

# ATV Safety For Agricultural Workers





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# Introduction

Since its founding in 1973, the Farm Safety Association (FSA) has worked to make employers and workers aware of safety and health hazards, and to help them follow Ontario's requirements. FSA also provides on-site training, literature, videos, and other health and safety guidance.

This booklet reflects what we know about the hazards associated with ATV use, and provides advice on safe ATV use in agriculture. It also explains the current requirements of the *Workplace Safety & Insurance Act* and the *Occupational Health and Safety Act*, as they apply to ATV use in Ontario agricultural operations.

As a general guide, this booklet may not cover all details of safe ATV use. FSA assumes no responsibility or liability for the application of this information, recognizing that circumstances, conditions, and other factors may vary greatly.

FSA welcomes your inquiries and comments on this booklet. For more information, or to receive a catalogue of resource materials which lists all FSA's available farm safety information, please contact:

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# Who is This Booklet For?

This booklet will be useful to every agricultural operation in Ontario that uses, or is considering using, an all-terrain vehicle (ATV).

If you are registered with the Workplace Safety and Insurance Board (WSIB) or pay workers as part of your farm operation, your workplace falls under the requirements of the *Workplace Safety and Insurance Act (WSIA)* and the *Occupational Health and Safety Act (OHS Act)*. Following the recommendations of this booklet will assist you in meeting the current requirements of the OHSRA.

## Why ATV Safety?

Rather than providing a list of statistics of ATV-related injuries and deaths, here are some observations based on recent ATV accidents in Ontario and the rest of Canada. The same factors show up, over and over again, in ATV accidents:

- Driving on or along a highway, or crossing a highway
- Carrying a passenger on the ATV
- Refusing to wear a helmet
- Inadequate training or supervision, especially of young people and children
- Use of poorly-maintained equipment, or older, unsafe ATV models

In recent years, ATV-related deaths and serious injuries have shaken many Ontario communities. Some have involved the use of ATVs as workplace equipment in forestry, agriculture, and other industries. Others have taken place during recreational activities. Many have involved young people and children. In most cases, these deaths and injuries could have been prevented by better training, safer procedures, or more careful equipment maintenance.

The goal of this booklet is to bring together the most reliable information on ATV safety, and make it applicable to the special situations in Ontario agricultural operations.

# What is an ATV?

The information in this booklet applies to four-wheeled or “quad type” all-terrain vehicles. (Other types of equipment are sometimes also called all-terrain vehicles, particularly in other countries.) This booklet does not deal with the safe operation of snowmobiles, dirt bikes, or riding mowers. These vehicles all have their own special features and safety hazards, which are beyond the scope of this booklet.

At the end of this booklet, you will find a brief discussion of the four-wheeled and six-wheeled utility vehicles that more closely resemble a small car than a four-wheeled motorcycle. These vehicles are significantly different from ATVs in many ways, and may be better suited to some types of agricultural tasks than ATVs.

The first ATVs sold in North America were tricycle-type vehicles, with one wheel in front and two in the back. Since the 1980s, three wheeled ATVs have not been manufactured or sold in North America, because their instability made them prone to serious rollover accidents. The organization of doctors who often treat people injured in ATV accidents, the American Academy of Orthopedic Surgeons, has adopted a strongly-worded resolution supporting the ban on three wheeled ATVs. If you still have a three-wheeled ATV, FSA strongly urges you to replace it with a safer, four wheeled model.



ATV stands for all-terrain vehicle. An ATV is a small, specialized piece of mobile equipment that is designed for use on rough, unpaved ground. The operator sits on a saddle-like seat, and steers with handlebars (unlike most other small vehicles, which have chair or bench-type seats, and are controlled with a steering wheel). The ATV has four large balloon-like tires, with very low air pressure.

Most important, the ATV is designed to be “driver-active.” On a “driver-active” vehicle like an ATV (or a motorcycle or snowmobile), the operator’s body movements help control the ATV. Driver-active vehicles require a strong combination of skill, good judgement, attention, and physical strength.

# How to Use This Booklet

This booklet explains how to safely use an ATV on your farm, ranch, or orchard. However, this booklet cannot substitute for a good course on basic ATV operation. These courses are inexpensive, and include hands-on experience. Many are specially designed for young people. FARSHA strongly recommends that everyone who may operate the ATV take one of these courses. In most regions of Ontario, ATV training courses are regularly offered through the Ontario Federation of All Terrain Vehicle Clubs

With everyone properly trained in basic ATV operation, you may wish to use this booklet as a guideline for discussions with family members, as well as hired workers. There will certainly be topics in this booklet that you have not considered, and you may improve some operating procedures by following the suggestions in this booklet. When you train new workers, use this booklet as a checklist for ATV safety procedures.

At the end of this booklet, you will find some further resource information on ATV safety.

# Current Situation of ATV Use in Ontario Agriculture

In Ontario, we see ATVs being used on farms, ranches, and orchards:

- Herding livestock
- Checking fences and irrigation lines
- Hauling fuel, chemicals, salt, feed, or other supplies
- Moving injured or ill small animals
- Spraying fertilizers or pesticides
- Plowing snow
- Mowing grass and cutting brush

In many situations, the ATV operator is working in a remote corner of the property and is working alone.

People who operate ATVs in Ontario agriculture include:

- Farm owners
- Members of the farm owners' family (who may be children or the elderly)
- Hired workers on the farm operation

ATVs are often used on family farms, where the line between work and recreation is sometimes unclear. The ATV may have originally been bought for farm work, but is also used by adults or children for recreation.

# Children and ATVs in Agriculture

The guidelines for ATV use are:

- Children under 12 should not use ATVs at all (some organizations even feel the age should be 14)
- Children between 12 and 16 should only use smaller ATVs with a 90cc motor, and should always drive under adult supervision



As already discussed, safely operating an ATV requires skill, good judgement, attention, and physical strength. A child or young person is developing these qualities, but may not yet be consistent enough to drive an ATV without close supervision, or even to drive an ATV at all. Children mature physically and mentally at different rates – what’s suitable for one 13 year old may be far beyond the strength or ability of another.

## Statistics of Use

A recent Manitoba study showed the high risks facing children who use ATVs. The survey was carried out with interviews and questionnaires at agricultural fairs and similar events. The *Injuries Manitoba – Prevention of Adolescent and Childhood Trauma (IM PACT)* study surveyed over 300 Grade 6 students in 1996-1997, and found:

- 42% of the children said they had ridden ATVs on public roads
- 26% of the children who owned ATVs said their ATVs were three-wheeled models
- More than 50% of the children said they were driving adult sized ATVs
- Only 30% of the children said they always wear a helmet while riding

We can assume that similar results would be found among children and young people in farm families in Ontario.

In a policy reaffirmed in January 2000, the Canadian Pediatric Society (the organization of doctors who treat children), recognized ATVs (two-, three-, and four-wheeled) as hazards to the health of Canadian children. Based on their experience treating children injured in ATV accidents, they called for:

- A ban on ATV use by children under 14 years, since the safe use of off-road vehicles requires skill, judgement, and experience
- Compulsory licensing of all ATV operators
- A ban on passengers on ATVs
- Compulsory use of helmets during ATV use

## **The North American Guidelines for Children's Agricultural Tasks**

The Canadian Coalition for Agricultural Safety and Rural Health has recommended that farm parents follow the *North American Guidelines for Children's Agricultural Tasks (NAGCAT)* when giving farm chores to children and young people.

The NAGCAT guidelines on ATV safety for children ask the following questions:

1. Can the child reach and operate all controls while comfortably seated?
2. Is the child strong enough to operate the controls without straining?
3. Does the child have good peripheral vision? For example, while looking straight ahead, can the child see your finger entering his or her field of vision at shoulder level?
4. Can the child use hands and feet at the same time?  
For example, can the child run and dribble a basketball?
5. Can the child understand and repeat from memory a five-step process?
6. Can the child recognize a hazard and solve the problem without getting upset?
7. Can the child react quickly?
8. Does the child do things that seem dangerous for the thrill of it?
9. Is your child responsible? Do you trust your child to do what's expected without anyone checking?
10. Does the child usually go with his or her "gut" feeling without thinking too much about what could happen next?
11. Has an adult demonstrated farmwork with an ATV on site?

12. Has the child shown that he or she can do the job safely four to five times under close supervision?
13. Can an adult supervise as recommended?

Your answer to each question should be a definite and confident “yes” (except for questions 8 and 10, which should be “no”). Even if your child is “old enough,” you may decide, based on these questions, that she or he is not yet ready to safely drive an ATV.

Adequate supervision of children and young people should follow these steps:

- Explain the task, and draw attention to each hazard and possible problem.
- Discuss solutions for each hazard and problem.
- Demonstrate the task while describing each step.
- Have the child or young person do the task four or five times under direct and continuous supervision.
- Have the child or young person do the task, but come back to observe or check every 15 to 30 minutes.

## What's Required?

Currently in Ontario, there are two distinct areas of requirements that apply to ATV use. One area involves licensing, and where the ATV can be operated (the *Motor Vehicle Act*, *Highway Act*, and so on). The other area involves the use of the ATV as **work** related equipment (the requirements of the *Occupational Health and Safety Act*).

# What's Good Practice?

Good practice (sometimes called “best practice”) goes **beyond** the minimum legal requirements. For instance, family members who are not considered farm employees are not regulated by the requirements of the *Workplace Safety and Insurance Act* and *Occupational Health and Safety Act*.

However, a good practice would be to make a rule that on your property, **everyone** who operates the ATV must always follow the guidelines in this booklet.

# How to Choose an ATV

ATVs can be very different. When using any new or unfamiliar ATV, check the manufacturers' manual to prepare yourself for the different features.

This section is not intended to be a buyers' guide to ATV manufacturers and models. However, by considering the following list of pointers, you may get a clearer idea of the types of ATV available on the market. If you are planning to buy an ATV, this list should help you make a good choice.

At the same time that you buy the ATV, be sure to include a suitable helmet, if you do not already have one in good condition.

If you think someone may be tempted to carry a passenger on your ATV, you should consider a different type of equipment. Some manufacturers are now making four-wheeled and six-wheeled vehicles that can safely carry one or more passengers and a larger load of gear or farm materials. Some of these vehicles are equipped with roll bars or rollover protective structures (ROPS). At the end of this booklet, you will find a brief discussion of the advantages and disadvantages of this type of vehicle.

ATVs can be designed for serious work or for recreation – be sure to buy the utility model, which will be more heavy-duty and durable.

- Does it have a four-stroke or two-stroke engine?  
(Utility models almost always have four-stroke engines.)
- Does it have two-wheel drive or four-wheel drive?  
(Utility models almost always have four-wheel drive capability.)
- Does it have a rear differential, and if so, can it be locked and unlocked according to need? (Utility models offer the flexibility of a lockable differential.)
- Does it have an independent suspension system?
- Is it designed for work in the bush, with brush shields to protect the operator's legs?
- Is the transmission standard, automatic, or semi-automatic?  
(Utility ATVs should have a reverse gear, and automatic clutch.)
- Is the starter electric (with a battery) or recoil (with a pull-start)?

- Does the ATV have options or special attachments, like a trailer hitch or a winch?

Consider who will be using the ATV – are the size proportions comfortable for the operator(s)?

- Can you comfortably push the foot brakes?
- Can you comfortably stand, with enough clearance from the seat? (On rough ground, a half-standing position is how you will absorb shocks and avoid getting thrown.)
- Are the handlebars positioned so your arms are slightly angled (not stretched right out)?
- Can you comfortably grip the handlebar controls?
- Are the footplates solid and non-slip, and comfortably positioned? Do they have a raised ridge to prevent the foot from slipping off the edge?
- Is there space for your knees without banging against the handlebars or brush shields?
- Are you able to swing your right leg high over the seat, to get on and off the ATV? (If this is not comfortable, you should look into an ATV model with a cutaway space in front of the seat.)

If there is any possibility that children will use the ATV, it must be a smaller model with a 90cc motor. The helmet must be fitted to the child's head size.

# Special Features of the ATV

In many ways, ATVs are very different from any other kind of vehicle you might drive. The special features of the ATV help explain some of the serious safety hazards, so understanding them will make you a safer ATV operator. You will also be able to use this information when explaining ATV safety to others on your operation. The special features are:

- Large low-pressure tires
- A high center of gravity
- Fixed rear axle
- Limited protection for the operator

## The Tires

The ATV's big balloon-type tires are designed to be very good on rough terrain. On the other hand, they are very bad on pavement. Like driving a truck with under-inflated tires, they affect the steering. In part, this is why it is not legal to drive an ATV on a highway. In addition, the tires create a much more bouncy ride than other vehicles, which adds to the instability by exaggerating the ups and downs.

The tires are intended to have very low air pressure. The manufacturer's manual will say exactly, but it's usually between 2 and 6 pounds per square inch (psi), which is much lower than the 35 to 40 psi required by most vehicle tires. With such low pressure, a regular tire gauge is not accurate enough, so a special smaller-scale gauge will be supplied with the ATV. Always use the right gauge.

On ATV tires, even the difference of 1 psi will make a difference. The tire pressure must be the same on all four tires. If it's not, the ATV will pull towards the soft tire. Always check the tire pressure before each ride, and top up the air if it's low.

## The High Center of Gravity

All vehicles have a point called the **center of gravity**, which is the point where all parts of the vehicle balance each other in all directions. In addition, all vehicles have an imaginary boundary at ground level, usually a square or a triangle, called the stability baseline. If the center of gravity moves outside the boundary of the **stability**

**baseline**, the vehicle will tip and roll over.

Where are these located on an ATV?

Each ATV model is a little different. But in general, the center of gravity of a parked ATV can be estimated:

- about six or more inches above the center of the axle
- about six or more inches rear of the halfway point between the two axles.

The stability baseline can be estimated by imagining the point where each wheel touches the ground, and drawing a line through each of those four points, to form a square.

The center of gravity of the ATV itself stays the same. But if you add other weights to the ATV (the body weight of an operator, and heavy gear on the carrier racks), the center of gravity



**includes** those weights, too. The new center of gravity is **higher**, and it may also be further forward or backward, or off to one side. The typical utility model ATV weighs about 600 pounds by itself, so the additional 200 pounds of an operator and gear can significantly raise the center of gravity. (Lightweight recreational ATV models that advertise a high ground clearance will, of course, have an even higher center of gravity.)

Therefore, when the ATV is fully loaded, travelling across a slope, the center of gravity is dangerously close to the stability baseline. In this situation, running over a bump may be enough to cause a rollover.

Or, in another example, consider what happens to the stability baseline when the ATV makes a sharp turn. The four points of wheel contact with the ground no longer form a square – they become more like a triangle. If the ATV is then loaded with gear over the front axle, the center of gravity is higher and further forward. When the front wheels are sharply turned, the stability baseline at the vehicle's front end is dangerously narrow – so narrow that the center of gravity can easily move outside the boundary of the stability baseline. The result will be a rollover.

When you explain to family members or employees why they should never carry a passenger on a single-operator ATV, be sure to point out that the vehicle's center of gravity is already high enough with just the operator's body weight. The addition of a passenger makes an ATV dangerously unstable.

## **The Fixed Rear Axle**

Most ATVs have a fixed or solid rear axle. This is a significant difference from other vehicles, which use a differential mechanism to allow the two wheels to turn at a different rate when going around a curve.

When the ATV comes to a curve, you steer the handlebars, and the front wheels turn in the direction of the curve. But both back wheels, because the ATV has no differential, want to keep going straight. Therefore, when you turn, the force is pulling the ATV out of the curve. The whole ATV tries to skid outwards, or roll over away from the curve. This is more noticeable at higher speeds.

The safe operation of the "driver-active" ATV depends on your body movement. To overcome the outward roll of the ATV, you must shift your upper body into the direction of the curve. In effect, this brings the center of gravity back inside the stability baseline. And to overcome the straight-ahead movement of the rear wheels, you must force the inner rear wheel to slip a little more than the outer rear wheel. This happens when you brace your outer foot hard on the footpeg as your upper body leans inwards.

Of course, these movements are affected by the distribution of the load on the ATV. An unevenly distributed load makes the ATV much more difficult to control.

The operator's movements are another reason why you should never carry a passenger (unless the ATV is specially designed for one). The long seat on an ATV is intended to allow the operator to move freely, and play a driver-active role in controlling the vehicle. Carrying a passenger would interfere with this necessary movement.

# Very Little Operator Protection

Most workplace vehicles have some kind of built-in protection for the operator: it may be the reinforced cab of a truck, or the rollover protective structure (ROPS) of a tractor or heavy equipment. The ATV has nothing of the kind. There is no ROPS on an ATV, no cab, and very little shielding.

What keeps the operator safe is a combination of preventive measures (good operating skill, and well-maintained equipment), and if something goes wrong, protective gear and clothing.

Even in a simple upset on rough ground, you can suffer cuts, puncture injuries, and broken bones. In a rollover, you may be pinned under the machine. In any kind of ATV accident, there will not be time to protect your head, if you're not already wearing a helmet.

Head injuries in ATV accidents are serious. Operators have been struck by falling rocks, by low-hanging brush, or have been thrown to the ground.

Wearing a helmet will not prevent the accident itself. However, the helmet can make the difference between a fatal head injury and survival after the accident. Or, the helmet can make the difference between a permanent brain injury and recovery from a less-serious head injury. This choice is in your hands every time you ride the ATV.

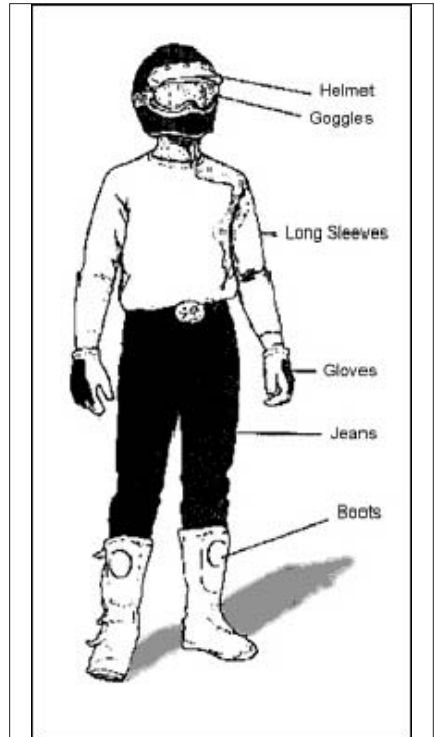
# Protective Gear

Wear the **best** protective gear possible whenever you use the ATV. You are setting an important example for everyone who sees you, especially the members of your own family.

When using the ATV in a workplace, the operator must wear:

- the right headgear and eye protection
- suitable clothing for the environment
- gloves, long pants and long sleeves

It's important to remember that even though the moving parts of the ATV are covered, a loose bootlace or piece of clothing can be entangled and cause a severe injury. This type of entanglement injury is similar to the PTO (power take-off) entanglement that most farmers have heard of. A loose bootlace that gets drawn into a spinning ATV axle or belt can pull your leg with enough force to break it. Loose clothing can also get caught in passing brush, and drag you from the moving ATV.



## The Helmet

The correct type of helmet can make a difference between life or death - or between a concussion or a permanent brain injury. It is also one of the **legal requirements** of ATV use.

The helmet must be certified for ATV use. It must be the right kind – **not** a bicycle helmet, **not** a hockey helmet, **not** an industrial hard hat. An ATV helmet will stay on

your head through anything. It has a chin strap and visor or goggles. It will protect your face and eyes from loose gravel, dust, bugs, and branches.

It should have a certification sticker from one of the following agencies:

- Snell Memorial Foundation, for motorcycle use
- Canadian Standards Association (CAN3-D230-M85), for motor vehicle applications
- British Safety Institution (BS5361), for vehicle users
- US DOT (571.218), for motorcycle helmets

The helmet should be in good condition, with no cracks or gouges in the plastic. The inner foam padding should be in good shape, and the chinstrap must work. The visor or goggles should be clear and not scratched or clouded.



If the ATV operator is a child or young person, the helmet must be carefully fitted for the smaller head size.

If the helmet goes through an accident or is somehow damaged:

- Thank it for its service, and get rid of it.
- Don't use it again. It cannot protect you any more. Get a new one.

## Clothing

Suitable clothing will protect you from many minor injuries on an ATV. Suitable clothing can also make safe operation easier. Leather gloves will protect your hands, as well as keeping them warm and dry. Many of the ATV controls are handled with your thumb and fingers, so having cold, stiff hands will make it harder to drive safely.

## Boots

Your feet are an important part of how you control the ATV – by shifting your body when turning, half-standing over bumps, and so on. The soles of your boots should be non-slippery, because you brace your weight on the ATV footplates. Your feet and lower legs may be hit by gravel or branches as you drive, so high sturdy boots will protect you.

# Pre-Ride and Post-Ride Inspection

ATVs take a lot of wear and tear. Things break down, or shake out of adjustment. ATVs need frequent and regular maintenance. The pre ride and post ride inspections are your chance to identify and correct small problems while they are still small.

## Reporting Mechanical Defects and Safety Problems

Even on a small operation, you should have a clear system for reporting and correcting health and safety problems. In fact, one of the WCB's requirements is that anyone who sees an unsafe condition or act must report it to a supervisor or to the employer. In turn, the person who receives the report must investigate the situation and correct any hazard without delay.

A good way of doing this with your ATV is by using a tag system. A notice or tag at the ATV's ignition warns the next user either:

- That the ATV has a serious safety problem, and that it cannot be operated at all, until the problem has been fixed, or
- That the ATV has a safety problem, and that it can be used only in certain circumstances

For example, if the ATV's brakes aren't working, the tag should say clearly that no one may use the ATV at all, until the brakes have been fixed. On the other hand, if the ATV's headlights aren't working, the tag should say that the ATV may be operated only on private land during daylight hours, until the lights have been fixed.

A tag system of this kind eliminates confusion, and cannot be overlooked.

In addition, each ATV in the workplace should have a file of maintenance records or a logbook. Each time the ATV is inspected, and each time the ATV has any repairs or problems, these should be noted. These records may be needed if you ever have to show evidence of regular maintenance and care.



# The Pre-Ride Inspection

The manufacturer's manual will have a list of what to check, and how often. Always make sure that you are looking for everything that's covered in the manufacturer's manual.

The pre-ride inspection takes place in two parts – before you turn it on, and when it's running.

With the ATV turned off, check the following:

- Is the manufacturer's manual there?
- Look at the maintenance records – are there any recent problems or warnings?
- Is the gas tank full?
- Is the oil level okay?
- Is the tire pressure on all four tires okay?
- Is the helmet in good condition? Does the chinstrap work? Is the visor clear and unscratched?
- Are the first aid and emergency kits there? Is the tire repair kit there?
- Grab each tire with both hands and try to rock it – there should be no movement or play.
- Grab each footpeg and footplate and try to move it – there should be no movement or looseness.
- Are all the wheel bolts tight on each tire?
- Look at all four tires, all around – there should be no obvious worn places or cuts.
- Look at all the cables and lines – there should be no signs of wear or breaks.

Now start the ignition.

- Do the lights come on?
- Turn the handlebars as far as they go – the throttle should continue to run smoothly, regardless of the handlebar position.
- On level ground, go slowly. Try the brakes. You should have a smooth stop, with no grabbing, and no pulling to one side.

Now turn the ignition off.

- Does the engine stop smoothly? There should be no run on.

Get in the habit of looking around the whole ATV before starting up, every time. Check that nothing is dragging, and that nothing is entangled in the wheels or axles. Check that the tires are okay. Check that no one is standing too close.

Finally, make your inspection entry in the logbook. Initial and date it. Say either that everything was okay, or specify the problem and what was done to correct it.



## Post-Ride Inspection

Serious ATVers have learned from experience to always do a post ride inspection before putting the ATV away.

If you did not check the ATV before putting it away, and something was loose or had been damaged, when would it be discovered? Someone might discover the problem in the next **pre-ride** inspection, when they might be tempted to ignore it, since they'd be eager to get going.

The post-ride inspection has some of the same points as the pre ride inspection – and some different. Check:

- All the fluid levels (gas, oil, and so on) and top them all up.
- The pressure and condition of all four tires, and add air if necessary.
- The tightness of all important parts – the footpegs and footplates, the wheels, the wheel bolts should show no looseness or play. Tighten any that need it.
- All lines and cables – there should be no signs of wear or damage.



**Clean** the ATV thoroughly. Grit and standing water will corrode and damage important parts.

Inspect the helmet for any signs of wear or damage, and replace it if you have any question about its effectiveness. Replace anything that was used in the first aid or emergency kits.

## Preventive Maintenance

Many farm operations do their own maintenance. There's sometimes a temptation to modify the equipment. **Don't**. If the ATV is still under warranty, take it to the dealer for modifications, or you may lose the warranty. If you want modifications to the ATV – extra gear racks, higher clearance, a trailer hitch, or something else – get the modifications done properly by the authorized dealer. If someone on your operation modifies the ATV, it may then become your liability.

## Emergency Maintenance

There is **no** spare tire on an ATV. You should always carry a repair kit to use if the tire goes flat. The repair kit should include a pump or a canister of compressed air, and a repair kit (plugs), plus directions for how to use them.

Check the manufacturer's manual for the emergency starting procedure. An ATV that uses a battery starter will not start if the battery fails. Usually, this type of ATV will have an emergency recoil starter. On a few ATV models, the gear shifter depends on battery power, so the manufacturer makes an insertable bypass for manually shifting. If this is your type of ATV, make sure this part and instructions are kept with the ATV at all times.

## Working Alone

Because the ATV should not be used to carry a passenger, you may find yourself working alone on a distant corner of the farm property. Does this work pose the risk of a disabling injury? Could someone be unable to get help if they were injured? In agricultural situations, the answer to these questions is almost always “yes.”

One suggestion for agricultural workplaces is that in this type of situation, the employer must have a way of periodically checking on the well-being of the person working alone.

A two-way radio or cellphone is a good first step. But if you rolled the ATV and could not make a call for help – **how long would it be** before someone started looking for you?

Make an emergency plan for this kind of situation, and discuss it with everyone involved with your operation. Always make sure that someone else understands where you have gone, what route you are taking, and when you plan to return. Arrange to have a reliable person call you regularly – then, if you do not answer the call, they can send help without delay.

Equip the ATV with a first aid kit. At the end of this booklet, there’s a list of what it should contain. Consider what other emergency equipment should be carried on the ATV: flares, a space blanket, matches, some basic tools and spare parts, and so on.

## Emergency Evacuation

Emergency evacuation is also something you should plan for. Usually, an ATV is used **because** of difficult terrain; in this situation, a conventional ambulance would probably not be able to evacuate someone injured in a serious ATV accident. The emergency response agency in your local area (a volunteer fire department, an emergency service, or a police detachment) can help you work out an emergency plan.

# Operating the ATV

Of course, the best way to learn to operate an ATV is by **doing** it. This booklet is no substitute for a hands-on course in basic ATV operation. The courses offered in Ontario on basic ATV operation will cover all of these topics in detail. However, here are some pointers for safely operating an ATV.

## Starting Up

Some models of ATV have different starting procedures, so follow the directions in the manufacturer's manual. Make sure the ATV is in neutral before starting. The parking brake should be engaged if the ATV was properly parked from the previous use.

## On Normal Rough Terrain

**Walk** a new or tricky route first, asking yourself questions like:

- How stable is the ground?
- How loose are the rocks?
- How deep are the holes?
- Are there low-hanging branches?
- Is there space to safely turn around?

Experienced ATVers **always look ahead** when driving. It's important to plan for the terrain **before** you get to it, rather than reacting at the last minute.



One basic rule that seems obvious, is **don't go faster than you can see to stop**. There may be other vehicles around – and the ATV operator will come out the worst in a collision with another vehicle or piece of equipment. There may be branches or a tree down, or an animal on the road. Low-hanging branches are a special hazard. A helmet may save you from a brain injury, but if you're going too fast, a collision with a branch may throw you from the ATV completely. If you're ATVing in a group, keep a safe distance from each other.

Don't ever drag your foot on or even near the ground while the ATV is moving. This may seem obvious, but ATV operators have had a foot and ankle caught and twisted between the footplate and the ground. This usually happens while getting on or off a rolling ATV, or in the panic of getting off a tipping or sliding ATV. Make it a habit – **never** drag your foot on or near the ground.

Another pointer that might seem obvious is: never ride the ATV while reversing down a slope – either the ground, or a loading ramp. It's just too easy to lose control, and with the ATV rolling backward, you will not have the chance to get off.

Don't suddenly throttle up (give it gas) or rev the motor. This can be enough to start a back-flip.

## Through Water

Always check the manufacturer's manual before driving through water. The depth limit will be different from one ATV to the next. Then walk the route first with a stick to check for hidden holes, or a soft muddy bottom. Drive through the water at a steady speed, but do not raise a big spray.

Once out of the water, don't count on the brakes until you've checked them.

Don't ever try to drive through fast-moving or unfamiliar water.

## Reversing

Almost all ATVs have a reverse gear now. They have no mirror and no backup beeper. Rarely, you may need to back the ATV up – but, if you do, always watch closely behind you.

## Going Uphill

When driving the ATV up a slope, remember that the center of gravity will want to pull towards a back-flip. To counteract this force, make adjustments before you start going uphill:

- Redistribute the load so more weight is on the front of the ATV.
- Slide forward on the seat, and lean forward and down.

Gear down, and slow down. Always climb a hill in **low** gear.

Don't make changes in the traction between the wheels and the ground by suddenly turning the front wheels, popping the clutch, or revving the throttle. If you picture the ATV driving uphill, you can see that a sudden burst of power will rotate the rear tires faster than the vehicle's weight can be pushed forward. The ATV will pivot on the back axle and flip over, pinning the operator underneath.



Some ATV advertisements make it look like these vehicles can climb almost straight up a steep slope. Remember that these advertisements are filmed under ideal conditions, with extreme camera angles, and highly skilled stunt riders. Don't overestimate the capacity of your ATV or your own skill and experience.

If the slope is too steep, the ATV will begin to stall out or roll or slide backward. If you panic and slam on the brakes, the back axle may lock. In this situation, too, the ATV can pivot on the back axle and flip over, pinning the operator underneath.

What should you do if you discover the slope is too steep?

- Apply first the front and then the rear brakes, with the ATV pointed uphill.
- If it keeps sliding, get off and step away. You won't be able to try and stop a 600-pound ATV by force, anyway.
- If the front and rear brakes are holding, carefully get off the ATV, while continuing to apply the brakes.
- Stand with your feet clear, and set the parking brake, put the ATV into neutral, and turn the engine off.
- Then, with the immediate situation taken care of, you can decide what to do next: get help, use a winch, or try to walk it down.

## Going Downhill

When driving the ATV down a slope, the center of gravity will want to pull towards flipping forward. To counteract this force, make adjustments before you start going downhill:

- Redistribute the load so more weight is on the back of the ATV.
- Slide back on the seat, and try not to lean forward.

- Gear down, and slow down. Do not use neutral. Let the engine keep you slow.



If you must use the brakes, use the rear brakes. And brake gently, never suddenly. Don't ride the brakes. You can picture what happens when an ATV is speeding downhill, and the front brakes are suddenly applied. The front axle locks too quickly to stop the built-up momentum of the ATV and operator. The ATV pivots on the front axle and flips forward, and the operator is either thrown forward or pinned underneath the ATV.

Even a sudden, sharp application of the rear brakes can cause an upset, if the rear wheels lock. If the rear wheels lock too quickly to stop the forward movement of the ATV, the back end of the vehicle will drag sideways and the ATV may roll.

## Going Sideways Across a Slope

Avoid going across a slope, whenever you can. The ATV is very unstable in this situation. Never cross a slope with a loose surface or big bumps.

Even on a gentle angle, the center of gravity will pull towards the downhill side of the slope. Stop and redistribute the load to the uphill side of the ATV. Keep your body weight shifted to the uphill side, too.



Stay on the inside of the road or trail, because the outer edge of the trail may be loose or crumbling, too.

Avoid the bumps and holes, and go slowly. Tipping one side of the ATV by running over a bump can be enough to cause a rollover.

If you're on a slope, and you feel the ATV starting to roll over:

- Try to turn the wheels more to the downhill, if the terrain makes this possible.

- If you **can't**, carefully get off the ATV on the uphill side. The ATV may then level itself out without your body weight adding to the high center of gravity. Once off the ATV, you'll be able to think through what to do next.

## Driving Through Curves

On an ATV, you cannot take a curve at the same speed as driving in a straight line. Slow down before the curve. If you apply the brakes during a curve, the wheels will tend to skid.

Steer the handlebars, firmly brace the foot on the outside of the curve, and lean **into** the curve. This will counteract the force pulling the ATV outward to a skid or roll.

If you're already turning, and you feel the ATV start to roll outwards:

- Lean your body further into the turn, away from the direction that the ATV is tipping.
- Reduce the throttle gradually.
- Straighten the wheels gradually, to widen the turn.



## Parking

Always park on level ground, if at all possible. If there is no level ground, park crossways to the slope.

Always use the parking brake. If you're parking on a slope, use wheel chocks too, if necessary.

## Carrying Loads on an ATV

ATVs are mainly designed for transport rather than hauling large amounts of gear. There are limits on the weight you can safely haul with an ATV. Check the manufacturer's manual for the exact limits, since they are different for each ATV model. The manufacturer's recommended hauling limit is important, but always remember that the ATV will be harder to handle and stop with any heavy load.

Almost all ATVs have two carrier racks, on the front and back of the vehicle. Don't try to carry gear anywhere but the manufacturer's carriers.

An extra load on the front makes the steering more sluggish. It reduces traction on the rear wheels, so it's easier to skid the rear end and lose control. A heavy front load also changes the side-to-side stability of the ATV – you have to go slower, to compensate.

A heavy load on the back of the ATV increases the risk of a back flip. It, too, changes the side-to-side stability of the ATV.

Put any load as near the center of the ATV as possible, and don't let any weight extend over the edges of the carrier racks. Use tie downs, to keep the load from shifting while you're driving. Distribute the load evenly, front and back, and on both sides. Use ballast, if necessary, to make sure the load is balanced.

Remember that a high or bulky load on the rear carrier will get in the way as you swing your leg over the seat when getting on or off the ATV.

Big containers of liquids can slosh a lot of weight back and forth, high up on the ATV. They make an ATV **very** unstable. If you regularly carry big containers of liquids, get a proper carrying tank, mounted low on an ATV trailer. (A proper tank has baffles inside, to reduce the movement of the liquid.)

## Towing with the ATV

The manufacturer's manual will have specific information about towing a trailer with your ATV.

Never try to tow another vehicle or a trailer by attaching a rope or cable to the carrier rack. This will bring the center of gravity very high, near the rear stability baseline. It can cause the ATV to flip backwards. **Only** attach to the trailer hitch.

## Using Ramps to Load and Unload an ATV

An ATV can be moved from place to place on a trailer or in the box of a full-sized pickup truck. This increases the flexibility of your ATV, allowing you to move the ATV to places that are accessible only by public roads and highways (where you cannot drive the ATV itself).

The ramps must have a non-slip surface, and they must be securely attached to the truck or trailer. They should, of course, be sturdy enough to support the weight of the

ATV and rider, and wide enough for the ATV's tires.

When loading the ATV onto a trailer or truck, position the ramps for the ATV's tires, and secure the ramps with hooks and safety straps. Centre the ATV at the ramps, and drive slowly up the ramps onto the trailer or truck. Apply the parking brake and wheel chocks. Always secure the ATV by tying it down, before driving off.



When unloading the ATV from a trailer or truck, position the ramps for the ATV's tires, and secure the ramps with hooks and safety straps. Never ride the ATV backwards down the ramps. If a wheel starts to go off the ramp, you will not be able to jump off the ATV as it tips over. From a standing position, with your hands on the handlebar controls, roll the ATV backwards to the beginning of the slope of the ramps. Step down onto the ground alongside the ramp, and with your hands on the handlebar controls, continue to roll the ATV down along the ramps to the ground.



# Conclusion

The most important ideas of this booklet are:

- Make sure **anyone** using an ATV under your responsibility has been properly trained in basic ATV operation and safety.
- Do not allow passengers on the ATV.
- Always wear an ATV helmet.
- Do not use a three-wheeled ATV.
- Never drive on or across a highway, unless you have a permit.

If your operation is covered by the requirements of the OSHA, you are responsible for providing worker training, and assessing each person's competence before authorizing a worker to operate the ATV.

In any case, anyone who operates an ATV on your property or on your behalf (whether worker, family member, or guest), should be properly trained. The ATV is a vehicle that requires a strong combination of skill, good judgement, attention, and physical strength. Someone who does not have this combination of qualities is at serious risk.

This booklet has explained in detail why you should not allow passengers on the ATV. The ATV is a rider-active vehicle, and the operator needs to be able to move freely on the ATV seat to control the vehicle; a passenger interferes with that movement. A passenger raises the ATV's already-high center of gravity to a dangerous level. A passenger may affect the vehicle's center of gravity in other ways as well, by adding greater instability to the front or rear axle. A passenger will be in the way if the operator needs to get off the ATV quickly in an emergency. (There are very few ATV models that are **designed** for a second person – all others are single-operator vehicles.)

In an ATV accident, the helmet may be the only thing between the operator and a disastrous head injury or death. In almost every recorded ATV accident, the outcome could have been different if the operator had been wearing a helmet.

By now, the evidence is clear: three-wheeled ATVs are far more unsafe and unreliable than the four-wheeled models. The accident and injury statistics are

unmistakable. However, three-wheeled ATVs are still being used, especially by children and young people on family farms. If you still have a three-wheeled ATV, FARSHA strongly urges you to replace it with a safer, four-wheeled model.

Many of the most serious ATV accidents have been collisions with other vehicles. In a collision between an ATV and a car or truck, the ATV operator loses. Driving on or crossing a public road or highway is dangerous; that's why in most cases it is illegal. In BC, any use of an ATV on or close to a highway must be done under the terms of a special permit. If your work requires you to cross or drive along a highway, contact your municipality or local police for a permit.

The Farm Safety Association and other farm safety organizations are very concerned about the high numbers of serious ATV accidents in agricultural operations.

FSA Regional Safety Coordinators are available, to provide advice and information on ATV safety, as well as other aspects of farm safety.

# Resource Information

## Where to Get More Information on ATVs

In Ontario, the Ontario Federation of All-Terrain Vehicle Clubs organizes recreational ATV activities all over the province, including classes.

Their website address is: [www.ofatv.org](http://www.ofatv.org)

The Canada Safety Council offers courses in ATV operation for adults and children (the CSC sponsors a full range of community safety programs).

Their website address is: [www.safety-council.org/training/ATV/atv.htm](http://www.safety-council.org/training/ATV/atv.htm)

The ATV Safety Institute (ASI) is an industry organization sponsored by the ATV manufacturers to promote the safe use of ATVs. The ASI produces videos and booklets on ATV use. Their website features an interactive ATV safety exercise that is especially aimed at children interested in ATVing.

The website address is: [www.atvsafety.org](http://www.atvsafety.org)

The Canadian Agricultural Safety Association (CASA) is a coalition of farm safety agencies from across Canada. CASA administers the Canadian Agricultural Safety Program, and sponsors annual Canadian Farm Safety and Health conferences.

The website address is: [www.casa-acsa.ca](http://www.casa-acsa.ca)

For any other health and safety questions and information, contact:

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web site: [www.farmsafety.ca](http://www.farmsafety.ca)

## Other Types of Small Utility Vehicles

Now that you've read this booklet, you know that the special characteristics of the driver-active ATV make it unsuitable for some types of farm work.

You should consider other types of small utility vehicles if:

- You frequently need to haul bulky or heavy loads
- You frequently need to haul unstable loads, such as large containers of liquid, or live animals
- You want to carry passengers
- Some people on your operation do not have necessary combination of skill, judgement, attention, and physical strength to drive an ATV.

In recent years, some manufacturers have created small utility vehicles that are almost as versatile as the ATV, but are significantly different from ATVs in many ways. One of these vehicles may be better-suited to your needs.

These vehicles do not demand the same level of skill and physical strength as the driver-active ATV. They have different handling characteristics.

In general, these vehicles have a wider and more stable wheelbase. They have a very large rear cargo area that is designed for heavy and bulky loads. They more closely resemble a car, with a steering wheel, pedals, gearshift, and front dash panel, and they have separate seats for a driver and passenger. Many of these vehicles have a rollbar, and therefore also have seatbelts. These vehicles are available as four wheeled or six-wheeled models, and have excellent traction for heavy work.

As with all other agricultural equipment, you will get the best results by using the most appropriate tools for the job. Consider carefully what you expect from a utility vehicle, and make the safest choices possible.

## First Aid Kits

FSA strongly recommends that you keep a Basic First Aid on the ATV at all times. Use a container that can readily be taken to the scene of an injury, and that will keep items clean and dry. Here's a minimum list of what it should contain:

QUANTITY	ITEM
12	14 cm x 19 cm wound cleansing towelettes, individually packaged
30	Hand cleansing towelettes, individually packaged
50	Sterile adhesive dressings, assorted sizes, individually packaged
6	10 cm x 10 cm sterile gauze dressings, individually packaged
2	10 cm x 16.5 cm sterile pressure dressings with crepe ties
2	20 cm x 25 cm sterile abdominal dressings, individually packaged
4	Cotton triangular bandages, minimum length of base 1.25 m
2	Safety pins
1	14 cm stainless steel bandage scissors
1	11.5 cm stainless steel sliver forceps
6	Cotton tip applicators
1	2.5 cm x 4.5 m adhesive tape
1	7.5 cm x 4.5 m crepe roller bandage
1	Pocket mask with a one-way valve (a pocket mask is only required if the person is trained in its use)
6	Pairs of latex or waterproof gloves
1	Instruction card advising workers to report any injury to the employer for entry into the first aid records, and instructions on how the worker is to call for assistance.



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