THE UNIVERSITY OF MELBOURNE

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1.7 Inputs in extensive production systems

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Summary

- There are a large range of inputs and outputs on different farm systems based on species of animal, pastures and crops they manage as well as their location and other factors. You should be able to describe these inputs and outputs for a given system.

Inputs

- Role of manager is to mix inputs in best way possible to maximise sustainable profit
  - Range of ways of measuring this, might be $/ha, might be combination of $/ha and a sustainability index, certain KPI, margin or other metric
- Key inputs for livestock system include land, animals, labour, pasture and infrastructure

Land

- As an extensive enterprise land (soil) is the primary building block of the enterprise
- Combined with environmental influences (rain/temperature etc) will determine what pasture base is possible
- Land can be owned, leased or agisted (both leasing and agisting are generally done under a written agreement or contract)
- Can assess likely total stocking rate for an enterprise based on size as stocking rates for particular regions are relatively standard

Animals

Some enterprises only have one species/breed of animal while others have multiple

Pro's/con's – spread risk, animal expertise etc

Total numbers on property = animals per hectare * total hectares grazed

Some enterprises may solely fatten animals while others will have a self replacing breeding flock/herd – this will change the age groups and risk of some diseases

Important when collecting "history" about animals to understand the overall farm system

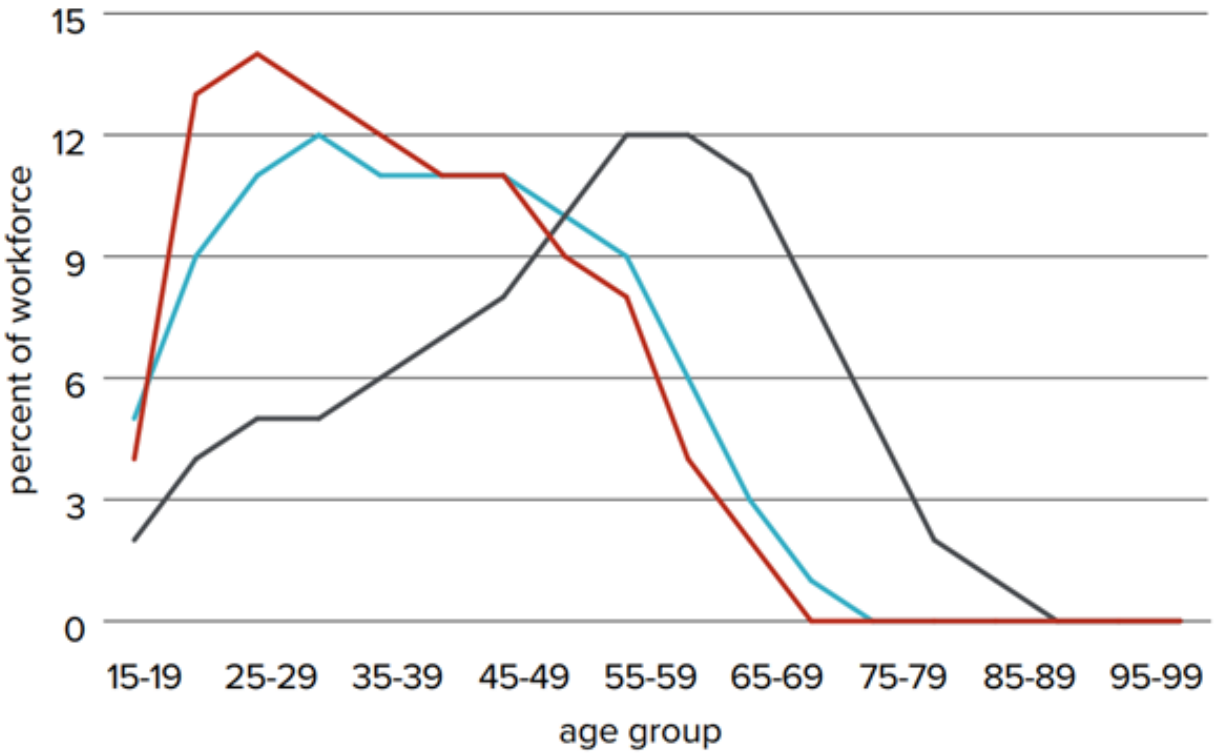
Labour

- Very important part of successful farm management
- Right people plus right knowledge and application
- Normally written as FTE (full time equivalent)
- Range of disciplines needed on most farms – often contractors involved
- Significant training needed, rules/regulations on who can do roles
- Contract jobs include shearing, marking, crutching, pregnancy testing, artificial insemination and range of others

Workforce

- Rural workforce generally older than average workforce

Figure 30. Age profile of industry and Australian workforces (2016)



Source: ABS 2016 Census

Pasture management – seed/fertiliser/spray etc

- Need suitable quality and quantity of pasture for extensive livestock to meet animal needs over time
- In high rainfall zones tend to have higher pasture management costs per hectare, but also run a higher stocking rate e.g. a dairy may harvest 18T grass/ha/yr
- Soil type of property will determine amount/type of fertiliser needed
- Soil tests to assess needs
- Higher pasture production likely to have more regular stock movement
- Temperature regions mostly C3 plants, tropical more C4 plants https://biologydictionary.net/c3-c4-cam-plants/

Pasture (cont)

- Often integrate livestock with pasture/grain system so paddocks change on yearly basis
- Range of herbicides used either in weed control or in pasture establishment
- Roundup been highly beneficial in soil conservation/minimum till cropping/planting

Farm fencing

- Managing livestock requires a farm to be fenced, unless stock are hefted such as in the UK (stock go to same area each year)
- Range of fencing types, conventional and electric
- Different fence types for different stock e.g. Merino sheep mostly respect a fence, British Sheep breeds less so
- Different upkeep for different fence types e.g. monitoring current in electric fence (using a tester, not your hand!)
- Future potential for virtual fencing?

Farm infrastructure

- Different enterprise types require different infrastructure
- Dairy farm – needs dairy, silo, yards, landways, small paddock fencing (often electric); regulations around design
- Merino – shearing shed, sheep yards, silo, hay shed
- 4DVirtualFarms has several examples to consider
- Silage storage
- Equipment and its storage (tractor, motorbike, SBS)
- Laneways for stock movement
- Water and power, how water supplied (trough versus dam)

Personal transport

- Safety!
- Motorbikes or side by sides (SBS)
- Utility (Ute)
- Tractor (ROPS)
- Horses

- For all above consider EHS (OHS)

Feeding infrastructure

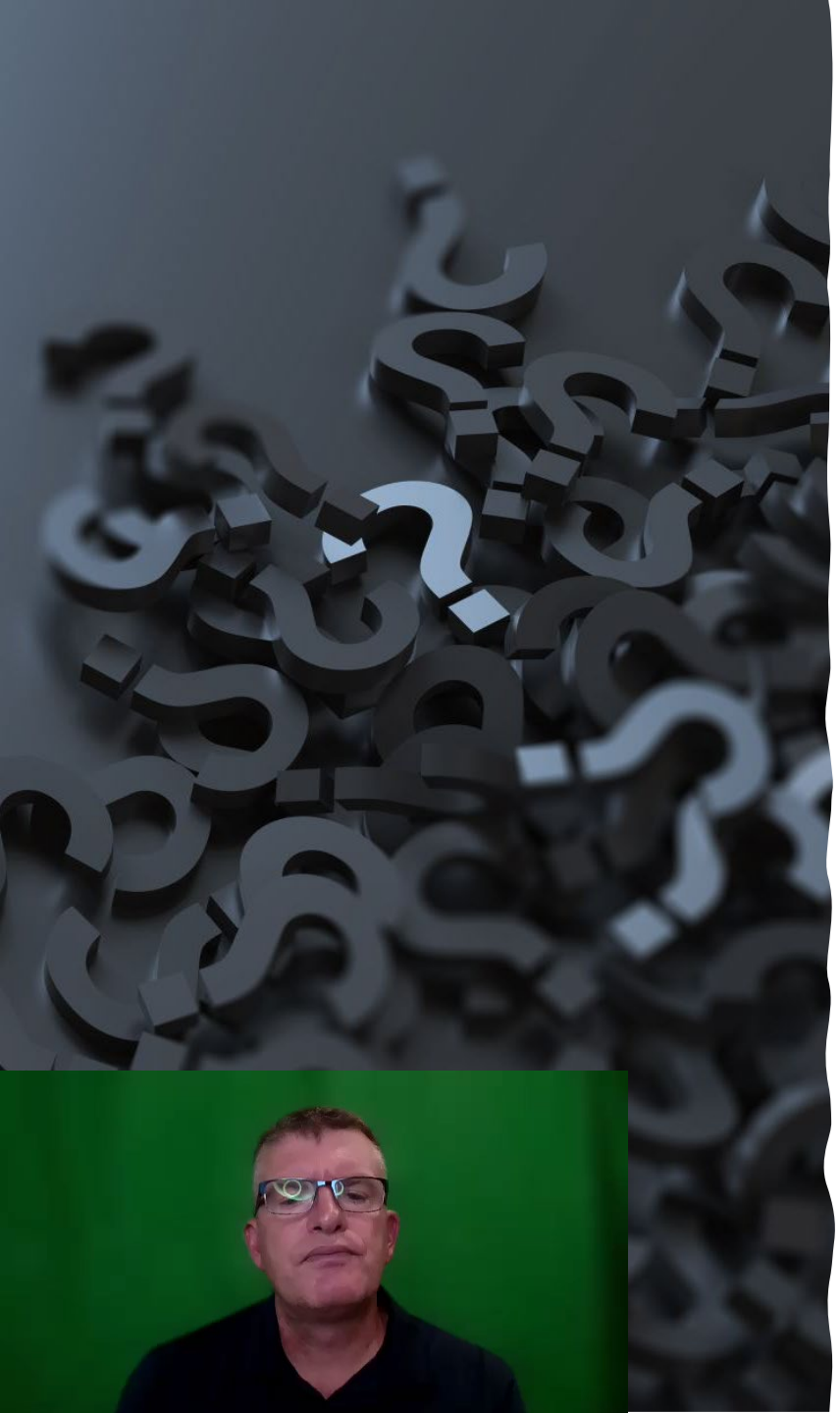
- Often need to feed stock for limited period of the year
- Containment zone (feedlot)
- Drought plan
  - Sell stock
  - Feed stock
- Machinery required to feed – tractor plus grain/roughage feeder
- Auger to move grain into and out of silo
- Water infrastructure and shade
- Hay shed and silos

Machinery

- Varies based with livestock enterprise
- Generally at least a tractor and utility vehicle on farm
- In Northern Australian often a small helicopter
- Most tractor will have a front end loader
- Hay/silage equipment (to make or feed out)
- Planting equipment
- Grain enterprises may have harvester
- Spray equipment
- Truck or trailer for livestock movement
- Often contractors used for a range of jobs needing specialised equipment such as livestock transport or sowing pasture.

Animal health and veterinary

- Often regarded as significant costs on farm, albeit usually lower than many other farm costs
- We will cover specific health programs under each species
- General costs includes vaccinations, internal and external parasite control along with other health preventives/treatments and veterinary assistance for pregnancy testing or health issues



Other

- A range of other inputs exist on farms with common ones listed here
- When doing extramural work it is a great opportunity to consider the variation in what inputs are used for different enterprise types and why
- A good question to consider is what would happen if a particular input was not available? What would the impact of that be and would there be other options?