

How Can We Improve Kid Health & Performance?

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Background

It is now well established in dairy heifers that their management, nutrition, husbandry and disease events can have a profound impact on a dairy heifer's lifetime production and survival. Wathes et al being one of many studies highlighting the influence of management strategies on physical performance of dairy heifers. There has been limited published research on the pre-weaning management of dairy goat kids on UK dairy farm and how it influences lifetime performance. An increasing amount of our work is spent reviewing herd health and benchmarking herd performance but to enable us to set realistic target we need to establish what are achievable and acceptable targets for kid rearing enterprises.

Questions needing answering?

- What % of kids born alive survive to their 1st kidding?
- What is the target age for 1st kidding?
- Is there a benefit to kidding earlier?
- What numbers of 1st lactation goat make it into their 2nd lactation?
- What is realistic yield in 1st lactation goats?
- How does disease & management in the pre-weaning impact on lifetime production?

Belmont Farm & Equine Herd Data

Kid Survival

Farm X large commercial milking goat herd. Event & yield data recorded in Interherd & used for data analysis.

3537 Females born 1.1.2005 – 31.12.2014

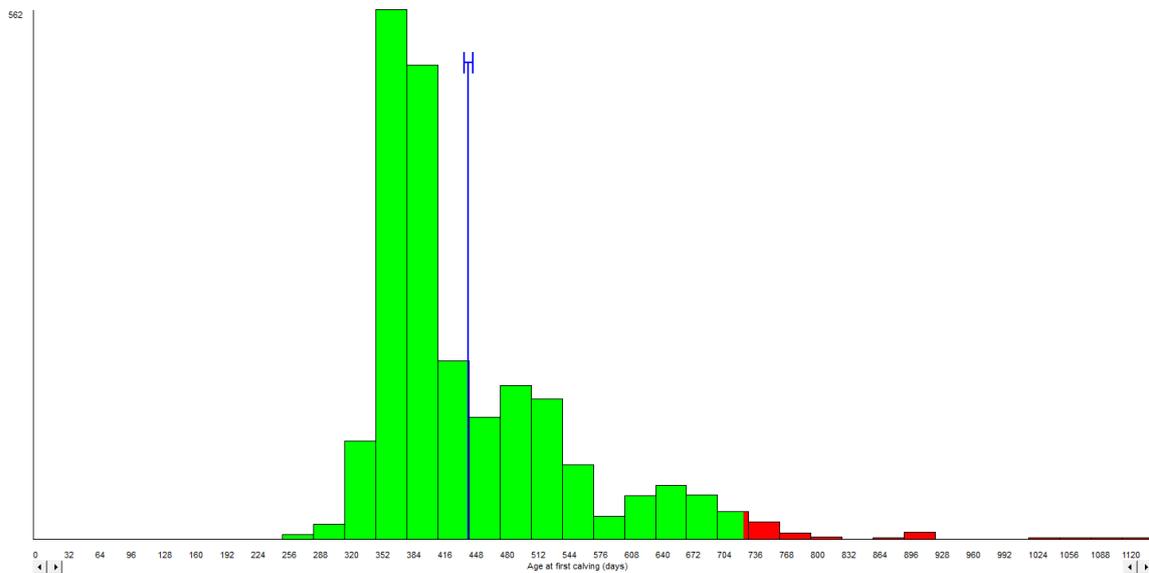
- 9% Death Rate with 44% of deaths in 1st 60 days of life.
- 33% Sold
- 57% Retained on farm
- 54% Conceived

- 1% still on farm not culled / kidded

Age at 1st kidding

Analysis of kids retained on farm X that were retained & conceived only from population of kids born between 1.1.2005 –31.12.2014

- Average 446 days
- Median 406 days



Graph demonstrating distribution of age at 1st kidding (Interherd so using 730 days as target!)

Appears to be strongly influenced by seasonality of goat fertility . Kids that fail to conceive in 1st breeding window with billies are retained and bred again either under an out of season breeding program ~6 months later or conventionally 12 months later as highlighted below and the long tail in the above graph.

Farm Y large commercial milking goat herd. Group of 91 goatlings put to Billy for Spring kidding 2015

- 78 kidded
- Average 353 days
- Median 347 days
- 1/91 aborted and subsequently culled

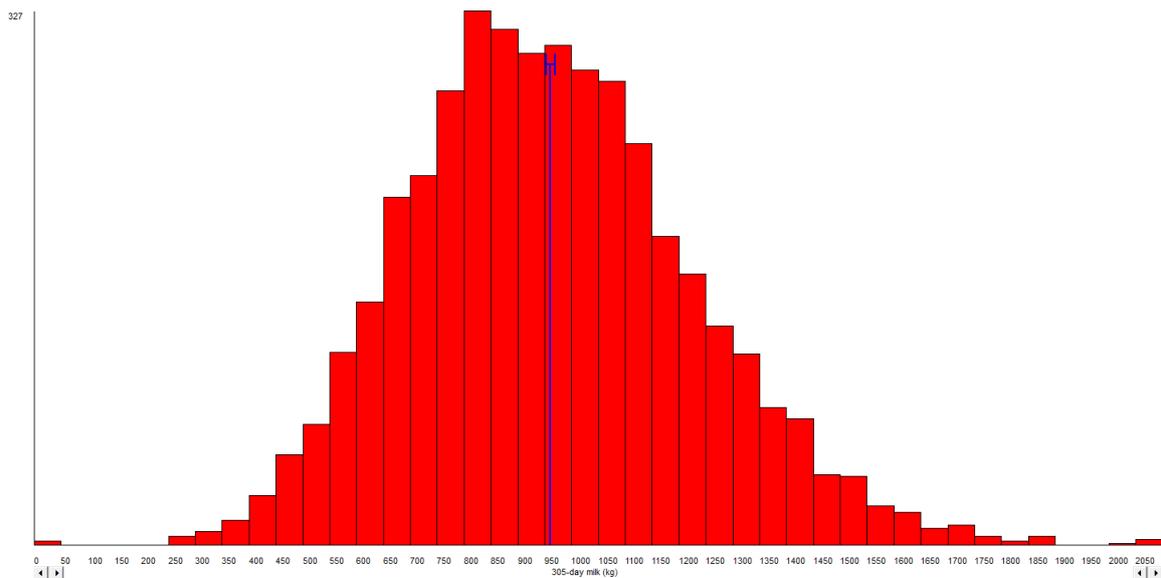
- 12/91 failed to kid as failed to conceive.

12 empty goatlings were put forward into an out season breeding group with an aim to kid in Autumn 2015 & hence would influence significantly age at 1st kidding of whole group.

Yield in 1st lactation

Again using the data set from farm X. 2098 1st lactation goats kidded between 1.1.2005 & 31.12.2014. There has been no correction for 305 day yield based on individual milk constituents as these are unknown.

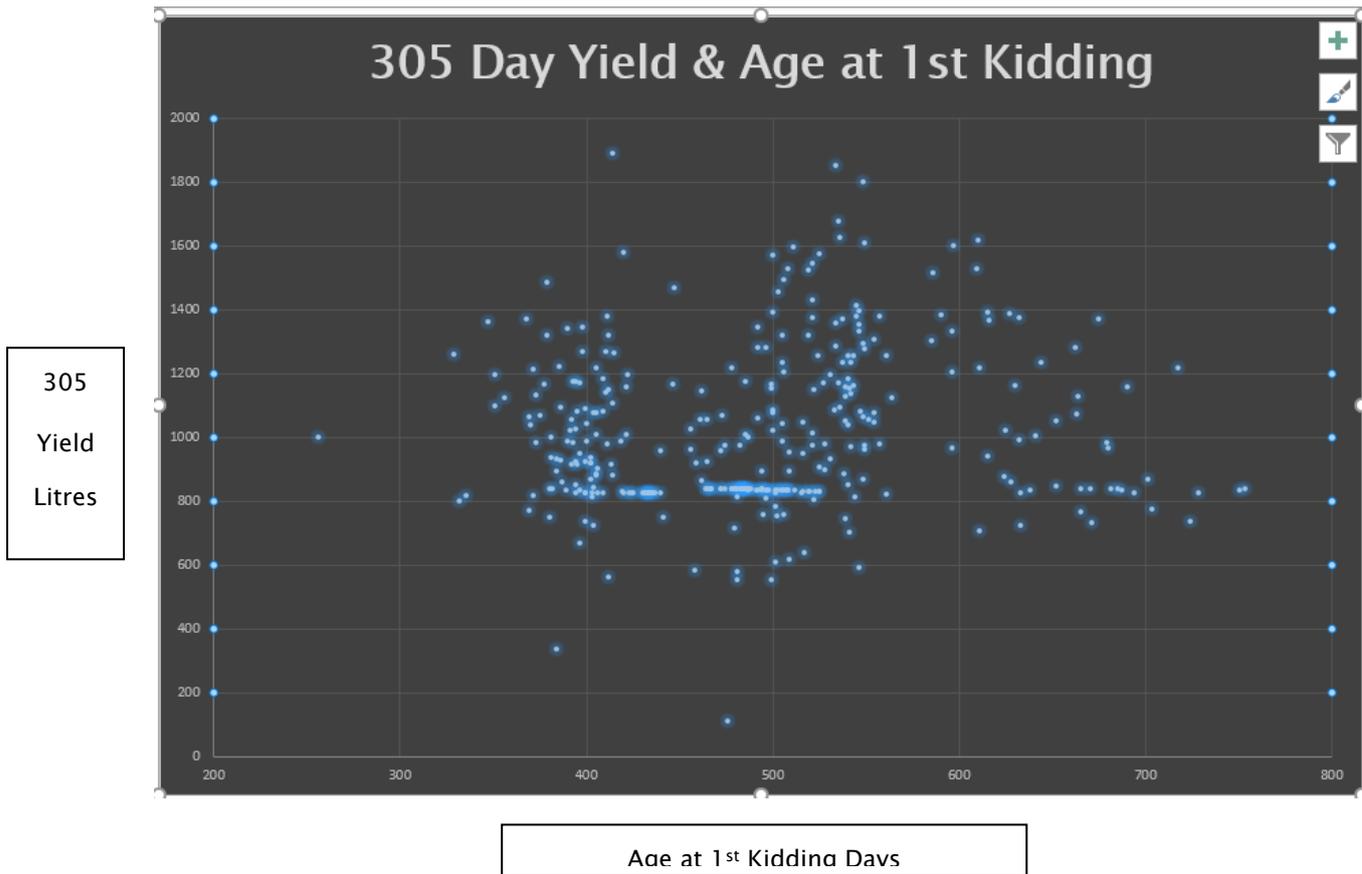
- Average 901 litres
- Median –883 litres



Graph demonstrating distribution of 305 day yield in 1st lactation goats on Farm X

Influence of age on 1st kidding & yield in 1st lactation

There appears to be no obvious correlation with age at 1st kidding and 305 yield within the data set of Farm X. Goats kidding as older animals incurring additional rearing costs without any direct benefit in respect of addition milk yield.



Graph – Scatter plot of individual goats of age at 1st kidding against 305 yield

What numbers of 1st lactation goat make it into their 2nd lactation?

Again using the data set from farm X. 2098 1st lactation goats kidded between 1.1.2005 & 31.12.2014

- 72% Re-Kidded
- 14% Culled
- 13% Died
- 1% still in 1st lactation
- **27% Voluntary & Involuntary Cull rate**

How does disease & management in the pre-weaning impact on lifetime production?

There is a strong evidence base for the impact on inadequate passive transfer in calves and subsequent health and production (Raboisson et al). To my knowledge there has been only limited work done to demonstrate a similar affect on kids. Massimini et al were able to demonstrate a link between liveweight gain to point of weaning and adequacy of passive transfer.

A limited pilot study was done on 5 commercial milking goat herds under our care to assess the status of passive transfer of kids born in autumn 2016. Kids were blood sampled at 2–7 days of age. Their bloods were then centrifuged and then serum total protein read on a refractometer. A value of >5.5 g/dL being deemed to reflect adequate passive transfer based on values from several studies presented in the table below. Although further work is need to validate if we can use these figures in dairy goat kids.

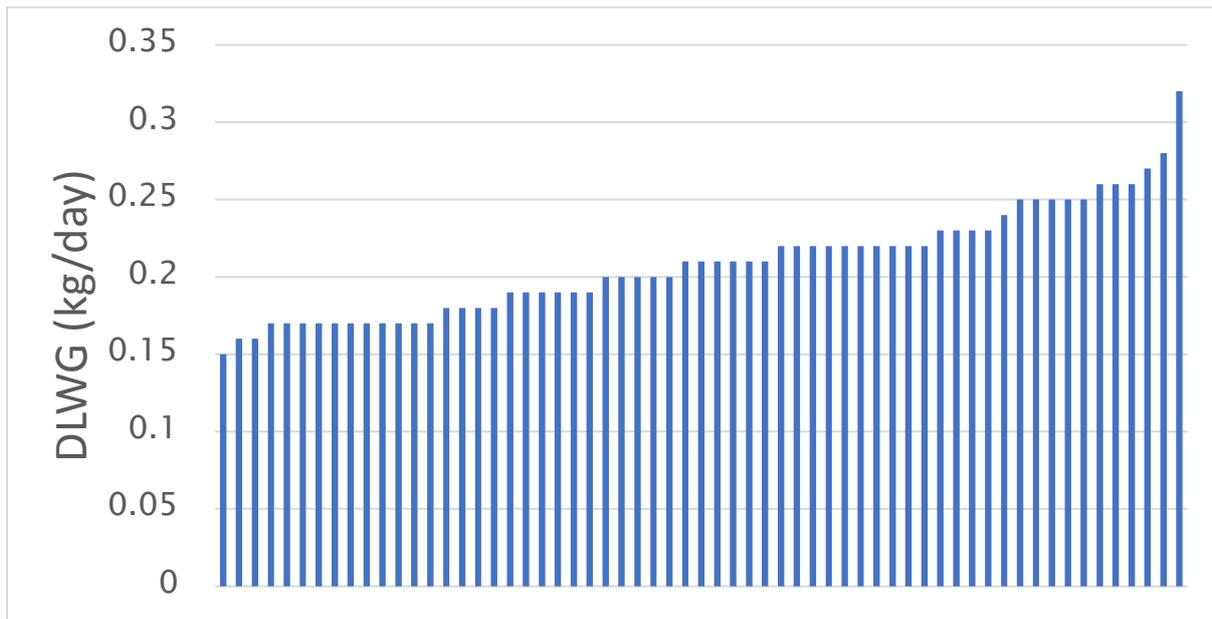
Study	Serum Protein (g/dL)	%Brix
Calloway et al., 2002	5.2	
Morrill et al., 2013		7.8%
Tyler et al., 1996	5.5	
Deelen et al., 2014	5.5	8.4%
Elsohaby et al., 2015	5.5	8.3%
Thornhill et al., 2015		10.0%

Table showing total proteins in dairy goat kids from 5 farms

Farm	A	B	C	D	E	
Date	Oct 16	Total				
Total Kids Sampled	7	6	6	7	6	32
Inadequate TP < 5.5	5	4	4	4	0	17

Although very limited in numbers it infers that more than 50% of goat kids across the farms under our care at the time of sampling have inadequate passive transfer and hence potentially significantly increased risk of disease events and suboptimal production if we extrapolate the evidence from dairy heifers into dairy goats.

Farm Y also did additional work looking at liveweight gain from birth to weaning in a cohort of kids born in Spring 2016. The farm has a target liveweight gain of 0.18kg / day in order to ensure that goatlings are kidding at a minimum of 85% of mature adult weight, 65 kg, at 12 months of age. The graph below is a plot of liveweight gain per kid from birth to weaning, ~ 20% of kids failed to meet the target. Why? Inadequate passive transfer? Disease events? Nutrition and management factors?



Graph - Liveweight gain / day of individual goats from birth to weaning on Farm Y

Summary

The data presented above provides a limited guide to current performance of 1st lactation goats & kids within dairy goat herds under our care. It highlights quite clearly areas that we need to work with our clients to improve herd health and performance.

It has also become increasingly clear that whilst preparing this talk that there is a lack of data to help support informed decision making about kid rearing practices and it was proposed that we the members of the Goat Vet Society look to collectively gather data in the spring of 2017 to further investigate health and performance on multiple goat herds from birth to weaning.

“The Kid Tracker Project”

Data to be recorded

- Birth weight
- Litter size
- Total Protein (measured @ 2–7 days of age)
- Validation of IgG measurements in kids.....
- Age @ weaning
- Weight @ weaning
- Disease events birth to weaning
- (Pneumonia, scours, watery mouth, navel / joint ill)
- Deaths birth to weaning
- & additional

Timelines?

- Agree what is to be recorded
- Numbers of kids / farm
- Agree herds to be involved
- Data gathering Spring / Summer 2017
- Data presentation Autumn 2017

References

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Effect of passive transfer status on preweaning growth performance in dairy goat kids.

[Massimini G](#)¹, [Mastellone V](#), [Britti D](#), [Lombardi P](#), [Avallone L](#).

[PLoS One](#). 2016 Mar 17;11(3):e0150452. doi: 10.1371/journal.pone.0150452. eCollection 2016.

Failure of Passive Immune Transfer in Calves: A Meta–Analysis on the Consequences and Assessment of the Economic Impact.

[Raboisson D](#)^{1,2}, [Trillat P](#)³, [Cahuzac C](#)^{1,2}