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An Overview of Diseases in Sheep Production Systems

Produced for the CRC for Premium Quality Wool undergraduate program by;
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Economic impact of disease

- **Loss of production**
 - Phenotype ~ Genotype + Environment
 - Disease is a major environmental influence
- **Costs of control**
- **Loss of markets**

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Cost of major endemic diseases of sheep in Australia (\$M)

Disease	Cost of control	Production loss	Total
Blowfly ¹	130	31	161
Lice ¹	114	55	169
Worms ¹	81	141	222
Footrot ²	63	18	81
Total	388	245	633

¹Mcleod (1995); ²Collins (1992).
The gross value of Australian sheep production is ~ \$4 billion.

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Classification of external parasites

Phylum Arthropoda

Class Insecta

3 pairs of legs, distinct head, thorax and abdomen, one pair of antennae

Class Arachnida

4 pairs of legs, cephalothorax and abdomen, no antennae

Flies (Diptera)

- Blowfly *
- Primary
- Secondary
- Nasal bot
- Sheep ked

Lice (Phthiraptera)

- Biting *
- Sucking

Mites (Acarina)

- Itchmite

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Classification of helminth (worm) infections

Helminths

Roundworms (Nematodes)

- *Haemonchus contortus*
- *Trichostrongylus* spp.
- *Ostertagia circumcincta*
- Numerous other spp.
- Lungworms

Flukes (Trematodes)

- *Fasciola hepatica*

Tapeworms (Cestodes)

- *Monezia* spp.

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How does disease affect animal production?

- **Reduced quantity of product**
 - Deaths leading to fewer animals
 - Lower production per animal
 - Wool production
 - Reproduction
- **Reduced quality of product**
 - e.g. staple strength, stain, coting, chemical residues

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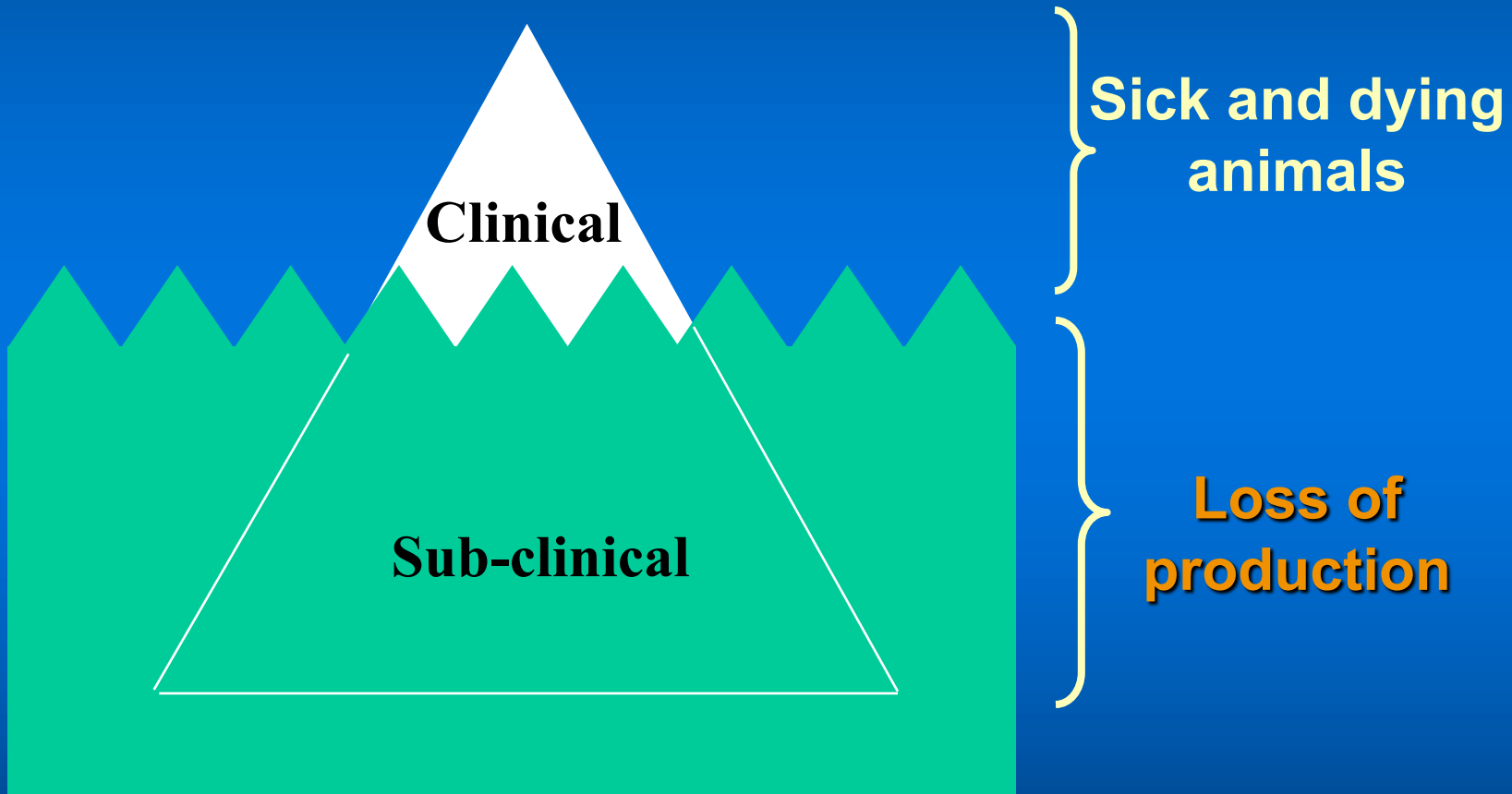
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Clinical and sub-clinical disease. “The disease iceberg”



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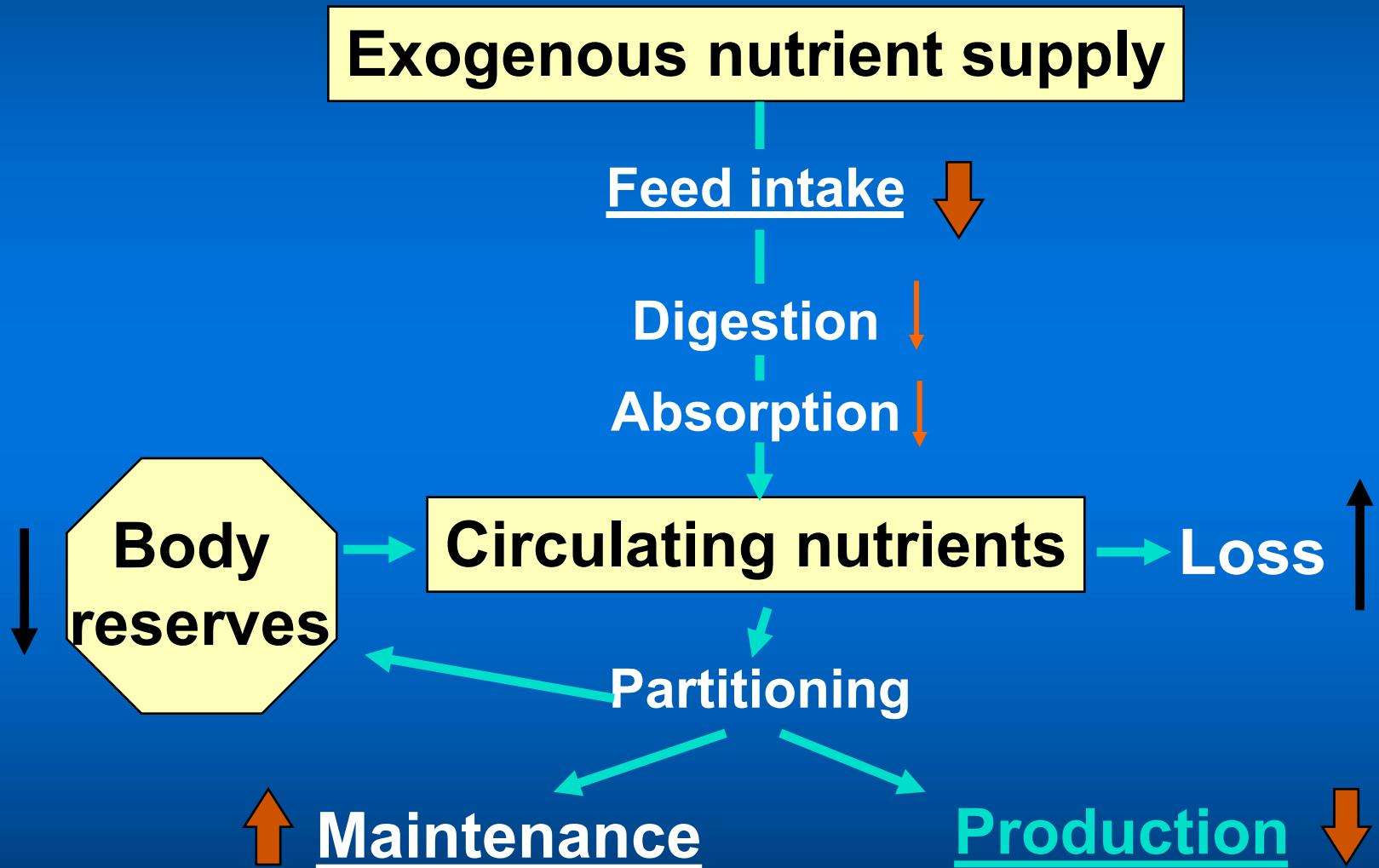
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Effects of disease on the efficiency of feed utilisation for production



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Summary of effects of key diseases on wool production

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Disease	Effects				Other
	GFW	Yield	MFD	SL	
Fly strike	↓ +		↓ +		↓ +++ Stain, cotting
Lice	↓ ++	↓ ++			Cotting, stain
Helminthiasis	↓ +++		↓ +++	↓ ++	↓ ++
Bacterial dis. Acute	↓ +		↓ +	↓ +	↓ ++
Chronic	↓ ++		↓ +	↓ +	↓ +



Overview of disease processes

Disease

Local effects → **Systemic effects** → **Systemic responses**

Damage to specific tissues or systems

Spread of organism, toxins or effects throughout the body

Immune and stress responses

- Impaired function
- Costs of repair
- Damage to product

- Disturbances of homeostasis, usually resulting in one or more of
- Loss of appetite
 - Fever
 - Catabolism of body tissues
 - Dehydration/electrolyte imbalance

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