investigated. Eighty-eight pregnant heifers comprised of four different genotypes were used: Sixty of the 88 heifers were group housed into 12 pens with 3 pens per breed, while 28 heifers were singly housed (seven heifers per breed). A reactivity test was performed post-housing on the singly housed heifers, and then on the group housed heifers, on the same days to calculate a reactivity score. Flight and dominance tests, respectively, were performed to identify the flightiest and the dominant animal of each group. An avoidance test, measuring both the avoidance distance towards a familiar (ADF) and an unfamiliar (ADU) human, was performed on all heifers. The ADF was correlated with the ADU ($R_s = 0.87$; $P < 0.05$) and the ADU was greater than the ADF ($P < 0.05$) for both singly and group housed heifers. The reactivity of singly housed heifers was correlated to their ADU ($R_s = 0.68$; $P < 0.05$) but there was no relationship ($P > 0.05$) between the groups' mean ADU and reactivity score; no relationship between ADF/ADU and reactivity was observed showing an effect of the group on results. The reactivity, ADF and ADU scores of the dominant heifers were correlated with the ADF and ADU scores of the group ($P < 0.05$), whereas there was no relationship ($P > 0.05$) observed with the flightiest animals. The response of animals in a group during the avoidance test was affected by the fear of the dominant animal in their group rather than the fear of each individual within the group, therefore, the assessment of the quality of the HAR could be biased.

Ergonomic risk evaluation of daily work tasks in horse stables

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Introduction

Most work in horse stables is performed manually in much the same way as a century ago, with old-fashioned tools and equipment. It is one of the least mechanized sectors dealing with large animals, which often implies work in awkward postures and lifts of heavy loads. Examples of such work tasks are mucking out, lifting bales of straw and hay, lifting buckets with water and feed, sweeping, and shoveling manure or gravel. Furthermore, the work is frequently performed in cold climates, which also is considered a risk factor for the development of musculoskeletal disorders (MSD). Many of the work tasks in horse stables are performed mainly by women, and not only by the paid work force, but also by youths (especially girls) spending leisure time in the riding school stables. Considering the lack of knowledge of the ergonomic risks during work in stables, and the fact that women have a larger risk to develop MSD, there is a need for deeper knowledge about this issue. Therefore, it is of great interest to investigate and analyze the work tasks in detail and the way they are performed, to find explanations for the reported high level of prevalence of musculoskeletal problems when working with horses.

Objectives

The aim of this study was to identify, evaluate and grade ergonomic problems in physical work tasks performed during daily activities in horse stables, to find possible explanations and increase the understanding of why musculoskeletal problems occur.

Methods

A number of analysis methods were used to identify and evaluate the physical work load in the selected tasks. Initially, a Hierarchical Task Analysis was used to make a detailed description of the three selected work tasks (mucking out, sweeping, preparing the bedding) by dividing them into subtasks. Then a Heuristic Evaluation was performed to rank the grade of ergonomic problems found in the subtasks, visualised by colour coding. Finally, a Rapid Entire Body Assessment analysis was used to deeper investigate the subtasks containing severe ergonomic problems.

Preliminary Results

In the work task “mucking out” many high risk operations could be found. This is also a work task operation that takes approximately a third of the work time a day for a stable worker.

Through the methods it was clear where in the work tasks the ergonomic problems occurred. There were many high risk operations in the subtask “muck out box”, and disposal of bedding material. In almost all the operations with a high risk level a shaft tool or wheel barrow were used. Therefore, there is a need to develop tools with a better ergonomic design and characteristics.

Keywords: Musculoskeletal problems, ergonomic evaluation

Health Environmental and Safety (HES) rules and demands for Green Care (provision of social services) Farming in Norway

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In Norway a new standard about Health Environment and Safety (HES) rules and demands for Green Care Farming has been approved. The new standard is part of the KSL system - The Norwegian Agricultural Quality System and Food Branding Foundation – which aims to develop quality and competitiveness in Norwegian food-production.

The purposes of the standard are to define and carry-out a simplified EQUASS (The European Quality in Social Services) system. The program serves farmers who offer rehabilitation to different clients, such as physically or mentally disabled people, drug users, youths or alternative kindergarten. The clients participate in different farm activities during their stay. The Social Service is often the buyer of the Green Care program. Farms who become contractors are reviewed by an external auditor every second year.

The standard, one of eleven in the KSL-system, is in three main parts: farm focus, client focus, and program staff focus and operation of the system includes: management, handling of sensitive information, activity plans and evaluation of activity, client's goal achievement, staff's and manager's competence and development, security routines for personnel, documents and work performance

All Green Care farmers have to participate in HES courses before they can be approved as contractors. LHMS is responsible for developing and delivering these courses. The goal of the course is to give the participants knowledge about safety on the farm, how to handle documentation and potential risk for clients during different activities.

Summary of Over 800 Grain Storage and Handling-related Entrapments and Suffocations Documented in the U.S. between 1970 and 2010

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The number of victims (51) of grain-related entrapments and suffocations documented during 2010 was the highest on record. This trend towards an increasing frequency of these incidents is inconsistent with the decreasing frequency of almost all other forms of agricultural-related injuries and fatalities. Contributing factors include the increased storage of grain on-farms, increased commercial storage capacity, increased capacity of handling and transport equipment and the levels of out-of-condition grain due to delayed harvests and inappropriate processing and storage practices. Due to this increase in incidents, considerable attention is being given to exploring cost-effective intervention strategies to reduce the frequency and severity of these incidents.

This article provides a preliminary summary of data gathered on over 800 documented incidents involving entrapment or suffocation in U.S. grain storage and handling operations that have been entered into the Purdue Agriculture Confined Space Database (PACSD). Special emphasis is given to those incidents documented in 2010. The Purdue database has incident records dating back to 1964. Specific causative factors including: type of structure or facility, type of grain involved, condition of grain prior to the incident, activities at the time of entrapment and environmental conditions are summarized. Recommendations for engineering, regulatory and worker education measures are included along with the use of recently commercialized grain rescue tubes to rescue victims from entrapment situations.

Key words: grain storage, entrapment, confined space

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Hydrogen Sulphide Gas Release from Spent Mushroom Compost

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Hydrogen sulphide (H₂S) gas is a well known by product of the anaerobic breakdown of organic materials such as animal manures. It can also be produced by organic compost under anaerobic conditions. It was detected in the air during disturbance of stored heaps of spent mushroom compost (SMC), highlighting a potential risk to farm operatives working with this material. To characterise the potential risks to farm operatives, H₂S gas emissions were monitored from four heaps of stored SMC, two outdoor and two indoor. Monitoring took place during SMC disturbance and removal (for spreading on land) by a front-loading tractor between Sep 2007 and Oct 2009. During the SMC removal operation, H₂S gas monitors were positioned in the vicinity of the heaps, mounted on the outside of the tractor and worn by the tractor driver. H₂S concentrations (10 second average) of 454, 249 and 100 ppm were detected outside the tractor, at the SMC periphery and on the tractor driver, respectively, at the outdoor sites and, 214, 75 and 51 ppm, respectively, for the indoor sites. The highest Short Term Exposure Values (STEV) over a period of 15 min were 147, 55 and 86 ppm for outside the tractor, the SMC periphery and the tractor driver, respectively, at the outdoor sites and 19, 9 and 10 ppm, respectively, for indoor sites. The current maximum Short Term Exposure Limit (STEL) of 10 ppm was exceeded on many occasions during SMC removal at most locations. The results suggest that H₂S concentrations are lower during disturbance of indoor stored SMC compared to outdoor stored SMC and that smaller heaps also emit lower levels of H₂S compared to larger ones. These results indicate that there is a significant health and safety risk associated with working in the vicinity of large heaps of outdoor stored SMC when it is being removed for spreading on land. Health and Safety guidelines are given for those working with SMC.

Assessment of Ergonomics Studies concerning Donkey Milking

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In the last decade, in Italy, the donkey farms are characterised by a net positive increase in the number of animals reared thanks to the great value of she-ass milk for babies suffering from various forms of allergies. Moreover, this increase represents an intervention to protect biodiversity and save a species in danger of extinction and also an important opportunity for development in many agricultural marginal areas.

The mechanisation level of these farms is rather low and she-ass milking is mainly carried out using machine generally adopted for sheep and goats but not too adapted for donkeys. The milker can work from the pit placed under the level of donkey or from the same level. As well known, the negative effects of position and movement during the milking, especially in the first case, might contribute to development of injuries among milkers. Also other connected activities (bottle handwashing and manual bottling) are characterised by repetitive movements and incorrect postures, which in time would contribute to musculoskeletal stress for the milker.

The study was carried out in two farms of eastern Sicily: one is situated on the slopes of Mt. Etna (Catania province) and the other down near the town of Ragusa. In particular, in the first farm the milker works from the pit 0.87 m below floor level and the milking machines is trolley type; in the second farm the milker works from the same level of the animals and the milking machine is bucket type.

The aim was to examine the working posture of the milker and to assess the risks arising from repetitive movements of upper limbs during the milking and other connected activities, by means of a method known as the “OCRA Checklist”, recommended by the standard EN 1005-5 and ISO 11288-3 and the software “midaOCRAMulticompiti”. The survey wants to assess the risk of daily exposure, considering the different activities carried out by the worker.

The experimental findings were recorded during usual routine work times. Fundamental work tasks during milking were recorded with a digital camera. Video films shot during the work period made it possible to deduce information about frequency, posture and the stereotypical nature of the work.

The operations making up the milking process was broken down into phases and both the times taken and method of execution were recorded for each phase by means CIOSTA – AIGR methodology.

The first results show that the slight or borderline risk values obtained in relation to the milking duration becomes higher if assessed without regard for the time actually taken to carry out the operation. The same is also true for the connected activities of the first farm, where the daily exposure to the risks is generally higher than the second.

Key words: operator safety, OCRA index, milking parlour, donkey far

Thermal discomfort for workers in the agro-food industry: an experimental survey in a milk processing plant

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Objective

The study covered a large agro-food industry in Rome, which handle the processing of milk, where workers operate at a temperature which can drop up to +4°C.

With this work we want to evaluate the effectiveness of the thermal insulation of clothing used by workers in the agro-food company, based on the microclimatic parameters and using subjective judgments expressed by workers.

Materials and methods

The microclimatic data acquisition was carried out into the workplaces of the company using special equipment, as required by ISO 7726:1998. It was used a globe thermometer, for the mean radiant temperature measure, a psychrometer, for humidity and air temperature measure, and an anemometer for the airspeed measurement.

Regarding the assessment of energy metabolism of workers, reference is made to ISO 8996:2005. Then we proceeded to the evaluation of the thermal insulation of clothing workers, I_{clo} , according to the methods specified in ISO 9920:2009.

Finally, it was calculated the required clothing insulation, I_{REQ} , for microclimatic parameters measured, as required by severely cold environments on ISO 11079:2008. A questionnaire was distributed to workers for the determination of the subjective assessment, PMV (predicted mean vote), with reference to a grading scale ranging from very hot (+3) to very cold (-3).

Results

The thermal insulation value of clothing, I_{clo} , was less than the required insulation I_{REQ} , for microclimatic parameters measured; moreover, the subjective judgments expressed by workers, showed a negative PMV value, symptom of a widespread feeling of thermal discomfort.

Conclusions

The instrumental data showed that personal protective equipment are insufficient to meet the microclimate parameters recorded during the surveys, especially where it is expected the entry of workers into cold storage.

The employer should provide workers necessary tools to make the workplace more comfortable, for example, planning to spend a short rest periods at higher temperature.

Supplementary clothing would be needed to improve the welfare of workers.

Occupational Safety and Health of foreign workers in agriculture

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In Nordic countries, an increasing amount of farm work is done by foreign workers. Finland has about 15 000, and Norway as many as 27 000 foreign farm workers. Agriculture is one of the most hazardous industries worldwide, and many studies have concluded that foreign workers have higher risk for occupational injuries than native workers.

Both an employer and employees should act together in maintaining and improving safety on the farm. Open dialog and co-operation are the bases of farm safety. However, short employment periods, insufficient language skills, unfamiliarity with agricultural work and health and safety rules, new production methods, different attitudes towards safety, different management cultures and social stress might make communication and co-operation quite challenging.

We used diaries (n=14) and interviews of foreign farm workers (n=54) to identify factors that affect health and safety and what can be done to help farmers and foreign workers to improve the situation. Our results support the conclusions of earlier studies. Communication was complicated by very diverse attitudes towards safety among workers, an unclear role of safety as the responsibility of each individual, lack of language skills, work experience and awareness of safety hazards, shyness and cultural differences leading to misunderstandings and underreporting of incidents.

Homesickness was a special stress factor among foreign workers. Making money was the first priority, which can also compromise safety since some had very long working days. A common practice of experienced workers guiding and training newcomers can be used effectively if accordance with safe working procedures is monitored and supported by the employer. Other conclusions were that tools, materials and practices that activate discussion about health and safety should be provided for agricultural work places. Supporting the well-being of workers in general, like efforts to ease homesickness, may have a positive effect on safety as well.

Farm risk perception and management survey among Finnish farmers

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Risk management is a challenge on farms. MTT Agrifood Research conducted a farm safety and risk management study in Finland in 2006. Data consisted of survey responses (n=592), literature, farmer workshops, case interviews and observations on the farm. The aim of the survey was to characterize risk management practices and risk perceptions. The survey included questions about farmers' occupational health service (OHS) as one risk management intervention. In this paper we analyzed the association of OHS membership and variables on farm demographics, perceived risks and risk management practices using logistic regression modelling. Similar analyses were completed for the association of injury and all survey variables.

The results showed that, compared to non-members, OHS members were more frequently full-time farmers and livestock producers with larger farms and larger livestock herds. Generally, members showed more sensitive risk perception and better knowledge about risks. OHS members reported more accidents, near misses, mental stress, profitability risks and risks from dependence on one person on the farm. Related to risk monitoring and control, OHS members reported greater use of personal protective equipment, more farm safety evaluations, more advice to workers and visitors on safety issues, and more frequent monitoring of production quality, occupational safety, work strain and fluency of work processes. Non-members were more frequently located in southern Finland and they had less full-time workers than did OHS members. Non-members reported more field machinery damage and product sale risks. They also reported more fire security training and more locks on farm buildings.

OHS members assessed their farms to be safer. However, members also reported more risks and more incidents and close calls. This seems conflicting, and it may indicate that OHS members have a heightened awareness of risks and safety in general, which may introduce biases in reporting both positive and negative conditions related to safety. In a cross-sectional survey, it is not possible to determine cause and effect. It is possible that previous injuries or pre-existing risk awareness encourage farms to join OHS; or that guidance provided by OHS makes farmers more aware, increasing the reporting of injuries, risks, and safety features.

OHS members have larger active farms with more livestock production. They are exposed to greater injury and health risks based on injury and illness statistics. Injury risk is related to working hours, which were not available in this study. Therefore exposure-based incident frequency and risk level cannot be accurately calculated in this study. However, our results seem to indicate that all farmers, and OHS members in particular, are facing many risks and challenges in their work. Managing multiple threats to the farm operation, family members and workers emphasizes the need for new risk identification and holistic farm management tools to help farmers manage their farm operations effectively.

Occupational health and safety strategy in Swedish agriculture

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In Sweden there is a joint focus on injury prevention in agriculture and this is coordinated through the Swedish Committee on Working Environment in Agriculture (Lantbrukets arbetsmiljökommitté, LAMK), <http://lantbruketsarbetsmiljo.slu.se/gem/default.aspx>.

LAMK is a network working for a good, healthy and safe working environment in Swedish agriculture from the view of the enterprise with the humans in focus. It is a committee consisting of representatives of authorities, institutions, companies, research & education institutions and organisations referring to the green sector. Examples of ongoing initiatives & partners which are included in this mission against injuries in agriculture:

- The Swedish Work Environment Authority (Arbetsmiljöverket), www.av.se is the administrative authority for questions relating to the working environment. They are now running a large project with inspections and supervision on Swedish farms with the aim to reduce the number of injuries, encourage farmers to work according to the Systematic Work Environment Management (SAM) and to introduce the new provision on working with animals.
- The Federation of Swedish Farmers (LRF) with the support of Swedish Institute of Agricultural and Environmental Engineering (JTI) and Swedish University of Agricultural Sciences (SLU) is running a large project called “Safe Farmers Common Sense” (Säkert Bondförnuft), www.sakertbondfornuft.se with the support from the European Commission (EU) during 2009-2013 with the aim to reduce the number of injuries in agriculture by 50%.
- The Federation of Swedish Forestry and Agricultural Employers (SLA), <http://www.sla-arbetsgivarna.org/> is running their strategy to reduce the number of injuries by their small-scale farm safety extension service to their farming members. The service is provided by safety engineers make on-farm visits in order to help the farmers to cope with safety issues and to establish their work with Systematic Work Environment Management (SAM).
- The Swedish Municipal Workers’ Union (Kommunal), www.kommunal.se, have a system with regional safety representatives. They give advice and services for their members on farms as well as their employers in order to support the use of Systematic Work Environment Management (SAM) in order to improve the working conditions and to reduce the number of injuries.

These are examples of major partners working with the same goal to improve the working conditions and to minimize the number of injuries on Swedish farms. The Swedish Institute of Agricultural and Environmental Engineering (JTI) and Swedish University of Agricultural Sciences (SLU) are involved in this work through research projects, education and evaluation of the efforts within this joint focus on injury prevention in agriculture.

Findings of a recent survey of health among farmers in Ireland

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Background

Farming is an occupation that presents many risks to health. The aim of this study was to establish the nature and prevalence of health problems among farmers in Ireland, to explore farmers self-reported health status, and to establish farmers' health service utilisation and exercise participation.

Methods

A questionnaire incorporating questions from the National Farm Survey (NFS), Survey of Lifestyle, Attitudes and Nutrition (SLÁN) and European Health Interview surveys was designed. Questionnaires were distributed to farmers attending Teagasc centres, courses and farm walks. Quota sampling was used to achieve 100 farmers from each of the 6 main NFS farm enterprise systems (n=600) namely dairy, dairy and other, cattle rearing, cattle other, mainly sheep and arable. Data were entered onto SPSS (Version 14.0.1) and analysed using descriptive statistics and Chi square tests.

Results

Of the 600 farmers, 61% (n=363) had experienced a significant health problem in the previous year. The most common health problems reported were musculoskeletal disorders (MSDs) (54%, n=325), respiratory problems (4.3%, n=26), digestive problems (3.3%, n=20), diseases of the ear (3.0%, n=18), and mental health problems (2.7%, n=16). Diseases of the ear were more prevalent among arable farmers compared with the other farming systems (p<0.05). A majority (80%) of farmers considered their health to be 'very good' or 'good' where excellent, fair and poor were 17%, 2% and 1%, respectively. Farmers who rated their health as 'good health' were significantly younger than those rating their health as 'poor health' (p<0.001). Also, a significantly higher proportion of sheep farmers and those who have farmed between 45 and 64 years reported their health as poor compared with other farmer subgroups (p<0.01). In the previous year 73% (n=427) of farmers had visited a health profession, most commonly a medical doctor. Only 50% (n=294) of farmers reported participating in leisure time physical activity.

Conclusions

MSDs are by far the most commonly reported health problem among Irish farmers. Overall farmers regard their health status as good, however a high level of health service utilisation was recorded. Only half of the respondents participate in any leisure time physical activity.

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Children travelling in tractors

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Objectives

The objective of the project is to find out how children can travel safely in tractors. The project also wants to reach out to families running farms, in order to inform them about the risks involved when a child travel in a tractor together with an older person.

Methods

A literature study was carried out where similar studies were investigated. However, not many similar projects were found. The Internet was also searched, for example different kinds of sites where people with similar interests can chat. The project also identified different kinds of standards and national provisions in the subject.

The project contacted different retailers of agricultural tractors, to discuss possibilities to mount an extra seat in used tractors. The project has also contacted farmers who have children to discuss if they allow children in the tractor and how they have travelled in the tractor in that case.

Results

The results are not yet fully synthesized in the project. However, according to farmers that has been contacted and information gathered on Internet sites, it seems to be fairly common that children travel in tractors on the lap of the farmer, down to an age as low as 2 years old. Retailers of different kinds of tractor brands can mount an extra seat, for instructors, in tractors not older than ten years. The cost is about 500 euro. This possibility is also depending on the size of the tractor. The “general” understanding though is that children shouldn’t travel in a tractor together with the farmer.

Conclusions

The conclusion so far is that farmers sometimes bring children in the cabin of the tractor even though the tractor lacks an extra seat. There is definitely a need to inform farmers with children, especially young ones, about the risks, but also how they can make safe journeys with a child in the tractor

Conclusions and reactions from the 2010 prevention campaign in Denmark

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The comprehensive accident campaign we carried out in 2010 resulted in 46 large advertisements dealing with newer accidents as well as 46 corresponding fact sheets with advice and preventive guidelines.

The accidents that we showed in the campaign were chosen among about 100 accidents that were reported to us by our network. All who suffered an accident were contacted and interviewed – to get the facts right, to get as many details as possible, and to make the story as personal as possible.

The 46 accidents and the corresponding fact sheets can be found on: www.landbrugsulykker.dk

The conclusion to the 46 advertisements is that only in a few cases were there technical faults to blame for the accidents – most of the accidents were due to personal behaviour like not using protective equipment, not evaluating the risk, hurrying too much to be careful etc.

Changed behaviour – how is it done?

Changing behavioural patterns takes a long time. And behaviour is changed by a mix of several kinds of information and experience. During the fall we will start a row of safety meetings where locals who have been injured will tell about their accidents. The meetings will be held around the country and on farms where it will be possible to see the risk elements for yourself.

An item for the agenda is safety and money. This is a “carrot” that needs to be spotlighted more: The interrelation between economy, safety and a good working environment. A good working environment is closely connected to a high level of efficiency and a better bottom line. We will highlight this argument at the meetings, but also we would like in the near future to demonstrate this connection specifically in farming. Farmers want to hear the arguments in relation to their own field of work and not to be compared with other types of business.

“Make the Promise” –The Health and Safety Executive’s (U.K.) approach to the problem of fatal accidents in farming

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The “Agriculture Revisited” initiative was developed by HSE to tackle the unacceptable level of fatal injuries in the farming sector. Typically 45-50 people are killed annually on British farms. Farming employs about 1.4% of the workforce, but has between 15% and 20% of all work related fatalities each year. Despite HSE’s past efforts, fatal accident rates remained at a high level.

The initiative included a direct marketing campaign which featured the strap line “*Make the promise – Come home safe*” (MTP). MTP targeted smaller farms and older farmers (as they feature most prominently in the fatal injury figures). MTP packs mailed to farmers included a “Promise Knot” made of bale twine. Farmers were asked to display the knot to remind them to think about safety and were encouraged to make a promise to keep themselves safe for the sake of their families and farms. Responders (those replying) received a booklet “*How Lives are lost on British Farms*” which illustrates the common causes of fatal injury. They could also request additional knots. The response rate (16%) exceeded expectations.

MTP was supported by a series of press adverts and other PR based media coverage.

Independently conducted qualitative research confirmed that the campaign had succeeded in attracting farmers’ attention and to a degree, their involvement. The knot, case studies and campaign messages were key tools for engagement. Many responders reported that they thought more about the potential impact on their family. There is also some indication that responders have a better understanding of specific risks following the campaign.

MTP was never envisaged as a long-term tool for embedding behavioural change. Rather, it was part of the strategy to engage and motivate farmers to take a more responsible attitude towards risk management. Additionally, it has served as a catalyst in persuading industry leaders to accept ownership of the problem and to demonstrate leadership in finding solutions. Recent initiatives, including key stakeholders pledging their support to a farm safety charter, are early signs of progress in this respect.

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Challenges to improving occupational safety and health training in universities of applied sciences and agricultural schools in Finland

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Occupational safety risks and the rate of compensated occupational diseases and injuries are high in farming in Finland. New tools for communication and education regarding farm safety risks are needed. Vocational Education Centre Sedu, the Farmers' Social Insurance Institution (Mela), the Finnish Institute of Occupational Health (FIOH), MTT Agrifood Research Finland and the local fire service organized a pilot OS&H day in Ilmajoki together with safety specialists. The plan is to develop OS&H training, especially in schools offering a Bachelor Programme.

The challenge is to improve general farmer management skills and safety attitudes in vocational education. The aim is to create convenient conditions including useful knowledge on farm safety management. The research institutes and Mela offer all-round information and guidance on safety and well-being at work.

According to statistics, one third of active farmers have basic agricultural education and 12% have a Bachelor's degree or some form of higher education qualification. Vocational education in agriculture consists of two different degrees: Basic Education Programme (3 years) and Bachelor Programmes (4 years). About 40 agricultural schools provide the Basic Education Programme and 8 universities of applied sciences provide Bachelor Programmes. Some universities of applied sciences and the University of Helsinki offer Master Programmes (5.5 - 6 years), which include one study week of OS&H training. Some schools have integrated OS&H into vocational courses and others have developed a special OS&H course. Ilmajoki offers a good example of an OS&H training model.

Initially, we arranged a one-day OS&H program for agriculture students, which consisted of lectures and a study task. The organizers and students gave feedback to be used for future activities. Our conclusion is that a positive attitude towards systematic and practical OS&H work is the key to improving working conditions and to reducing occupational injuries. OS&H education must be integrated more effectively into all vocational education, including further training.

Key words: Occupational Safety and Health, Educational one-day program, Agricultural school, Farm risk

Provision of an occupational health and safety module, linked to professional work experience, for undergraduate agricultural science university students in Ireland

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A Health and safety module has been available for students of Agricultural Science degree programmes at University College, Dublin (UCD) for many years. UCD has had a Professional Work experience (PWE) component in the BAgrSc honours degree programme for more than 50 years. UCD School of Agriculture and Food Science (SAFS) has 10 academic degree speciality programmes in which PWE is a required component for academic credit during Stage 3 (in Semesters 5 and/or 6), the duration of which depends upon the individual speciality programme. UCD has established policies governing the operation of PWE in various degree programmes throughout the university involving the use of host contract instruments to formalise placement programmes for students. Most SAFS students are placed in farm, horticultural and forestry environments, but many are placed in industry, research, agribusiness and food, and service industries. All are engaged in a very wide range of work activities arranged between the PWE academic co-ordinator, the student and the host provider. As Agriculture is one of the most dangerous occupational environments in which people work, the School, with the support of the University, considered it essential to provide a Health, Safety and Welfare academic module for all students going on their PWE, with the ongoing benefit of providing Health and Safety knowledge into their ongoing education. The core module offered in Stage 2, was built on the format of the successful Health and Safety module previously offered as an elective. The current module is now a pre-requisite for all undergraduate students going on PWE.

Objectives

This paper describes the development and implementation of a safety, health and welfare at work module for agricultural science undergraduate students at University College Dublin.

Methods

The current module had 20 hours of class teaching time with 4-6 hours of practical training demonstrations tailored to the PWE programmes within each speciality. Over 400 students have already completed the module since 2009/10.

The lecture content of the module includes material on the legal requirements, health and safety technologies appropriate to different specialisms, occupational health, prevention of musculo-skeletal disorders (MSD) and disability causation and prevention, with management strategies for gaining adoption of safety, health and welfare standards and practices. Some practical/training sessions are conducted on the university research farm and include demonstration of building standards; manual handling, vehicle and machinery safety including a demonstration of powershaft entanglement, spraying, gaseous emissions from slurry, animal handling, chainsaw safety; safe use of pesticides and prevention of injury. In other specialisms e.g. food science, forestry and human nutrition, appropriate training programmes have been developed linked to the working environment appropriate for these students going on PWE in these areas. Risk Assessment is a key component running across all programmes in the practical/ training sessions. Research on agricultural health, safety and disability in progress within UCD, is used to provide an evidence-base for module knowledge delivery.

The module is delivered by specialists from SAFS, UCD Centre for Safety, Health and Welfare at Work along with expertise from Teagasc, the Health and Safety Authority (HSA) and other specialist sources.

Findings

The module is now embedded in the Agricultural Science programme as a pre-requisite core module for all students going on PWE from the School. The module will continue to be strengthened with on-going support from SAFS, other university staff, Teagasc, HSA and other experts who will enhance the delivery of the module. The conference presentation will provide further details of the module components and structures as well as more detailed observations on module assessment, evolution and delivery.

Health, Environment and Safety (HES) Training in Norwegian Agriculture

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The Norwegian Agricultural Health, Environment and Safety Service (LHMS) has developed a Health, Environment and Safety (HES) course specifically designed for agriculture entitled “Practical HES-work”. It is a course with combination of E-learning (Internet) and traditional training in groups with instructor. The aim of the course is to provide a basic introduction on health and safety in agriculture and an understanding of systematic health and safety work on the farm.

The e-learning part contains an introduction to several topics, such as injury risks, ergonomics, fire and electrical safety, chemical and biological risks, noise, employer’s responsibility, emergency preparedness and HES when starting non-farm business activities on the farm. It also contains documentation for an internal control system and links to relevant information and regulations. The third part of the course involves a walk through on the farm with teacher/instructor.

More than 10 000 farmers have participated in this training so far and 12 agricultural schools offer this course annually for their students. Also all students in one junior high school (grade 8th to 10th) have completed this course.

In 2010, an online survey was carried out among course participants (n=2833) and 872 responded. Among respondents, 64% answer that they actively use the documentation after finishing the course, 59% have changed their attitude or behaviour as a result of the course, 57% work in a safer way and 89% increased their knowledge about HES. 90% agreed (totally or partly) that it was important that part of the course was carried out in-person on the farm to fully benefit from the course.

142 courses with 2150 participants have been completed in 2011 (as of June 10). The target is to complete 184 courses during 2011.

E - Learning about the working environment for foreign employees on Danish farms: www.Safetyonthefarm.dk

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From 4 cows in Romania to 400 cows in Denmark, from a university environment in the Ukraine to a Danish piggery. This is a radical change and add to this, a foreign language in a different culture. This is the challenge faced by foreign employees on Danish farms.

Danish farmers require high production efficiency in their high tech stables. The farmers have to instruct in the tasks at hand and in safe working environment, while also handling the cooperation between 3-15 employees across language and culture.

Immigrant workers quickly turn into skilled workers during the training period. After 2-3 years many have become supervisors of new foreign trainees. Until 2009, 3 out of 4 foreign trainees came from Ukrainian universities, but on 1st. of May, 2009, the East Agreement ended and as a result there is now far more trainees from EU countries than non-EU countries. Foreign labour is perceived as flexible, loyal, competent, stable and necessary to ensure growth.

The farmers require that the trainees are independent and deliver high quality work, but they do not expect them to be very fast or very tidy. Most foreigners have a strong belief in authorities and are less independent, so the employer should:

- Be extra careful about instructions in working environment, because they tend to be less considerate about themselves. Doing this, the employer also shows that he wants to take good care of them.
- Inform them that when they look after themselves, it is also good “business” for the company

An attitude test has shown that Romanians and Brazilians have a different perception when it comes to risk assessment. They consider farm work less dangerous than the Danish youth does. Danish employers even find it likely or very likely that they themselves are injured

eLearning

eLearning helps farmers instruct new trainees. It is based on the principles that pictures and movie clips works better than words and speak; that your mother tongue is better than a second language; that examples of accidents encourages consequence thinking and that questions connects issues to people’s everyday life.

eLearning initiates discussions about the working environment of the farm at a Friday meeting and annual prioritising of the farm safety efforts. It also provides references for specific directions and guidelines.

Finally, it presents examples of implementation of Safetyonthefarm.dk on cattle and pig farms.

Findings of a recent survey of M.S.D.'s among farmers in Ireland Musculoskeletal disorders: a problem for Farmers in Ireland

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Background

Farming is regarded as a high-risk work sector for developing musculoskeletal disorders (MSDs) in particular low back pain (LBP). The aim of this study was to establish the prevalence of all MSDs and to identify some risk factors and consequences of LBP among Irish farmers.

Methods

A questionnaire incorporating questions from the National Farm Survey (NFS), Survey of Lifestyle, Attitudes and Nutrition (SLÁN) and European Health Interview surveys was designed. Questionnaires were distributed to farmers attending Teagasc centres, courses and farm walks. Quota sampling was used to achieve 100 farmers from each of the 6 main NFS farm enterprise systems (n=600) namely dairy, dairy and other, cattle rearing, cattle other, mainly sheep and arable. Data were entered onto SPSS (Version 14.0.1) and analysed using descriptive statistics and Chi square tests.

Results

Of the 600 farmers, 56% (n=325) had experienced a MSD in the previous year. Problems included back (37%), neck/shoulder (25%), hand/wrist/elbow (10%), knee (9%), ankle/foot (9%), and hip (8%). Lifetime, annual and point prevalence of LBP were 46% (n=227), 24% (n=146) and 13% (n=78), respectively. Of those with a lifetime history of LBP, 35% attributed their LBP to a specific farm injury and 36% to repeated activities, with over 50% of farmers attributed onset to lifting. Farm hours worked, farm enterprise, age, employment status, off-farm work, gender or attendance of manual handling and lifting training were not found to have a significant association with LBP. However, prevalence of LBP was significantly higher among farmers with less than 20 hectares or more than 50 hectares ($p<0.05$). Of the LBP respondents, 36% reported needing help to carry out some of their farm tasks, due to LBP, while 54% reported having to change work habits.

Conclusions

The most commonly experienced MSDs were back (37%) and neck/shoulder (25%). Lifetime prevalence of LBP was 46%, where the most commonly perceived risk factor was lifting. LBP resulted in workplace disability where some farmers needed help completing farm tasks and had to make changes to their work habits.

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What controls do farmers specify following completion of a statutory Risk Assessment in Ireland?

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Objectives

This presentation describes progress with a National Initiative to develop a legal Code of Practice including a Risk Assessment document and to evaluate strategies that assist farmers to effectively complete and implement the legal requirements. In particular, it presents data on the nature and number of controls specified by farmers when completing the Risk Assessment document, with or without attendance at an accompanying half-day training course.

Methods

Risk Assessment documents (no. 477) were collected 3- 6 months after its completion in association with training (no. 337) and without training (no. 140). The training was of about 3.5 hours duration and concentrated on how to complete the Risk Assessment for each participants' farm. The controls specified on the 'Action List' page were counted (1414 in total) and analysed. Quasi-experimental comparisons were made of mean controls specified with and without training and these were tested using the t-test for equality of means statistic.

Results

Risk Assessment documents controls specified were principally associated with farm vehicles/ machines (42%), livestock (14.6%), farmyards and buildings (12.7%), health (8.9%) and electricity (8.8%). Just 1.4% of controls specified were associated with controls related to children and older farmers. The overwhelming majority (92.4%) of controls specified were 'physical' in nature with 7.6% being 'practice' related. Documents completed with and without training had, on average, 3.32 and 1.95 controls specified ($p=0.000$), giving a 70% advantage for training. A significant difference ($p= 0.002$) associated with training occurred for dairy farms where a mean of 4.28 controls were specified following training compared to 2.24 where no training took place. Comparable data for both tillage farmers (training 3.08, no training 2.55) and drystock farmers (training 2.60, no training 1.85) indicated a non significant difference in mean controls specified ($p= 0.62$ and $P =0.09$, respectively).

Conclusions/ Recommendations

The data presented gives a measure of the mean number of controls specified following completion with and without training. The data shows that farmers emphasise specification of physical controls following completion of the Risk Assessment document and that attendance at training increased number of controls specified, particularly for dairy farmers. Completion of the Risk Assessment document (with or without training) may, however, influence farmers to implement controls independently of specification of controls in the document. Further research is suggested to examine if risk assessment document completion is associated with subsequent injury levels. Preliminary research related to this issue is being undertaken in Ireland.

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