



Lend an ear to hearing protection

The traditional picture of a farm as a serene and quiet workplace couldn't be further from the truth. Machinery, even sounds made by animals, create a sometimes noisy and often hazardous environment.

The noisy farm environment has taken its toll on many farm operators' hearing capabilities. A central Iowa farm health clinic found that 70 percent of farmers given a routine hearing test had below normal hearing for their age. At least 30 percent suffered hearing loss significant enough to warrant an assistive hearing device.

On the back is a chart of sounds commonly heard by people involved in agricultural activities. Continuous sounds of 85 decibels or higher are considered hazardous. Any time you have to shout to be heard by someone standing 3 feet away, the noise level is probably greater than 85 decibels. Doubling the sound intensity results in a 3 decibel increase. For example, an electric drill (88 decibels) is twice as loud as a lawnmower (85 decibels).

Distance from the noise source also is important. As a person moves away from the sound, loudness drops off quickly. For example, someone 4 feet rather than 2 feet away from a chain saw will hear 109 decibels and not 115 decibels. The key is to keep noisy equipment as far away as possible. When that's not possible, wear hearing protection devices (HPDs) to get noise within the acceptable 85-decibel range.

Hearing loss

Some hearing loss occurs naturally as part of aging. Generally this does not become severe unless people are continually exposed to noise. Therefore, it is important to avoid excessively loud noises to prevent additional hearing loss that could lead to a disability.

Hearing loss will occur even if people say they have become "used to the noise" or ignore it. Many people say they can "block out" noise, but damage will continue unless the hazardous noise level is reduced.

Although noisy environments can lead to permanent hearing loss, they also can affect people in other ways. Noisy environments can lead to increased anxiety, hypertension, and fatigue. Many people who wear hearing protection comment that they feel better in general at the end of the day.

Most people cannot detect their own hearing loss because auditory damage occurs slowly over time. Usually, a person with a hearing loss may think other people are mumbling and need to "speak up" or enunciate better. If in doubt, get a hearing test by an audiologist, available at most hospitals and clinics.

When to consider protection

Hearing loss can be prevented with the proper use of hearing protection devices (HPDs). These devices provide a barrier between the sound and the ear, or absorb sound waves before they enter the ear. Persons with normal hearing always can detect some sound while wearing HPDs because bones in the head conduct sound.

You may want to consider HPDs if:

- you work in noisy conditions that have a continuous decibel level greater than 85;
- you experience "ringing" in the ears after being in a noisy area;
- you are bothered, nervous, or anxious after being in a noisy area;
- you want to increase your comfort;
- you are unusually fatigued after working in a noisy area, or
- your doctor recommends one.

How to select protection

Not all HPDs provide the same level of protection. Consider the following aspects:

Style: The most common hearing protection devices are muffs worn over the ears and plugs worn in the ears. Plugs may be more comfortable to wear for long periods of time, especially in hot environments.

Hearing safety

How much do you know?

1. Most hearing protection devices, regardless of type or design, reduce about the same amount of noise that reaches the ear. True or false?
2. An extended time in a noisy environment can make people feel anxious and fatigued. True or false?
3. The squeal of a pig has a louder decibel level (sound) than a chain saw. True or false?
4. Which of the following sounds could cause hearing loss?
 - a) an electric drill
 - b) a garden tractor
 - c) an enclosed poultry building
 - d) all of the above
5. It's more difficult to hear conversations in a noisy environment while wearing a hearing plug or muff. True or false?
6. Hearing muffs always block out more noises than hearing plugs. True or false?

See answers on back.

Muffs should not be worn with eyeglasses or any other obstruction that will reduce their effectiveness.

Hearing plugs may be disposable or designed for re-use. Disposable plugs are especially popular for short wearing periods or infrequent use. They are inexpensive and can be thrown away when the job is completed or they become dirty. However, disposable plugs can be relatively expensive if hearing protection is required on a regular basis. In this case, a non-disposable plug or muff, meant to be washed and stored after each use, is a good choice.

Effectiveness: Not all materials can block the same amount of sound. An HPD manufacturer must indicate how much noise (in decibels) the device will reduce for the wearer. This is listed on the package as the noise reduction rating (NRR). For general use, look for NRR of 25 or greater. Remember that the rating was obtained in perfect conditions after wearers had received careful fitting instructions. A more realistic estimate is about half the manufacturer's NRR. For example, expect a device with a 30 NRR to reduce noise by about 15 decibels. This means that a 95-decibel noise would be reduced to 80 decibels for the wearer.

Cost: Hearing protection devices do not have to be expensive to work well or be comfortable. Expandable foam ear plugs are available for about \$1; muffs about \$15-\$30, depending on quality.

Limitations of protection

As with most personal protective devices, HPDs have limitations. Improperly worn HPDs may not reduce the noise levels to within acceptable levels and tend to cause a false sense of security. Wearing both plugs and muffs at the same time will reduce the amount of noise exposure. However, the additional reduction from wearing both devices will be only 3 or 5 decibels, even if the NRR for both devices is above 25.

A dirty HPD can cause serious skin irritation and ear infection. Follow manufacturer's instructions to clean non-disposable HPDs, and keep in a clean, dry container. Washing expandable foam or disposable plugs can actually harbor germs and foster disease.

Wearing hearing protection devices may take some adjustment. At first, wearers may experience some physical discomfort after several hours. Upon continued use, these annoyances generally diminish. The long-term benefits—diminished loss of hearing—outweighs any short-term inconveniences from wearing HPDs.

Prepared by Charles V. Schwab, extension safety specialist, and Steve Freeman, professor of agriculture and biosystems engineering.

Approximate common noise levels (in decibels)

Jet airplane	140*	Table saw	100	Electric drill	88
Pig squeals	130*	Shop vacuum	98	Lawnmower	85
Chain saw	115	Garden tractor	92	Normal conversation	60
Chickens (inside building)	105	Tractors	85-95	Quiet whisper	20

*Above 130 decibels causes pain.

For more information

If you're interested in purchasing a hearing protection device, check with your local farm supply store or a direct-mail catalog. An audiologist or hospital clinic also would be a good source.

For more information about hearing protection devices, contact the National Institute for Occupational Safety and Health. For additional information check the NIOSH Internet site at www.cdc.gov/niosh/topics/noise or call 1-800-232-6348.

Hearing safety

What can you do?

- Identify jobs at which the noise may be harmful to your hearing or bothers you.
- Ask your local farm supply dealer to stock HPDs.
- Wear hearing protection in any situation in which you must raise your voice to be heard 3 feet away.
- Get a hearing test if you think you may have hearing loss or question your hearing ability.
- Purchase a hearing protection device that will meet your specific needs. Follow the manufacturer's instructions for proper use and wear.

Answers to quiz: 1-False; 2-True; 3-True; 4-d; 5-False; 6-False



Safe Farm is an Iowa State University Extension and Outreach project helping to make Iowa farms a safer place to work and live.

For more safety information, check the web at www.abe.iastate.edu.

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