
FARM SAFETY
FIRST
Agri Aware
An Roinn Talmhaíochta,
Bia agus Mara
Department of Agriculture,
Food and the Marine

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Introduction

The aim of the Farm Safety First programme is to increase the knowledge and awareness of farm safety practices for everyone. The programme is not only aimed at people who are on a farm daily, it is also for those who are visiting the countryside.

This programme is designed to inform people about how farms in Ireland work, what dangers there can be on them, and the ways that we can protect ourselves and others from those dangers.

This programme aims to:

1. Increase understanding of the challenges and dangers of working on a farm.
2. Educate on safe farming practices.
3. Offer guidance and information to those who are working on farms or hope to in the future.

"Farm safety should be a priority for everyone"

FARM SAFETY FIRST

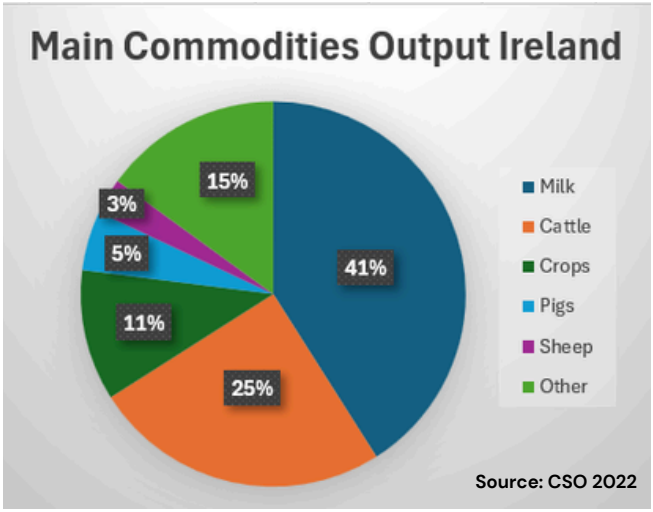
Farming is an important occupation which provides food to people across the world on a daily basis. The nature of farming means that workers are often alone, moving heavy machinery and livestock, often under time and financial pressures. This can lead to incidents where farmers are hurt or killed, sometimes without immediate access to emergency help.

This programme is designed to get students thinking about farm safety, understanding their responsibility while on a farm, whether they are visiting or working, and also give them the knowledge to perform safe practices while on a farm.

Farming is statistically the most dangerous occupation in Ireland, with almost half of all workplace fatalities being farm related. Considering farmers only make up 6% of the working population in Ireland, it is essential that everyone understands how to stay safe on a farm.

Farming in Ireland

Farming is amongst the oldest professions in the world, dating back almost 12,000 years. The development of farming allowed humans to have a constant supply of food. Before farming, humans were nomadic, moving constantly from place to place in search of food. The development of farming made way for permanent settlements and the growth of towns and cities. In the present day, farming is an integral part of the Irish economy, with the agri-food sector accounting for 9% of all goods exported from Ireland. The majority of these exports are made up of meat and dairy produce which are sent to many countries around the world as represented in Figure 1 below.



The supply of food in Ireland and internationally relies on farms to produce what is required. There are approximately 135,000 farms in Ireland, with an estimated 127,000 active farmers. The agri-food industry as a whole supports the employment of approximately 165,000 people, making it an important factor in maintaining local economies. .

Figure 1. Output of Irish food commodities

Farms are busy places which require the use of many types of machinery to complete day to day tasks. A large proportion of people working on a farm do so alone. This can lead to problems when incidents do occur as there may not be support around to contact emergency services. In 2023, 16 people lost their lives in farming related incidents, accounting for 37% of all work place fatalities. When you compare this to the fact that farmers only account for 6% of the total work force, it means that a farmer is 8 times more likely to die in a work related incident than any other profession.

Farm accidents can have devastating consequences not only to the individual involved, but also to their family and friends. Accidents lead to life altering injuries causing financial losses, bills and reduced productivity, which can affect the farm and family involved for generations. Understanding the dangers involved and having appropriate knowledge of how to protect against them is the first step to reducing farm accidents.

Types of Farms in Ireland

There are many different sectors of farming in Ireland, each focusing on different areas of food production including beef, dairy, cereals and vegetables. This section will give you a brief overview of the main sectors, allowing you to understand the work involved and giving an insight into the tasks a farmer needs to carry out each day.

Dairy Farms

The main focus of a dairy farm is to produce milk for use as a product on its own, or further processed in the agri-food sector to make cheese, yoghurt and butter. Dairy cows have been bred specifically to produce high quantities of milk. Common dairy breeds which are farmed in Ireland include Holstein-Friesians, Friesians and Jerseys.

A dairy herd requires feeding, milking and monitoring to produce optimal levels of milk each day. In Ireland, our temperate climate ensures a constant supply of rich fresh grass, allowing Irish cows to graze outside for approximately 9 months of the year. During the winter, cows are housed indoors for their own benefit to keep them out of the harsh weather conditions during this season. When housed indoors, the farmer needs to supply the cows with food which is usually in the form of cut grass called silage. This grass would have been cut earlier in the summer by the farmer and stored until winter. Dairy cows also need to be milked twice a day. This requires the animals to be moved from their field, up to the milking parlour. There are different types of milking parlours, each requiring varying levels of input from the farmer.

Types of Farms in Ireland

Beef Farms

The main focus of a beef farm is to produce animals for processing. Beef production is a dominant enterprise on many Irish farms and beef processing is one of Ireland's largest indigenous industries. Beef cattle have been bred specifically for meat production. Common beef breeds which are farmed in Ireland include Hereford, Aberdeen Angus, Charolais and Limousin.

Ireland is in the top 10 list of beef exporters globally and in 2020, there was 524,543 tonnes of beef produced with 90% exported mainly to UK and European markets.

Ireland's temperate climate is ideal for beef farming. The consistent supply of fresh grass all year provides a great competitive advantage in terms of feed costs and allows Irish beef to be marketed under the Quality Origin Green credentials. Origin Green is Ireland's national sustainability program, which ensures that beef production meets high standards of environmental and ethical practices.

In Ireland, the beef industry places a strong emphasis on animal welfare, meat traceability, and food safety. In summary, beef farming in Ireland is a cornerstone of the agricultural sector, benefiting from a favorable climate, high-quality breeds and a high level of safety standards. This not only supports the economy but proves Ireland's reputation for producing premium beef on a global scale.

Beef farming in Ireland involves several different periods of production:

1. **Breeding and Calving**: Farmers select breeding stock to produce calves with desirable traits for beef production. Calving occurs in the Spring or in Autumn.
2. **Weaning**: At around 6 to 8 months of age, calves are weaned from their mothers.
3. **Rearing**: Young cattle are reared on grass-based diets, with some supplementation, to ensure they grow to the best standard.
4. **Finishing**: The last period of production involves fattening the cattle to prepare for production. This involves additional feeding to reach the optimal growth rate.

Types of Farms in Ireland

Tillage Farms

In Ireland, tillage farming also known as arable farming, involves the cultivation of crops in ploughed land. In Ireland, tillage farming plays a crucial role in the agricultural sector, contributing significantly to the economy and food supply.

Key Crops in Ireland

- Cereals: Barley, wheat, and oats are the most common cereals. Barley is particularly important for the brewing and distilling industries.
- Potatoes: Known as a staple food in Ireland, potatoes are a significant crop.
- Oilseed rape is grown for its oil, which is used in cooking and industrial applications.
- Vegetables: Various vegetables such as carrots, onions, and cabbages are also cultivated.

Tillage practices

- Ploughing: Turning over the soil to prepare it for planting.
- Harrowing: Breaking down soil clumps to create a fine seedbed.
- Planting: Sowing seeds or planting seedlings in prepared fields.
- Crop rotation: Alternating different crops on the same land to maintain soil fertility and prevent diseases.
- Weed and Pest control: Managing weeds and pests to protect crops.

Project Brief

The agricultural industry is an integral component of the Irish economy. This programme is designed to encourage students to think about the importance of farm safety, understand their responsibility while on a farm and enhance their knowledge on how to implement safe work practices to reduce the number of farm accidents.

Farming is one of the most dangerous occupations in Ireland. The next generation of young farmers are best placed to create a safer working culture in the agricultural industry and make our farms a safer place to live and work.

"Each National Champion will be awarded a grand prize of €200 and a framed certificate"

1 Structure

Submit a reflection exercise related to your learnings from the 'Farm Safety First' programme e.g. a poem, an essay, a short story, a piece of artwork, a filmed drama.

Research your chosen reflection exercise using various data sources including websites, newspaper articles, television news and radio. Keep a record of the sources used.

There are many aspects of farming that can lead to farm accidents.

Ask yourself the following questions:

- Why do you think farm safety is important?
- How can young farmers create a safer working culture in the agricultural industry?
- Can you think of any innovative ways to reduce the number of farm accidents?

2 Submission

Please use the submission portal to upload your entry. Further instruction on how to submit will be sent to all registered teachers during the programme. All submissions will receive a certificate of achievement. There will be winners chosen for both an individual category and a group category (max. 4 students).

Submission Portal

The individual category winner will receive a framed certificate and €200 prize money. They will also receive family tickets to an agricultural show.

The group category winners will receive a framed certificate each and €200 prize money each. They will also receive an all-expenses paid trip for their class group to an open farm event nearest their school.

Chapter 1: Personal Safety and Awareness

Chapter 1: What is Farm Safety?

Objective: To introduce students to the types of hazards that are on a farm and provide an understanding of potential hazards on the farm from livestock to falls from a height. It will also help students understand the importance of personal responsibility while on a farm.

Lesson 1.1 : What makes a farm dangerous?

1. Provide students with an overview of hazards that may be present on the farm including vehicles and machinery, livestock, slurry, heights, electricity and chemicals.

2. Give an understanding of the need for safety practices on the farm.

Lesson 1.2 : Personal Responsibility

1. Informing students on what personal responsibility is and what it looks like.

2. Inform students on why personal responsibility is important on a farm and ways that taking personal responsibility can avoid farm accidents.

Lesson 1.1: What makes a farm dangerous?

Staying safe on the farm involves a lot of things including understanding of the dangers, personal responsibility, and education. This chapter will give you an overview of the dangers which can be experienced on a farm. Throughout this programme, you will learn more details about each of these dangers and ways to protect yourself and others when on a farm.

Farm Machinery

Farmers use many different types of machinery daily to complete jobs around the farm. They are an essential part of modern agriculture, but incidents with farm machinery account for almost half of all farming related fatalities. There are many ways that farm machinery can cause incidents.

Farm vehicles are large and can be difficult to safely manouvre. It requires training and skill to safely use them. Due to the size and nature of the vehicles, it can be difficult to see areas around the machine. These are known as 'blind spots'. There are blind spots on many vehicles, including cars. These are areas where it can be difficult for the machine operator to see particular areas around the vehicle. There are many additions which can be attached to a tractor which can add to the difficulty of seeing including trailers and front loaders. If a person is in a blind spot, the driver may not see them, which can lead to fatal incidents.

Machinery that is not parked correctly can roll out of control and hit people who are nearby. This can be caused by faulty breaks or not engaging the brake system correctly. Machinery should always be parked on level ground, with the brake system properly engaged.

Livestock

Livestock such as cattle, pigs, sheep and horses are all present on farms throughout Ireland. When thinking of dangerous livestock, many people may think of a bull and know that these are animals to be cautious of. However, all livestock can pose dangers to humans in different ways.

Lesson 1.1: What makes a farm dangerous?

The most common injury by livestock is caused by cows who have recently calved. A farmer may have had a cow for many years who is calm in nature. However, when a cow has a young calf, they can be protective when a person comes into their space, including the farmer who they interact with daily. This has led to many incidents of cows fatally attacking people, as they are instinctively protecting their young. Startled or scared animals can also be unpredictable, leading to fast, dangerous movements that can injure those who are in close proximity.

Diseases

Livestock can carry diseases which can be transferred to humans. These are known as zoonotic diseases and in some cases can be extremely harmful to humans. Examples of zoonotic diseases include Leptospirosis, TB, Ringworm, Salmonella, Tetanus and Toxoplasma. There are over 200 types of zoonotic disease, affecting all types of vertebrate animals from monkeys to sheep. In many cases, zoonotic diseases can be prevented with vaccinations, antibiotics and hygiene precautions. It is important that the correct measures are taken on a farm to prevent the spread of disease. We will learn more about this further in the programme.

Chemicals

Chemicals are used regularly on farms for different reasons. Farmers use chemicals to fertilize their crops as well as manage weeds, diseases and pests. They may also use chemicals for disinfecting areas on the farm or for maintaining farm machinery. If chemicals are not used and stored in the correct way, they can be damaging to both the farmer and the surrounding environment.

Animal waste, known as slurry, is often stored on farms to use in fertilizing grass, which improves growth. Slurry can produce noxious gases which can be fatal if not managed correctly.

Environmental Factors

As we have seen, there are many direct dangers which farmers encounter on a daily basis. However, there are many factors which are a result of the nature of the work which can be dangerous and cause harm. These include things such as open water sources which can lead to drowning, falls from heights, uneven terrain and working in confined spaces. These can all lead to accidents or injury if caution is not taken.

Task: (20 mins)

- Divide Students into groups of 3-4 students.
- Provide each group with a different farm safety scenario, get them to identify potential risks in each scenario and how to prevent these risks.

Examples
Scenario 1: A tractor tipping over on uneven ground.
Scenario 2: Handling a spooked horse.
Scenario 3: Spillage of hazardous chemicals in the farmyard.
Scenario 4: A child wandering into a restricted area with machinery.
Scenario 5: Losing control of a quad on rough terrain.

- Each group presents their scenario to the class.

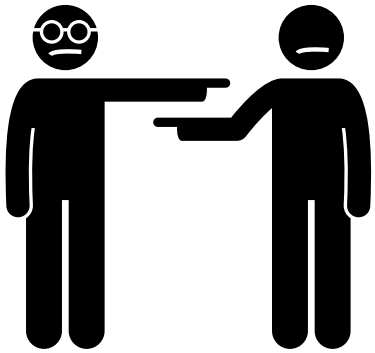
Lesson Recap:

In this lesson, we learned about the different jobs and activities farmers carry out daily on a farm. We also learned about the different ways those who are on a farm can encounter dangers from livestock to falls from height. Throughout the programme we will learn about these in more detail and learn the ways to notice the danger signs, as well as ways to protect ourselves and others from them.

Lesson 1.2: Personal Responsibility

From a young age, children are taught about taking responsibility for their actions. This can be something small like spilling a drink and admitting they did it, or something more serious like calling someone names and apologising. These actions are a sign that the child is aware of their actions and is taking steps to fix them.

As we grow up, there are more things in life that we need to take personal responsibility for. As adults, we perform day to day tasks for which we are responsible. This can include paying bills, going to work or cleaning the house. Other tasks have the potential to cause serious incidents if we did not take personal responsibility, such as driving a car. Although adults drive cars daily, they take personal responsibility each time they sit in the drivers' seat to ensure the safety of the car and the way they are driving.



Personal responsibility is when you are aware of your actions and decisions, taking full accountability for them. It means understanding the obligations you have and performing them with commitment and in an informed way. This is true of every aspect of life, but it is especially important when in situations that can be problematic or dangerous, such as being on a farm.

What does taking personal responsibility look like?

There are a number of areas which we should focus on if we are to take personal responsibility for our decisions and actions.

1. **Accountability**: We should take ownership of our actions, whatever the outcome. Even if the outcome is not what was intended it is important that we admit our mistakes and learn from them.

2. **Dependability**: When we are personally responsible, we are also dependable. We are aware of our responsibilities, and we complete them as best that we can. This means that people can rely on you to receive tasks and complete them.

Lesson 1.2.: Personal responsibility

3. **Ethical Behaviour**: Acting in a way that is morally and socially acceptable. This includes being honest and respectful to others.

4. **Self-Discipline:** Managing your behavior and impulses to stay focused on your goals and responsibilities. This includes managing your time effectively and prioritizing tasks.

5. **Decision-Making:** Making thoughtful and informed choices. Personal responsibility involves considering the consequences of your actions and making decisions that align with your values and responsibilities.

Know Your Rights!

Knowing your employment rights is an important part of being responsible for yourself and your working environment. These laws set out when you can work and how much time you can spend working. They are in place to protect you and others around you while you are working.

These laws include:

- Setting limits on how many hours you can work depending on your age.
- Banning under 18's from working at night.
- Ensuring that young workers recieve a minimum pay of €8.89 per hour.
- Ensuring 14-15 year olds do not work regular, full time jobs.
- Ensuring proper employment records are kept by employer and pay slips are given.
- Employers must give workers under the age of 18 a copy of their employment rights within one month of starting work.
- If your rights have not been followed, your parent or guardiand can make a complaint on your behalf to the Workplace Relations Committee (WRC).

You can find out more about your rights as a young worker on the Citizens Information website. Click the link attached or go to www.citizensinformation.ie

Young Workers Rights

Lesson 1.2.: Personal responsibility

As we learned in the previous chapter, farms are busy places where lots of things happen. You may be visiting a farm for a day or you may have started a part time job helping around the farm. No matter what the reason is, it is important to take personal responsibility for our actions while on the farm.

There are many things which can be dangerous or cause harm to us and those around us. If there is a sign at the entrance to a field saying beware of bull, we must be responsible and not enter that field. The field may look empty, but it is our responsibility to acknowledge the sign, understand what it means and take the appropriate, safe course of action.

On a farm, personal responsibility is especially important because safety is a major concern. Farms can be dangerous places if you're not careful, with heavy machinery, animals, and chemicals all around. Being responsible on a farm means following safety rules, wearing the right protective gear, and paying attention to what you're doing at all times. For instance, if you're operating machinery, you must make sure you're trained and understand how to use it safely. If you're working around animals, being aware of their behavior and knowing how to interact with them can prevent accidents. By taking responsibility for your actions, you're not only keeping yourself safe but also protecting those around you.

Task: (5 minutes) Read the below paragraph about a 16 year old who is working on a farm. As a group, discuss if you think the worker or employer is responsible for the situation (or both!). Why do you think so?

Sarah has been working on the farm part time for a month. As she is doing her tasks, she notices the farmer has left a gate open with livestock in the field. Sarah assumes the farmer intended this and continues with her work. The livestock later get out and cause damage to a neighbours garden.

Lesson Recap:

In this lesson, we have learned about th importance of personal responsibility. We learned that being responsible for our actions and ensuring we are carrying out our work correctly can have positive impacts on those around us and to our safety on the farm. We also learned about the rights young people have while working. These are in place for the health and safety of the worker and ensures that they are doing jobs that are appropriate to their age, reducing risks to themselves and others.

Chapter 2: Identifying hazards and understanding warning signs

Chapter 2: Identifying hazards and understanding warning signs

Objective: To provide students with an understanding of potential hazards on the farm and the importance of being aware of these potential hazards, warning signs to look out for to identify the hazards and in turn, implementing safe work practices to ensure accidents are avoided by acting responsibly on the farm.

Lesson 2.1 : Overview of hazards on the farm

1. Provide students with an overview of hazards that may be present on the farm including vehicles and machinery, livestock, slurry, heights, electricity and chemicals.

2. Explain briefly how these sources of hazards can cause accidents on the farm and the importance of implementing safe work practices.

Lesson 2.2: Awareness of hazards and observing warning signs on the farm

1. Brief discussion on the meanings of different coloured safety signs on the farm.

2. Explain the importance of being able to recognise other visual warning signs on the farm (e.g. aggressive animal behaviour, broken PTO cover).

Lesson 2.1 : Overview of hazards on the farm

The agricultural industry plays a key role in the Irish economy. However, farming is one of the most dangerous occupations in Ireland with an average of 20 fatal incidents and approximately 2,800 serious injuries on farms annually. There are many sources of hazards that make the farm a very dangerous workplace. The main sources of hazards on the farm include vehicles and machinery, livestock, slurry, heights, electricity and chemicals. Regardless of whether you live on a farm, work on a farm or have never been to a farm before, these hazards are present for everybody but farm accidents can be prevented if these sources are managed correctly. It is crucial that the farming community and people who come in contact with the farm are vigilant and aware of the various hazards that may be encountered when visiting a farm.

What is a hazard? A hazard is a potential source of harm or adverse health effect on a person or persons.

What is a risk? A risk is the likelihood that a person may be harmed or suffer adverse health effects if exposed to a hazard.

Vehicles and Machinery

Vehicles and machinery are the main causes of farm accidents in Ireland, accounting for almost half of all fatal farm accidents. The most common farm vehicles which cause accidents include tractors, loaders, quads and trailers. The main causes of fatalities involving these vehicles are due to being crushed, trapped, struck and falling from vehicles. The main causes of deaths involving farm machinery are due to entanglement in the Power Take Off (PTO), crushed under part of a machine, caught in a machine mechanism and struck by a moving object.

The most common vehicle used on farms is a tractor. The tractor is the workhorse of the farm and it is an essential vehicle for carrying out jobs on the farm, regardless of the size of the farm or type of farm enterprise. It is important to be aware of 'blind spots' around the tractor. Blind spots are areas that are not visible to the driver inside the tractor. Reasons for blind spots from tractors can include window bars, high mudguards and large machinery being attached. If you are standing near the tractor and you cannot see the driver, then the driver cannot see you either.

Lesson 2.1 : Overview of hazards on the farm

Safe work practices when working with farm vehicles and machinery:

- You must be over 16 years of age to drive a tractor on a public road and the rules of the road must be strictly adhered to.

- Operators must be trained and competent to use farm vehicles and machinery.
- Ensure vehicles and machinery are in safe working condition before use and regularly maintained.
- Ensure that all brakes, mirrors, lights, indicators and wipers are clean and in good working condition.

- Keep the cab of the tractor clean and tidy as objects on the floor could present a hazard while driving.
- Children U7 are not allowed to travel in the cab of a tractor, even if there is a seat and seatbelt present.
- Similar to driving a car, the use of mobile phones is not allowed when driving a tractor.

Task: (15 minutes) Watch the video produced by Teagasc about tractor safety and answer the following questions.

1. What are the main causes of accidents involving tractors?
2. What percentage of fatal farm accidents do farm vehicles and machinery account for?
3. Name four machinery checks that should be carried out before operating machinery.
4. Explain the SAFE stop procedure.

Tractor Safety Video

Lesson 2.1 : Overview of hazards on the farm

Quads are another vehicle commonly used to carry out various jobs on Irish farms. Although quads look like small vehicles, they are very powerful and there is a high risk of serious injuries or fatalities when using a quad. The main causes of accidents involving quads are due to an inexperienced or untrained driver, being thrown off during vehicle overturning or after loss of control, being trapped under an overturned vehicle, carrying a passenger or an unbalanced load, driving on a steep slope or tipping on an uneven surface.

New legislation came into effect from November 2023, outlining that any users of quads including farmers and others who use quads on the farm, must undergo mandatory training and wear the correct Personal Protective Equipment (PPE), including a helmet.

Safe work practices when operating a quad:

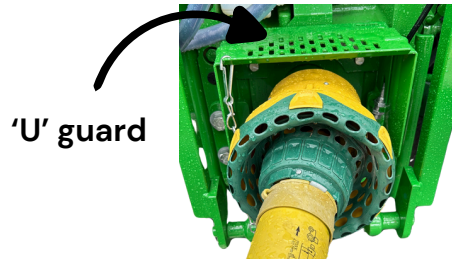
Quad Safety Video

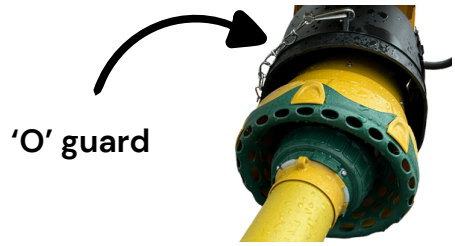
- Quad users must be aged 16 or over.
- Ensure mandatory training is completed before using a quad.
- Always wear the correct PPE - helmet, gloves, steel toe boots, long trousers.
- Never carry a passenger - there is one seat on the quad for one person driving the quad.
- Ensure the quad is in safe working condition before use and regular maintenance is carried out on the quad.
- Know your ground when driving on rough terrain and stick to planned routes where possible.
- Be aware of changes to driving surfaces due to weather conditions and loads being carried on quad as this can affect the stability, operating and braking of the vehicle.

Lesson 2.1 : Overview of hazards on the farm

PTO

The Power Take Off (PTO) is a driveshaft, usually on a tractor and it is used to connect a piece of machinery to the tractor. The PTO transfers power from the tractor to an attachment or piece of machinery, making it move and carry out its required job. It can rotate at speeds up to 1000 revs per minute (rpm). Every PTO shaft must have a working PTO shaft cover on it to prevent injury. As the PTO shaft spins at extremely fast speeds, clothing can get caught in the PTO and there is a risk of becoming entangled in it which could result in serious injury or death. Accidents on farms involving a PTO have resulted in farmers losing a limb or fatalities.





<u>Safe work practices when working with a PTO:</u>

- Never use a PTO shaft if there is no cover present or if the cover is broken, damaged or unfit for use. The size and length of the cover must be the same size and length as the PTO shaft.
- Ensure the PTO shaft cover is in good condition and safe for use.
- There must be a 'U' guard fitted on the back of the tractor and an 'O' guard fitted on the attached implement to ensure the PTO shaft is fully protected and safety chains must be present on both ends of the PTO.
- Never wear loose or torn clothing when operating machines powered by a PTO.
- Ensure the PTO is fully turned off before attempting to make adjustments or clear blockages from the machine.
- Ensure the PTO is greased regularly to ensure it is in good working condition.

Lesson 2.1 : Overview of hazards on the farm

Livestock

Livestock is another term used for animals on the farm. Livestock are the second highest cause of farm accidents in Ireland and accounted for 19% of all farm fatalities between 2012 and 2022. Many accidents that involve livestock are due to attacks, crushing, kicking, butting or goring with countless accidents occurring during routine tasks such as handling, loading and vaccinating livestock. The various types of livestock that can be found on the farm will be discussed in greater detail in Topic 3. Cows with newborn calves and bulls pose a significant risk, however it is important to be cautious around all animals on the farm.

On both beef and dairy farms, cows will have a calf once per year. These cows at calving time cause more accidents than bulls on the farm. When the cow calves, there are hormonal changes in her body. This causes the cow to become protective of her newborn calf from any potential danger therefore it is very hard to predict the cows behaviour at this time. Farmers are at a high risk of being attacked at this time of the year and need to ensure extra caution is taken when handling cows at this time.

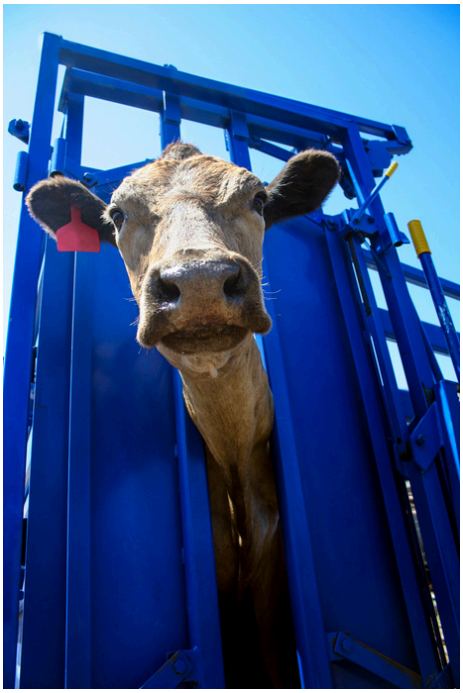
A bull is an adult male in the bovine family and they can weigh up to 1000kg. Bulls are dangerous animals and they must be treated with caution and respect. There should be a ring put in the bulls nose when they are 10 months old. A warning 'Beware of the bull' sign should be present in areas where there are bulls. Farmers must exercise caution when handling bulls on the farm.

Never trust any farm animal because even quiet animals can cause accidents.

Lesson 2.1 : Overview of hazards on the farm

Safe work practices when working with livestock:

- Ensure personnel handling animals are trained and competent.
- Have an escape route planned in advance of working with livestock.
- Understand the basics of animal behaviour.
- Ensure good handling facilities are available when handling livestock.
- Ensure there is a physical barrier (e.g. a calving gate/crush) between yourself and the cow if handling the cow at calving time or if you need to come between a cow and calf in a pen at calving time.
- Never turn your back on a bull or a cow when handling a newborn calf.
- Ensure the bull has a nose ring and chain.
- Use a tractor or farm vehicle when out in the field with a bull.
- Ensure there are warning signs on display to inform others about the livestock (e.g. Beware of the Bull).



Task: (15 minutes) Watch the video produced by Agri Aware and Teagasc about livestock safety and answer the following questions.

1. Which animal causes most accidents on the farm and why?
2. Name three safety measures to take when working with cows at calving time.
3. What does the 'Point of Balance' mean?

Livestock Safety Video

Lesson 2.1 : Overview of hazards on the farm

Slurry

During the winter months when animals are housed in sheds, they produce slurry which is a mixture of manure and urine. Slurry is stored in a large tank known as a slurry tank or pit and it is used by the farmer to help fertilise fields and grow crops. When slurry is stored in the tank, the liquid part goes to the bottom and the solid, heavy part sits at the top. A crust forms on the solid part of the slurry. Farmers must break this crust and mix the slurry to ensure it is the same consistency prior to spreading it on the land. This is known as agitation.

The main risks with slurry are drowning and slurry gas poisoning. As working around slurry can be a demanding job on the farm, there is the potential for the farmer to lose concentration and fall into a slurry tank if there are not relevant safety precautions in place to prevent access to tanks. There are four main gases in slurry (1) hydrogen sulphide (2) ammonia (3) methane and (4) carbon dioxide. Slurry gas poisoning can occur as dangerous gases are released when agitating slurry. These gases are colourless and odourless and one breath or lungful of slurry gas can be fatal.

Safe work practices when working with slurry:

- Agitate slurry on a windy day (to help disperse the dangerous slurry gases with the wind).
- Ensure there are no livestock or personnel in the shed when agitating slurry.
- Evacuate the area for at least 30 minutes when agitating slurry.
- Avoid agitating alone if possible.
- Open all shed doors to increase ventilation.
- Never enter a tank or pit, even when empty.
- Ensure slurry tanks and pits are securely covered.

Lesson 2.1 : Overview of hazards on the farm

Heights

There are many sources of heights present on the farm including roofing, gates, bales, silage pits and ladders. Heights on the farm can be hazardous as they can result in falls and collapses. Farmers must take caution when carrying out jobs at heights on the farm.

Farmers may have to carry out regular maintenance and repairs on farm buildings, however this can be hazardous and involves working at heights. It is crucial that the personnel carrying out this work at heights are competent and that they have the correct equipment to carry out the work in a safe manner. Farmers should consider hiring a contractor to carry out work at heights if they feel it would be a safer and more efficient option.

Bales present a danger on farms because of the height they are stacked at. Bales are typically made from silage, hay or straw. The main risks with bales include falling off the bales, the bales falling on you and getting stuck in between the bales causing suffocation. Children should never climb on bales. Silage pits are another hazard due to their height.

Farmers must ensure the silage pit is not overfilled as this can cause the walls of the silage pit to collapse and there should be handrails on the walls of the pit for extra safety. Machinery operators must ensure stability of the rolling equipment to prevent losing control or overturning.

Safe work practices when working at heights:

- Ensure personnel are trained and competent to carry out the job at height.
- Carry out work using a mobile elevating platform such as a cherry picker.
- Know where the roof lights are on the roof to ensure you do not stand on perspex covered by dirt or paint.
- Be cautious when filling a silage pit to ensure it is not overfilled.
- Never climb on bales.

Lesson 2.1 : Overview of hazards on the farm

Chemicals

There are many chemicals used on the farm including fertilisers, detergents, disinfectants and plant protection products. The use of these chemicals is to provide grass and crops with nutrients, to protect crops from insects, weeds and diseases and some chemicals are necessary for food security. However, chemicals on the farm can be dangerous if they are not used safely. Exposure to chemicals can cause health effects such as cancer, burns, skin rashes and lung, liver or kidney disease. It is important that farmers take caution when storing, transporting, using and disposing of chemicals on the farm.

Common chemical symbols

Toxic: May be toxic/cause damage even in small amounts. Handle carefully.

Serious Health Hazard: Potential to cause serious damage to human health.

Flammable: May cause fire if exposed to heat, sparks or flames. Handle carefully. No ignition sources.

Explosive: Potential to explode. Sensitive to heat, fire, vibration and friction. Keep a safe distance.

Safe work practices when working with chemicals:

- Read the chemical information label and safety data sheet before use and follow instructions.
- Wear the correct Personal Protective Equipment (PPE).
- Keep chemicals stored securely in a locked chemical store.
- Do not put chemicals into unmarked containers.
- Dispose of empty containers in a safe manner.

Lesson 2.1 : Overview of hazards on the farm

Electricity

There are many sources of electricity found on farms including overhead power lines, electric fences, lights and milking parlours. There is a high risk of serious or fatal injuries caused by electricity sources on the farm. Electricity can jump gaps, therefore you could be seriously injured even without coming in contact with the electricity source itself.

When driving farm machinery, it is important to be aware of overhead power lines which could potentially come in contact with the machine. If the machine comes in contact with an overhead power line, stay in the cab and call the ESB Networks. If you must exit the cab (for example due to fire), it is important to jump clear and take short steps until you are at least 5 metres away.

Safe work practices when near electricity:

- Always assume an electricity line is live and stay away from it.
- Never touch an electric fence with your hands, even if you think the fence is off.
- Do not go near or touch damaged or fallen electricity wires, call the ESB Networks.
- Be vigilant when driving machinery to ensure it does not come in contact with the overhead power lines.
- Never mount electric fences on ESB poles.

Lesson 2.1 : Overview of hazards on the farm

Task: (20 mins)

Have a class discussion on the various jobs farmers might carry out on the farm and the types of PPE they should wear for each specific job (e.g. milking cows/ handling animals/ working with chemicals). Discuss why it is important to wear the specific item of PPE for the job being carried out.

Lesson Recap:

In this lesson, we learned about many of the different hazards that may be present on the farm. It is important to be able to recognise the various hazards and to ensure the correct safe working practices are taken in relation to each specific hazard. Through being aware of the hazards found on farms, this can aid in assisting the next generation of young farmers to ensure there is a safer working culture created within the agricultural industry.

Lesson 2.2: Awareness of hazards and observing warning signs

It is very important to be aware of the various hazards on the farm and to know how these hazards can lead to farm accidents. Through being aware of hazards on the farm, this can help to ensure that the risks involved with each hazard are reduced. The warning signs on farms do not only refer to the physical warning signs that you may see on farms, they also refer to less obvious signs relevant to a specific danger on the farm. Personnel working on farms should be trained and competent to complete the required tasks. They should be observant and able to recognise other warning signs on the farm, relevant to the various hazards they may encounter.

Warning signs

Physical safety signs are used to inform and protect the public, visitors or staff on farms where there are agricultural activities taking place. Every farm should have safety signage in place at key access points to the farm. It is the responsibility of the farmer to ensure hazards on the farm are highlighted through the use of relevant safety signs displayed on the farm, however, it is our responsibility to act responsibly and obey the signs.

Farm safety signs alert us to the various hazards we may encounter on the farm. If there are safety signs in place and you do not obey the sign, this leads to a high risk of encountering hazards on the farm.

Task: (15 mins)

Have a classroom discussion about the various signs you might see on a farm, discuss what the meanings of the various coloured safety signs are and why it is important to have these signs on farms.

Lesson 2.2: Awareness of hazards and observing warning signs

There are four main colours of safety signs: red, blue, yellow and green. Each coloured sign has a different meaning.

Red signs

These signs indicate actions that are forbidden but they can also be fire safety information signs. The signs give information about serious messages of actions we are not allowed to take. Examples include 'No entry; Unauthorised entry prohibited to this farm; Children are not allowed on this farm'.

Blue signs:

These signs indicate actions that are mandatory. They give us instructions and inform us about what we are required to do. Examples include 'Please keep this gate closed; Appropriate PPE to be worn at all times; Please disinfect your boots'.

Lesson 2.2: Awareness of hazards and observing warning signs

Yellow signs:

These signs are the most common coloured signs found on Irish farms. They are warning signs and indicate the need to be cautious and aware of your surroundings for potential hazards. Examples include 'Beware of the bull; Warning farm machinery; Warning overhead power lines'.

Green signs:

These signs are positive or affirmative signs. They point the way to safety by informing us about positive things we should do or where to go in case of an emergency. Examples include 'Assembly point; First aid; Emergency exit'.

Lesson 2.2: Awareness of hazards and observing warning signs

From experience of working on the farm, farmers are capable of spotting the less obvious signs of hazards that may be present. There may not always be a warning sign displayed to inform you about all the hazards on the farm, therefore it is important to be observant of other hazards or problems you may encounter on the farm.

- For students working on farms, it is important that they receive adequate training for the role they are carrying out, whether it is working with livestock or machinery for example.

- It is the students responsibility to inform the farmer if they need extra training in a specific area or if they notice something is not right before carrying out a job.

- It is important for students to know that they have the right to speak up and inform the farmer if they see something is not right or not safe for use, otherwise they are putting themselves at risk by taking a chance.

There are some other warning signs of hazards you may encounter on the farm discussed below.

Livestock:

- Understand the warning signs of aggressive livestock.

- Be aware of the risk of accidents if handling animals without using adequate handling facilities.

- If there is a bull present on the farm and no warning sign, don't be afraid to suggest the importance of having a safety sign on display to warn others about the bull.

Tractors and Machinery:

- Be vigilant to people standing in blind spots.

- Be able to identify if the PTO cover is broken/ not safe to use.

- Look out for dirty windows and mirrors, indicators and lights not working on the tractor.

- Remember to use the appropriate speed when using farm vehicles and machinery. Be vigilant for all road users.

Lesson 2.2: Awareness of hazards and observing warning signs

There are some other warning signs of hazards you may encounter on the farm discussed below.

Slurry:

- Be aware that colourless and odourless gases may be present when slurry is being agitated.
- Leave the area immediately if you begin to feel dizzy.
- If covers are left open at agitation points, close them over to keep everyone safe.

Chemicals:

- Be vigilant to chemicals not stored and locked away securely.
- Look out for chemical spills and report any spills you may encounter.
- When using chemicals, ensure to use correct PPE and be in a well ventilated area.

Task: (15 mins)

In the classroom, have a discussion about other potential warning signs you may encounter for various hazards on the farm. Students may share their experiences of incidents within the agricultural industry.

Lesson Recap:

In this lesson, we learned about the importance of having farm safety signs on display on the farm. It is important to know the meanings of the colours on the signs to understand what the signs are informing us about. It is the farmers responsibility to put up the signs, however, it is out responsibility to act responsibly and obey the signs.

Chapter 3: Safety around Livestock

Chapter 3: Safety around livestock

Objective: To provide students with an understanding of livestock safety on farms, including general knowledge of livestock, detailed information of the dangers they pose and in turn how to mitigate risks.

Lesson 3.1: Types of animals and Safe handling of animals

1. Brief discussion surrounding what livestock are and their role in farming. Go into detail on the types of livestock in Ireland; Beef cattle, dairy cattle, sheep, poultry, and pigs. Mention the importance of farmers to produce such livestock in Ireland.

2. Explain briefly the basics of safe animal handling, this includes the use of equipment such as a crush. Explain how gender, breeds, size, how mating season comes into play.

Lesson 3.2: Dangers around livestock on farms

1. Dangers present. Talk about the dangers that can be present on farms with animals. Discuss this before going into the content.

2. Mitigating the risks. In this lesson the ways to avoid the risk associated with livestock will be discussed. Ask students do they know any of the measures taken that can avoid risks

Lesson 3.1: Types of livestock and safe handling

Livestock production in Ireland is extremely important to Ireland's agricultural sector and rural economy. Our climate and pasture provide ideal conditions for raising cattle, sheep, pigs and poultry. Making the nation one of the leading producers of high-quality meat and dairy products globally. Farm safety around livestock is intertwined with the importance of Ireland's agricultural production. Given that livestock farming is so important to the economy, ensuring the safety of those who work with livestock is paramount to maintaining the industry's productivity and sustainability.

There are various types of livestock that can be found on farms in Ireland. Each animal requires handling and management in different ways due to their tempermant and size. The animals on Irish farms include sheep, cattle, pigs farms, poultry and goats. Each enterprise will always require a different set of safety requirements based on the type of farm and livestock on it. However, no matter what type are farm you are visiting or working on, you should always have the basics of farm safety with you.

Types of Livestock:

Sheep: They are flock animals, often can be skittish and easily stressed.

Beef/dairy cattle: They are herd animals, generally calm but have the potential to be aggressive if threatened for example bulls do not like sudden movement.

Pigs: They are intelligent but can also be quite strong, which makes them dangerous.

Poultry: Usually harmless but can peck if they are threatened.

Horses: They can be unpredictable, and are quite large which makes them powerful.

Lesson 3.1: Types of animals and safe handling of animals

The Basic Principles of Animal Handling

When it comes to safety around livestock there are three basic principles:

1. Wearing correct PPE
2. Understanding the basic knowledge needed to be in an animal handling situation
3. Awareness that all animals differ in temperament.

Personal Protective Equipment

- It is very important when working with animals and it is required by law that personal protective equipment is provided on the farm. If you are starting work on a farm, you have the right to ask for this.
- This looks like wearing sturdy boots, gloves, overalls, eye protection if needed, helmets when needed, dust and chemical protection.
- When using chemicals or near fumes you must wear goggles and a mask, this is very important.
- On the farm all hazards may not be obvious which is why it is important to always have the correct PPE on. Hazards can look like; sparks flying, chemicals that you can't always see or smell, sharp edges, heavy objects falling.
- When wearing PPE you must make sure there are no faults to it.
- PPE must be removed when entering the home environment as to not contaminate.

Task: (15 mins)
Have a class discussion on what the items of PPE below are used for and why.






Lesson 3.1: Types of animals and safe handling of animals

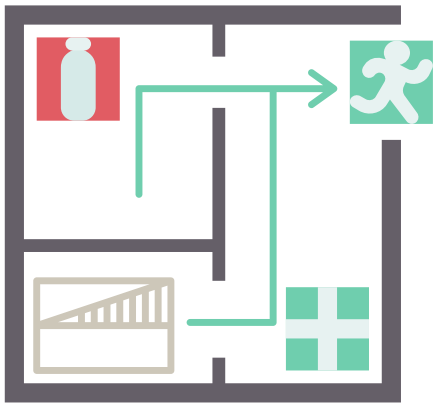
The basic requirements needed to handle animals safely

It is important no matter your interest in animals that you know the basics of animal handling, because you might be put into a situation where you will need these skills.

Steps that must be followed when dealing with animals to ensure both you and the animal are safe:

1. Any personnel working with animals must be capable and have experience of animal handling. This means that if you are new to a farm that you ensure there is always somebody experienced there to teach you.

2. When entering a situation with an animal ensure you can always see your escape route. This means if the situation is going badly, you can easily get out of the proximity of the animal. Example: if entering a field with a bull ensure that you can easily get out through a ditch or have a vehicle with you as a means of escape.



3. Never move suddenly around an animal as this can cause unnecessary stress and distrust. Always try to keep the animal calm as this allows them to be easier to predict to avoid any spontaneous physical action from them.

4. Every farm must have safe handling facilities implemented such as a crush for cattle. Example: if the vet is vaccinating the cattle, it is essential that there is a crush to hold the cattle so that the vaccine can be given safely.

Task: (5 mins)

Watch the following video produced by Teagasc to learn more about how to handle livestock in a safe manner.

Livestock Handling Video

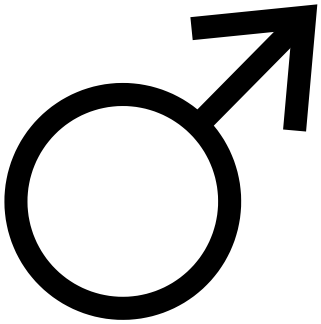
Lesson 3.1: Types of animals and safe handling of animals

Understanding animals temperaments

1. Temperament differences by sex

Male animals

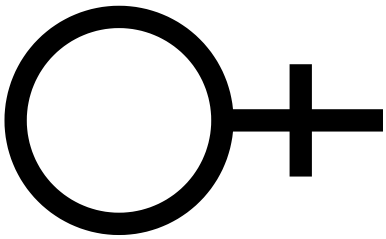
- Generally, more easily angered particularly during mating season. Bulls, boars and rams can be unpredictable and dangerous. There must be extra caution taken when handling or working near them.



- As bulls get older they become more territorial and are protective of a herd.

Female animals

- Cows, ewes, and sows can become angry when protecting their young.



- During lactation and after giving birth, they may exhibit heightened protective behaviour.

2. Temperament differences by breed

Cattle: Dairy breeds are usually more docile than beef breeds. For example, dairy breeds are usually more docile due to being handled more through many generations, farmers have carefully chosen the most gentle breed making them easier to handle and milk. Some breeds are known for their calm nature, while others can be more skittish.

Sheep: Certain breeds e.g. Suffolk are more placid, while others (e.g. Cheviot) might be more flighty. This is usually due to selective breeding practices that prioritise ease of handling.

Pigs: Breed affects behaviour, for instance, Large Whites are typically calmer compared to Durocs.

Lesson 3.1: Types of animals and safe handling of animals

3. Temperament differences by size

Larger animals (e.g. bulls, cows)

- Can be more dangerous due to their size and strength
- Handling practices must consider the potential for serious injury

Smaller animals

- While smaller, animals like sheep and smaller pig breeds can still cause harm through bites, kicks or sudden movements
- They can be more difficult to control due to their agility and speed
- Always be safe around small animals also, as just because they are small does not mean they are not dangerous.

Understanding the temperament variations in livestock based on sex, breed and size is crucial to maintaining safety on Irish farms. Implementing proper handling techniques and safety measures can reduce the risk of injury.

It's important to have a discussion surrounding this topic in class, possibly see if a local farmer would come in to discuss it. This topic is important for students to know that they must use their own initiative to take on the correct use of PPE, learning the basic knowledge of animal handling and knowing that different animals have different temperaments.

Task: (20 mins)

Divide students into groups and assign each a type of livestock. Using online resources, each group should research their assigned livestock's behaviour and safety threats. The groups should look at the risks posed by the animal and safety recommendations on how to mitigate the danger. Have a class discussion on the most important safety practices regarding livestock and how important it is to understand it.

Lesson 3.1: Types of animals and safe handling of animals

Lesson Recap

In this lesson we developed a basic knowledge of types of livestock on the farm, The three basic principles of animal handling, and the importance of livestock production in Ireland. To responsibly manage the dangers of livestock, it is essential to understand the different types of livestock, recognise the importance of wearing Personal Protective Equipment, know the basic requirements for handling animals safely and be aware that each animal has a unique temperament. This information will be extremely important for the understanding and application of lesson 3.2.

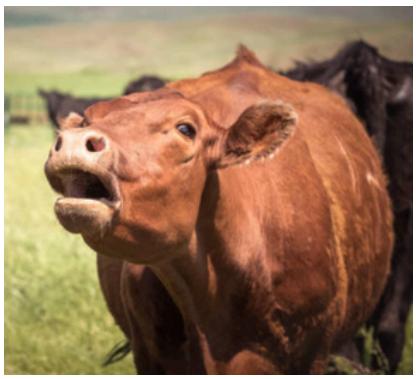
Lesson 3.2: Dangers around Livestock on Farms and how to mitigate them

In the previous lesson we explored the different types of livestock commonly found on farms and the essential knowledge needed to handle them safely.

In this lesson we will delve into the various dangers that can be present on the farm when working and how to apply your knowledge on livestock safety from lesson 3.1.

Dangers associated with livestock

It is very important to be able to identify when there may be a danger present. This means looking out for the following three signs:



1. **Animal behaviour:** Sudden movements, angry animals, mother animals protecting their young. Do not put yourself in a situation with these animals if you notice any of these signs. Always ask for help.

2. **Equipment** not working properly, such as a crush being broken, or a gate left open. If this happens it is your responsibility to bring it to the attention of the farmer.

3. **Environment** unsafe for working with livestock. It can often happen that livestock environments can be slippery or uneven creating a hazard when handling livestock.

Lesson 3.2 : Dangers around Livestock on Farms and how to mitigate them

Task: (20 mins)

Building a Livestock Safety Plan

Objective: Create a detailed livestock safety plan for a farm focusing on identifying when a danger may be present, such as animal behaviour, equipment, and environment. Ensure lesson 3.1 and 3.2 are complete before beginning.

1) Divide students into groups and design each group an area: animal behaviour, equipment and environment.

2) Ask students to make idea bubbles surrounding their assigned topic. This means all potential hazards associated with the topic.

3) Ask students to develop a protocol for on the farm surrounding the topic as they have now researched the risks. This protocol should include a safety checklist that will be posted around the farm.

4) After establishing a safety checklist, ask students to write a detailed safety plan, step-by-step if something went wrong on the farm. Students should still be in their assigned groups.

5) Combine the safety checklist and detailed safety plan to create one resource that can be implemented on farms.

6) Ask students to present their plan to the rest of the class and ask each group one question surrounding the resource they have developed. (optional)

Lesson 3.2 : Dangers around Livestock on Farms and how to mitigate them

Livestock risks

Sheep: Risk of being knocked over by them, especially in large groups.

Management: Always move slowly, use a crook and avoid loud noises.

Beef/dairy cattle: Risk of trampling, kicking and charging towards you.

Management: Approach calmly, avoid any sudden movements particularly around a bull and use proper restraining equipment when handling them such as a cattle crush.

Pigs: Risk of biting and charging at you.

Management: Never corner a pig, use boards to guide their movement

Poultry: Risk of scratches and pecks.

Management: Always wear protective clothing, and handle the birds gently

Horses: Risk of kicking, biting, and being thrown off.

Mitigate: Approach from the front, speak softly, avoid any sudden movements

Task: (15 mins)

Divide students into groups and give each group one danger associated with each animal. Each group must discuss the steps in which they would take to avoid this risk and then present their solution in front of the class, explaining step by step what they would do.

Ask students to discuss the dangers that can be present on the farm. In class the following day, ask for a show of hands how many people were surprised at the dangers present.

Lesson 3.2: Dangers around Livestock on Farms and how to mitigate them

Zoonotic diseases

The animals above can be physically dangerous but also can carry zoonotic diseases, which is also very important to the safe practice of working on farms.

Zoonotic diseases are those which can be contracted by humans from handling animals.

How zoonotic diseases infect:

- Direct contact: touching animals, their bodily fluid
- Indirect contact: touching contaminated surfaces or objects
- Vector-Borne: bites from ticks, fleas or mosquitoes

The most common zoonotic diseases are:

- Brucellosis
- TB
- Campylobacter
- Cryptosporidium
- Leptospirosis
- Orf virus
- Ringworm
- Salmonella
- Tetanus
- Toxoplasmosis

Lesson 3.2: Dangers around Livestock on Farms and how to mitigate them

Risk mitigation techniques for Zoonotic diseases

Avoiding zoonotic diseases can be made a lot easier by following hygiene rules:

1. Washing hands after handling animals.

2. Washing hands upon entering the home.

3. Correct behaviour around animals such as lambing ewes, ensuring anybody involved is wearing gloves.

4. Ensuring any infected animals are quarantined and not in contact with people. When you are handling them, wear the correct PPE.

5. Having security measure in place on the farm such as footbath.

6. Some farmers have a closed flock/herd to ensure disease will not be brought onto the farm.

Lesson 3.2: Dangers around Livestock on Farms and how to mitigate them

Task: (20 mins)

Zoonotic diseases on the farm in Ireland

Objective: Understanding the most common zoonotic diseases on farms.

1. Divide students into groups of 4.
2. From the list of zoonotic diseases listed on page 35, ask each group to gather information on them.
3. Each group must present their findings to the class in a chosen format: powerpoint or class discussion surround each zoonotic disease.
4. In their powerpoint or class discussion they must include how the disease is contracted and how to mitigate the risk of infection.

Lesson Recap:

In this lesson we explored the various dangers when working with livestock on farms and how to mitigate them effectively. Understanding animal warning signs, knowing the potential dangers that each animal can have, and the method in which to mitigate these risks is crucial to maintaining a safe farm environment.

Always be responsible.

Chapter 4: Machinery and Vehicles safety and Good practice

Chapter 4: Machinery and vehicles safety and good practice

Objective: To provide students with an understanding of machinery and vehicles safety on farms, including general knowledge on the various types of vehicles and machinery used on the farm and what jobs they are used for, detailed information on the dangers machinery and vehicles can pose and how to implement good practices to mitigate risks.

Lesson 4.1 : Types of machinery and vehicles used on the farm

1. Provide students with an overview of the different machinery and vehicles that may be used on the farm.

2. Discuss the importance of each machine and vehicle for carrying out specific jobs on the farm.

Lesson 4.2: Dangers with farm machinery and how to mitigate them

1. Highlight the main dangers associated with farm machinery and vehicles. Refer to statistics for farm fatalities on machinery and vehicles.

2. Explain what measures can be implemented on farms to ensure good practice when working with or near machinery and vehicles. Ask students if they know any measures that can be taken to avoid risks.

Lesson 4.1: Types of machinery and vehicles used on the farm

Machinery and vehicles are the most important and biggest investment on many farms, saving the farmer time and labour. Modern agriculture is very reliant on the efficiencies associated with the use of machinery and vehicles on the farm. There are many different types of farm machinery which may be used on farms depending on the type of farming enterprise. Some farm enterprises may require the use of more machinery and vehicles in comparison to other farm enterprises. The most common types of vehicles and machinery on farms and their uses are discussed below.

Tractor

The tractor is one of the most common vehicles used on farms. It comes in various sizes to suit any farming operation. The main purpose of a tractor is to pull farm equipment and machinery. Attachments on tractors enable them to become versatile machines capable of carrying out various jobs on the farm.

Combine harvester

A combine harvester is a large complex machine that cuts, threshes and separates seeds from straw. They use a complex system of gears, blades, belts and wheels to turn cereal crops into grain. Combines clean the seed in one operation and they are used to harvest wheat, oats, barley, etc.

Quad

Quads are a four-wheel powered vehicle generally designed for off-road use and they are becoming increasingly common on farms in Ireland. Quads are small vehicles but they are extremely powerful. All quad users must undergo mandatory training and wear the correct PPE, including a quad helmet, according to legislation which came into effect in November 2023.

Lesson 4.1: Types of machinery and vehicles used on the farm

Fertiliser spreader

Fertiliser spreaders are used to spread fertiliser across a field. Fertiliser provides nutrients to the plant, enabling improved growth and productivity. On many farms, fertiliser spreaders will be attached to the back of the tractor, however there are also fertiliser spreader attachments available for quads.

Slurry tanker

A slurry tanker is used to spread slurry on fields. Slurry is a mixture of manure and urine from housing animals over the winter months and it is used as a source of fertiliser on fields. With current environmental measures, many farmers carry out Low Emission Slurry Spreading (LESS) which consists of them using a trailing shoe or dribble bar system, placing the slurry close to the soil and reducing gaseous emissions to the air (i.e. smell).

Agitator

An agitator is used to mix slurry in the slurry tank or pit before it is spread on the field. Agitation is necessary to ensure the slurry can be sucked into the slurry tanker easily by breaking into the crust at the top of the slurry and mixing the top solid part and bottom liquid part of slurry together.

Lesson 4.1: Types of machinery and vehicles used on the farm

Plough

A plough is a large attachment with long blades used to cut furrows in the soil. It is used to bury vegetation and surface matter while turning up fresh soil to the air and the weather. Ploughing is an essential first step to prepare the soil for planting the next crop.

Baler

When grass is cut, it is packed into bales for transport, storage and feeding. Grass that is not fully dried to hay is baled and wrapped in plastic to make silage or haylage (haylage is drier than silage but not as dry as hay). There are also machines that can bale and wrap in a combined baler-wrapper.

Sprayer

A sprayer is a precision machine used to combat pests and diseases and to apply herbicides, pesticides, insecticides and liquid fertiliser. Farmers also use a sprayer to spray fields before reseeding to burn off the old vegetation.

Topper

Grass topping refers to the process of cutting the seed stems from grazed fields. A topper is used to keep fields tidy by stimulating new leafy growth, making pasture more palatable and nutritious for animals.

Lesson 4.1: Types of machinery and vehicles used on the farm

Lesson Recap:

In this lesson, we learned about the different types of machinery and vehicles and their uses on the farm. Farm machinery and vehicles have a key role to play in modern-day agriculture from planting and harvesting to other agricultural tasks. Although farm machinery and vehicles are an integral component on many farms in Ireland, there are also many risks associated with them. It is important that students are familiar with some of the commonly used vehicles and machinery as this will be important for their understanding and application of Lesson 2.

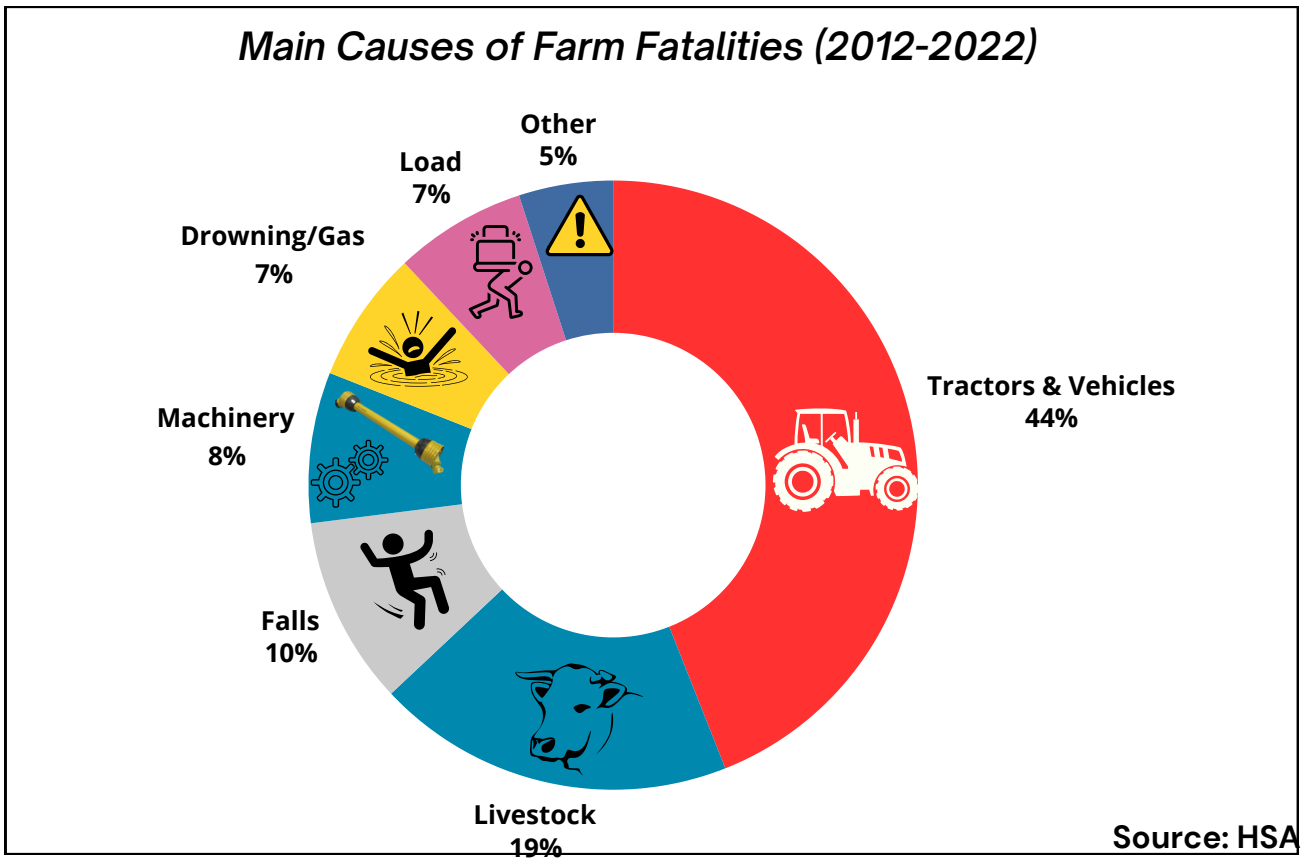
Lesson 4.2: Dangers with farm machinery and vehicles and how to mitigate them

In the previous lesson, we explored the various types of vehicles and machinery commonly found on farms and what they are used for.

In this lesson, we will learn about the dangers associated with the different farm machinery and vehicles we discussed in lesson 1 and how to implement good practices to mitigate the risks.

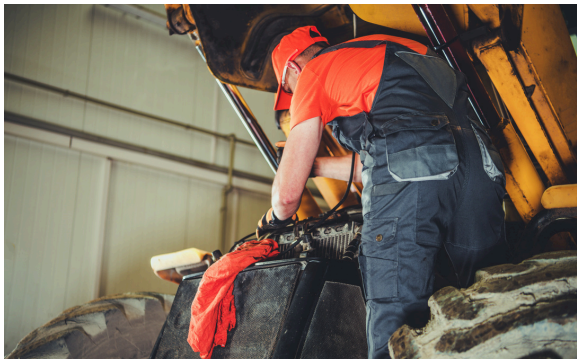
Dangers associated with machinery and vehicles

Although machinery and vehicles are an integral component of many farm enterprises, they pose a significant risk to both the operator and those people close by due to their large size, weight and immense power. They are one of the leading causes of death and injuries on farms. Machinery and vehicles pose a significant risk for everyone, however, those most at risk are elderly farmers, children and young males.



Lesson 4.2: Dangers with farm machinery and vehicles and how to mitigate them

- Tractors and vehicles account for almost half of all farm accidents.
- Between 2012 and 2022, 44% of farm fatalities were caused by tractors and vehicles. Other vehicles that also cause many farm accidents include loaders, quads, trailers and excavators.
- The main causes of fatalities involving these vehicles are due to being crushed, trapped, struck and falling from vehicles.
- Other factors which can cause accidents with farm vehicles include inexperienced operators, lack of concentration, poor mechanical condition of vehicles and speed.
- Farm fatalities involving machinery accounted for 8% of all farm fatalities between 2012 and 2022.
- The main causes of accidents involving machinery are due to becoming entangled in a PTO, crushed under part of a machine, trapped in a machine mechanism, crushed between vehicles and struck by a machine



Did you know?

A tractor driving at normal walking speed of 5.1 km/hr covers 1.42 meters/second. At 10km/hr, the vehicle covers 2.82 meters/second. This gives little or no time to get out of the vehicles way.

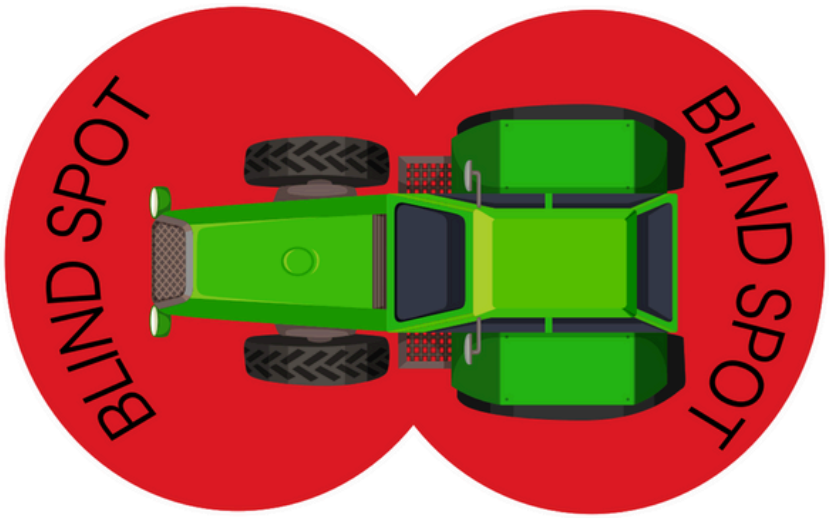
Lesson 4.2: Dangers with farm machinery and vehicles and how to mitigate them

It is crucial to be vigilant when near farm vehicles and machinery as accidents can happen very easily. Many incidents involving farm vehicles occur due to the vehicles rolling out of control, vehicles reversing and striking people on foot. Blind spots are areas around vehicles and machinery which can lead to these accidents on the farm.

Blind spots

Blind spots can lead to accidents involving farm vehicles and machinery and it is essential that drivers are aware of the blind spots.

- Blind spots are areas around the tractor where the drivers vision is impaired. These areas are present to the front, sides and back of the tractor.
- Reasons for blind spots from tractors can include window bars, high mudguards and large machinery being attached.
- If you are standing near the tractor and you cannot see the driver, then the driver cannot see you either.
- It is very important to be aware that if there is machinery attached behind the tractor, then there will be blind spots present around the machinery too.
- It is important to raise awareness of blind spots with others to ensure they know where these blind spots are present around vehicles and machinery.



Lesson 4.2: Dangers with farm machinery and vehicles and how to mitigate them

PTO

- The power take off (PTO) shaft is attached to the tractor and it is used to transfer power from the tractor to a piece of machinery connected to the tractor.
- There are two different speeds in which the PTO operates, 540 revs per minute (rpm) and 1000 rpm. For most machinery, the PTO will be operating at 1000 rpm.
- The PTO spins at extremely fast speeds, hence why they are so dangerous.
- It is essential that all PTO shafts have a working PTO shaft cover on it to prevent injury. There is a risk of entanglement with PTO's which could result in serious injury such as losing a limb or even death.
- It is crucial to implement good practice when working near machinery, as the PTO is the cause of many farm accidents.

PTO Demonstration Video

Good practice when working with a PTO:

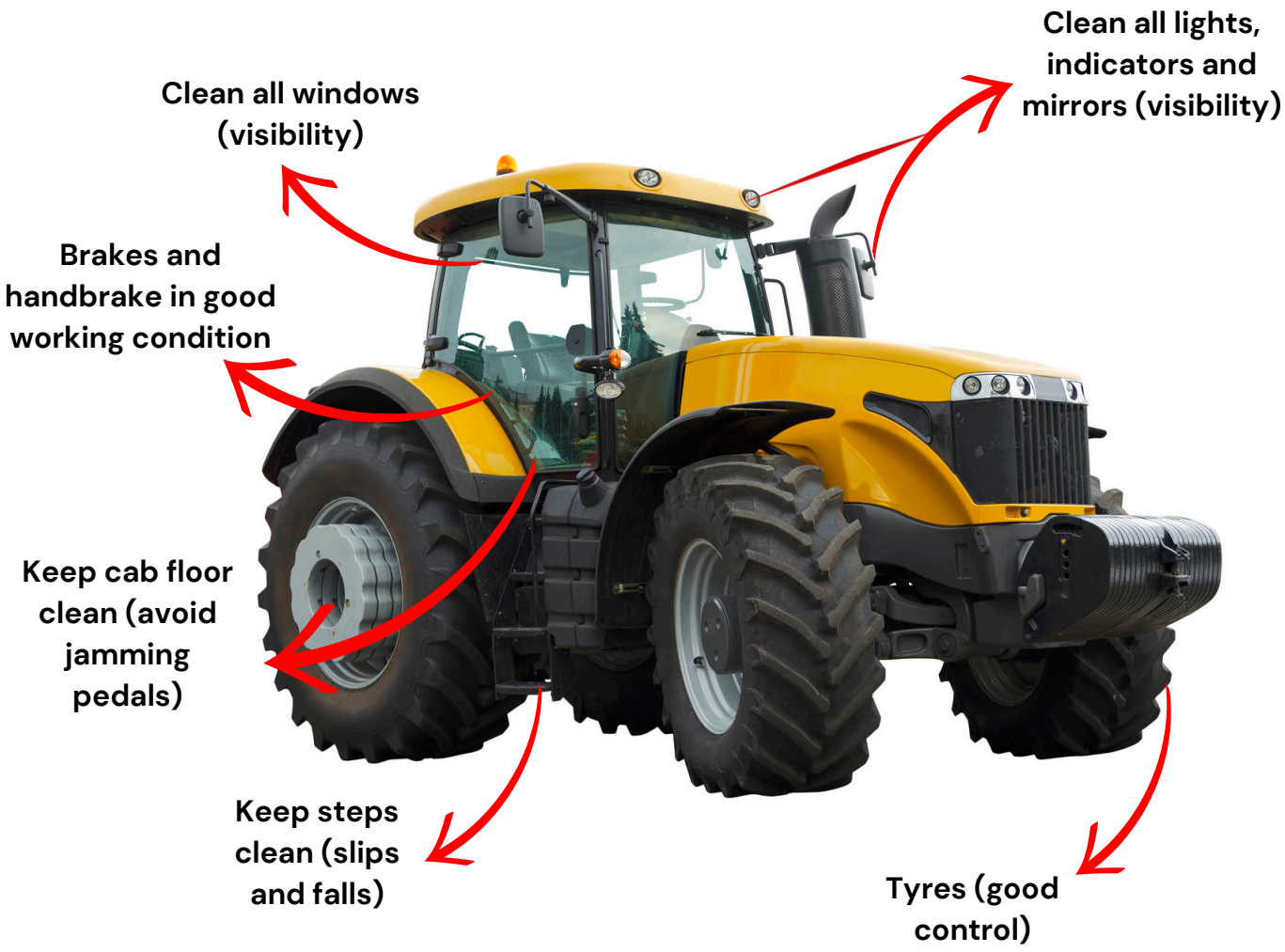
- Do not use a PTO shaft if there is no cover present or if the cover is broken, damaged or unfit for use. The size and length of the cover must be the same size and length as the PTO shaft.
- Ensure the PTO shaft cover is in good condition and safe for use.
- There must be a 'U' guard fitted on the back of the tractor and an 'O' guard fitted on the attached implement to ensure the PTO shaft is fully protected and safety chains must be present on both ends of the PTO.
- Never wear loose or torn clothing when operating machines powered by a PTO.
- Ensure the PTO is fully turned off before attempting to make adjustments or clear blockages from the machine.

Lesson 4.2: Dangers with farm machinery and vehicles and how to mitigate them

Good practice to mitigate risks

It is important to implement good practices when working with or near farm machinery and vehicles because the weight and power of machinery and vehicles offer you very little chance against them if an accident were to happen.

Every person operating tractors and machinery should take the time to carry out the **'Five Minute Check'** prior to starting work. These are simple measures to ensure good practice is implemented before using farm vehicles. Once you have completed these safety checks, you are safe to begin your farm work.



Lesson 4.2: Dangers with farm machinery and vehicles and how to mitigate them

Good practice to mitigate risks

The **SAFE STOP** procedure is another safety measure that should be implemented to ensure good practice is carried out with farm vehicles and machinery.

- Reverse park safely
- Controls in neutral
- Turn engine off
- Handbrake on
- Lower all attachments
- Remove keys

Safety tips to mitigate risks:

- All drivers must be adequately trained and competent.
- Never use a mobile phone while driving farm machinery.
- Ensure the wheels of the tractor/machinery are washed regularly to avoid carrying muck onto public roads.
- Extra caution must be taken when transporting material such as silage, slurry or gravel to ensure it does not spill on the road and pose a risk to other road users.
- Do not overload trailers as this will cause them to be unstable.
- Ensure the vehicles is safe for use by completing the 'Five Minute Check' prior to use.
- Farm vehicles and machinery must be driven at an appropriate speed for road conditions.
- Ensure all machinery and equipment is regularly maintained and in good working condition.

Lesson 4.2: Dangers with farm machinery and vehicles and how to mitigate them

Task: (15 minutes) Watch the video produced by Teagasc about machinery safety and answer the following questions.

1. What are the main causes of accidents involving farm machinery?

2. Outline four safety measures that should be taken when working with farm vehicles and machinery.

Machinery Safety Video

Lesson Recap:

In this lesson, we learned about the various dangers associated with farm vehicles and machinery. It is important to understand the main causes of accidents involving vehicles and machinery and to ensure good practices are implemented to reduce these accidents on the farm. The 'Five Minute Check' and 'SAFE STOP' procedure are simple yet effective measures to ensure safety is taken when operating farm vehicles.

It is our responsibility to think and assess risks before using vehicles and machinery on the farm to reduce the number of farm fatalities and create a safer working culture within the agricultural industry.

Project Template

Submit a reflection exercise related to your learnings from the 'Farm Safety First' programme e.g. a poem, an essay, a short story, a piece of artwork, a filmed drama.

Research your chosen reflection exercise using various data sources including websites, newspaper articles, television news and radio. Keep a record of the sources used.

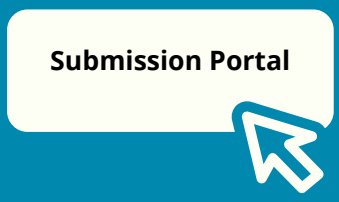
There are many aspects of farming that can lead to farm accidents so consider the various hazards you have learned about in this programme.

Ask yourself the following questions to help you refine your project submission idea :

- Why do you think farm safety is important?
- How can young farmers create a safer working culture in the agricultural industry?
- Can you think of any innovative ways to reduce the number of farm accidents?

Submission Guidelines

Please use the submission portal to upload your entry. All submissions will receive a certificate of achievement.



There will be winners chosen for both an individual category and a group category (max. 4 students).

The individual category winner will receive a framed certificate and €200 prize money.

The group category winners will receive a framed certificate each and €200 prize money each.

The deadline for submission is 20th December 2024.