NATIONAL CENTRE FOR FARMER HEALTH

in partnership with

wdhs Western District Health Service

DEAKIN UNIVERSITY AUSTRALIA

‘Careful - they can’t hear you’

Heidi Mason (presenting)

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Funded by the National Health and Medicine Research Council

Study approved by ANU Human research ethics committee (EC00104) and Deakin University Human Research Ethics Committee (EC00213)

In partnership with

Australian National University

and National Acoustics Laboratory

Background

- Noise Induced hearing loss (NIHL) affects over 60% of all farmers – self reported
- 44.5% of previous Sustainable Farm Families ™ participants self reported a hearing difficulty
- Feedback at SFF ™ workshops

Background cont'd

- Farmers exposed to many different and unique sources of noise
- Hearing damage caused by prolonged and cumulative effects of noise levels above 85 decibels (dB A)
- Instant trauma from peak noise levels above 140 decibels (dB C)
- Hearing loss has huge consequences both personal and social for the person
- Farmers as a group are reluctant to seek help due to the stigma associated with having a hearing loss

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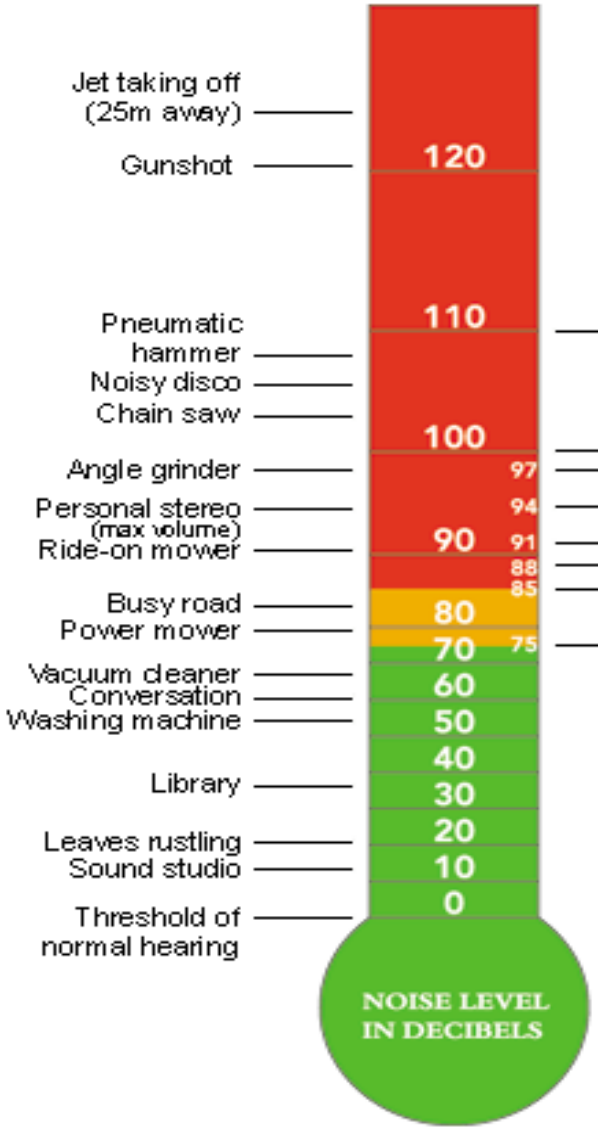

The above noise levels are approximate and should only be taken as a guide

Adapted from the website of Australian Hearing, http://www.hearing.com.au/ accessed 2 April 2012

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Background: How much noise is too much in one day?

Chainsaw	110 dB	1 min
Impact driver	106 dB	4 min
Circular saw	100 dB	15 mins
Power planer	97 dB	30 mins
Angle grinder	94 dB	1 hr
Disc sander	91 dB	2 hrs
Auger	88 dB	4 hrs
Tractor	85 dB	8 hrs
4 wheel motorbike	82 dB	16 hrs

These noise levels for the given times <u>all</u> give the equivalent noise exposure.

** Estimates only, the noise levels of individual machinery will vary*

Aims

- To determine the significant sources of noise exposure in mixed farming enterprises in Victoria and Queensland
- To educate farmers to reduce their noise exposure and in turn reduce hearing loss

Methodology
Recruitment : Participants

- Letter sent to all participants who had participated in SFF ™ to ask if we could access data
- Participants that had identified a hearing loss in a previous SFF ™ program were invited to be involved
- Plain language statement/consent and pre-questionnaires posted out – participants were asked to mail back consent if interested

Methodology
Recruitment : Participants

- A farm noise audit carried out to identify noise levels
- Attendance at a one-day workshop including physical health assessment, audiogram and education on noise exposure.
- Follow-up questionnaires/telephone interview (3 months)
- Participants invited to attend follow-up workshop (4-6 months)

Recruitment: Participants

- Hamilton – 9 participants
- Casterton – 9 participants
- Wondai, QLD – 7 participants

- Next - Colac and Ararat

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Victoria Locations

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Queensland locations

Dosimeter

Sound level metre (SLM)

Results: Common Activities

Task	LaEq (dB A)
Automatic pellet feeder (pigs)	66.8
Piggery near pens	75.6
Tractor (in cabin)	77.5
Bobcat	82.5
Four-wheel bike	82.8
Ride-on mower	85.7
Wool press	86.6
Auger	88.8
Angle Grinder	92
Shearing elbow joint (ear level to shearer)	93.1
Chainsaw	103

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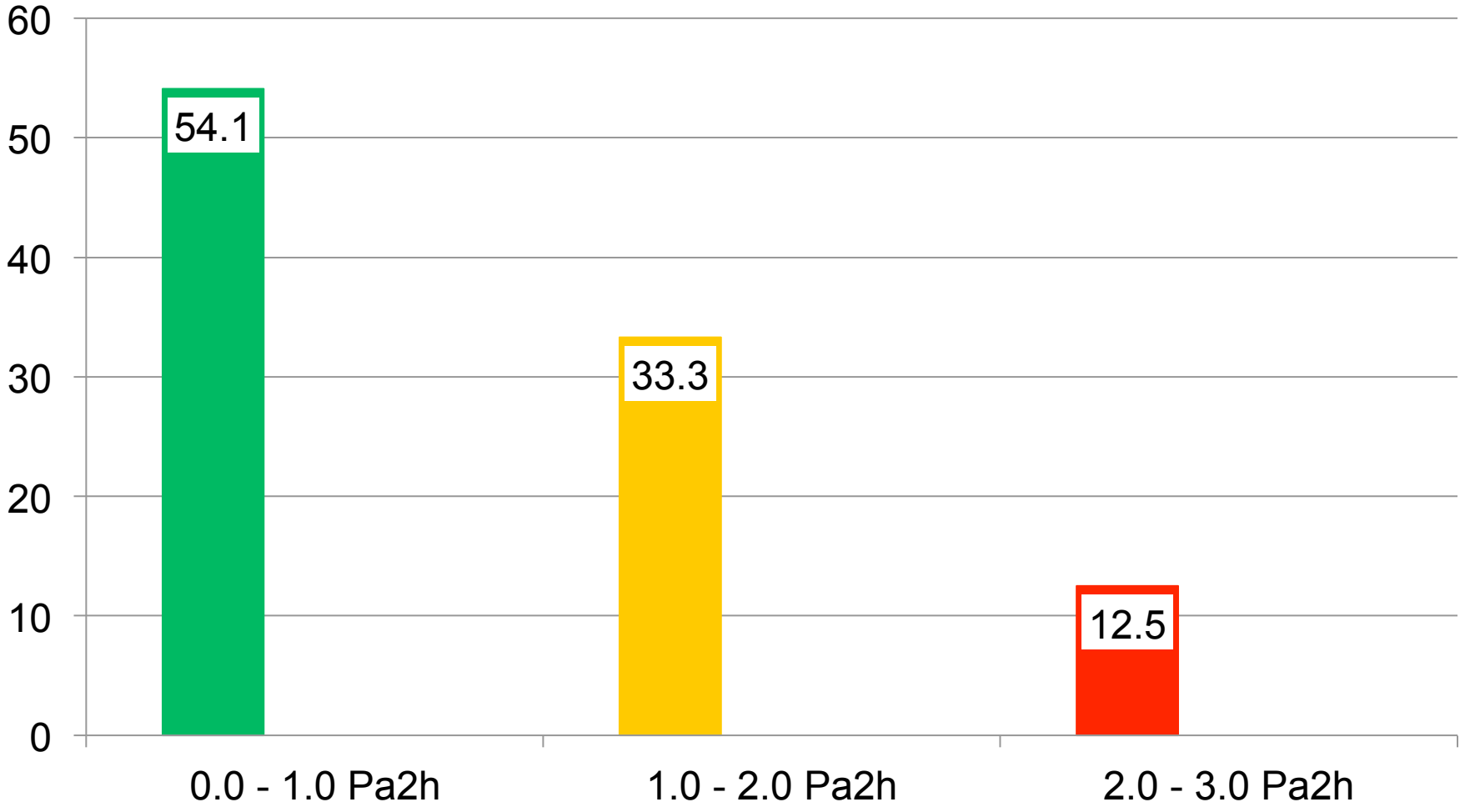
Results – Daily Exposure (n: 24)



Barbara's total noise exposure for a 7.5 hour day was 0.24 Pa^2h which is roughly 25% of daily recommendation of 1 Pa^2h. Bill's total noise exposure for a 7.5 hours day was 0.76, or roughly 75% of the recommendation – So that's good news!

How can you prevent hearing loss?

In table 1, the activities which fall under the recommended daily maximum have been highlighted in green and the tasks that fall over the recommended daily maximum are highlighted red. This is to remind you use noise control measures when performing these tasks.

If you wanted to limit your noise exposure and prevent hearing loss, you could take simple noise control measures such as wearing earplugs or muffs, for these activities (using tools in the workshop and using the two-wheel motor-bike).

We hope this information has been helpful to you. Thank you for allowing us to come and visit your farm and if you have any questions please contact Heidi Mason (Research Assistant) at the National Centre for Farmer Health on (03) 5551 8533.

Tractor – 77.5 dB

Four- wheeler 81.7 dB

The Shhh hearing in a farming environment research project is funded by the National Health and Medicine Research Council GNT1033151. Research partners include the National Centre for Farmer Health, Australian National University and National Acoustics Laboratory. The contents of this publication do not reflect the views of the NHMRC.

Report of your farming noise exposure

'Sheeptown'
9th May 2012 11am

Clinical Assoc Prof. Susan Brumby, Ms Cate Mercer-Grant, Ms Heidi Mason (RN), Mr Adrian Calvano (RN) – National Centre for Farmer Health.
Dr Warwick Williams, National Acoustics Laboratory
Dr Anthony Hogan, Australian National University
Dr Rebecca Taylor, Australian National University

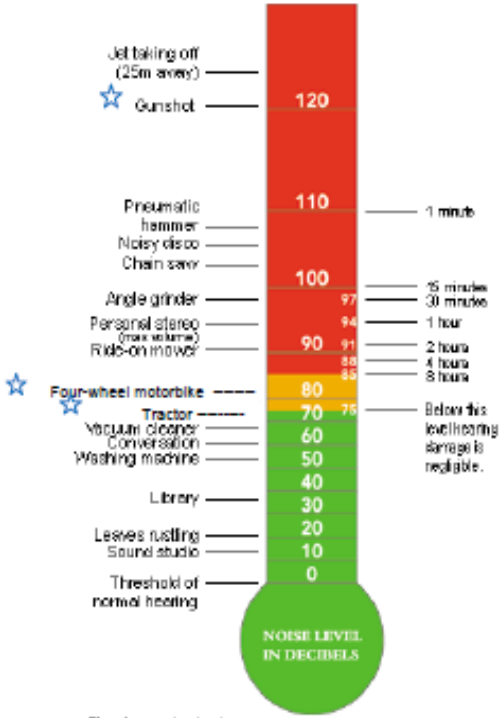
Did you know?

85 decibels (dB) - is the maximum permitted level of noise you should be exposed to daily.
75 dB - is the standard level of noise you can be exposed to daily with negligible risk.

1 Pascal squared hour (Pa^2h) is equal to 85dB and is your MAXIMUM DAILY ALLOWABLE NOISE DOSE during an 8 hour working day.

Recommended usage time (T_{rec} h) is the maximum level of time you can perform a particular task for before exceeding the standard.

The noise thermometer below shows the dB rating of some of your farming tasks, along with common farming tasks.



Adapted from the website of Australian Hearing, http://www.hearing.com.au/ accessed 2 April 2012

How does your noise exposure measure up?

The activities measured were given an average allocated time that you might perform them for daily. The total hours of farming was set at 7.5 hours per day (roughly the amount of time you wore the dosimeter for).

The dB reading in the left column tells you how each activity rated. Most activities were under the recommended maximum of 85dB except for riding the two wheel motorbike, and using tools (chainsaw etc) in the workshop.

The maximum recommended usage time is also shown for each individual activity in the far right column so you can see that if you were to spend 2 hours 22 minutes in the workshop, you have already met your recommended daily limit of 85 dB or 1 Pa^2h. This does not take into consideration other activities you may perform for the rest of your working day.

This is the dB reading

This is the maximum recommended usage time

Table 1.
Daily exposure of farming

Barbara	Activity	dB (L_{aeq})	Time (h)	Exposure (Pa^2h)	Trec (h:m)
	Driving ute	69.2	1.00	0.00	304.09
	Four wheel bike	80.6	3.00	0.14	22.18
	Drafting sheep	77.2	0.50	0.01	48.12
	Ride-on mower	85.7	0.25	0.04	6.49
	Kitchen - cooking (Kenwood)	78	1.75	0.04	40.50
	Office (computer)	71.4	1.00	0.01	183.16
Actual			7.50	0.24	
Mean		77.02		0.04	

Bill	Activity	dB (L_{aeq})	Time (h)	Exposure (Pa^2h)	Trec (h)
	Four wheel motor bike	81.7	1.00	0.06	17.06
	Two wheel motor bike	89.6	0.50	0.18	2.46
	Tractor	77.5	1.50	0.03	44.59
	Workshop – (chainsaw etc)	90.3	1.00	0.43	2.22
	Ute	80.4	0.50	0.02	23.04
	Truck	74.4	3.00	0.03	91.51
Actual			7.50	0.76	
Mean		82.32		0.13	

This is your daily exposure

NOISE MANAGEMENT STRATEGIES

1. Identify noisy tasks
2. Reduce equipment noise
3. Limit your exposure to loud noise
4. Limit the number of noisy jobs done
5. Make hearing protection convenient
6. Wear hearing protection

* Class 5 earmuffs (reduces by 26 dB)

Participant responses

- Participant responses from the Noise control booklets have been positive.

"It gives a real guide on our farm noise levels"

"It identifies noise level limits and time limits easily"

"Booklet is more personalized. We can refer back to it at any time"

"It made me more aware"

Results

- Preliminary results show that the data from the Dosimeters was more comprehensive that the sound level metres
- Farmers weren't responsive to the word 'noise audit'

Conclusion

- Integral to the success of the program was the enthusiasm and interest of the farming participants.

- It is anticipated that realising how they have been affected they in turn will take measures to both protect themselves but also others from further noise exposures.

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Questions?