

Manual handling solutions for farms



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version of leaflet
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What are the problems?

In agriculture, back, neck and limb disorders are the most common types of ill health. Around 80% of the people who work in the industry will suffer the effects of these disorders and some are permanently disabled. Many of the injuries are caused or made worse by poor manual handling practice. They can arise from stresses and strains over a period of time rather than from a single event.

What are the causes?

Manual handling includes lifting, putting down, pushing, pulling, carrying, moving or supporting a load by hand or bodily force. Injuries are not only caused by the weight of the objects you handle – other important factors include:

- the size, shape and available grip;
- the way you carry a load and where you have to move it from and to; and
- how often you have to do the job.

What do I need to do?

The Management of Health and Safety at Work Regulations 1999 require employers and the self-employed to assess risks to health and safety. The Manual Handling Operations Regulations 1992 (as amended) complement these Regulations. If your general assessment identifies risks from manually handling loads, you should:

- avoid the job if it is reasonably practicable to do so;
- assess the operations that cannot be avoided;
- take appropriate steps to reduce the risk of injury. Where possible, provide mechanical assistance such as handling aids. Where this is not reasonably practicable then explore changes to the task, the load and the working environment;
- provide employees with general indications of the weight and nature of the load to be handled.

Assess the risk

Does the job involve one or more of these risk factors:

- handling loads at a distance from the trunk?
- twisting?
- stooping or reaching upwards?
- excessive lifting, lowering or carrying distances?
- excessive pushing or pulling force?

- positioning the load precisely?
- risk of sudden movement of loads?
- frequent or prolonged physical effort?
- insufficient rest or recovery periods?
- handling while seated?
- team handling?
- intensive work, tight deadlines and lack of control over the work and working methods?

Is the load:

- heavy, bulky or unwieldy?
- difficult to grasp?
- live, unstable, or with contents likely to move?
- sharp or hot?

Where the handling is done, are there:

- space constraints preventing good posture?
- uneven, slippery or unstable floors?
- variations in level of floors or work surfaces?
- extremes of temperature or humidity?
- conditions causing ventilation problems or gusts of wind?
- poor lighting conditions?

Consider the people involved. Does the job:

- require unusual strength, height etc?
- involve special risks for pregnant staff or anyone with a health problem?
- require special information or training?
- conflict with personal protective equipment or other clothing?

Take steps to reduce the risk of injury

There are several practical solutions described in this leaflet that farmers can use to help reduce the likelihood of back or muscle problems.

How much will it cost?

The solutions to most manual handling risks will involve a combination of physical measures, systems of work and operator training. Often the costs of these solutions are small and they are **always** tiny in comparison to the costs of disabling and painful injuries. Reducing risks from manual handling will usually improve the efficiency of the task, reduce labour costs and improve staff motivation.

How do I prepare for manual handling?

Even with some of the solutions described, you will still need to apply manual effort. Whenever you have to move a load manually, training helps you to use your body more effectively and safely. Pure strength is no safeguard against manual handling injuries. Pregnancy, hernias or chronic back pain will all reduce your capacity for safe lifting. Better knowledge will help you to decide whether you can safely move a load and how to move it.

Good handling technique

This is no substitute for other risk-reduction steps such as lifting aids, improving the task, load or working environment. Good technique is a valuable addition to other risk-control measures but it requires training and practice, and should be tailored to the particular handling operations being carried out.

This advice is relevant to a lift using both hands that takes place in front of and close to the body:

- Stop and think. Plan the lift. Use handling aids. Remove obstructions.
- Keep the load close to the waist.
- Adopt a stable position.
- Ensure a good hold on the load.
- Bend the back, hips and knees slightly at the start of the lift. This is preferable to either fully flexing the back (stooping) or fully flexing the hips and knees (full/deep squatting).
- Don't flex the back any further when lifting.
- Avoid twisting the back or leaning sideways.
- Keep the head up when handling.
- Move smoothly.
- Don't lift or handle more than can be easily managed.
- Put down, then adjust.

Training

Training will help you apply these rules to move loads safely. Employers have a duty under the Health and Safety at Work Act 1974 and the Management of Health and Safety at Work Regulations 1999 to provide their employees with health and safety information and training. This should be supplemented as necessary with more specific information and training on manual handling injury risks and prevention, as part of the steps to reduce risk required by the Manual Handling Operations Regulations 1992 (as amended).

Points to consider

- The risk of injury may be increased where workers do not have information or training to work safely.
- The use of mechanical handling aids may require training.
- Effective training will complement a safe system of work but is not a substitute for it.
- Training is available from a number of sources including Lantra Awards, training groups and local colleges. Tests to assess competence can be arranged through the NPTC (see 'Useful addresses').

Everyday solutions

Physical solutions to manual handling problems are often low cost and easy to apply, such as simple but important improvements like levers and platforms.

Levers

Increased mechanisation has led to less dependence on and knowledge about straightforward solutions like levers. Simple leverage can be a very cheap and effective solution.

Situations where you could use leverage include:

- helping to make minor adjustments when hitching linkage-mounted machines or hanging gates;
- inching a heavy item, eg a water tank, horizontally;
- using a spare post or crowbar when fencing for removing posts or tensioning wire;
- purpose-made tools for lifting manhole covers;
- long-handled wrenches or extension handles on some tools (taking care not to damage or over-tighten bolts).

Platforms

Tables and platforms, including temporary ones, can help ensure you are working at the best height. Consider:

- a swing-out 'bench' over the tractor's front weight frame for maintenance work at a remote site;
- a trolley or swing-out mounting on a tractor to present a heavy toolbox at a convenient height and avoid lifting;
- a makeshift bench, eg of straw bales, to make livestock husbandry tasks easier;
- storing tractor weights at the same height as the mounting frame, eg on pallets (if you cannot handle them mechanically).



Figure 1 Tractor weights mounted on a frame to enable attachment by hydraulic link arms

Use a counterbalance or stored energy to help

- Consider applying a counterbalance weight to help when lifting loads such as heavy manhole lids. Remember not to compromise child safety where a lid or cover is secured shut by weight alone.
- Fit and maintain effective tailgate assistors (counterbalances, springs etc) on livestock transporters.

Make it easier to link equipment to tractors

- Position equipment accurately, using any slope to your advantage.
- Maintain and use the three-point linkage levelling box and the adjustment in a top link.
- Use quick attach/detach systems, eg with an 'A' frame (see Figure 1).
- Consider auto-attach and demount weight blocks in place of individual front weights.

Handling spare and dual tractor wheels

The problem

Spare tractor wheels are heavy, awkward loads that are frequently moved, eg when fitting dual wheels or as part of changing between conventional, row crop and low ground pressure sizes. The effort needed to roll the wheel when it is vertical can be deceptively small but once the wheel starts to lean, it quickly becomes unstable and a major manual handling problem.

The risk of injury is even greater when you have to align wheel studs and can be increased by the ground surface where the wheels are handled. It is tempting for one person to try to do the job alone and often people will leave wheels leaning against a wall when they have finished, making the next move possible but causing unacceptable risks to children.

The solution

Use a mechanical wheel handler, either as a free-standing unit or as an attachment on a lift truck. Wheel handlers can lift, carry, rotate and tilt wheels to aid fitting and removal from the tractor (see Figure 2).

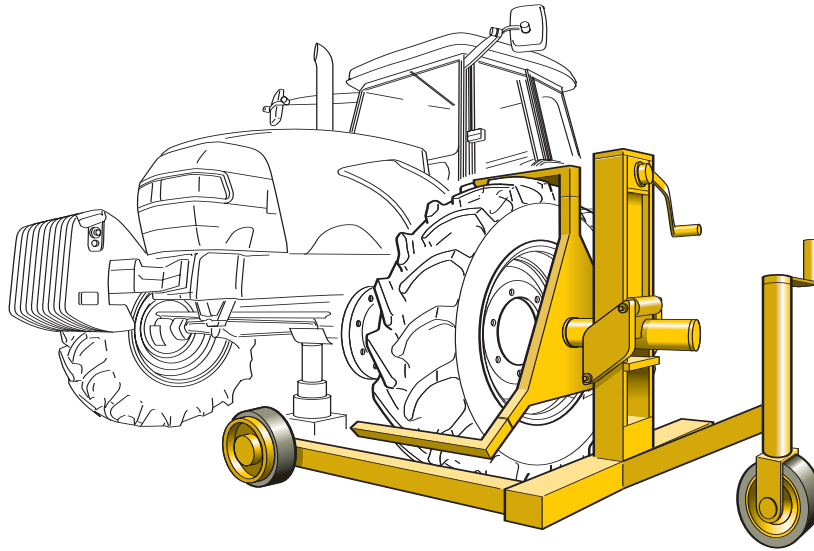


Figure 2 Handling device for wheel changing or fitting dual wheels

Handling bagged products

The problem

Even though most feed and fertiliser is now handled in bulk or big bags that can be moved mechanically, there are still some 40 kg and 50 kg bags used, eg with seed corn.

Where it is not feasible to change to bulk or big bag systems, eg with some specialist, small-volume fertilisers or on smaller farms with limited mechanisation, considerable amounts of lifting can be required.

Handling materials in 50 kg bags into a high hopper, such as on a seed drill or up steps into a loft, involves increased risks. Where there is a poor working surface, eg slippery concrete or freshly cultivated soil, the problems are worse.

Solutions

- Use big bags or bulk systems with loaders, pipelines or augers to move the material wherever possible.
- Tote bins can help to mechanise and reduce manual effort.
- Aim to use the optimum spreader or drill hopper size for the scale of your enterprise to increase the opportunities for bulk systems.
- Palletise 50 kg bags wherever and for as long as possible. Aim to keep the pallets intact from lorry to store to trailer to spreader or drill.
- Use the height of delivery trailers to your advantage so that bags are presented at the best height for carrying.
- Position trailers and spreaders or drills so that bags can be moved to the hopper in one movement, avoiding difficult access over coulters etc.
- If you do have to move bags or bulk material by hand, especially over uneven or muck-laden ground, consider trolleys and feed barrows which have larger wheels and pneumatic tyres, or which are motorised (see Figure 3).



Figure 3 Self-propelled trolley being used to transport container plants at a nursery

Lifting chemical and oil containers

The problem

Despite many pesticide formulations becoming less bulky, some packs of liquid products delivered onto farms are still difficult to handle, particularly into stores and other buildings. Some containers which provide excellent control of chemical risks through closed transfer technology can cause manual handling problems if you don't properly plan how you will move them and use the right equipment, eg for handling and agitation. Larger (eg 200 l) oil or dairy chemical drums avoid much manual handling but still have to be moved from a delivery lorry to where they will be used.



Figure 4 Drum cradle

Solutions

- Use a drum cradle to move and tilt larger containers (see Figure 4).
- Plan your storage arrangements to reduce the distance containers have to be moved.
- Install ramps at the entrance to chemical stores to allow rolling of containers.
- Use bulk containers that are only handled by a lift truck.
- Fit low-level filling points on sprayers – never lift large containers up a ladder to the top lid.
- Use automated dairy bulk-tank washers to reduce chemical handling.
- Always consider pumps, syphons or gravity taps to remove the contents.
- Use the manual handling risk as one of your criteria when deciding which chemical formulation is most appropriate for your farm.

Handling and casting sheep

The problem

Handling sheep regularly for routine flock management involves a lot of manual effort. One example is casting adult sheep for foot trimming. The risks arise both from the effort in turning the sheep and then from the awkward posture reaching down to the animal.



Figure 5 Sheep turnover crate

Solutions

As with many risks, avoiding the job or doing it less often is the preferred solution, eg avoid introducing footrot, vaccinate, use a footbath, or where possible allow access to stony ground. However, where sheep have to be cast, and especially where this involves a group of animals, a turnover crate will reduce the manual handling risks. A turnover crate can also be used in conjunction with a handling system to aid the flow of animals, enable shedding and with some, present the sheep on an elevated platform to reduce bending when drenching, dagging etc (see Figure 5). A number of different designs are available.

Consider a turnover crate and handling system to:

- present the sheep at the right height and the right way up;
- make sheep struggle less;
- avoid lifting forces – good designs rotate without raising the sheep's centre of gravity too much;
- avoid sitting sheep on dirty ground, contaminating wool and risking flystrike.

Sheep shearing

The problem

Shearing is a high-risk job involving the entire adult flock for a short time and requiring substantial manual effort. While contractors shearing many thousands of sheep may be considered at higher risk, often a farmer who is less practised at the job will have a poorer technique and work in less suitable surroundings.

Solutions

Traditionally, the physical options for reducing the risks during shearing have been limited to the workstation layout. The best practice of presenting sheep to the shearer in a close, small pen and allowing rapid exit of the shorn animal, away from the wrapping point has been achieved in purpose-designed shearing sheds or mobile shearing trailers. However, these features can be employed at **any** shearing site.

Manual effort can be further reduced by a shearing back-aid (see Figure 6). Back-aids are widely used in Australia and in other sheep-rearing countries and are available in the UK. The 'Warrie back-aid'[®] helps by carrying some of the shearer's upper body weight while they are bent over the sheep.

The device uses sound ergonomic principles and in a well-designed workplace can make the difference between lifelong back problems and years of skilled shearing.

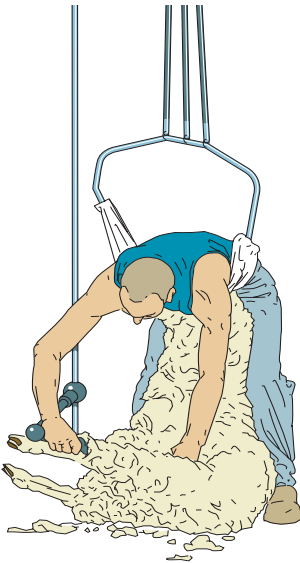


Figure 6 Sheep shearer using back-aid

Bale handling

Many farming systems involve handling hay, silage or straw bales. The most important step is to match the optimum bale type to your available storage and system of use. While silage bales will normally be handled entirely mechanically, others may not.

Conventional bales

If you cannot use larger bales, eg if you farm a smaller unit or, as in some parts of the country where the fields, storage facilities and methods of using hay or straw would not support bigger bales, you need to make sure you have controlled the risks properly.

Problems

- Transporting, putting into store and using conventional bales on small units, eg where bales are stored in small stone barns, lofts etc.
- Outdoor stacks with bales which are spoiled by rain and very heavy.
- Handling small bales into straw choppers with a high hopper (necessary to protect against contact with blades).
- Moving pedestrian bale choppers around the farm.

Solutions

- Use traditional aids such as pitchforks, bale hooks, or slat elevators.
- Store bales close to where you will use them, eg over livestock pens.
- Use sledges, accumulators, grabs and other mechanical aids to handle bales in groups where possible.
- Try to use storage buildings which allow easy access for a materials handler or accumulator trailer.
- Where possible switch to large-bale systems.



Figure 7 Tractor-mounted straw chopper for spreading fresh bedding

Round and large square bales

While most handling will be mechanical, these bales sometimes have to be moved by hand, eg in livestock pens.

Problems

- Unrolling round bales in less suitable livestock pens, especially when turning corners.
- Restricted access into buildings such as cubicle sheds.
- Playful cattle can be an additional hazard and may need to be excluded if you have to go into the pen.
- When large square bales of poor-quality straw are cut, the flakes can themselves be very heavy.



Figure 8
Mechanised feeding

Solutions

- Use chopped straw from a tractor-mounted chopper (see Figure 7).
- Consider an automated unwrapper or other mechanised feeding process (see Figure 8).
- Use a purpose-designed carrier – effectively fitting wheels to the bale.
- Use a loader attachment that allows large square bales to be gradually released for bedding loose yards.
- Break open bales outside areas with restricted access and move the flakes on a trailer or trolley with large wheels.
- Consider alternative bedding systems using wood shavings, rubber mats or water beds in cubicles.

Useful addresses

Specific advice on training is available from colleges and from:

Lantra Awards, Stoneleigh Park, Kenilworth, Warwickshire CV8 2LG.
Tel: 02476 419703 Fax: 02476 411655.

Information on competence assessment can be obtained from:

NPTC, Stoneleigh Park, Kenilworth, Warwickshire CV8 2LG.
Tel: 02476 857300 Fax: 02476 696128

Further reading

*Manual handling. Manual Handling Operations Regulations 1992 (as amended).
Guidance on Regulations L23 (Third edition) HSE Books 2004 ISBN 0 7176 2823 X*

Manual handling: Solutions you can handle HSG115
HSE Books 1994 ISBN 0 7176 0693 7

Handling and stacking bales in agriculture Leaflet INDG125(rev1)
HSE Books 1998 (single copy free)

Getting to grips with manual handling: A short guide Leaflet INDG143(rev2)
HSE Books 2004 (single copy free or priced packs of 15 ISBN 0 7176 2828 0)

Manual handling assessment charts Leaflet INDG383
HSE Books 2003 (single copy free or priced packs of 10 ISBN 0 7176 2741 1)

*Are you making the best use of lifting and handling aids? Leaflet INDG398 HSE
Books 2004 (single copy free or priced packs of 15 ISBN 0 7176 2900 7)*

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