

# Nothing Can Restore Lost Hearing Once It's Gone, It's Gone!

## Typical Hearing Protection:

### Disposable Ear Plugs

- Made of dense foam
- Plugs are compressed or shaped prior to insertion
- Expandable to provide a snug fit
- One size fits all

### Reusable Ear Plugs

- Made of flexible rubber or silicone
- May be joined by cord or headband to prevent loss
- Must be fitted (sized) for each ear

### Earmuffs

- Adjustable headband with rigid cups and cushions that seal around the ear
- Muffs and plugs may be worn together for extra protection.



## *For more information...*

If you're interested in purchasing a hearing protection device, check with your local farm supply store, a direct-mail catalog, or AgriSafe Clinic.

For more information about hearing protection, contact the North Carolina Agromedicine Institute:

**North Carolina Agromedicine Institute**  
East Carolina University  
West Research Campus  
106 West Academic Building  
Greenville, North Carolina 27858  
Phone: 252.744.1000  
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Website: [www.ncagromedicine.org](http://www.ncagromedicine.org)



# Agricultural Hearing Loss...

## IT'S PREVENTABLE



of North Carolina

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. This noisy farm environment has taken its toll on many farm operators' hearing capabilities. While you cannot reverse the damage that has already been done, it is possible to slow the loss of hearing due to noise exposure by reducing noise levels. Good maintenance is one of the most effective ways to reduce noise exposure because they reduce noise at the source. Here are some simple maintenance tips that will help to protect your hearing:

- Replace worn, loose, or unbalanced machine parts to cut down on the amount of vibration
- Make sure that machine parts are well-lubricated to cut down on noise exposures created by friction
- Install a good, high quality muffler on all engine powered equipment to reduce vibration by air flow
- Use an acoustically designed cab to isolate yourself from noise.

If you are unable to reduce noise through maintenance, alternate methods to reduce noise exposure can be used.

- Alternate work schedules to reduce the amount of time exposure to high sound levels (Ex. A tractor with a noise level of 95 decibels has a safe time exposure of 4 hours)
- Keep noisy equipment as far away as possible
- If not possible, use hearing protection devices (HPD) to get noise within an acceptable range (85 decibels or less)

Sound Level (dB)	Time Period (Hrs)	Examples
85	8	Tractor (enclosed cab)
91	2	Grain auger
94	1	Bench grinder
97	0.5	Four wheeler
100	0.25	Tractor (no cab); air hose
103	7min 30sec	Pig feeding (CAFO)
106	3min 45sec	Chainsaw (cutting)

Continuous sounds above 85 dB or higher are considered hazardous. Sounds above 130 dB cause pain.

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, ringing in ears, discomfort, and fatigue. Many people who wear hearing protection comment that they feel better in general at the end of the day.

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 can always detect some sound while wearing HPDs because bones in the head conduct sound.



HPD's have a Noise Reduction Rating (NRR)

To determine how much hearing protection an HPD will give you use this formula:

$$\text{Protection} = (\text{NRR}-7) \times 0.5$$

For an HPD with an NRR of 27

$$\begin{aligned} \text{Protection} &= (27-7) \times .5 \\ &= 10 \times .5 \\ &= 5 \end{aligned}$$

For a farmer using an auger (91dB) who is using an HPD with a noise protection rating of 27, this would decrease his noise exposure to 86 dB (91-5) and increase the amount of time that he is hearing safe from 2 hours to just under 8 hours.