



AgriKids Farm Safety Lessons Fifth and Sixth Classes

Theme 2: Tractor & Machinery Safety

Engage, Educate & Empower



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Food and the Marine



Learning Outcomes Theme 2

Learn about the various types of farm machinery and equipment that are commonly used on a farm and how and why a farmer must be responsible and safe when using tractors, quad bikes and Power Take Off, (P.T.O.), equipment. We also learn how we can help remind farmers by learning key safety tips which can be shared.

This topic covers:

- 1. What kind of machines do farmers use.**
- 2. How tractors changed over time.**
- 3. Where are the tractor rules and blind spots?**
- 4. Learn the tractor safety checklist.**
- 5. What is S.T.O.P.I.T?**
- 6. Quad bike rules**
- 7. What are PTO's and how are they used?**

Theme 2

Tractor & Machinery Safety

Safety Signs:



Machinery

**Can you name different types of farm machinery
used on a farm?**



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Tractor & Machinery Safety

Safety Signs:



Machinery

**Do you know what each piece of machinery named
does on the farm ?**



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Tractor & Machinery Safety

Safety Signs:



Machinery

Do you know where on the farm they may be used?



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Tractor & Machinery Safety

Safety Signs:



Vehicles (some examples below)



These are driven
by the farmer.

Machinery (some examples below)



These are powered or
pulled by a tractor.

We will learn lots more about each of these in
the next few slides.

Theme 2

Tractor & Machinery Safety

Safety Signs:



Tractors - Vehicles



There are lots of different makes and models of tractors.

They are used on farms to pull or work equipment such as ploughs, harrows, slurry agitators, etc.

Theme 2

Tractor & Machinery Safety

Safety Signs:



Combine Harvester - Vehicles



**There are lots of
different makes and
models of combine
harvesters.**

**It's job is to cut and
harvest grain and
cereal crops.**

Theme 2

Tractor & Machinery Safety

Safety Signs:



Quad Bike - Vehicles



**There are lots of
different makes and
models of quad bikes**

**It is a 4 wheel motorised
bike used to drive across
fields. They are only
suitable for passengers
and safety equipment
must be worn**

Theme 2

Tractor & Machinery Safety

Safety Signs:



Gators - Vehicles



There are lots of different makes and models of gators

Gators are an off road vehicle used on farms and many industries where all-terrain ability and versatility is required. designed to help property owners haul material and travel across terrain ranging from smooth, to very rough.

Theme 2

Tractor & Machinery Safety

Safety Signs:



Plough - Machinery



**Digs up the earth
to loosen the soil
or before the
farmer sows the
next crop in their
field.**

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Tractor & Machinery Safety

Safety Signs:



Trailers - Machinery



Normally pulled by a tractor and used to carry a variety of products around the farm, such as grain and food crops.

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Tractor & Machinery Safety

Safety Signs:



Slurry Agitator - Machinery



Normally powered by a tractor. A slurry agitator is used to mix (agitate) slurry which is kept in the slurry tank / pit.

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Tractor & Machinery Safety

Safety Signs:



Slurry/Muck Spreader- Machinery



**Normally pulled
by a tractor.
Spreads slurry
across the
farmer's fields.**

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Tractor & Machinery Safety

Safety Signs:



Cultivator/tiller- Machinery



Normally pulled
by a tractor. Used
after ploughing to
break down the
soil and prepare it
for sowing seed.

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Tractor & Machinery Safety

Safety Signs:



Topper- Machinery



Used to keep
fields tidy by
cutting weeds and
long grasses,
rushes, etc.

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Tractor & Machinery Safety

Safety Signs:



Mowers- Machinery



Cuts grass when making hay, silage, haylage. Can also be used to keep fields tidy

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Tractor & Machinery Safety

Safety Signs:



Sprayers- Machinery



**Sprays fertilisers
or pesticides on
crops to keep
them healthy**

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Tractor & Machinery Safety

Safety Signs:



Diet Feeder - Machinery



A diet feeder weighs, mixes, and shares out animal feed. Mostly used for cattle feeding and in particular dairy cattle.

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Tractor & Machinery Safety

Safety Signs:



Hay Turner - Machinery



When grass has been cut, the turner is used to turn the grass so it can dry in the sun and be baled for hay

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Tractor & Machinery Safety

Safety Signs:



Baler - Machinery



Used to bale hay
and straw. Bales
can be round,
small rectangle or
larger rectangle.

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Tractor & Machinery Safety

Safety Signs:



Sower - Machinery



Used to sow crop
seeds such as
barley, oats and
wheat

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Tractor & Machinery Safety

Safety Signs:



**How many brands of tractors
can you name?**



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Tractor & Machinery Safety

Safety Signs:



Some are:
John Deere
New Holland
Massey Ferguson
Deutz
McCormick
Fendt
Claas
Ford
Case
David Brown
Landini
Zetor
Fiat
Valtra
International

Do you know any
of these tractor
logos?

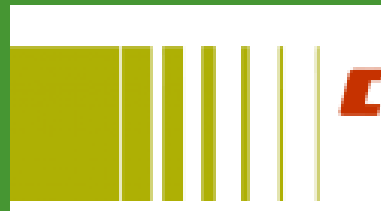


MF



JD

NH



C

V



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Safety Signs:



Discuss:
**Why do you think we measure tractor
speed in horsepower?**



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Tractor & Machinery Safety



**In olden times before
mechanised
machines, horses
were used to 'power'
the various tools.
Which is why today
we still talk about
the speed of a
tractor as its 'horse
power'.**

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Trailers, ploughs (pictured) and the earliest combine harvesters were horse drawn. Horses were also used to transport the farmer and their family, farm produce such as milk and eggs and to clear areas of the farm of scrub and overgrowth. It would be a huge status symbol to own a horse and much of the time neighbouring farms shared their horses, this practice was known as 'Comhar', the Irish for partnership.

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**Over time as
mechanisation came
about and the safety of
tractors improved, the use
of horses began to decline
from the mid 1940's and
throughout the end of the
20th century.**

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Tractor & Machinery Safety

**Discuss:
What kind of dangers would have been
on a farm in the past?**



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Tractor & Machinery Safety

**Discuss:
What came after the horse?**



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Tractor & Machinery Safety



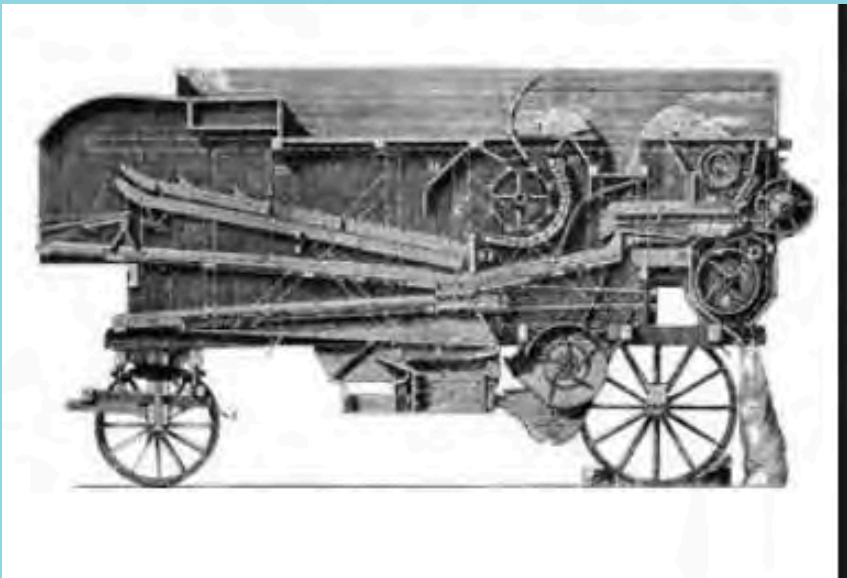
From the 1700's, steam was quickly becoming a major player in power and transportation. Steam powered engines were pumping water from mines, travelling across railways and waterways.

In farming it's presence was felt with the arrival of the steam thresher. Threshing is the process of removing the grain from the stalk.

The early threshing machines were horse powered with the stalks hand fed into the machine.

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From the late 1800's steam powered machines became more available and rapidly replaced this once very laborious task.

Steam threshers were commonly used up to time when combustion engine tractors became more common and combine harvesters became available.

Steam engines revolutionised agriculture and inspired a man named Henry Ford in later life to design and manufacture vehicles.

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The evolution of tractors

1940's - At the end of WWII, tractor technology was emerging as safer and the more efficient way to farm.

Largely with thanks to Harry Ferguson (picture), who previously working for Ford honed his skills to bring about the Massey Ferguson. It was about 20HP

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1950's – Some of the earliest mechanised combine harvesters were in use in Ireland. (Harvester dating back to the 1950's pictured on a farm in Co. Kildare)

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Tractor & Machinery Safety



1980's - Tractors such as the 'International' were common on Irish farms and at 50HP were seen as very fast machines.

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Tractor & Machinery Safety



**2000s - Nowadays
our tractors are
bigger, on average 5
times faster and more
efficient in getting
the job done.
However at this scale
the potential for
accident is also high.**

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Tractor & Machinery Safety

Safety Concerns

In the past, safety around horses and avoiding a kick, a bite or been trodden on were considered the key dangers, the introduction of machinery gave way to a new wave of safety concerns.



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Tractor & Machinery Safety

Safety Concerns

As machinery became more popular entanglements in machinery became a new problem on farms.

Early tractors provided no cab and therefore no roll over protective system (ROPS), see pictures. Having roll over bars created a 'survivable space' in the event of a tractor roll over.

**No Roll Over
Protective
System
(ROPS)**



**Roll Over
Protective
System
(ROPS)**



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Tractors

Tractors are essential on the farm and they are the most useful machine that farmers use to carry out many of the jobs they do each day.

Farmers use tractors to pull trailers, to spread fertiliser on fields and to check his/her animals.

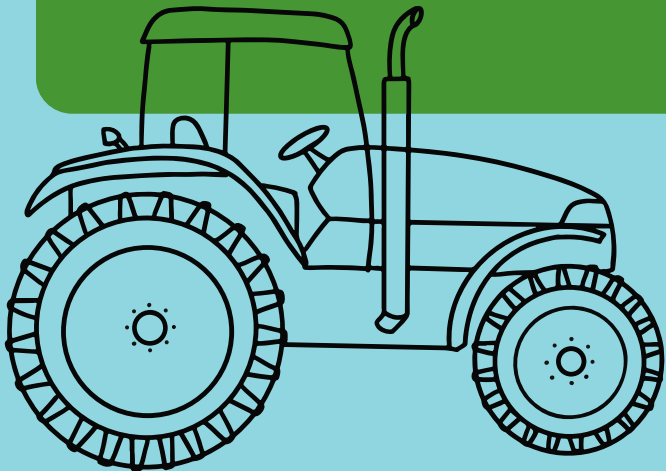
Tractors are big, powerful machines and the farmer's job is to make sure that children do not go near them. Farmers drive at a safe speed around the farm and are always on the lookout for children and adults.

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Tractor & Machinery Safety

Tractors

It is important to always know the key rules to tractor safety. The age you are permitted to be a passenger and drive, wearing seat belts as well as knowing the correct sequence farmers should follow when parking their tractors will ensure that tractor and machinery safety rates will improve.



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Tractor & Machinery Safety

Safety Signs:



Tractor Safety – Know the Blind spots



Image taken from teagasc.ie

Visibility can be limited for farmers when sitting high up in tractors, combine harvesters, etc.

NEVER play near a moving tractor or any other type of farm machinery as you may not be visible.

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Tractor & Machinery Safety

Safety Signs:



The picture below is what a tractor looks like from the ground.

FRONT



BEHIND:



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Tractor & Machinery Safety

Safety Signs:



The picture below is what the farmer can see from the tractor



Can the farmer always see people when they are driving?

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Tractor & Machinery Safety

Safety Signs:



Ahead of busy times when they will be relying on their tractors to get the job done, farmers must take extra care of their tractor.



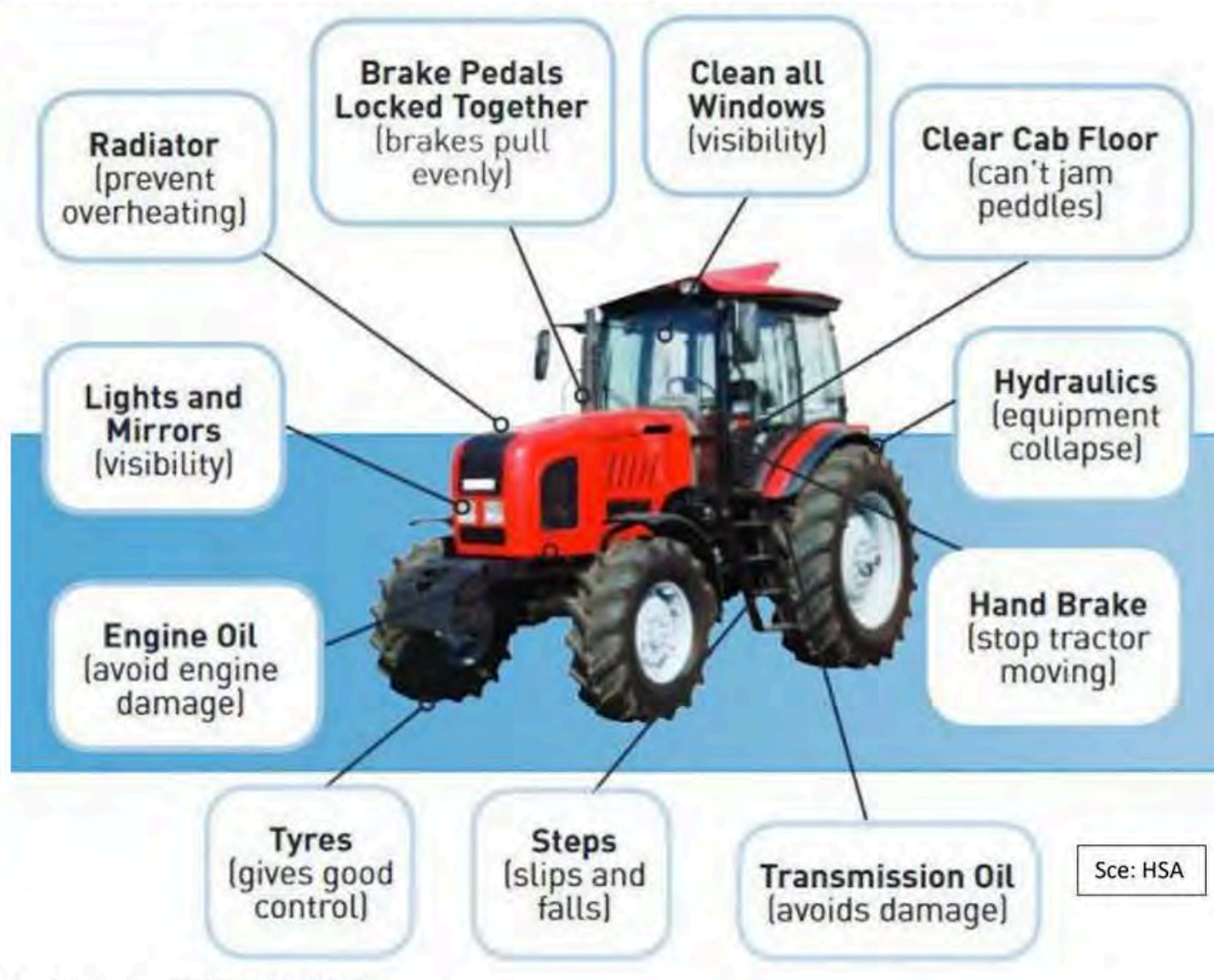
Can you think of any repercussions if checks did not happen?

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Checklist

All farmers should check the following before using their tractor



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Safety Signs:



As a class can you brainstorm some checks that farmers should carry out inside and outside their vehicles? Make a list on the board.

Inside Checks



Outside Checks

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Safety Signs:



Inside Checks

**Cab floor
Brakes /Pedals Windows
and Mirrors
Engine Oil Fuel
Transmission Oil
Radiator**

Outside Checks

**Lights Tyres
Windows and
Mirrors Steps
Hand brake
Hydraulics**



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Safety Signs:



What to wear in a vehicle?



Seat belts – The Safety Zone

Most tractor cabs have Roll Over Protective Systems (ROPS) in place. These ROPS create a 'Safety Zone' inside the tractor cab. By wearing a seat belt farmers and passengers are kept inside the 'Safety Zone' and have protection from being thrown from the tractor if the tractor over turns.

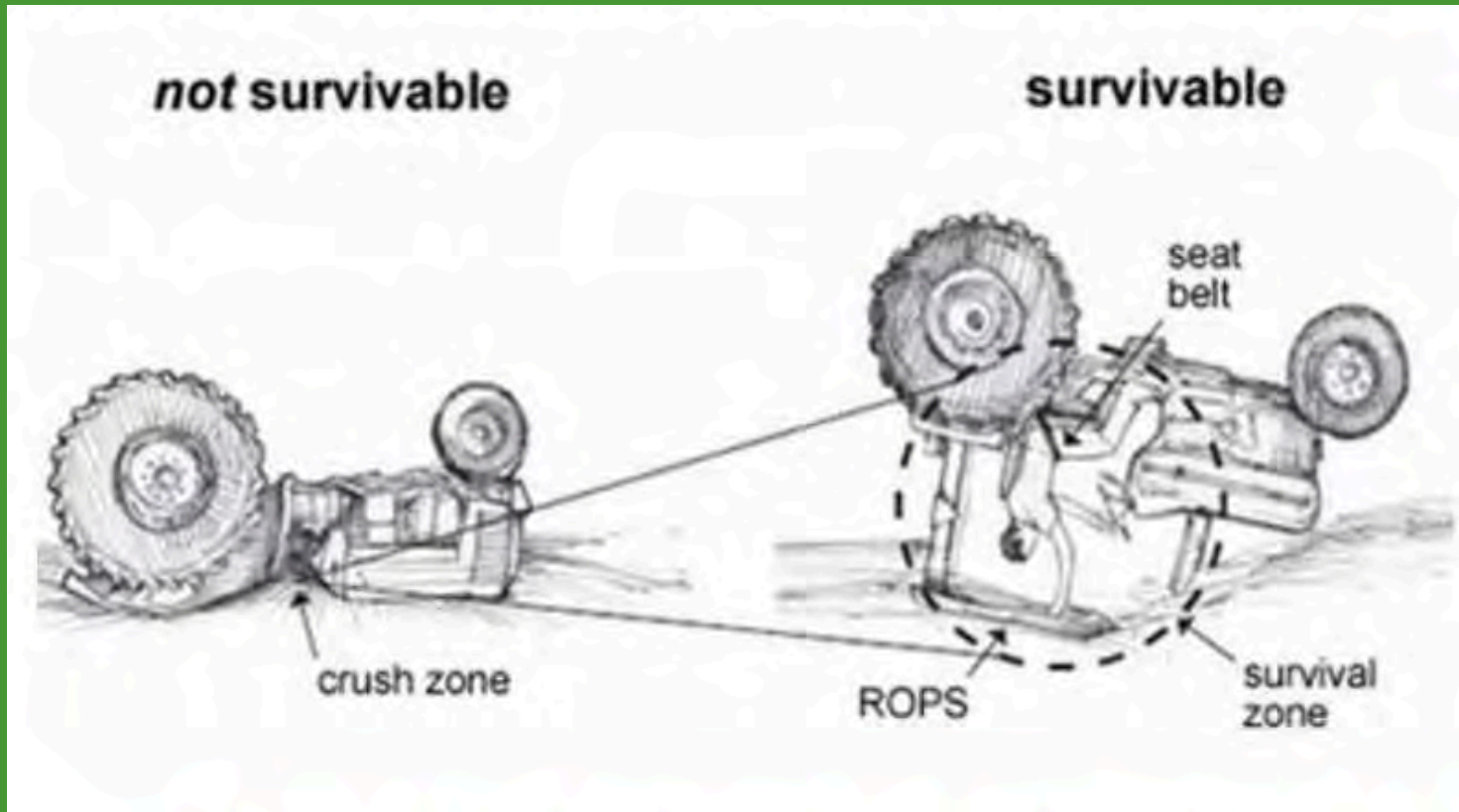
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Safety Signs:



ALWAYS WEAR A SEATBELT



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Safety Signs:



Are you old enough?

**Do you know how old you should be to be a
passanger on a tractor?**

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Safety Signs:



Are you old enough?

Under 7 Years: you are not permitted in Ireland to be a passenger in a tractor. (In the UK the minimum age is 13)

7+ years: The age you are permitted in Ireland to be a passenger in a tractor as long as there is a passenger seat and seat belt.

14 years: You may drive a tractor on the farm only and only after completing a safety training course.

16 years: You may drive a tractor on the road but only after you complete special training and acquire a license.

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Safety Signs:



Do you know how to S.T.O.P.I.T?

Also known as the 'Safe Stop', S.T.O.P.I.T, is handy acronym which makes it easy to remember how farmers correctly stop and park a tractor after a long day's work.



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Safety Signs:



Do you know how to S.T.O.P.I.T?



S – Stop the tractor in a Safe place. Farmers should park the tractor facing forward. This means they don't have to reverse it out when using it again.

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Tractor & Machinery Safety

Safety Signs:



Do you know how to S.T.O.P.I.T?



Image NFU

T – Take up the
hand break and
prevent the
tractor from
rolling.

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Safety Signs:



Do you know how to S.T.O.P.I.T?



Image NFU

O – Take the
tractor Out of
gear and feet
Off the pedals

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Tractor & Machinery Safety

Safety Signs:



Do you know how to S.T.O.P.I.T?



P – Put the
bucket or fork
down.

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Tractor & Machinery Safety

Safety Signs:



Do you know how to S.T.O.P.I.T?



Image NFU

**I – Turn off the
Ignition**

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Safety Signs:



Do you know how to S.T.O.P.I.T?



Image NFU

T – Take out the keys.
Leaving keys in the tractor means the farmers is at risk of it being stolen or driven by someone with no permission to do so.

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Quad Bikes

A quad bike is also known as an All-Terrain Vehicle (ATV). Farmers use quads on their farms when herding animals, checking stock in fields, transporting food and equipment and for general transport.

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Remember your ATV'S !

A – Age: Are you old enough to use a quad bike. To use quad bikes typical to farms, you must be 16+.

T – Training: Before using a quad, all farmers should be trained in how to operate the vehicle.

V – Visual Inspections. Like their tractor, farmers should check their quad is not damaged, has oil, lights, good tyres and fuel before using.

S – Safety equipment. Farmers musts make sure they are wearing the correct clothing and PPE (Personal Protective Equipment).

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What to wear on a quad bike

Discuss with your class:

Do you know what PPE (Personal Protective Equipment) should be worn on a quad bike?

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Head

Head protection is very important on a quad bike. You could wear a motorcycle helmet or a horse riding helmet.

Why do you think we need to protect our head?

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Clothes

Clothing which is strong and covers arms and legs. High visibility clothing must be worn on a quad bike.

Why do you think we need to wear this type of clothes?

Why should we not wear shorts or t-shirts?

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Hands

Gloves for protection and to keep hands warm in cold weather & for good control of the ATV.

Why do you think we need to wear gloves on a quad bike?

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Feet



Boots or wellingtons which are strong and have good grips.

**Why do you think we need to wear these on a quad bike?
Why should the shoes have good grip?**

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Eyes



Goggles to protect eyes from insects and branches.

Why do you think we need to wear these on a quad bike?



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REMEMBER:
**NO passengers should EVER be on a
quad bike.**

**You can unbalance the quad and cause
it to turnover**

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Safety Signs:



**Do you know what the
letters PTO stands for?**



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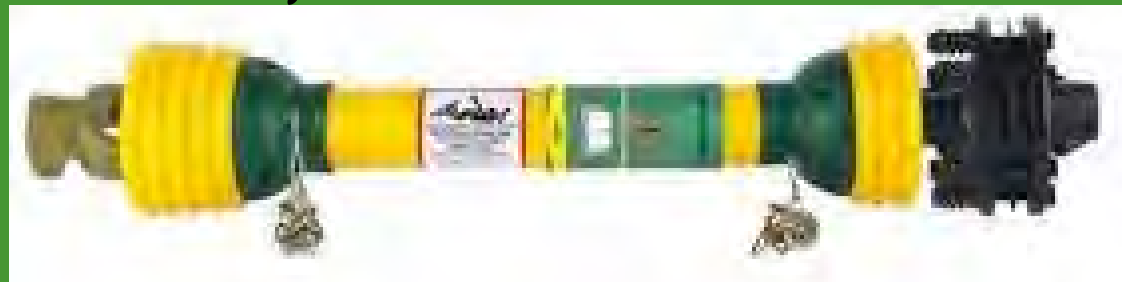
Tractor & Machinery Safety

Safety Signs:



PTO's- Power Take-Off

PTO is a part on the back of a tractor that transfers power from the engine to machines attached to the tractor, like mowers or feeders.



PTO's are extremely dangerous! Be careful!

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Tractor & Machinery Safety

Safety Signs:



PTO's- Power Take-Off

**The PTO rotates between 9 & 16 times per second.
Farmers must be careful not to get entangled in
the moving shaft.**

**All PTO's should be covered with a guard and
safety chains.**



PTO's are extremely dangerous! Be careful!

The Farmyard Farmyard Zones

Safety Signs:



Power Take-Off (PTO's)



PTO's can be very dangerous because the spinning shaft moves fast and can catch clothes, hair, or hands, pulling a person in quickly. Farmers must always have a PTO guard in place and never go near it while it's turning.

PTO's are extremely dangerous! Be careful!

The Farmyard Farmyard Zones

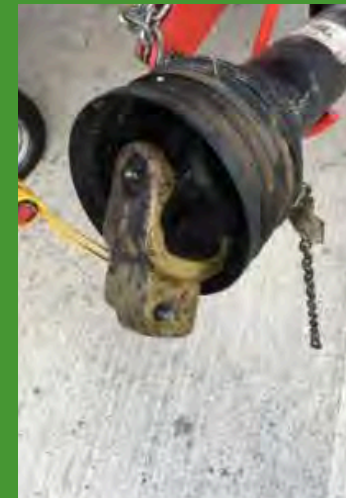
Safety Signs:



Power Take-Off (PTO's)



Peter lost his leg in a PTO accident.



PTO's are extremely dangerous! Be careful!

Theme 2

Tractor & Machinery Safety

Safety Signs:



**Do you know machines that
require a PTO**





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