

## ALL TERRAIN VEHICLES

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(For assistance, please contact EHS at (402) 472-4925, or visit our web site at <http://ehs.unl.edu/>)

All Terrain Vehicles (ATV) are commonly used in agricultural operations as a tool of the trade. While they can enhance the efficiency of work tasks, they present unique hazards. Nationwide, over 100,000 injuries and several hundred deaths are attributed to ATVs each year. The ATV Safety Institute (<http://www.atvsafety.org/>) provides a wealth of resources on safe operation, as well as hands-on training classes.

### General Precautions

- Restrict ATV operation to adults only.
- Prior to operation, riders should read the equipment manual, participate in hands-on instruction, and demonstrate competency to an experienced and trained instructor.
- The ATV should be thoroughly inspected prior to each use, including tire condition and pressure, driveshaft or chain condition, lever and cable condition and smooth operation, operable lights and ignition/stop switches, and secure wheel nuts/pins.
- All riders must use appropriate protective gear, including a DOT rated helmet, long pants, eye protection (or face shield), and sturdy boots with ankle supports. Consider riding gloves and long sleeved shirt or jacket, as well.
- Do not carry passengers.
- When carrying a load, ensure that it is properly balanced and secured to a rack that is intended for this purpose.
- Do not operate an ATV on pavement. The vehicle is not designed to be used on paved surfaces and may be difficult to control.
- Avoid operating an ATV on a public road. If absolutely necessary, the ATV must be in use **specifically for agricultural purposes**, have head-lights and tail-lights illuminated, fitted with a bicycle flag that is a minimum of 5 feet off of the ground, and operated by a licensed driver.
- Do not consume alcohol or drugs before or while operating an ATV. Of course, this is also against University policy.
- Be familiar with the area of operation and do not operate the ATV at excessive speeds. Go at a speed that is proper for the terrain, visibility conditions, and your experience.
- Never attempt to do wheelies, jumps or other stunts.
- Be cautious when operating an ATV, especially when approaching hills, turns, and obstacles and when operating on rough terrain.

## **Selecting the Right ATV for the Work**

When selecting an ATV for your operations, you need to consider many factors and features: intended use of the ATV, terrain and ground conditions, power, speed, gear ratio, suspension, center of gravity, drive mechanism, brakes, lights, starter, seat, carrying rakes, and reverse gear. The most important factor, however, is to purchase a "workhorse" ATV, not a "thrill-type" recreational model. The workhorse model is four-wheeled, and designed for power, traction, and stability. Recreational models are built for speed and thrills and are not suitable for the workplace. The following information is provided to help you select an appropriate vehicle for your operations.

### **Suspension Systems**

- The only suspension system provided on some ATV models is the low pressure (usually two to six psi) balloon tires. These can provide a smooth ride and good vehicle control at slow speeds on a smooth surface. However, with added speed or on rough terrain, they tend to bounce and pitch up and down and from side to side. Control of the machine becomes more difficult and the ride is more tiring on these models.
- Some models have suspension systems only on the front wheel(s), while other models include suspension systems on all four wheels. Some use only coil springs, others use both shock absorbers and coil springs. The latter type, both coil springs with shock absorbers, provides the best traction, maximum control, and the smoothest ride. Other models are more likely to cause or aggravate back or leg problems.

### **Drive Lines**

- For most agricultural operations, an ATV with an automatic clutch, reverse gear, shaft drive and a differential with a locking mechanism is appropriate.
- A power take-off is available on some models, for operating attachments such as mowers, spray equipment, and other machinery. The anticipated use of the machine would determine whether or not this feature is desired.

### **Power and Speed**

- ATVs come equipped with engines ranging from less than 100 cc to over 500 cc, and with gear ratios that permit speeds in excess of 50 mph. The use(s) planned for the ATV should determine the size of the engine and the gear ratio. There are few, if any, justifications for a maximum speed of more than 20 to 25 mph on ATVs for agricultural operations. Serious ATV accidents are frequent at higher speeds. Make sure the ATV's gear ratio fits your needs.

### **Other Features**

- Select a model with both front and rear brakes with independent controls.
- The rear fenders and foot peg or rest should be designed to make it difficult or impossible for the foot to slip off and be caught under the rear wheel.

- The muffler, exhaust, and other hot engine components should be located, or guarded, to prevent burns. The design should also prevent the buildup of dry trash near hot exhaust parts to reduce the risk of fire.
- If carrier racks are installed on the ATV, both front and rear racks are recommended. This permits the load to be balanced front and back to maintain stability. Remember, an extra load, such as carrier racks or a passenger, significantly raises the center of gravity of the loaded machine and increases the risk of an overturn.

**References:**

Safe Farm Program Fact Sheet Pm-1563c, Iowa State University Extension, Ames, Iowa. Publication date: September 1994, by Charles B. Schwab and Laura Miller.

*Safety Tips for the ATV rider.* A pamphlet from the National 4-H Council.

The Consumer Product Safety Commission ATV safety alert: *Ride Safely and Legally.*

National Ag Safety Database (NASD).