Safe Farm: Evaluate equipment for dangers

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Evaluate equipment for dangers

The most serious injuries and fatalities on the farm involve machinery and equipment. In 1996, nearly half of 47 Iowa farm deaths resulted from working with or around agricultural equipment.

Farm operators depend on powerful equipment to effectively handle commodities. Although some injuries occur in recognized danger areas, such as around power take-offs, many others occur in areas where hazards are not readily apparent.

For example, more Iowans were injured while operating skid steer loaders than balers in 1992-1993. Farm operators who work with balers know the dangers of getting caught in the windrow pick-up area and take appropriate precautions, while operators of skid steer loaders often fail to recognize the hazard of being crushed by the hydraulic loader arm. Unlike seasonal equipment, loaders are used frequently in some operations, which increases exposure to danger. Side screens on an operator’s cab can help prevent this hazard.

The key is to recognize hazards while working or living on a farm. Then you can avoid dangerous situations or at least minimize your exposure to them.

This publication deals with danger points on agricultural equipment, those areas which can entangle, pinch, crush, or shear clothing and limbs. Possible danger points could be the belt, chain, or gear drives on many types of equipment. Rotary or auger intake areas on grain handling equipment, grinder mixers and grain heads also are dangerous. Consider feed rolls, gathering chains and similar equipment used to pull crops into a machine as areas where extra caution is required. A slow-moving hydraulic arm can be as hazardous as a rapidly rotating power take-off shaft.

Recognize the dangers
The first step to avoiding danger is to recognize that hazards exist. Carefully read the safety section in operator manuals. Identify specific hazards associated with equipment you use.

Then consider how you use equipment. Are you using it for tasks it was meant to perform? Are you following all safety precautions recommended by the manufacturer?

Most machinery accidents result from human error. The operator either forgot something, took a shortcut, ignored a warning, wasn’t paying close attention, or failed to follow safety rules. Be familiar with the operator manual so you know the limitations of your equipment and can follow safety measures automatically.

Carefully evaluate the operation of each implement for safety before starting work. For example, a skid steer loader bucket is a poor choice for a human lift because the bucket is designed to dump its contents. It has no guard rails and no way to prevent the bucket from dropping if hydraulic power fails.

Check equipment guards
Equipment guards cannot eliminate all injuries. The best auger intake shield won’t work if it’s not in place, or if the

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shield is damaged or improperly installed.

Check guards on all equipment as part of your routine maintenance schedule. During seasons when equipment is used heavily, check guards more often.

It may be possible to retrofit older equipment with shields. Check with your local implement dealer or the manufacturer to order specific retrofit parts.

Recognize secondary hazards
Many farm injury victims recognize hazardous situations, but they misjudge the seriousness of the hazard because of secondary factors.

For example, spilled grain or debris in an unloading area could cause you to slip and fall into the intake auger. Icy, muddy or manure-covered surfaces make the work area slick and increase the risk of injury. Bystanders or children in the work area can distract the operator, or limit operator vision.

You can’t completely eliminate the hazard of working around grain augers, but you can reduce the hazard. Remove or eliminate secondary factors that are under your control. Keep the work area clean and uncluttered. Control access and shut down operations when others enter the work area.

Consider human factors
Farm operators can overestimate their ability to stop or avoid a dangerous situation. This is common when operators work around powerful equipment every day and become comfortable with their ability to control the machinery.

However, operators are limited by their reaction time. The human reaction time to a stimulus commonly ranges from one-fourth to three-fourths of a second. Time varies by individual, and with age and physical condition. Human reaction time is not quick enough to avoid an injury with machinery.

Gravity also is faster than human reaction. For example, it is very dangerous to reach underneath the hydraulic loader arm of a skid steer loader. If the hydraulic line breaks, gravity could pull the loader bucket to the ground at a rate of about 9 feet in three-fourths of a second, and crush the extended arm of the operator.

Manufacturers have built safeguards into equipment but all hazards cannot be removed. Take a realistic approach to equipment safety and think about these principles for the operation of all machinery.

• Be aware of the dangers. Read the operator manuals and think about how you use the equipment.
• Regularly repair and replace protective guards or shields on all implements.
• Look for and remove secondary hazards, such as spilled grain or debris.
• Recognize the limitations of you and your equipment.

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For more information


Farm & Ranch Safety Management, available from John Deere Publishing, John Deere Dept. 800, 5440 Corporate Park Drive, Davenport, IA 52807.

Other Safe Farm publications, including Reduce Risks Around Big Round Bales, Pm-1518g, and Harvest Safety Yields Big Dividends, Pm-1265h, available at your ISU extension county office.

Professor of Agriculture, Stanley R. Johnson, director, Cooperative Extension Service, Iowa State University of Science and Technology, Ames, Iowa.

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