

AN INTRODUCTION TO STOCKMANSHIP



PILOT VERSION

*Includes content for half-day & full-day workshops on
Stockmanship*

Australian Wool Innovation



Workshop options include:

- Half-day Introduction to Stockmanship;
- Half-day Introduction to Merino Visual Classing;
or
- Full-day workshop on either topic

A full set of the slides are available on the AWI website

- Housekeeping
- Introductions
- Overview of today's program
(Workshop topics)
- Practical activities
- Questions encouraged

1. OVERVIEW

2. STOCKMANSHIP

1. Observation skills
2. WH&S
3. Animal Welfare Legislation
4. Sheep Behaviour
5. Sheep Handling (Yards)
6. Impact of Environment
7. Flock Structure & Enterprise Mix
8. Working Dogs (Yards)
9. People Culture
10. Further Resources
11. Career Paths in Wool

1. OVERVIEW: STOCKMANSHIP & MERINO CLASSING

Our Aim...

To highlight the importance of the core skills of stockmanship and Merino visual classing in running a successful merino enterprise and point to further learning opportunities

Stockmanship is a skill that all people in the business need to have, not just the “stockman”



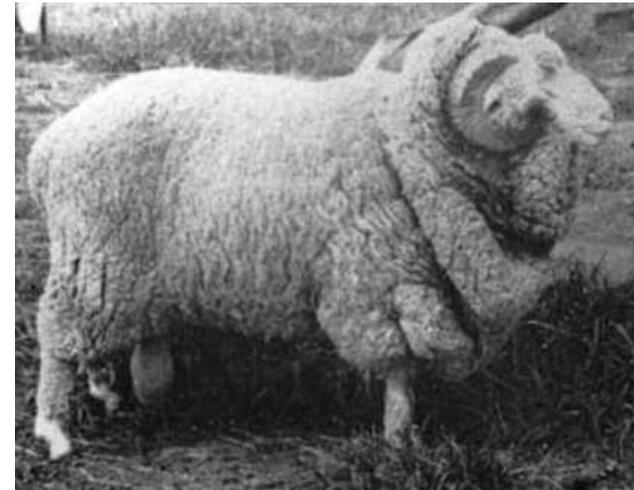
Why focus on stockmanship & sheep classing?

- Both impact on profitability, health & welfare
- Recent decline in 'on the job' training
 - Experienced staff have less time to instruct
 - Fewer experienced staff on farm
 - Fewer permanent staff, greater use of contractors
 - Limited opportunities now available in Jackaroo/Jillaroo system
- Need strong core foundation skills so new technology can be well implemented

1. OVERVIEW: LARGE CHANGES IN LAST 50 YEARS

50 years ago = more labour, more time, less technology

- No UHF, no faxes, no mobiles
- No internet
- No hydraulic wool press
- Limited use of motor bike
- Larger holdings
- Less competition from other fibres
- Less scrutiny by customers

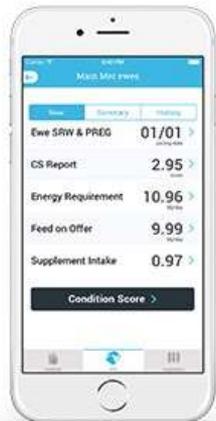


1. OVERVIEW: LARGE CHANGES IN LAST 50 YEARS

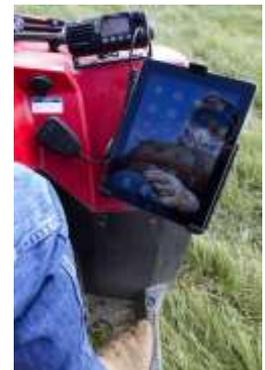
Now = less labour, less time, more technology

- Technology, GPS, solar power, breeding values, drones, etc.
- Smaller holdings - improved property planning
- Greater scrutiny of farming practices by distant customers
- Impact of mining & competing agricultural enterprises

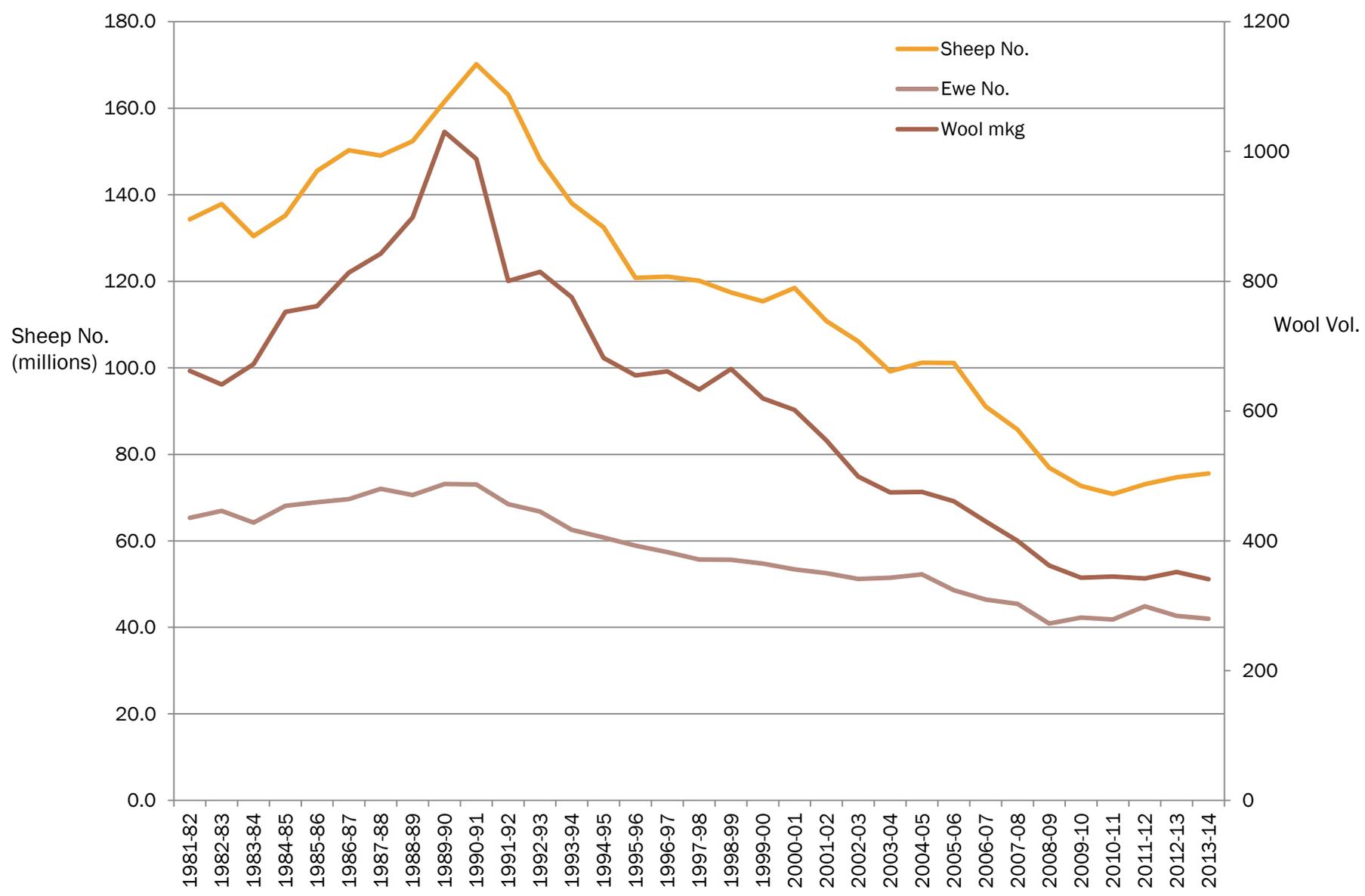
***Need to keep up the core foundation skills
so new technology can be well implemented***



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.com.au

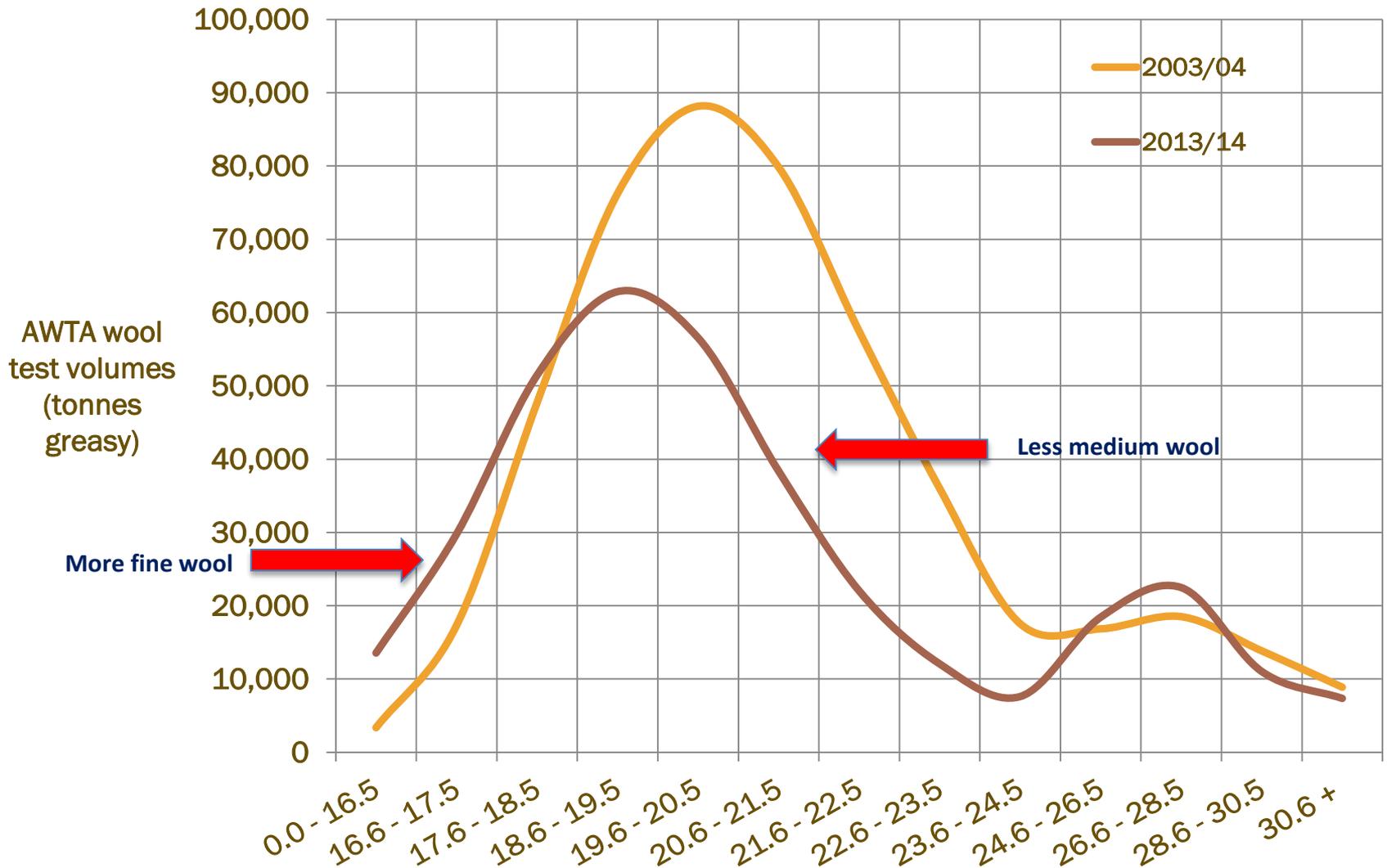


1. OVERVIEW: AUST SHEEP NO'S & WOOL PROD.



Source: AWPFC, AWI (2014)

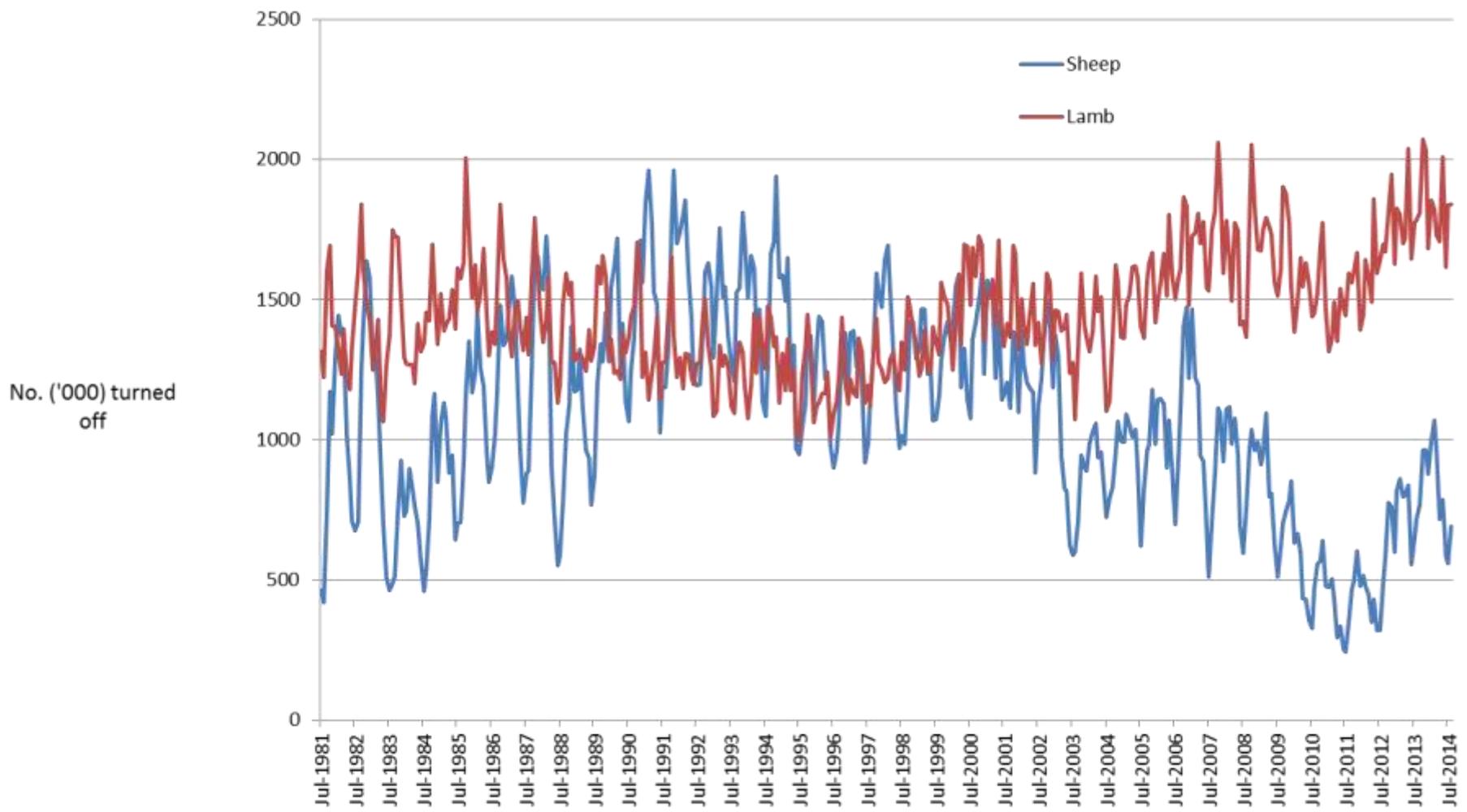
1. OVERVIEW: CHANGES IN CLIP MICRONS



Source: AWTA (Jun 2014)

Fashion shift away from formal clothing has reduced the demand for fine wool

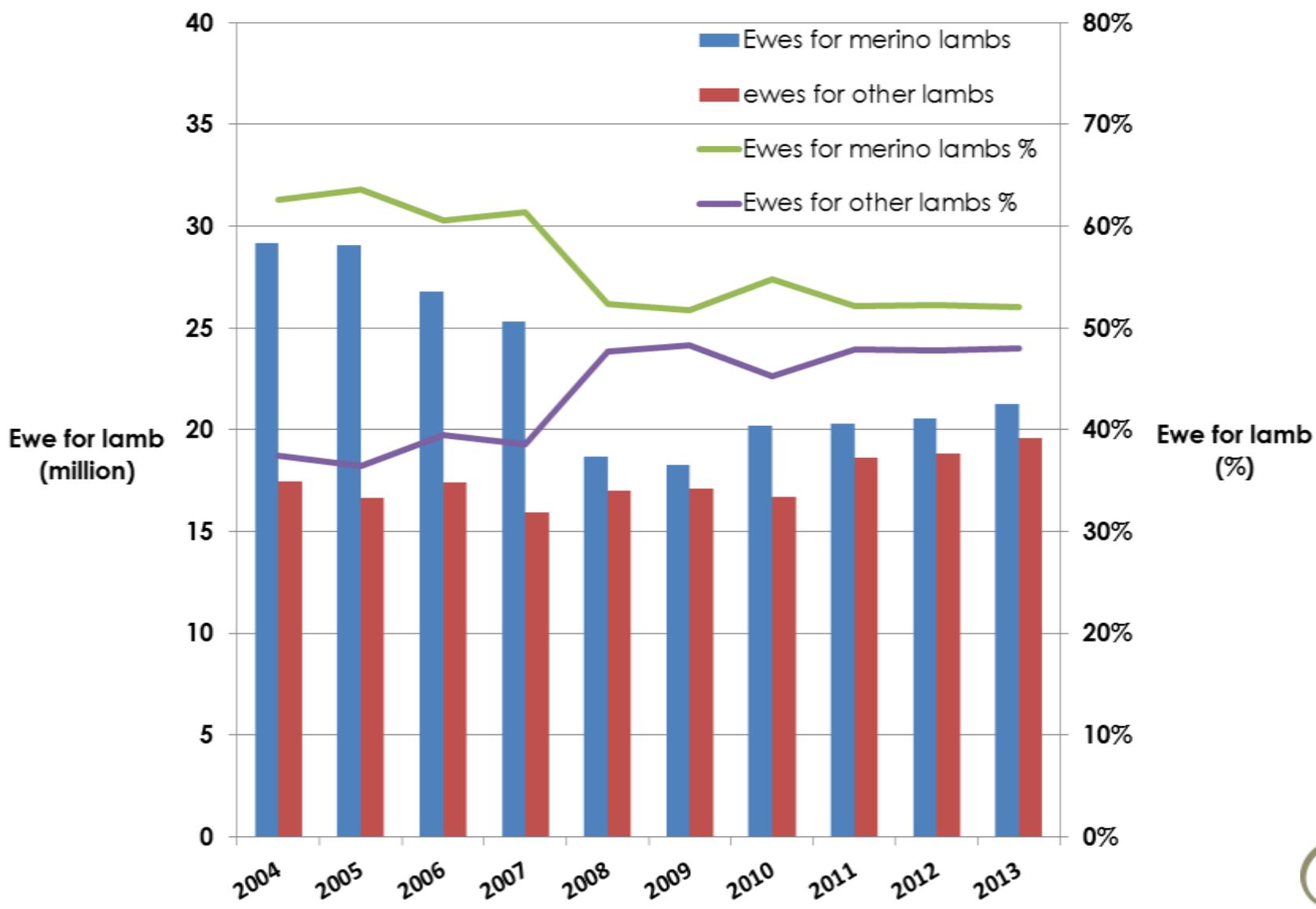
1. OVERVIEW: CHANGING SHEEP SALE NUMBERS



Source: ABS, AWI (2014)

Lamb production increasing and sheep (mutton) decreasing especially wethers

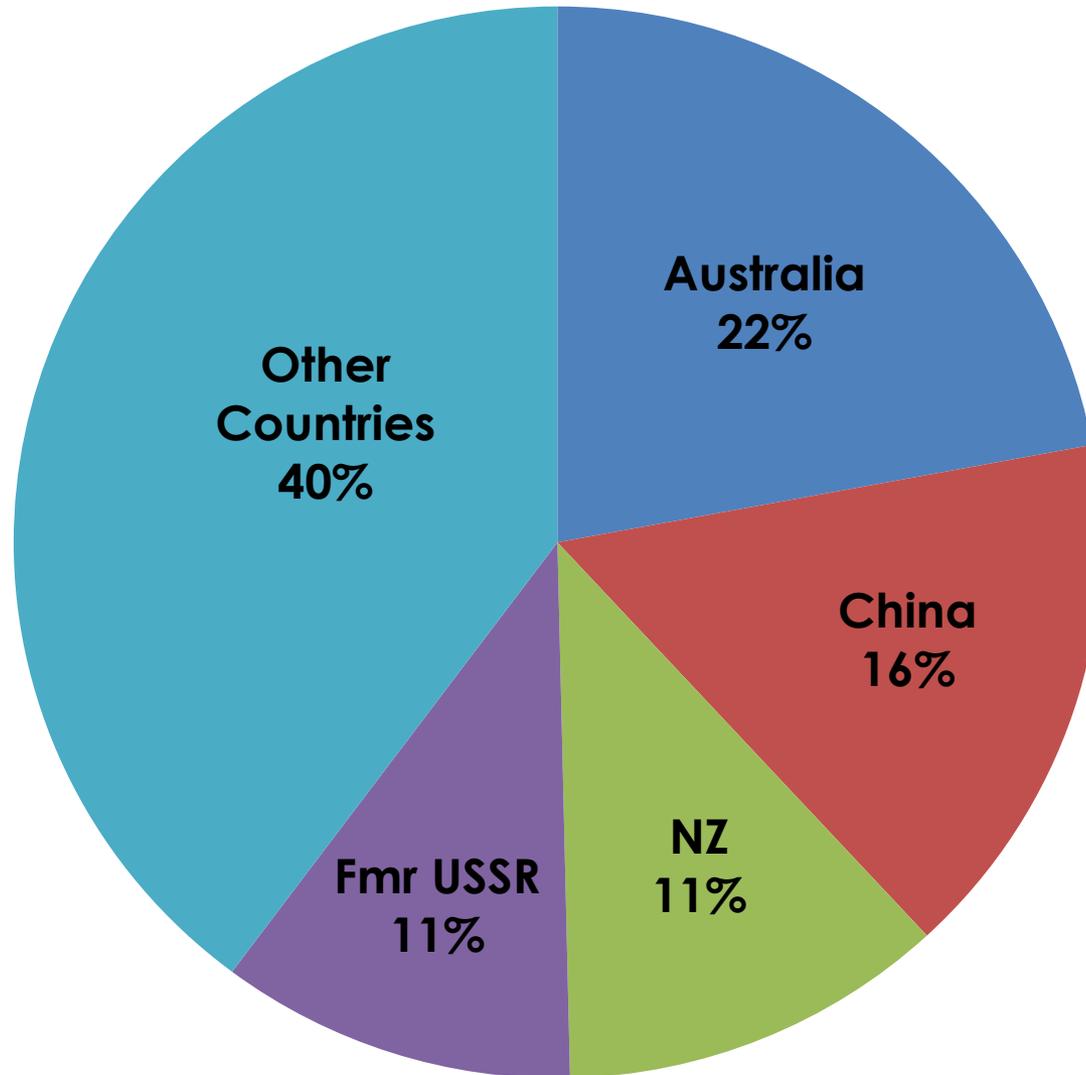
1. OVERVIEW : CHANGES IN BREED TYPES



Source, ABS MLA and AWI survey (June 2014)

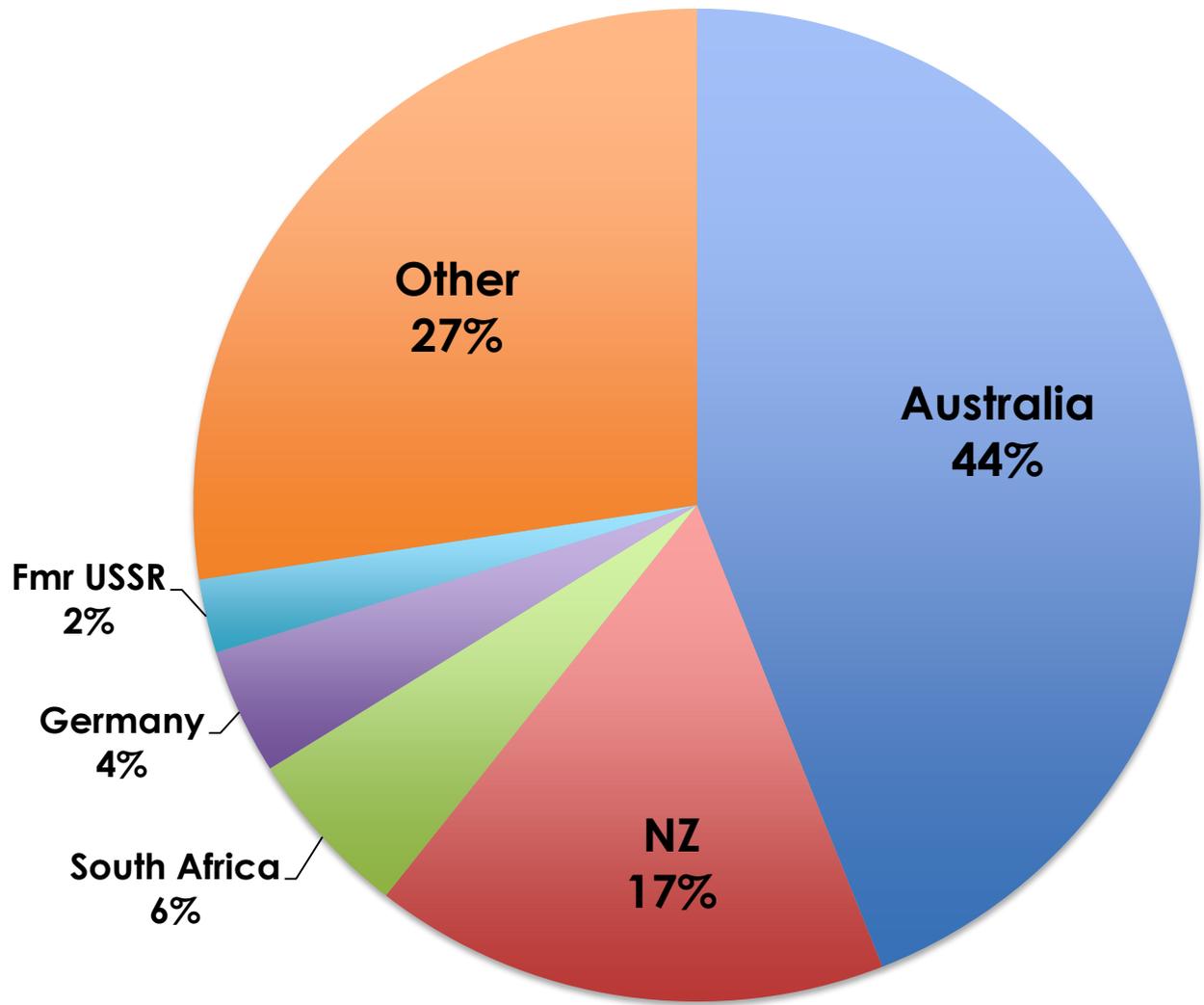


1. OVERVIEW: 2013/14 WORLD WOOL PRODUCTION



Source: FAO, AWI 2014

1. OVERVIEW: 2013/14 WORLD WOOL EXPORTS

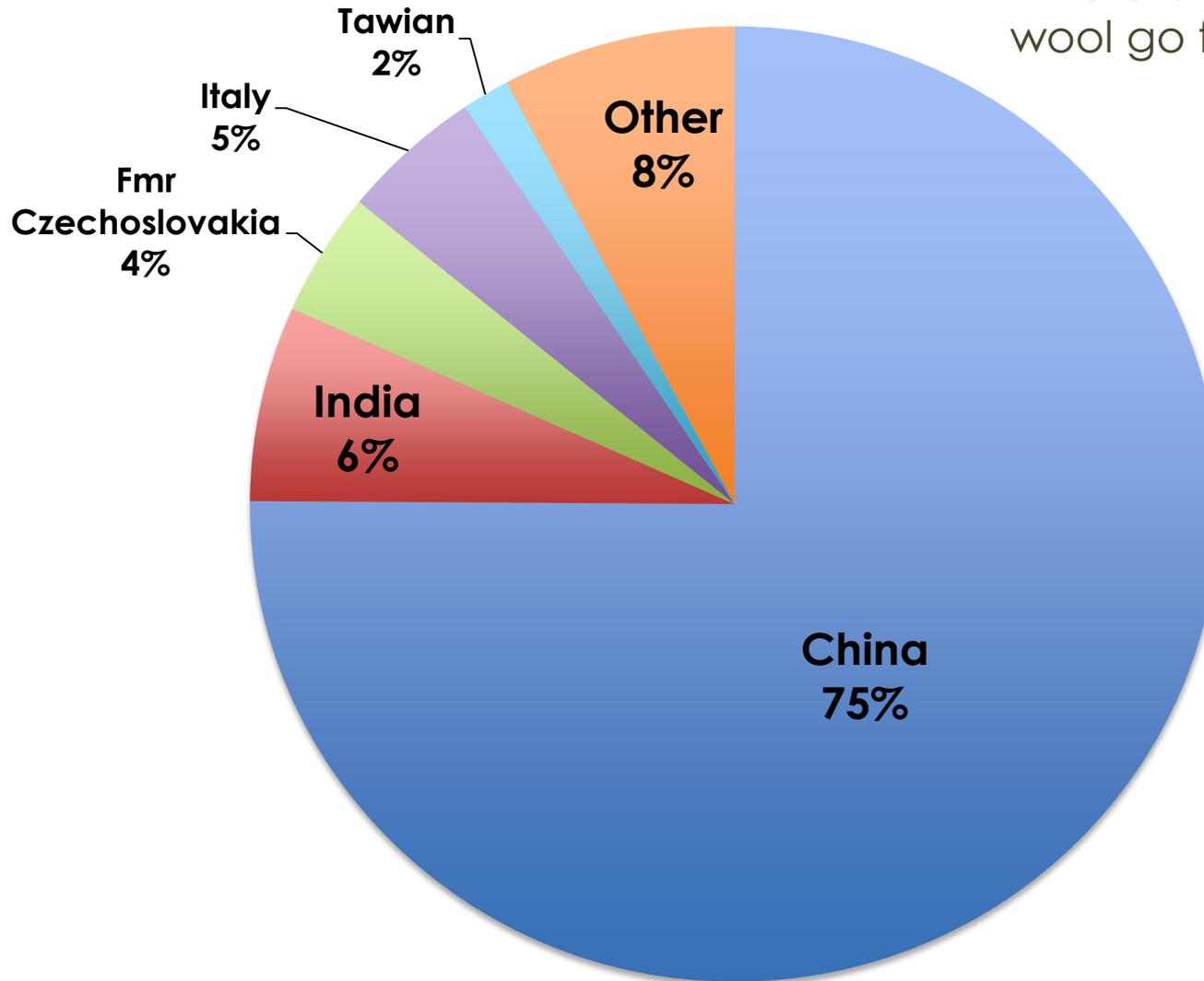


Source: International trade data, AWI (2014)

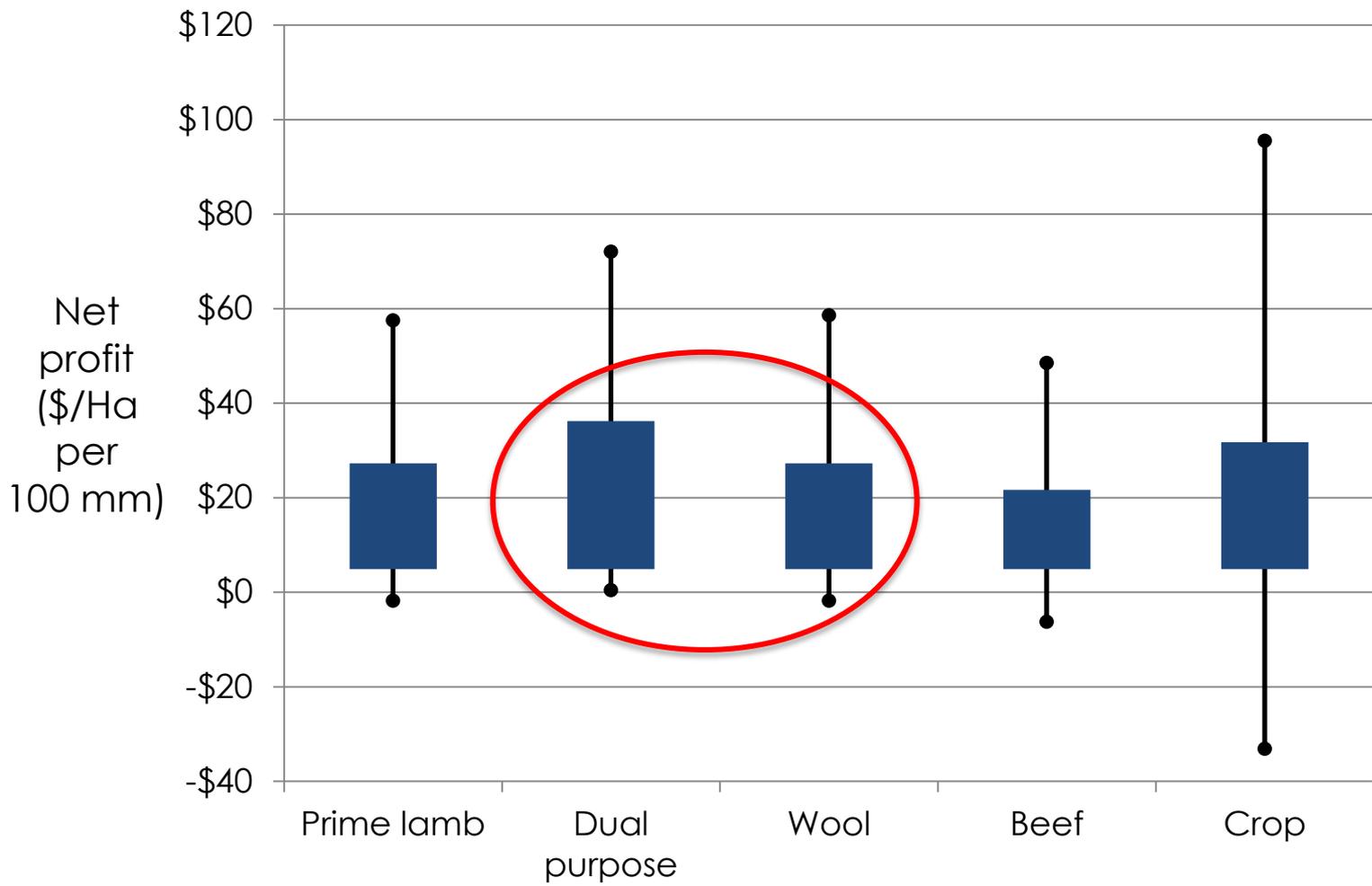


1. OVERVIEW: 2013/14 AUSTRALIAN WOOL EXPORTS

Where does Australia's wool go for processing?



1. OVERVIEW: ENTERPRISE PROFITABILITY 1998-2014



According to Holmes Sackett, over the 1998 – 2014, Merino or related wool ewe-based flocks performed well to other enterprises, across rainfall zones.
(Ag Insights Vol 17 Holmes & Sackett)

2. STOCKMANSHIP - CONTENTS

- 2.1 Observation skills
- 2.2 Workplace Health & Safety
- 2.3 Animal welfare legislation
- 2.4 Sheep behaviour
- 2.5 Sheep handling (practical - yards)
- 2.6 Impact of environment
- 2.7 Flock structure and enterprise mix
- 2.8 Working dogs (practical - yards)
- 2.9 People culture
- 2.10 Further resources



2. WHAT IS STOCKMANSHIP...?

Stockmanship is not only about stock handling... it is about all the components of having healthy, contented and productive stock



2. GOOD STOCKMANSHIP INVOLVES



2. GOOD STOCKMANSHIP INDICATORS

- Quiet and contented stock
- Well trained, observant and contented staff
- Well trained and managed dogs
- Good communication
- Well planned stock movements, minimum time in yards
- Crisis management plans in place
- Good, tidy stock handling facilities and equipment



2. GOOD STOCKMANSHIP INDICATORS

- Optimal stock condition and productivity per animal
- Adequate pasture cover
- Low mortality rates
- Low incidence of disease (flystrike, foot rot, pulpy kidney)
- No “lamb breaks” at lamb marking and weaning (mismothered lambs that break away from the mob of ewes)



2. RESULTS OF STOCK HANDLING TRAINING, "IT PAYS"

Staff from 3 WA sheep feedlots undertook stock handling training. Key study findings included:

- Av daily gain (ADG) increased by 33% at 2 feedlots, no change at the third
- Flight speed (measure of fear & temperament) reduced at 2 of the 3 feedlots
- Stress of stock handlers decreased at all 3 feedlots
- Time taken to weigh sheep reduced at 1 feedlot, remained same at other 2 feedlots
- Effort required by handlers to weigh sheep reduced at 2 feedlots
- Behaviour of sheep in the race improved
- Stress measured by blood cortisol levels were down at all 3 feedlots

Note - Handlers decided not to use dogs in race work

2.1 OBSERVATION SKILLS

- *“I hear nothing, I see nothing, I know nothing”*
(Sergeant Schultz from Hogan’s Heroes)
- A good stockperson builds on observation and experience to see problems early, to make more timely and better decisions
- Good observation and planning skills are key to productivity and minimising adverse welfare issues



2.1 OBSERVATION SKILLS

- A good stockperson sees abnormal sheep behaviours early, such as:
 - Stamping, licking lips, wriggling, limping, panting
 - Unusual distance from the mob
 - Grass seed in eye or ear
 - Thirsty or sick stock
 - Early signs of lambing
- Early intervention may not only help an individual animal, but the whole flock
- Duty of Care



2.1 OBSERVATION SKILLS

Examples of good stockmanship include:

- Predict when the grass seed will fall
- See the early signs of declining feed reserves
- Recognise the difference between the limp caused by footrot and the limp caused by foot abscess
- Minimising wastage of drought feed
- Monitor sheep condition score
- Understand nutritional requirements of weaners/wethers/pregnant ewes, etc.
- Selling stock early in droughts
- Conserving or leasing feed supplies provides opportunity for buying stock at low prices and then selling high

Examples of good stockmanship include:

- Never panics, especially in flood, fire or drought
- Takes responsibility, rather than blaming nature
- Predicts where the sheep are grazing but musters the paddock, not the sheep
- Stock arrive at yards in good time and minimum stress
- Care for working dogs; access to water, recognising heat stress and fatigue, avoids over-working dogs
- Knows when to call in an expert, i.e., vet

2.1 OBSERVATION SKILLS

Examples of good stockmanship include:

- Being proactive not reactive, i.e. timely crutching
- Knows the behaviour of a ewe that has found one lamb but is looking for the twin
- Can guess progeny by common features, i.e. face, horn and frame similarities
- Recognises early signs of flystrike
- Monitor/predict pasture depletion rates and when to move mobs
- Better prioritises paddocks to mob types

2.1 OBSERVATION SKILLS

A good stockman sees and takes action to resolve abnormal behaviours early:

- Hunched standing, tail wagging, prostrate lying
- Stamping, licking lips, wriggling, limping, panting
- Unusual distance from the mob
- Slow urine flow (kidney stones?)
- Blindness due to grass seed in eye
- Stance of a thirsty sheep
- Early signs of lambing, pregnancy toxaemia, pulpy kidney

2.1 OBSERVATION ACTIVITY

ACTIVITY: Throughout the day I will ask a number of questions to see how observant you are of your surroundings

What did you see?

It could be in the yards...

It could be in the shed...

It could be the sheep...

It could be the facilities...

At the end of the day I will ask who is the most observant and why

Part of the observation process is also identifying risk levels, hazards and steps we can take to make our workplace as safe as possible.

- **What is the aim of WHS Act 2011?**

To protect the safety of workers and improve safety outcomes whilst reducing the compliance costs for business

- **Who is bound by WHS legislation?**

Everyone in the workplace

- **Hazards?**

Anything that can hurt you or make you ill. These are broken down into 6 types:

- physical
- chemical
- biological
- ergonomic
- electro-mechanical
- psychosocial

2.2 WORKPLACE HEALTH & SAFETY (WHS)

■ **Risk level?**

The likelihood someone may be harmed by being exposed to a hazard. Categorised as high, medium or low

■ **Control?**

What we can do to make the job as safe as possible

- E.g. Personal Protective Equipment (PPE): gloves, glasses, boots, clothes

■ **How do we address WHS?**

- Identify hazards and the risks in the activities we do at work
- Give each hazard a priority for action (5 = highest, 1 = lowest) this is called the 'risk level'
- Identify **controls**

Risk Assessments

- A simple way of looking at our work activities to focus on improving safety
- Once practiced a few times, it is less time consuming
- Handling livestock requires the right equipment and facilities and approach to minimise risks
- Take steps to reduce the risk by forward planning

✧ **WHS ACTIVITY**

Complete Risk Assessment (group exercise)

On farm hazards may include:

1. **Physical** - sunburn, dehydration, heat exhaustion
2. **Chemical** – backlining, drenching
3. **Biological** - Q Fever
4. **Ergonomic** - lifting/catching sheep
5. **Electromechanical** - motorbikes, ATVs, augers
6. **Psychosocial** - depression, drought, debt, ill health

See Presenter Notes for “Safe Operating Procedures”

Safe Operating Procedures (SOPs) for Sheep:

A description providing information on an activity covering safety, preparation, animal welfare, procedures, handling & skills required.

Preparation:

- **Suitable clothing:** long pants/jeans, long sleeved shirt, boots, hat & sunscreen.
- **Ensure** instructions are clear for use of animal health products; equipment is working & PPE is available e.g. drench guns, backlining equipment, chemical gloves, etc.
- **Inspect yards & facilities** to ensure all aspects are working. If not, repair or make alternative arrangements. Check for broken gates, loose rails, weldmesh protruding.
- **Observation of sheep to be handled:** work as quietly & as calmly as possible, if flighty give more room, don't over-fill yards.

2.2 WORKPLACE HEALTH & SAFETY (WHS)- ACTIVITY

WHS ACTIVITY – Sample Risk Assessment

RISK ASSESSMENT		Date: 15/11/2014	
Property: "Three Trees" Conducted by: Bill			
Work Activity: (break job into steps)	Potential Hazards: (What can harm you?)	Risk Level	Control: (What can you do to make it as safe as possible?)
Mustering sheep on motorbike	Physical - falls, rocks/logs, wheel ruts	High - 5	Wear helmet, protective clothing, training
Lifting stragglers into ute	Ergonomic - back injury	Medium - 3	Get help or tow lower trailer or hydraulic hoist on ute
Backlining off the board	Chemical - hazard	High - 4	Gloves, protective clothing, read safety instructions

2.3 ANIMAL WELFARE LEGISLATION

- State based animal welfare legislation aims to ensure all animals receive an acceptable level of care and treatment including:
 - Adequate handling and sanitation
 - Nutrition and water
 - Veterinary care
 - Protection from extreme weather conditions and other forms of natural disasters
- Overwhelmingly farms operate well above the legislated requirements

2.3 ANIMAL WELFARE LEGISLATION

- Animal welfare laws apply to **all** people responsible for the care of the animals
- State legislation (i.e. Prevention of Cruelty to Animals Acts)
- *Australian Model Code of Practice for the Welfare of Animals: The Sheep* (second edition). **Note** – Code may be replaced by proposed *Australian Animal Welfare Standards and Guidelines for Sheep* (www.animalwelfarestandards.net.au)

2.3 ANIMAL WELFARE IMPROVEMENTS

- On-farm sheep welfare continues to improve with:
 - Better vaccines and animal health/ parasite treatments
 - Newly registered pain relief products
 - Breeding for resilient traits; e.g. fat, worm resistance, poll (no horns)
 - Provision of, and better quality, water at more closely spaced locations – poly pipe/tanks/troughs
 - Improvements in property planning and facility design
 - Ability to feed and truck animals during drought
 - Industry training programs

2.4 SHEEP BEHAVIOUR

- Observing and understanding sheep behaviour is the key to good stock handling. It improves a handler's ability to move stock whilst minimising stress on the animal and people



2.4 SHEEP BEHAVIOUR

Key characteristics of sheep behaviour:

Sheep are **herd** animals

- **Flock**
- **Follow**



Avoid isolating a single sheep



Separated sheep will attempt to return to mob



Warn off or alert the mob of a threat by **stomping**



Young sheep **learn quickly**
be patient



Highly social & form sub-groups



2.4 SHEEP BEHAVIOUR

Click on the link below to view “AWI’s Drone video”

<https://www.youtube.com/watch?v=gV6ozSLyrOk>

What makes sheep tick?

Sheep will:

- Always watch you, the dog or the other sheep
- Watch your eyes and body language
- Watch what the lead sheep are doing – they like following
- Copycat - if one jumps the following sheep are likely to jump also
- Watch for predator behaviour - 'stalking' in curved lines (makes mobs ring, keeping an eye for any threat)

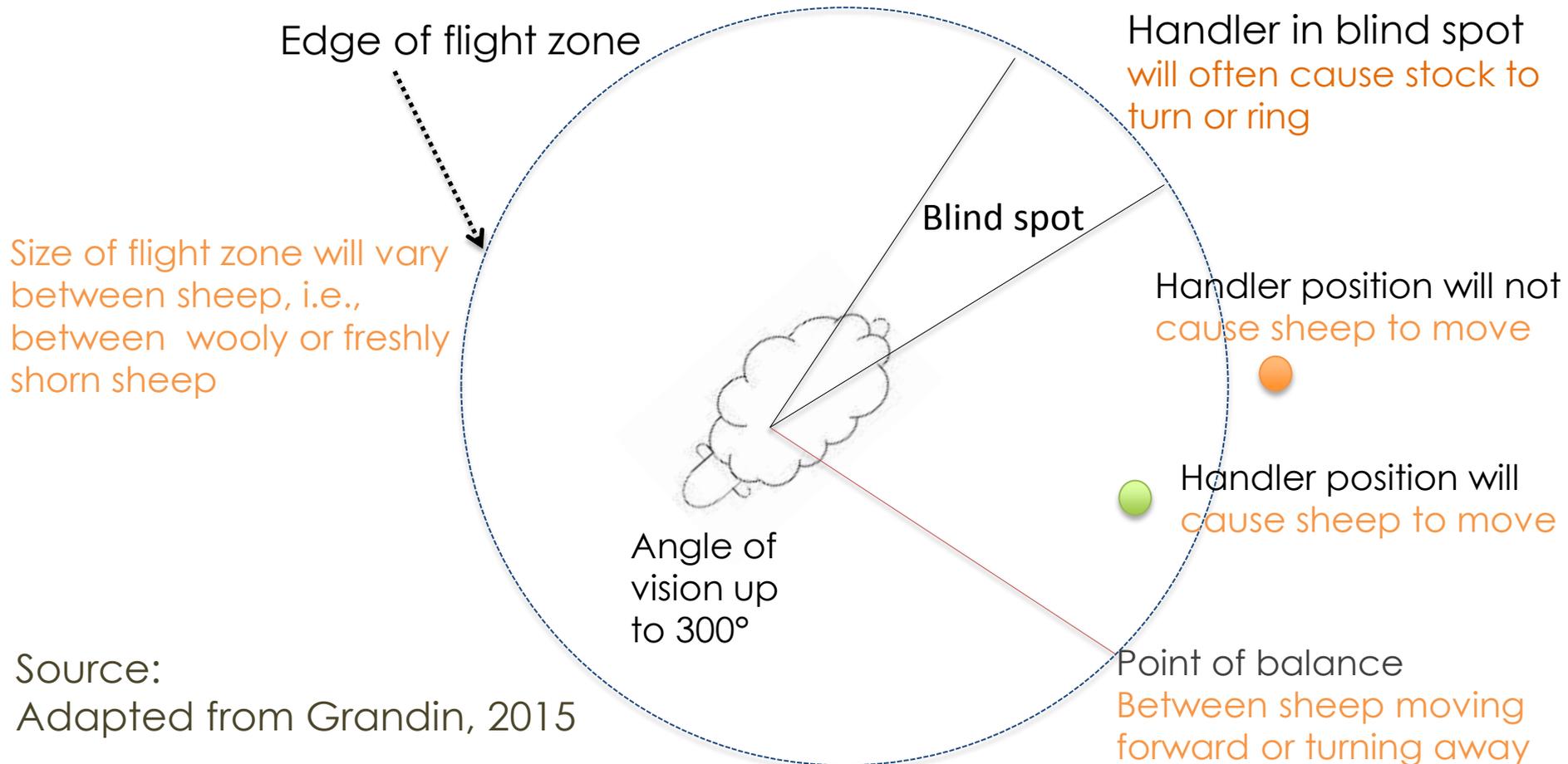
2.4 SHEEP BEHAVIOUR

- Sheep behave differently as they age and from prior handling experiences
 - Lambs and weaners are more unpredictable and will flee or 'break' from flock safety when pressured
 - Ewes with lambs at foot are hard to move and will resist pressure
 - Older sheep and sheep in lighter condition or full wool are slower to move
 - A general rule is to push up young sheep and walk back through old sheep

2.4 SHEEP BEHAVIOUR

What is a flight zone?

- An imaginary space that surrounds an animal
ie. like a person's personal space



Source:
Adapted from Grandin, 2015

Using the flight zones

- Every animal's flight zone is slightly different and will vary depending on its individual nature
- Sheep like to see what is pressuring them
- When pressured too much, they will try to cut back
- If the handler moves into the flight zone the sheep will move, the direction of movement will depend on the position and speed of the handler

Flight zone distances are affected by:

- Face and eye cover (wool) as it will affect animals ability to see the handler
- Shearing- sheep that are off shears or short wool are more flighty
- Sheep that are handled less, e.g., pastoral zone, may be more flighty
- Sheep condition
- Age and experience

2.5 SHEEP HANDLING

- Effective sheep handling requires:

Understanding sheep behaviour



The right attitude by the handler



Well trained dogs (if used)



Good facilities & equipment



Good weather



Keep handling to a minimum

2.5 SHEEP HANDLING

Husbandry procedures requiring handling may include:

- Drenching - controlling worms
- Vaccinating - protection against diseases
- Lamb marking - tagging, tail docking and castration
- Shearing, crutching, dipping for lice, scanning for lambs



2.5 SHEEP HANDLING

Poor sheep handling = Stress = Lower Productivity

- Sheep that arrive over-heated take longer to settle
- Agitated sheep don't flow smoothly in yards
- Stragglers can lead to poor disease control
- Mismatching = orphans (breaking ewe & lamb bond) due to wild dogs, foxes, humans, etc.
- Overloading pens in yards can cause smothering
- Anxious sheep run into fences and cause harm
- Biting dogs

✧ **Activity 1 - How do we react?**

Form pairs to act out/experience the following points:

1. Eye contact
2. Position of body
3. Personal space
4. Stance - passing by close space
5. Feeling of being cornered or isolated
6. Effective noise

Discussion – What are the differences/similarities between us & sheep?

Discuss mob/herding, safety in numbers, predators

2.5 SHEEP HANDLING - MUSTERING

Mustering = gathering together all the sheep in the paddock

1. Plan

- Make a plan. Factors to consider are:
 - Time and temperature
 - Distance and means of mustering
 - Age of stock and number
 - Wind direction and strength
- Avoid the peak of the heat or poor weather in general
- Minimise handling wet animals, especially low rainfall pastoral sheep (increases fleece rot, impact of grass seed)

Remember your hat, water, UHF or mobile

2. Mustering Tips

- Approach sheep so they head off in the right direction
- Muster the paddock, not the sheep
- Know the count - check records
- Count the sheep out of the paddock, or at the first opportunity, check muster if needed
- Restrict the sheep to a sustainable walking pace – “manage the lead, don’t push the tail”
- Sheep, dogs and machinery should expend the least amount of energy possible

If you get lost:

- go back to where you were last in contact
- stay on a road, gate or fence
- don’t leave the paddock, if hot find shade

3. Penning up

- After droving, allow sheep to cool down before yard work
- Push up young sheep, walk back through adult sheep
- Choose a route where the sun is not casting shadows as this may cause the sheep to balk
- Avoid over-filling yards as sheep won't flow easily and may trample each other if spooked (i.e. from storms, stray dogs, sudden movement). Young sheep particularly should not be overcrowded
- The narrower the yard or pen, the fewer the sheep
- Minimise unnecessary stress

✧ **Activity 2 – Planning & Simulation for Sheep Handling**

As a group:

1. Walk through the yard – discuss gateways, outside yards through to draft, working race, light, shadows, slippery surfaces, weldmesh, WH&S issues
2. Discuss likely flow of sheep
3. Discuss the importance of planning and observation
4. Discuss and demonstrate pressure and release

2.5 SHEEP HANDLING – Explanation of yard activities

✧ **Activity 2A – Handling sheep, applying & releasing pressure**

Each pair to move sheep yard to yard:

1. Set up gates. Always do this first
2. Direct body pressure towards area of yard you are emptying
3. Step in sideways to apply pressure to lead, step back out again to release
4. Move forward and backwards to keep sheep moving, if more pressure is needed step in. Avoid turning the lead
5. Try to avoid walking to rear of mob



2.5 SHEEP HANDLING – Explanation of yard activities

✧ Activity 2A - Releasing pressure & closing gates

1. Step away or turn body away from stock again, focus should be on area of yard you want to empty.
2. When shutting gates try to drop eye contact to just in front of gate, sheep are more likely to shuffle forward than break away.

Avoid overcrowding yards



2.5 SHEEP HANDLING – Explanation of yard activities

Insert the link below into your web browser to view AWI's videos on Moving Sheep Between Yards and Sheep Ringing:

Moving Sheep between yards 1:

<http://youtu.be/Bh3U88f1Vcs>

Moving Sheep between yards 2:

<http://youtu.be/iimBS2Dae3g>

Sheep Ringing:

<http://youtu.be/bsTjKtg03bA>

✧ **Activity 2B - Drafting**

Same pairs - one on the draft & one keeping sheep flowing:

1. Plan the way you want the sheep drafted, ideally the smallest mob are drafted into pens towards the drafter
2. Main mob to go straight ahead
3. Choose the features on which to draft (eg. Ear marks, tag colours, woollies from shorn sheep, lambs from ewes)
4. Ensure sheep coming up to the draft can see drafted sheep
5. Push sheep squeezing their tail, direct their head with a hand under their jaw and avoid grabbing wool
6. With ewes and lambs start with several ewes - lambs will follow

Alternate pairs and repeat.

✧ **Activity 2B – Drafting tips**

- Do not grab wool to pull or push the sheep
- Keep your eye sight well ahead of the drafting gates to ensure timely drafting decisions are made
- Use soft/cupped hands on the drafting gates - if the sheep jump less likely to damage hands
- Use inside knee to push sheep back in draft that are heading in the wrong direction
- Keep your body movements slow and smooth, avoid sudden or loud movements
- Start with 2-way drafting before progressing to 3-way
- **BE PATIENT!**

2.5 SHEEP HANDLING – Explanation of yard activities

Insert the link below into your web browser to view AWI's video on Drafting Sheep:

Drafting Sheep:

<http://youtu.be/f1C8OYPXU8Y>

✧ **Activity 2C - Filling the race**

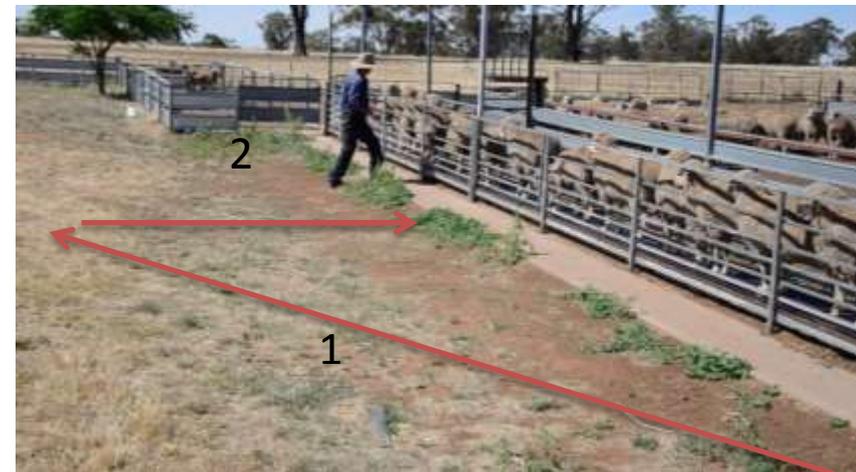
1. Start the same as the drafting. Once sheep have started to walk or trot 2/3 of the way to the lead, face away and out from sheep (pressure released)
2. Turn and approach race leaning over race focusing eye contact over sheep
3. Extend body by outstretching arm (sheep will run under)
4. Trot or walk towards the rear, eye contact is in the opposite direction to flow of sheep
5. At times depending on yard design and sheep, you might have to physically turn sheep to start or keep going

2.5 SHEEP HANDLING – Explanation of yard activities

✧ Activity 2C- Filling the race

Step 1

1. Walk up with pressure directed away from your sheep
2. Quickly turn and come in extending inside arm over the rump of your sheep
3. Eye contact is also over the top of your sheep focussing on the rump



2.5 SHEEP HANDLING – Explanation of yard activities

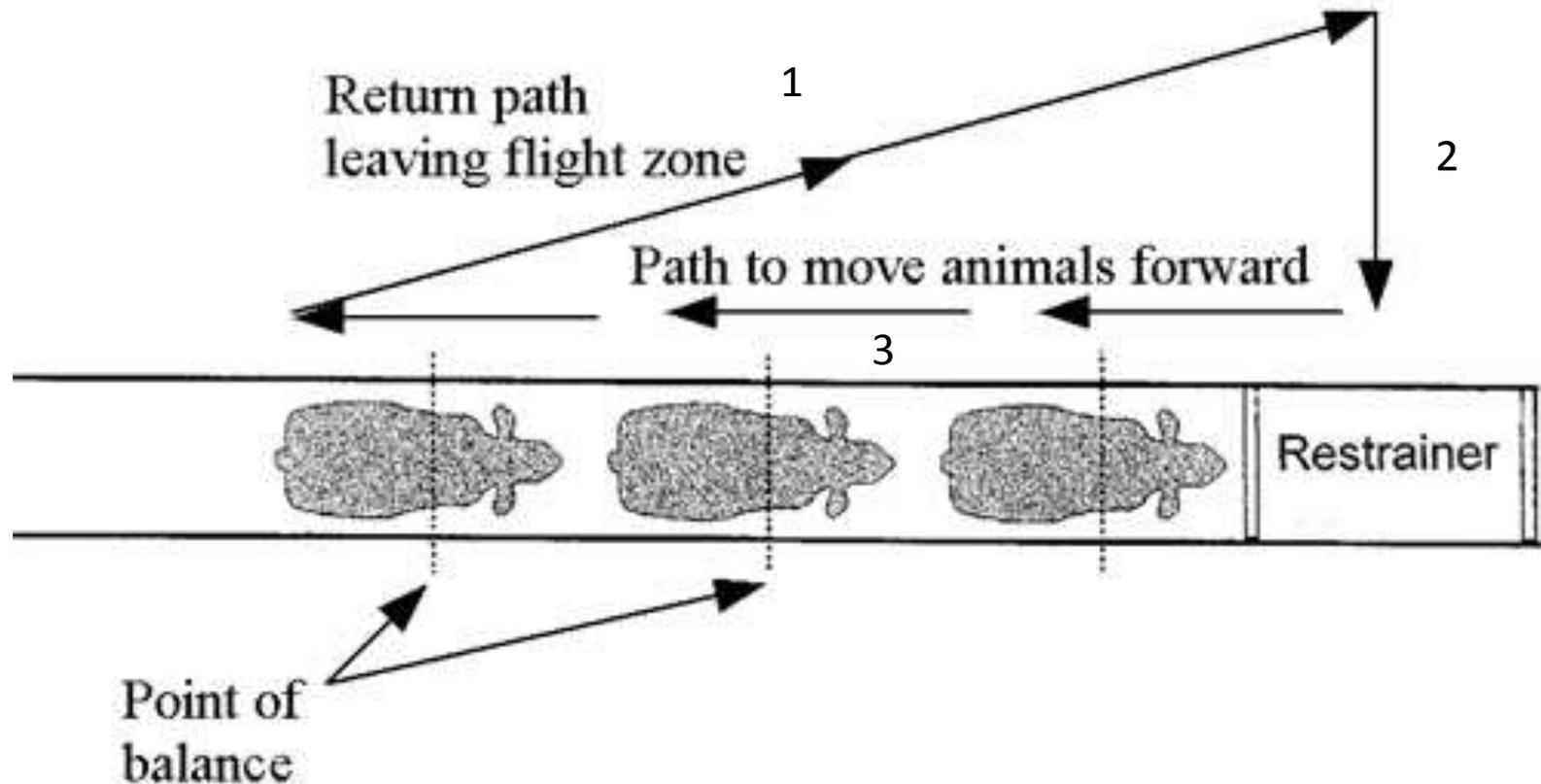
✧ Activity 2C- Filling the race

Step 2 - Apply Pressure

4. This should cause the sheep to duck under and surge forward. You may have to start the lead by squeezing the tail of the sheep
5. If too slow, or you go too far towards the front of the race, you will cause your sheep to turn back
6. Watch eyes and ears to anticipate response



✧ Activity 2C- Filling the race



(Source: Adapted from www.fao.org)

2.5 SHEEP HANDLING – Explanation of yard activities

Insert the link below into your web browser to view AWI's video on Filling the Race:

Filling the Race:

<http://youtu.be/AhS2U24XaF8>

✧ **Activity 2D- Counting**

Use sheep from previous activities:

1. Pick a small gate, with secure fences either side (that sheep flow through well) and that opens in the same direction of the sheep flow
2. Facilitator to control sheep flow
3. Keep a hand on the gate and move your body to impact on the flow of the sheep - towards the sheep to slow the flow, away from the sheep to increase the flow
4. Start counting in 2s, more experienced counters often progress to 3s, 5s or 7s. Record the count

✧ **Activity 2D- Counting**

- Use a fixed point to count sheep past
- Position your body so sheep are running past your shoulder, this helps them flow with less resistance
- Try to pick a yard the sheep like running to generally from an inner yard to an outer yard
- Use a tally counter or stones for the hundreds, if others are in ear shot they can call out the hundreds
- Keep the uncounted sheep looking at the counted sheep
- Practice counting whenever you get a chance!

2.5 SHEEP HANDLING – Explanation of yard activities

Insert the link below into your web browser to view AWI's video on Counting Sheep:

Counting Sheep:

<http://youtu.be/xC6vGOKR-I4>

✧ **Activity 2E- Catching/tipping up sheep**

1. Place your hand under the jaw
2. Place your leading leg behind the shoulder
3. Place other hand above the tail on the opposite side
4. Push the head away from you and rotate the sheep onto its backside rotating it around your leading leg
5. This gives the most leverage and control over the animal
6. For larger animals your trailing hand may need to reach over and grab the flank skin just in front of its thigh

2.5 SHEEP HANDLING – Explanation of yard activities

Insert the link below into your web browser to view AWI's video on Tipping Sheep:

Tipping Sheep:

<http://youtu.be/AFkjNx5Gyuc>

✧ **Activity 2F- Lifting modest-sized sheep**

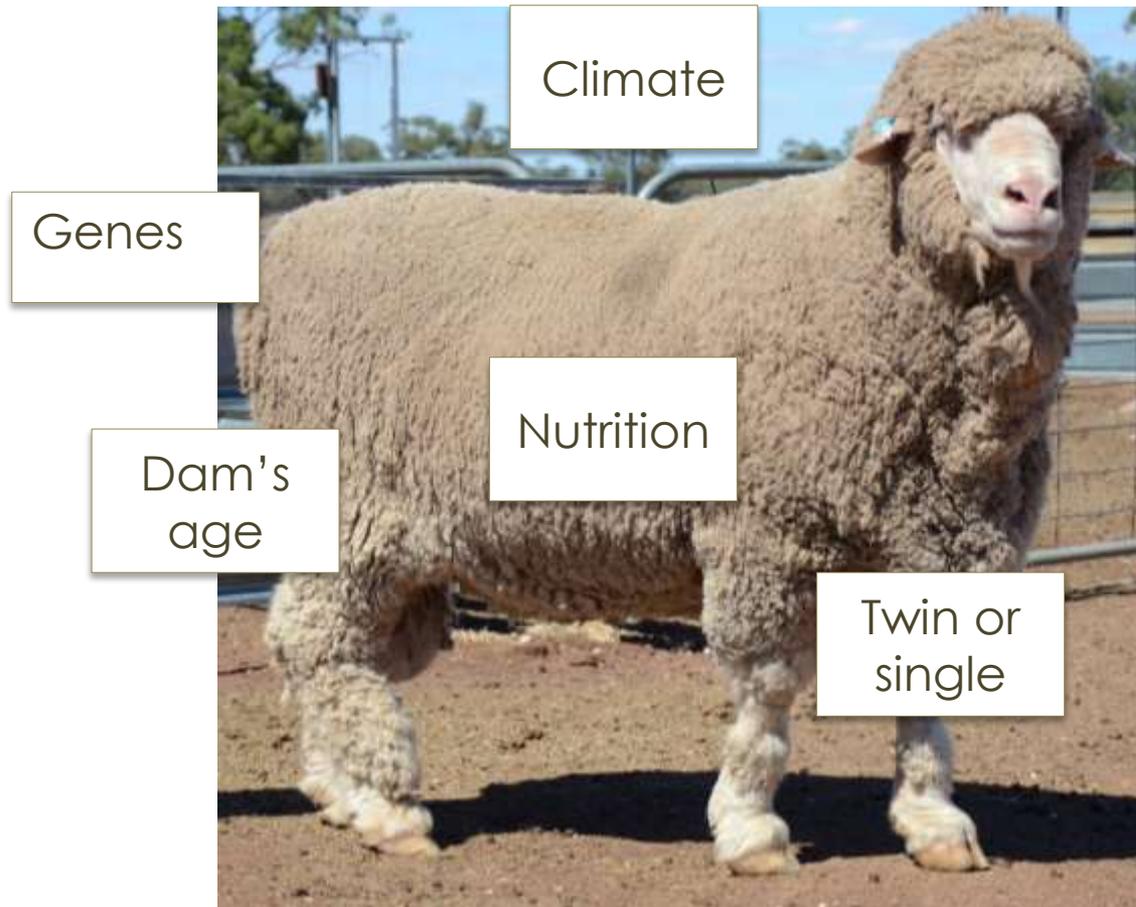
1. Tip them up on their backside
2. Bend your knees keeping your back as straight as possible
3. With one hand grab the fore leg, with the other grab the opposing hind leg above its hocks and straighten your legs

✧ **Activity 2F- Lifting heavy sheep**

- Where possible avoid hand lifting heavy sheep – use a hoist or lifting equipment as your first option
- If required to hand lift:
 1. Seek assistance, one on either side of a standing animal
 2. Bending at your knees grab the fore leg with your front facing hand
 3. Place your trailing hand under the sheep just in front of its rear legs and link hands using a monkey grip with your assistant
 4. Lift with your knees
 5. If it is a horned ram, lift the horn rather than the front legs to ensure its horn does not hit you in the head

2.6 IMPACT OF ENVIRONMENT

How a sheep looks (phenotype) and thus their productivity is impacted by:



2.6 IMPACT OF ENVIRONMENT

- How sheep look (phenotype) and their productivity is impacted by:
 - their **genes** (genotype) } **only genes passed on to progeny**
 - the nutrition & care by the **ewe** }
 - **climate** in which they live }
 - pasture and **nutrition** on offer }

environment
- Identical genotype animals can have sizable differences in productivity, even with quite small differences in environment
- Large differences in environment can cause very large differences in phenotype and productivity

Effects of Environment and Genetics - **Genes**

- Where environmental influences are constant or they can be accounted for, genes have between 2% and 50% influence (heritability) on how progeny perform (phenotype) depending on the trait.
- The heritability values for some key wool sheep traits are fibre diameter 50%; fleece weight 35%; fertility 3%; and yearling weight 35%
- Where ewe, climate and nutrition are not constant or cannot be accounted for, genes account for almost none of the differences in phenotype as these environmental factors 'swamp' the genes and heritability quickly falls to zero

Impact of Environment - **Ewe**

- Single lambs get more nutrition as a foetus and more milk and care from the ewe than twin lambs
- Lambs from mixed aged (experienced) ewes get more nutrition and care than lambs from maiden (inexperienced) ewes
- As lambs get older the differences due to dam and rear type reduce, but early life differences between animals can impact productivity for the rest of their life
- Classing at older ages (16 to 18 months) is more “accurate” compared to a younger ages
- Mixed aged ewes should be classed in ‘age/ management groups’, i.e. twin, single or dry, maidens, mixed aged. When classing mixed aged ewes special care needs to be taken to make sure that the high performing ewes are not penalised.

Impact of Environment - **Climate**

- Sheep in warmer climates grow faster, with less energy is spent on maintenance, keeping warm
- Warmer climates also have fewer diseases and parasites to impact on the young, growing animal
- Sheep grown in warmer climates tend to grow bigger, cut more wool and have higher fibre diameters (caused by the better climate)
- Sheep generally have to be classed later in colder, low growth, later maturing, high rainfall climates
- Ewes transported into cooler climates from warmer climates are unlikely to produce progeny that look like them

Impact of Environment - **Nutrition**

- Nutrition on offer depends on plant species, soil type and fertility, months of green feed and how long the volume and quality of dry feed holds on
- Sheep with better nutrition will grow faster, mature earlier, are bigger, have heavier fleeces and more lambs
- Differences in paddock nutrition within a property can have large impacts on how sheep look and perform. It is important to class sheep within 'management groups'. Different stocking rates can have a big impact

Summary

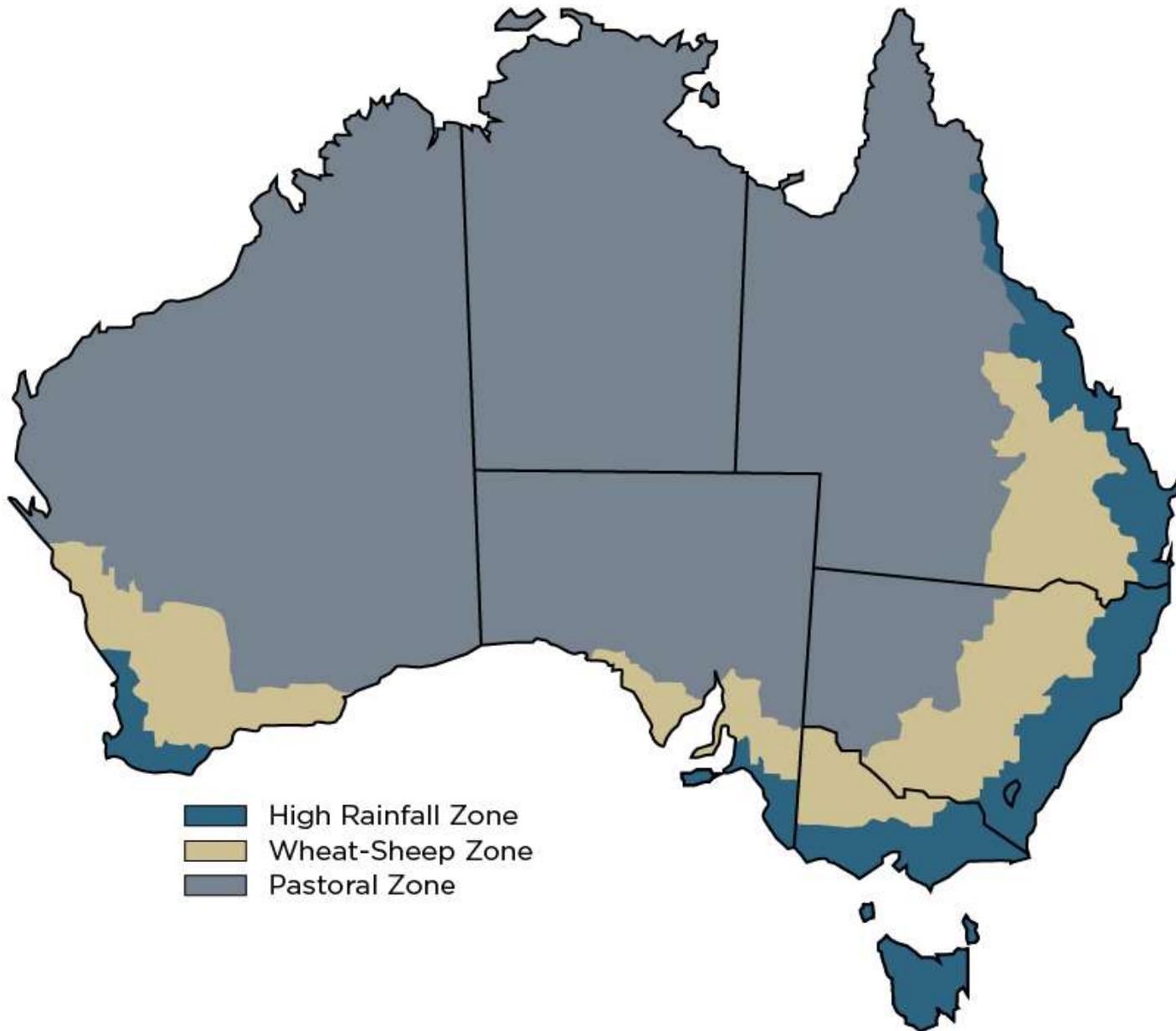
- Sheep productivity (phenotype) is affected by:
a) genes b) ewe c) climate and d) nutrition
- Good stockmen understand how best to utilise different environments and what type of sheep is best suited in what environment
- This is important when buying in replacement ewes or trading sheep. Buying high genetic-merit sheep that have been born in a drought or tough region can be a profitable exercise, (buy cheap, sell high)

2.6 IMPACT OF ENVIRONMENT

- Different “types” of merinos are better suited to some regions than other regions:

Types of Country	Merino Types
High Rainfall	Fine wool, smaller frame and tend to have a higher yield, less fleece rot and vegetable matter
Wheat Sheep	More moderate, ‘balanced’ in most traits
Pastoral	Robust, resilient, bigger, heavy cutting sheep, high fertility

2.6 IMPACT OF ENVIRONMENT



2.6 IMPACT OF ENVIRONMENT

High Rainfall Zone

- Livestock production mostly Merino, prime lamb, beef cattle and dairy production
- Colder and high altitude country, large number of frosts, low evaporation, more wet days, longer months of green feed, high stocking rates per ha
- Poor pastures in the middle of winter
- More worms
- Wool needs to be more resistant to bacteria (fleece rot) from continued damp conditions
- In steep native pasture country- nutrition and terrain can be more suited to wethers than ewes

2.6 IMPACT OF ENVIRONMENT

High Rainfall Zone (cont.)

- Areas include New England, Mudgee, Southern Tablelands NSW & Tasmania.
- Dominated by granite & traprock soils, well suited to fine wool production
- High protein, grazing pastures can lead to complications, mineral deficiencies, bloat, etc.
- High cost production systems



2.6 IMPACT OF ENVIRONMENT

Wheat Sheep Zone

- Wool, grain and prime lamb enterprises
- Poor pastures late summer, early autumn
- Occurrence and timing of frost can have big impact
- Sheep enterprise needs to fit in with grain production
- Flood plains, clay soils, pasture/crop rotations add variation within the Zone
- Merino enterprise is more dual purpose, wether lambs finished for meat trade and older ewes crossed with terminal sires



Pastoral Zone

- Large, isolated holdings, low rainfall, high evaporation rates
- Lower impact on pastures from frosts
- If it rains can grow feed throughout the year
- Greater variability of seasonal conditions
- Can be unviable to supplementary feed large numbers, early stock sales important
- Generally larger breeding flocks, Merino enterprise dominates income stream

2.6 IMPACT OF ENVIRONMENT

Pastoral Zone (cont.)

- Low number of green months per year, reliant on dry pastures, perennial grasses and bushes
- Distance to water affects stocking rate and mob to paddock choices



2.7 FLOCK STRUCTURE & ENTERPRISE MIX

Flock Structure (DSE = Dry Sheep Equivalent)

- Flock Structure is used to balance optimal profitability and business risk. Key factors are:
 - % of flock that is non lactating (“dry” DSE) and % of flock lactating (“wet” DSE)
 - % of breeding ewes that are 5 or 6 year old and over
- High % of dry DSE’s more flexibility in selling down sheep numbers during “lambing months”
- Low numbers of 5 and 6 year old ewes = higher average ewe sale prices, fleece values and ability to recover from drought faster and easily
- High fertility creates the ability to have high culling rates and a young flock structure

Flock Structure (cont.)

- With loss of wether flock in recent years, business risk has increased. Rarely are wethers now retained past 12 months of age but some country is not suited to breeding ewes (flood plains, steep rocky country)
- High numbers of young animals increase risk (harder to look after). If stockmanship is good, still a better option than having an old flock structure
- Use of prime lamb sires can spread risk (lambs sold at younger ages) but need some grass seed free paddocks
- Important to match peak demand for feed (2 months prior to lambing and 2 months after) with peak feed production

2.7 FLOCK STRUCTURE & ENTERPRISE MIX

Enterprise Mix

- Other enterprises on the farm may impact on the timing of sheep husbandry operations and flock structure.
- Optimising overall business risk, flexibility and profitability is the key



2.8 WORKING DOGS

- Sheep handling skills need to be sufficient before adding dogs
- The sheep dog can be one of the greatest assets you can have whilst handling sheep
- The median cost involved in owning a working dog is approx \$8K over the period of its working life
- Work performed by the dog throughout this time was estimated to have a median value of \$40K so a 5 times return on investment

(Uni Sydney Farm Dog Research, 2014)



2.8 WORKING DOGS

- Need to observe how sheep react to dogs and different styles of dogs (forcing “yard” type or wide casting “paddock” type)
- Need to observe the role humans have in the interaction between dog & sheep
- **Both are reacting to our behaviour!**



2.8 WORKING DOGS

- Sheep reactions are faster and stock are less confident with the presence of a dog
- Used wisely dogs have major benefits to stock handling
- When used poorly there is a high risk of injury to sheep, dog and stock handler
- Muzzle dogs that bite
- Tie up dogs when they are not working (with decent collar)
- At all times, you are responsible for your dogs
- Minimise use of dogs for sheep being sent to slaughter, stress can impact on meat quality



2.8 WORKING DOGS

Paddock Dogs and Yard Dogs

- Paddock dogs work wider and display more natural balance and eye in regard to keeping a mob together e.g. mustering
- Yard dogs display more force and enjoy working in close proximity with the sheep e.g. races, catching pens
- All rounder/utility dogs – are dogs that have paddock and yard skills



2.8 WORKING DOGS

Working Dogs – handling and obedience

The basic skills needed are:

- Early obedience (sitting, staying and coming, etc.)
- Introducing the young dog to sheep
- Identifying the dog's natural strengths
- Troubleshooting (bad habits, biting, cutting sheep out etc.)
- Handling techniques for paddock and yard dogs



Working dog demonstration by presenter

- Obedience/commands
- Understand the dog's natural working behaviour
- Dog training
- Moving sheep between yards
- Filling the race
- Drafting sheep
- Counting sheep

2.8 WORKING DOGS - YARDS

Training and Obedience

1. Start with a small yard and a lead rope on your pup/young dog
2. Use only a small number of sheep (quieter, older sheep are preferable as a training mob), your dog will hopefully go to a lead (12 o'clock position)
3. Try not to let your pup be overwhelmed by big numbers, or be trod on in high traffic/pressure areas



2.8 WORKING DOGS - YARDS

4. Let your dog become used to the sheep. At first there will be any number of reactions from excitement, barking, chasing, to sitting and quiet observation
5. Once initial reaction is over, try to position yourself in a “ringmaster” or “traffic controller” role and observe your pup. This observation will determine how you proceed with your young dog’s training



More advanced demonstration and workshop of working dogs by presenter and participants

Activities in yards repeated with dogs at higher level:

(Activities will only be performed at the discretion of the facilitator)

- Obedience/commands
- Dog training techniques
- Using your dog's leading instinct
- Moving sheep between yards
- Yard activities, i.e., filling the race, drafting sheep, counting sheep

2.9 PEOPLE CULTURE

- The right people culture needs to be fostered for good stockmanship to become part of “normal” operations, or “business as usual”
- Some businesses benefit more from well-trained staff than others. Why?
- Some businesses are more successful at training future managers and industry leaders. Why?



(Photo Credit: Hay Inc)

2.9 PEOPLE CULTURE

- Starts with attracting the right staff, being an employer of choice and making the right staff selections
- How the boss treats their staff sets the culture for how their staff treat livestock
- Staff “copycat” the boss, animals “copycat” staff
- If the staff culture is wrong the full benefits of stockmanship training are unlikely to be realised

2.9 PEOPLE CULTURE

It is essential to have staff
with:

Integrity

Honesty

“Everything

else

is

teachable”

Staff management approaches that encourage good stockmanship:

- Aim for staff to finish work by 5 to 6pm each day, start as early as needed
- Reassess the day's remaining operations throughout the day, (especially at lunch time), to ensure you finish efficiently and on time
- Manage staff in a way that fosters well trained, confident, contented staff. - Staff treat stock in a similar manner to the way they are treated

Common “old timer” sayings:

- “I don’t sack jackaroos I sack overseers. Everyone has the capacity to work; the overseer needs to learn how to motivate all types”
- “Honesty and integrity are non negotiable, everything else is teachable”
- “Everyone needs a hobby”
- “Staff should be able to get to the shops once a week without having to ask”
- “Young staff should do a week time course; wool classing, motor bike mechanics, and have an outside interest”

2.10 STOCKMANSHIP RESOURCES

Available courses:

- Stock handling courses
 - <http://www.lss.net.au/training.htm>
 - <http://www.stressfreestockmanship.com.au/>
- Stock handling and dog training
 - <http://www.waddell.com.au/stockhelp/>
- StockSafe
 - <http://www.profarm.com.au/>

Videos:

- Wool From New Heights
 - <https://www.youtube.com/watch?v=gV6ozSLyrOk>
- Learning NSWDEC clips on observation, mustering, flight zone, etc.
 - <https://www.youtube.com/watch?v=9zNKbfaCxbU>

Further reading:

- Making More From Sheep – Module 11, Healthy & Contented Sheep
 - http://www.makingmorefromsheep.com.au/healthy-contented-sheep/procedure_11.5.htm
- A Producers Guide to Sheep Husbandry Practices
 - <http://www.mla.com.au/News-and-resources/Publications>
- Best Practice Cattle & Sheep Handling Learning Resource
 - http://www.australiananimalwelfare.com.au/app/webroot/files/upload/filesLivestock_Handling_Training_Facilitators_Guide_final_version_24_8_12.pdf
- Animal behavior – Sheep Chapter
 - <http://www.animalbehaviour.net/JudithKBlackshaw/Chapter3b.htm>
- Temple Grandin – Livestock Behaviour
 - <http://www.grandin.com>

Further reading:

■ Dogs

- <http://www.awbcr.com/History/index.html>
- www.wkc.org.au/About-Kelpies/Origin-of-the-Kelpie.php

■ Staff management

- Under the Chloroform Tree; R Jameson
- Making More From Sheep Module 4 – Capable & Confident Producers
- <http://www.makingmorefromsheep.com.au/capable-confident-producers/index.htm>

■ Wool industry involvement and careers

- <http://www.wool.com/en/education-and-extension/education-and-leadership-opportunities>
- National Merino Challenge: <http://www.awinmc.com.au>

2.11 CAREER PATHS IN THE WOOL INDUSTRY

- Focus is on 25 case studies of current 30 to 40 year olds that have taken a wide diversity of career paths that are **currently** available to young people keen for a career across the wool industry
- Will be available on AWI website May 2016



2.11 JACKEROOS, JILLEROOS, STOCK HANDLER & THE OVERSEER

The definitions:

- A stock handler is a person who looks after livestock on a property, station, yards or feedlot
- A young trainee is known as a jackaroo or a jillaroo
- A head stock handler or overseer is responsible for a number of employees and livestock operations where they are employed

2.11 THE OVERSEER OR HEAD STOCKMAN

The overseer or head stockperson:

- Is responsible for a number of workers
- Plans livestock operations
- Supervises livestock operations, shearing, crutching, lamb marking , classing, joining, feeding and watering runs
- Managing repairs and maintenance on fencing, yards, vehicles and bikes, etc.

2.11 CAREER STEPS INTO ON FARM WOOL INDUSTRY

1. Jackarooing/jillarooing
2. Working on family farm
3. Traineeships
4. Vocational Education Training Courses
5. Sub-overseer, head jackaroo, overseer
6. Agricultural tertiary education
7. Other tertiary education
8. City job first
9. Management, consultant
10. Mining or other regional jobs first
11. Goals outside agriculture



Thank you





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