Maiden does may be the weak link to greater weaning rates

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Review: Sexual activity & pregnancy

Factor	Rate	Reference
Puberty:		
Age & season of birth	6-9 months	Greyling (2000)
Weight (60-75% of mature weight)	15, 27 kg	
Does mating:		
During breeding season (April)	90%	Greyling (2000)
Outside breeding season (September)	85%	Restall (1992)
Conception rate:		
During breeding season (March-July)	86-89%	Restall (1992); Norton (2004)
Outside breeding season (August-February)	<50%	

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Review: Ovulation & Fecundity

Breed	Kids born/pregnant doe	Reference
Kalahari Red	1.6	Oderinwale *et al.* (2017)
Boer	1.6-2.0	Erasmus (2000); Nogueira *et al.* (2016)
Rangeland	1.96-2.17	Allan *et al.* (1991); Goodwin & Norton (2004)

High fecundity increases triplet numbers (13% triplets at 1.6 kids/doe)

Maidens have a lower fecundity than adult does.

Ovulation rate peaks during the breeding season (10-40% higher)

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Review: Early pregnancy losses

Factor	Rate	Reference
Foetal mortality	2% at maintenance nutrition; 17% when 6% weight loss in mid-pregnancy	McGregor (2016)
	<7% at condition score 3; 20% at condition score 2 Nutritional stress 53-70%	Mellado *et al.* (2004) Mellado *et al.* (2004); Urrutia-Morales *et al. (*2012)
	First parity (i.e. maidens) higher risk Oldest does (>5 parities) higher risk	Mellado *et al.* (2004)

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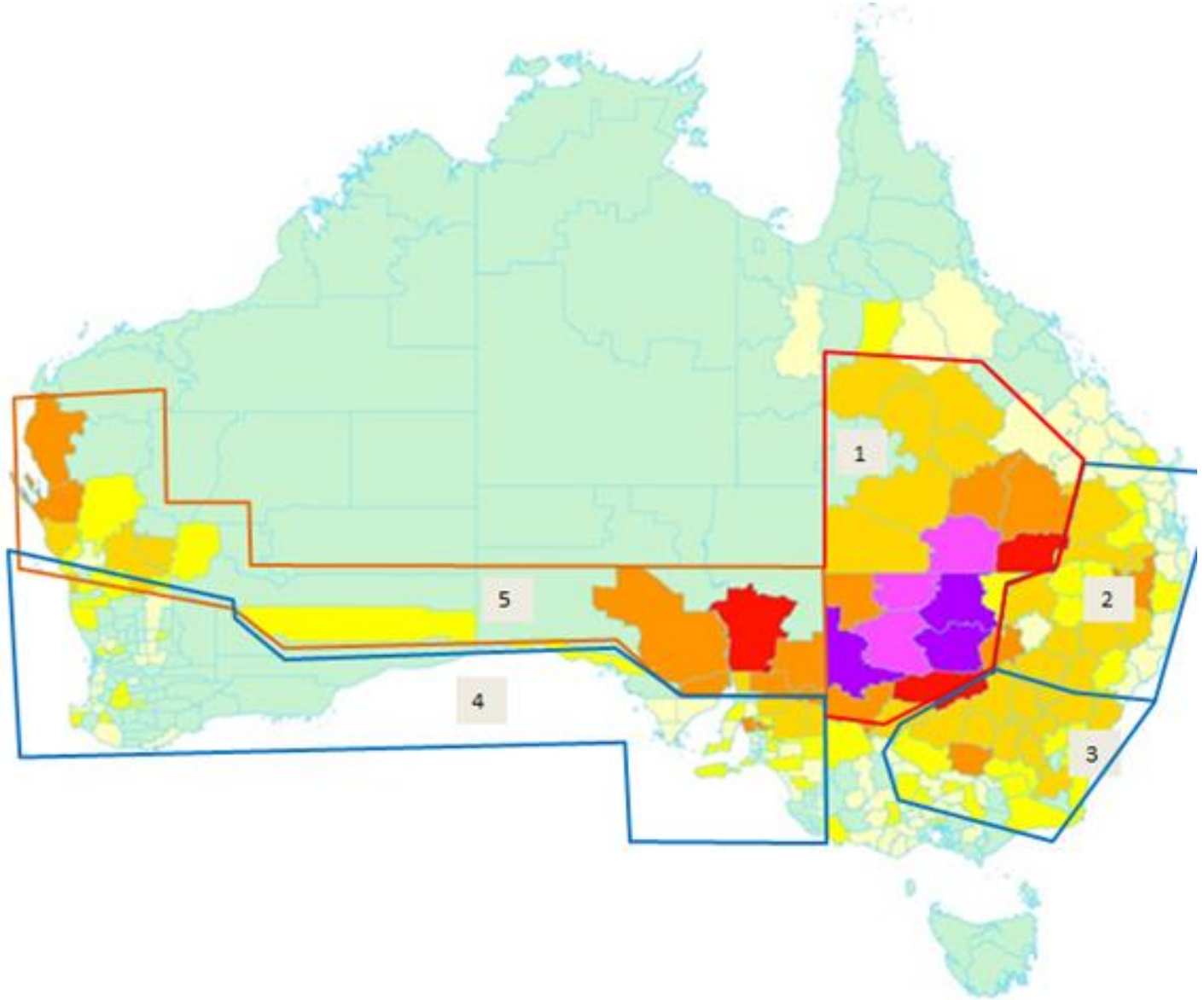
Review: Perinatal mortality

Factor	Rate	Reference
Location/management system	High rainfall 11.6% Pastoral 33.3%	Nogueira *et al.* (2016)
Litter size	Singles 0-17% Twins 13-18% ≥Triplets 18-83%	Lehloenya *et al.* (2005); Snyman (2010); Nogueira *et al.* (2016)
Nutrition	Maintenance 5.5% Sub-maintenance 33.3%	Bajhau & Kennedy (1990)
Breed	Range 7-20%	Norton (2004); Browning *et al.* (2011)

Literature take-home's

- Buck effect – sexually active & at least part-time exposure to bucks
- A lean doe at mating more likely to abort, so too slow early in life growth
- First pregnancy doe more likely to abort than mature doe
- Reproductive success: age, weight, nutrition, season of birth & breed

Pregnancy scanning



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Pregnancy scanning results

Pdn Zone	No. Farms	NDS	Fertility %	Scan %	Doe survival %	Kid survival %	Kids marked/ doe scanned
1	5	5161	74%	122%	97%	77%	87%
2	2	1710	69%	111%	98%	65%	72%
3	3	2316	66%	113%	94%	51%	58%
Total	10	9187					
Weighted mean			72%	117%	96%	65%	77%
Range			45-97%	73-187%	80-100%	27-93%	37-130%
Literature			86-89%	149%		67-90%	

NDS = Number of does scanned
NKM/DS = Number of kids marked per doe scanned

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Pregnancy scanning results

Parity	Dry	Single	Twin	Total	Fertility %	Scanning %	Kids per wet doe
Adult	891	1218	2479	4588	81%	136%	168
Mixed age	676	792	1119	2587	74%	118%	159
Maiden	1051	403	531	2012	48%	77%	161

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Maidens & adults

Class	NDS	On-farm %	Fertility	Scanning	Kid survival	NRR
Adult	2952	78 %	86 %	147 %	61 %	77 %
Maiden	848	22 %	76 %	128 %	36 %	35%
Total	3800					

Maidens and adults in the same herd, kidded separately and kept separate to marking

Fert x Scanning x Kid survival = Net Reproduction Rate (NRR)

These maidens occupy 22.3% of the herd number and rear 12.9% of kids

Low input systems

Q: How can rangeland producers increase production of rangeland goats?

- Without any intervention mgmt: (assumption is continuous mating)
  - Tactical & TGP + pregnancy scan females before (e.g. 15 kg+) before selling

- With mgmt:
  - Separate young females & grow, possibly to first wean
  - Controlled breeding (3 zones + identify dries)
  - Pregnancy scan females

Low input systems

Q: What tools are available without increasing cost?

- Udders are a problem (Identify the dry doe)
  - Benefit for rearing ability

- Tactical use of the better feed base that is available

Low input systems

Q: Are there any genetic tools available to producers?

- KidPlan.
  - A range of carcase and reproduction traits, and indexes
- Selection for rearing ability (wet & dry udders) & cull twice fail to rear
  - Tidy up the udders pretty quickly

Take home messages

- Maidens need more attention (R&D &M)
- Do only one thing: Tidy up udders
- Are you new to goats? *Cardboard isn't feed, mating isn't mating*

Tools and resources

- MLA Report – Reducing Kid Loss – Select and Protect – Phase 1 B.GOA.1905
- Literature review (free download) - www.publish.csiro.au/AN/AN20161
- MLA Resources www.mla.com.au/extension-training-and-tools/going-into-goats/
- KidPlan http://www.sheepgenetics.org.au/Breeding-services/KIDPLAN-Home

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