

Safe use of Quad Bikes (ATVs) in Agriculture and Forestry

Information Sheet

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The use of quad bikes is becoming more and more common on farms and forests and for many in these sectors it is an essential piece of equipment. However, there have been a number of fatalities involving quads in recent years and the potential for a serious accident when using a quad is high. This information sheet provides advice and guidance on the safe use of quad bikes. The guidance is no substitute for formal training and we recommend that quad bike operators undertake formal training in advance of quad bike or all-terrain vehicle (ATV) use.

1. Introduction

The underlying causes of quad accidents are usually one or more of the following:

- Lack of formal training or experience
- Excessive speed
- Poor quad maintenance, particularly tyres and steering
- Poor physical mobility
- Carrying a passenger or an unbalanced load
- Tipping on a bank, ditch, rut or bump
- A steep slope combined with other factors, for example ground or load conditions
- Towing excessive loads with un-braked equipment



Case Study 1

Deceased had travelled up his land at the back of his home on a quad with a sprayer mounted on the back filled with fluid. He was found trapped under the quad which was laying on its side.

Case Study 2

Deceased was out checking livestock on his quad in poor light conditions. He struck a pole and died of head injuries. He was not wearing a helmet.

Case Study 3

Deceased was operating the quad bike up a steep bank out of a river when he lost control. The quad skidded sideways and overturned into the stream trapping him underneath.

Case Study 4

Deceased was found lying under an overturned quad bike by a family member. It appears the quad veered off its path and overturned when it struck a ditch.

2. Significant Hazards

DANGER ZONE OR HAZARD	TYPE OF HAZARD
<i>Mechanical Hazards</i>	
<p>Acceleration or Deceleration: Quick acceleration or deceleration may lead to overturning of the quad by the rider resulting in the rider being trapped underneath.</p> <p>Feet slipping from foot rests and being trapped under rotating wheels is one of the major hazards on quads.</p>	<p>Crushing</p> <p>Entanglement</p>
<p>Poor Maintenance: Unless the quad has adequate maintenance, steering, suspension, seating, brakes and transmission controls, the rider will not have full control over the vehicle.</p>	Being Thrown
<p>Stability: Stability is compromised when tyres are underinflated (tyres separating from rims) or overinflated (may not adapt to the terrain) leading to loss of control.</p>	Being Thrown, Crushed
<i>Ergonomic Hazards</i>	
<p>Design and location of indicators: The machine could start reversing without the rider being aware of it. The user could assume that the gearbox is in neutral when a gear is disengaged. The machine could in such cases start moving suddenly.</p>	Fatigue, other hazards caused by error

3. Control Measures for Quads

Apart from the below, it is vital that you understand and be familiar with the instruction handbook supplied with the vehicle which provides information and instruction regarding maintenance of the vehicle, use and operation.

3. Control Measures for Quads (Cont'd)

Training:

Professional formal training is vital. It is a legal requirement to provide adequate training under both the Safety, Health and Welfare at Work Act 2005 and the General Application Regulations 2007. Under the 2005 Act, an employer must provide such instruction, training and supervision as is necessary to ensure the health and safety of their employees.

In effect this means that the employer (the farmer) must provide adequate training and ensure that quads are only ridden by employees (which may be the farmer himself) who have received appropriate training in their safe use, including the use of any towed equipment or attachments. The same requirements apply to the farmer or any self-employed person.

Personal Protective Equipment:

Head protection is vital. Helmets significantly reduce the number and severity of serious head injuries. Operators should always wear an approved helmet. Refer to your quad manufacturers' recommendation.

A helmet should fit your head comfortably and securely. For example, some manufacturer's instructions recommend wearing an approved motorcycle helmet, stating an open face helmet offers some protection but a full-face helmet offers more. Wearing a helmet with a face shield or goggles protects your eyes and will help your vision.

Also, the wearing of sturdy off-road motorcycle boots, gloves, riding trousers with knee pads, a riding jersey with padded elbows, and a chest / shoulder protector. See motorcycle helmet Regulation No. 22 (ECE 22) which is the current European standard for helmets for motorcycles and BS ISO6658:2017. High visibility clothing may also be appropriate.

Passengers:

Never carry a passenger on a quad bike. The **long seat is for active riding, operators shifting their body weight** backwards and forwards for different slope conditions, and is not for carrying passengers.

Route Planning:

Over rough terrain get to know your own ground and stick to planned routes where possible. Walk new routes if necessary to check for hidden obstructions or rutting of the ground. When selecting routes consider changes to the surface due to weather conditions and allow for any effects of loads being carried and attachments. These make a marked difference to the stability and abilities of the machine.



4. Safety Checks and Maintenance

Quads commonly used in Ireland are intended for use by a rider aged 16 or older. Off-road riding is especially hard on a quad so it is essential to carry out maintenance according to the manufacturer's recommendations. Check in particular:

Tyres: The size, designation, load index and type of tyres suitable for the vehicle are specified in the instruction handbook/manual.

Tyre marking: Quads are required to be equipped with tyres carrying the following markings:

- (a) At least one tyre sidewall shall be marked with the following statement or equivalent message: "Do Not Inflate Beyond XY kPa When Seating Bead".
- (b) Both tyre sidewalls shall be marked with the date code of manufacture in letters or numerals which are visible and indelible.

Pressure Gauge: Use a gauge that is designed for measuring and displaying recommended tyre pressures. This is generally supplied with your quad.

Brakes and throttle: Check that the brakes give a safe straight stop and that the throttle operates smoothly in all steering positions. Brakes other than disc brakes can have a relatively short life in farm or forestry conditions unless regularly and effectively maintained.

Controls: Be aware that controls for selecting forward, neutral or reverse or for selecting overall transmission ranges or for selecting the differential drive(s) may be located and operated differently. A diagram showing the different positions of the control device(s) should be permanently marked in the field of vision of the rider and close to the controls and kept clean.

Ergonomics: When selecting a quad, take account of the characteristics of the rider the bike is intended for including body dimensions, weight, postures, body movements, physical strength and general abilities.

5. Safe Driving Methods

Most quads have no differential (they have a solid rear axle) and so do not handle in the same way as other machines. This means that when you turn, the quad tries to keep going in a straight line.

When cornering on a quad with no differential or with the differential engaged, your body weight needs to be positioned depending on how sharp the corner is and on how fast you are going. For slow cornering you should put your body weight on the footrest on the outside of the turn while leaning your upper body into the turn. This will allow the inside driving wheel to skid slightly, allowing the quad to make the turn properly. At faster turning speeds the need for weight transfer to the outside of the turn decreases:

- If your quad has a differential and it is disengaged, when cornering your weight should be transferred to the inside of the turn.
- When riding across a slope, keep your weight on the uphill side of the quad.
- When going downhill, slide your weight backwards and select a low gear, reducing the need to use the brakes.
- When going uphill, move your weight forwards and maintain a steady speed.

The positions described above can be made more effective for rough ground and higher speeds by standing in a stooped position (called active riding). This increases the ability to shift weight quickly and maintain stability. It is important to keep both feet on the footrests at all times. Avoid sudden increases in speed, as this is a common cause of rearward overturning accidents, even from a standing start on flat ground where there is good grip. Never put your foot onto the ground to stabilise a quad when riding.

Physical fitness and agility is required for active riding, potentially making quad bikes unsuitable for physically unfit or elderly riders.

Trailed equipment and loads

Ensure all riders know the manufacturers recommended towing capacity and drawbar loading limit. Always operate within these requirements. Remember that your ability to control the quad by your body movements will be considerably reduced when carrying a load or towing a trailer. Risk assessment is key.

When selecting trailed equipment look for:

- over run brakes,
- swivel hitch drawbar,
- bead lock rims on wheels,
- a low centre of gravity and a wide wheel track,
- a long drawbar, and
- attachment points for securing a load.

Check the weight ratio between your quad and its trailed load. This needs to be assessed for each operation. These loads should be reduced when working on slopes, uneven ground or poor surface conditions. Follow the manufacturer's advice for your particular machine.

Weight transfer is also important. Stability and resistance to jack knifing is improved if some load is transferred onto the quad's drawbar. Do not exceed the manufacturers drawbar loading limit. Remember that weight transfer can change dramatically when you start going uphill or downhill.

When selecting mounted equipment, make sure it is within the manufacturer's approved weight limit, with a low centre of gravity, and controls which are easy to operate but do not create a hazard. Where equipment is added to one end of the machine, add ballast at the other end to maintain stability.

Loads carried on racks must be well secured, for example with ratchet straps, and be evenly balanced between the front and rear, except where they are deliberately altered to aid stability when going up or down a slope.

Only tow a load from the hitch point. Loads towed from other points such as the rear rack have caused sudden rear overturning even on slight slopes or with slight acceleration. Ropes or chains should not be used to drag a load where they can become caught on a wheel. This may lead to entanglement with the brake cable, causing unexpected braking.

Using sprayers

You are more likely to be exposed to spray drift on a quad than on a tractor with a cab, so a tractor should be used whenever possible. Where a quad is used, then attention to safety features is especially important when buying a sprayer and when spraying, particularly with mounted sprayers where the boom is close to you and contamination more likely.

- Consider techniques and equipment which contain spray within the target area and reduce potential drift, such as a drift hood or canopy, low drift nozzles.



- When buying a sprayer look for a low centre of gravity and internal baffles to reduce liquid surge which will improve stability when turning on slopes. Consider the distance of the boom from your seat as a boom in front of the quad or close behind your seat could increase your risk of exposure to pesticides.
- Spray operators must be trained and where appropriate hold a certificate for the type of equipment used. Wear the personal protective equipment specified for the equipment and pesticide in use. Select the pesticide of least risk.
- Work at right angles to the wind and turn into the wind to reduce contamination to yourself and the machine. Spray only in ideal wind conditions.
- Do not hold a spraying lance while riding your quad.
- After spraying, clean contamination from your quad, particularly your controls and seat. You should be aware of environmental regulations if bulk volumes of water are used for this purpose.

Children

Remove keys and keep in safe place away from children. Never carry a child as a passenger. It is illegal and will reduce your ability to control the quad.

Check the manufacturer's minimum age recommendations for your quad. The ratio of a child's weight to that of the quad is significant, as weight transfer is the key to safe handling. Quads commonly used in Ireland are intended for use by a rider aged 16 or older.

In addition, the use of self-propelled machines on farms is included in the Code of Practice on

Preventing Accidents to Children and Young Persons in Agriculture.

Roll bars

In general, roll-over bars are not provided with quad bikes because traditional roll bar design depends for its effectiveness on the operator wearing a seatbelt. In the absence of a seatbelt, there is a risk of the thrown operator being struck by the bars in the event of a roll-over

Fitting of CE marked Roll-Over Protection Devices (ROPS), now available on the market for all-terrain vehicles (ATVs) or quad bikes, is at the discretion of the owner/operator. The Health and Safety Authority does not have sufficient information at this time to form a view on the effectiveness of these novel designs and thus is not issuing an instruction or recommendation in respect of such devices.

6. Instruction Handbook/Manual

The instruction handbook/manual will contain lots of useful information to help ensure you are operating the quad in a safe way.

Remember:

- Undertake formal training
- Wear a helmet and personal protective equipment
- Know the terrain you're travelling across
- Keep the quad maintained and in good condition
- Don't overload racks
- Check tyre pressure
- Use of quads may be unsuitable for older operators with poor physical mobility and slower response times.

Further Information and Guidance:

Visit our website at www.hsa.ie, telephone our contact centre on **1890 289 389** or email wcu@hsa.ie

Use BeSMART, our free online risk assessment tool at www.besmart.ie or visit www.farmsafely.com

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