

## **Introduction**

Agricultural activities in schools include the use of gardening hand tools, power generating equipment and tractors. Students will also experience the handling of animals and the construction of fences and other farm structures. They will also come into contact with agricultural chemicals.

## **MACHINERY**

Agricultural machinery refers to hand-operated machines which are used to perform tasks in the development and maintenance of agricultural pursuits.

This machinery varies in structure, from simple mechanical machines to complex mechanical machines which incorporate motors, shafts, pulleys, belts and blades. Examples of this machinery include: cultivators, ploughs, harrows, tillers, seeders, spreaders and sprayers.

Hazards that may be encountered when using machinery such as revolving shafts and pulleys can cause finger and limb crush injuries.

Machinery guards protecting drive-lines, cutting attachments and V-belts should be in place and should be in operational order at all times.



## **HAND OPERATED POWER EQUIPMENT**

This equipment has the potential to inflict injuries and/or create hazardous situations. The major causes of accidents are ignorance of the hazards and operators' apathy to commonsense safety procedures. The main precautions include:

- check terrain for hidden obstacles, e.g. wire and rocks
- maintain a safe working distance from others
- keep a firm footing and good balance
- take rest breaks to reduce risk of vibration



## Mowers and Slashers

When operating this type of machinery hearing, eye, leg and foot protection must be worn such as spats and boots.

The operator should never pull a running mower towards his/her feet. The mower should be flat on the ground — never tilt it up while it is running.

Observe the following when operating electric mowers:

- use a recommended extension cord (eg. heavy duty) and regularly check it for damage
- An RCD (ELCB) must be used
- shut off and unplug cords whenever the electric mower is stopped
- mow away from the cord
- never use an electric mower in damp weather or on wet grass



## Brush Cutters and Whipper Snippers

When operating this type of machinery hearing, eye, leg and foot protection must be worn.

Observe the following when operating brush cutter and whipper snippers:

- Ensure that harnesses are fitted correctly
- Run blade at full speed before starting a cut
- Ensure blades and cord are appropriate and fitted correctly
- Do not touch sawn-off ends

## GARDENING TOOLS

Gardening and non-workshop hand tools refers to simple tools and aids which are used in relatively simple gardening activities.

Hazards that may be encountered when gardening can cause back injuries and stab or cut wounds from sharp cutting edges or points. Gardening tools that may cause injury to the hands include: shears, pruning saws, and secateurs.



Tools used should be checked to ensure that they are safe, properly maintained and used in accordance with manufacturers' operating instructions.

Tools should be neatly and safely stored so they do not create a hazard, eg. falling, tripping or stubbing.

Appropriate footwear should be worn for the activity of gardening.

## **LADDERS and SCAFFOLDS**

The ladder is one of the leading culprits of injuries, causing nearly 20 deaths a year in Australia and injuring thousands of others.

Ladder accidents aren't always due to faulty equipment. They in the most part, can be blamed on unsafe practices. The repetition of tasks can lead to complacency and over-confidence which may result in people taking shortcuts.



Care needs to be taken when using aluminium ladders or steel wire reinforced ladders where there is a chance they may come into contact with live electrical wires or parts.

Inspect ladders before using and ensure the ladder is in good condition, on a firm footing and secured to prevent outward or sideways movement.

The following is a list giving tips on how to scale the stepladder safely.

- Read the safety warnings on the ladder and follow the manufacturer's advice
- Only climb as far as the second step from the top of a step ladder or the third step from the top of a straight ladder
- Never use the ladder if you are alone
- Work within arm's reach from the ladder and never lean out too far
- Check it's in good working order, including non-slip feet fitted in good condition
- Ladder's height is right – an extension ladder should extend at least one metre above the surface the top is resting on
- Place the ladder on dry, firm, level ground – use a hard board if necessary
- Keep clear of powerlines and/or exposed electrical wiring



- Wear enclosed, slip-resistant footwear – not sandals or flip-flops
- Have someone hold the base of the ladder
- Hold with both hands while climbing and always hold the ladder with one hand (use a tool belt)
- Secure the top of an extension ladder into position before starting work
- Be careful you don't lose your balance
- Set at a slope of approximately four in one – that is, for every metre in height the ladder should extend out from the vertical surface at the base by about 250mm



Scaffolds and platforms two metres or more above ground level should have guards and toe boards.

## CONSTRUCTION

Construction includes all types of foundations, floorings and constructions performed in agricultural field structures such as animal shelters, sheds, stockyards and other work areas.



Construction may range from relatively simple activities, such as concreting, to the complex construction of buildings such as animal shelters.

Hazards that may be encountered in construction can cause back strain or crushing injuries.

Appropriate personal protective equipment should be worn by persons who may be at risk as a result of an activity involving construction equipment. This may include safety spectacles, ear muffs, gloves and safety boots. Head protection (hard hats) may be required in some construction activities.



## ELECTRICITY

Electricity is used to power equipment such as welders, drilling machines and assorted power tools.

Check to ensure electrical fittings, fixtures, plant and equipment, wiring, insulation, switches, power cords, plugs, earth wires, guarding, and welding equipment are in good condition and regularly maintained.

Avoid using electrical equipment in wet conditions. There is a real risk of electric shock or electrocution.

The best safeguard against electrocution on farms is the residual current device (RCD) or safety switch. A portable RCD can be used with individual power tools.



## ANIMALS

The types of animals kept and handled may vary from school to school, but may include poultry, fish, birds, sheep, pigs, goats, dairy cattle, beef cattle, horses and bees.



Hazards that may be encountered when handling live animals may result in crush injuries, back problems, abrasions, slip and trip injuries and animal bites.

Animal pens and shelters should be cleaned regularly to minimise the possibility of spread of diseases and breeding of flies.

## NOISE

Noise from farm tools and machinery can cause permanent hearing loss. Hearing loss may be temporary at first, but repeated exposure will lead to permanent damage.

Some noises, such as gunshots, are so loud they can cause immediate permanent damage.

The noise exposure standard for an eight hour day is 90 dB(A). The exposure standard for peak noise - for example a gunshot - is 140 dB.



Typical farm noises that can damage hearing include:

- tractor (95-100dB(A))
- angle grinder (95-105dB(A))
- chainsaw (105-120dB(A))



Where noise exposure cannot be reduced, hearing protection should be worn, e.g. on open tractors or when using a chainsaw.

## **STOCKYARDS**

Stockyards can be defined as any area where live animals are handled and/or confined.



Animals in any stockyard situation may react unpredictably. Persons working with animals should be alert and try to anticipate an animal's reaction to minimise potential hazards.

Hazards that may be encountered in this activity may cause crush injuries and lifting or manual handling injuries.

Stockyards, animal pens and shelters should be cleaned regularly to minimise the possibility of spread of diseases and breeding of flies.

Safe escape routes should be established and may include well-placed manways, easily accessible rails and footholds for climbing.

The stockyards should be designed to assist the smooth flow of stock and to reduce the risk of injury to both the animals and the students and staff.

## **HAY BALES**

Large hay bales, some weighing up to 800 kg, have killed and seriously injured many farm workers in Australia.





Bales, both round and rectangular, can fall on tractor and forklift operators, topple off stacks and vehicles onto workers or bystanders, and collapse when hay stacks fail.

The following strategies could be employed to minimise the risk of hay bales falling:

- Stacks should be on firm, level ground, away from fire hazards, sources of ignition, overhead powerlines, dwellings, boundary fences and footpaths.
- Stack and load heights should not exceed the lifting capabilities of the farm handling equipment.
- Big bales should be stacked to a maximum of four bales high.
- High density bales can be stacked up to six layers high.
- Stack big rectangular, square or high density bales by overlapping, to form a stable stack.

## TRACTOR DRIVING

Tractor refers to a motor vehicle, whether wheel or track-mounted, primarily designed to provide power to or movement of any attached machine or implement by any transmission shaft, belt or linkage system. Ride-on mowers are not normally regarded as tractors.



Hazards that may be encountered in tractor driving include, excessive noise levels, unsafe jacking, roll-overs on hillsides, improper dismounting and inhalation of exhaust fumes.

Passengers must not ride on tractors or towed implements not designed for this purpose ie. they have a feature such as an extra seat with back rest, handhold and foothold.

Under no circumstances should passengers attempt to ride upon the A-frame of trailed or three-point linkage implements such as box trailers.

If students, or others, are being transported by trailer to distant locations, the trailer should be enclosed, and no part of the passengers' body should protrude from the trailer.



## HEAT STRESS

The effects of heat stress range from simple discomfort to life threatening heat stroke. Heat stress causes increased sweating which leads to loss of body fluid and then reduced heat tolerance. This results in reduced capacity for work, inefficiency, and increased risk of hazardous incidents. Heat stroke is when sweating stops and body heat rises. This is a life threatening condition, and requires immediate medical attention.

Warning signs of heat stress are:

- tiredness,
- headache,
- nausea,
- loss of concentration,
- muscle cramps,
- dizziness.



If working in hot weather:

- Replenish lost fluid - take small drinks frequently.
- Reduce sun exposure during the hottest hours of the day.
- Rest frequently in a cool place.

## FENCING

Fencing refers to all activities in which a structure is built to contain animals or exclude animals from an area. Fencing may be constructed from one or more of the following: plain wire, barbed wire, electrified wire, wooden posts, steel posts and/or plastic posts.



Hazards encountered when constructing fencing may cause Injury due to manual handling including cuts and abrasions.

Manual handling tasks, such as lifting, pulling, restraining, carrying and holding should be performed in such a way as to minimise potentially hazardous situations.

Electric fencing should be clearly identified by warning signs placed on the fence at instances not exceeding 50 metres.



Wire strainers should be used in accordance with manufacturers' operating instructions to avoid unnecessary wire strain and possible wire failure.

Appropriate personal protective equipment should be worn by students and staff, who are at risk especially if split posts, splintering timber or when barbed wire is used. (eg. Safety spectacles, substantial footwear and leather gloves.

## MANUAL HANDLING

Manual handling or strain injuries can keep farm workers away from work for weeks at a time. They can happen from lifting, pushing, pulling, carrying, lowering, holding or restraining.

Injuries can occur through:

- increased wear and tear or damage, e.g. from intense or strenuous manual activity;
- gradual wear and tear, e.g. from frequent or prolonged periods of activity (continuous handling of hay bales); heavy or awkward lifts (lifting heavy machinery onto a ute);
- sudden damage, e.g. from unexpected movement (carrying a heavy object over uneven ground, stumbling, tripping or falling).



Consider using mechanical aids to minimise the risk of an injury. Some examples include:

- trolleys for heavy bags, drums or other weighty, awkward items;
- special trolleys to move and large drums;
- picket drivers for star picket fencing;
- small mobile hoists or forklifts;
- a fixed hoist on the utility or truck;
- mobile ramps or skids for loading and unloading trucks or utes;
- crow bars, barrows, pulleys, hooks and jacks

## CHEMICALS

Chemicals refer to all hazardous substances that are used in agriculture and animal husbandry.

These substances include pesticides, herbicides, veterinary products, fertilisers and a range of other industrial chemicals.

Agricultural chemicals should be supplied with labels and/or label leaflets and material safety data sheets.





Hazards that may be encountered when using agricultural chemicals include spillage, inhalation and ingestion.

Chemicals should be stored in a secure area, which is well ventilated. They should be kept segregated to avoid cross-contamination. Herbicides should not be stored with pesticides and fungicides.

Material safety data sheets (MSDSs) should be maintained for all chemicals and are to be stored in a known location.

## SUN EXPOSURE

Exposure to ultraviolet radiation from the sun is the main cause of skin cancers in Australia.

Skin damage from the sun is cumulative - the longer the skin is exposed to the sun, the greater the risk of skin cancers, regardless of your tan or skin pigment.



Rural workers have a high risk of getting skin cancers, as their work can expose them to long periods of ultraviolet radiation.

Consider the following strategies to minimise the risk of over exposure to the sun:

- Wear cool, protective clothing, i.e. a shady hat, shirt with collar and long sleeves, and long trousers.
- Use a sunscreen with a high sun protection factor (SPF +15) before you go into the sun.
- Noses, lips, ears, bald heads, necks and backs of hands need extra protection.
- Reapply sunscreen regularly, especially if you are sweating.
- Make use of shade areas wherever possible in the high risk hours.
- Use a tractor with shade protection fitted.

