

## Case Study Week 7: Dairy Cattle

Consider the 5-year-old cow in the following image on a seasonal calving dairy farm in western Victoria (cow is shown by the green arrow in the herd in the dairy yard).

The dairy enterprise had a mating start date (MSD) of 22<sup>nd</sup> August 2020.

The cow calved on 1<sup>st</sup> June 2020 and became pregnant on day one of the mating period (MSD); 22<sup>nd</sup> August 2020, following artificial insemination.

Describe what happens to this cow in terms of:

- reproduction,
- lactation,
- management and
- husbandry

for the next 18 months.

Also list important dates on the farm management calendar. Make sure you include things like calvings, lactation status and reproductive events.

Assume that in 2021 she has a dry period (when she is not lactating) of 50 days and a post-partum anoestrus period (when she doesn't cycle) of 30 days. She cycles every 21 days is not in anoestrus and becomes pregnant on the 3rd oestrus that she has following mating start date in 2021. The cow has an individual cow cell count (ICCC) consistently below 200 for her entire lactation. The farm MSD remains the same calendar day in 2021, and the AI period is 6 weeks. After the A period natural service using bulls is used.

August 2020	22 <sup>nd</sup> August – Cow becomes pregnant Cow is lactating, and sure to calve 1st June 2022
April 2021	12/4/2021 – Cow is dried off 50 days before expected calving date. She is treated with a teat sealant – DCT not required. 12/4/21 – this is the beginning of the dry period on the farm. She is vaccinated against 5 in 1, and may be treated with an anthelmintic
May 2021	11/5/21 – three weeks before she is due to calve she is drafted into a transition mob and fed a transition diet. She may also receive calf scour vaccinations. She may be treated with an anthelmintic

June 2021	1/6/21 – The cow calves. The calf is taken away within 12 hours of being born and reared separately. Her colostrum is harvested and fed to the calf. The cow's milk is used for calf feed for the first 8 milkings when it cannot be put into the vat. The cow is in post-partum anoestrus.
July 2021	1/7/21 Post-partum anoestrus ends, and the cow has her first oestrus period. MSD hasn't occurred yet so she is not mated. 22/7/21 The cow has another heat – and is not mated.
August 2021	12/8/21 The cow has another heat 22/8/21 MSD for the herd
September 2021	2/9/21 The cow is in oestrus and may be submitted to AI but doesn't conceive 23/9/21 the cow is in oestrus and may be submitted to AI but doesn't conceive
October 2021	3/10/21 – AI period ends on the farm and bulls are run with the herd. 14/10/21 The cows is in oestrus and mated by the bull – she conceives successfully and the cycle starts again!

Now consider her heifer calf, born in 2021.

Produce a management calendar describing the important events in the calf's life until it is 2 years old. Assume the calf becomes pregnant to AI on Mating Start Date, when it is 2 years old. Describe changes in the calf's diet, husbandry and reproductive events that occur.

June 2021	1/6/2021 Calf is born. Receive colostrum in first 24 hours (or might not make it until July 21!). 10% bodyweight in milk, early concentrate feeding (pellets/grain), some roughage. Good calf environment. Ad lib water. If male calf then would be sold after 1 week. Eartag close to birth.
July 2021	From 4 weeks of age calf weaned. >0.75kg concentrate per day, group averaging >1kg/d or more. Disbud. Drench. First vaccination. Move onto high quality pasture and continue concentrate feeding.

August 2021	Second vaccination (4-6 weeks post first vaccination)
September 2021	Potentially 100% pasture diet by this point. Check bodyweight
October 2021	
November 2021	As pasture quality drops add concentrate back into diet to maintain appropriate growth rate to meet CMW.
December 2021	Potentially drench, check FEC. Check bodyweight
January 2022	Continue concentrate feeding, based on what quality/quantity pasture is available.
February 2022	
March 2022	Check bodyweight
April 2022	
May 2022	
June 2022	Check bodyweight. May need another drench, assess by bodyweight gain, FEC. After this date FEC much less useful due to immunity.
July 2022	
August 2022	Mating start date 22/08/2023. Heifers might be synchronised to allow FTAI. Decide on how many cycles heifers will be joined for and if backup bulls to be used (what breed etc). Bull selection needs to occur few months pre joining ideally.
September 2022	Check bodyweight at end joining period.
October 2022	
November 2022	Pregnancy test.
December 2022	Check bodyweight
January 2023	
February 2023	
March 2023	
April 2023	Drench (check WHP/ESI). Vaccinate (7 in 1 and maybe include scours etc). Move onto transition feeding.
May 2023	30/05/2023 Calving occurs
June 2023	

The enterprise decides to keep the best six bull calves according to their dam and sire ASBVs (the mid point prediction).

Produce a management calendar describing the important events in the calf's life until it is sold from the enterprise (list if you consider there may be differences between bulls and why).

Describe changes in the calf's diet, husbandry and reproductive events that occur.

Effectively the overall management of the calf up to weaning will be the same for bulls and heifer calves, although bull calves likely reared as single group if born similar time to make management long term simpler.

June 2021	1/6/2021 Calf is born. Receive colostrum in first 24 hours (or might not make it until July 21!). 10% bodyweight in milk, early concentrate feeding (pellets/grain), some roughage. Good calf environment. Ad lib water. If male calf then would be sold after 1 week. Eartag close to birth. Check testicles are descended.
July 2021	From 4 weeks of age calf weaned. >0.75kg concentrate per day, group averaging >1kg/d or more. Disbud. Drench. First vaccination. Move onto high quality pasture and continue concentrate feeding.
August 2021	Second vaccination (4-6 weeks post first vaccination)
September 2021	Potentially 100% pasture diet by this point. Check bodyweight
October 2021	
November 2021	As pasture quality drops add concentrate back into diet to maintain appropriate growth rate to meet CMW.
December 2021	Potentially drench, check FEC. Check bodyweight
January 2022	Continue concentrate feeding, based on what quality/quantity pasture is available.
February 2022	
March 2022	Check bodyweight
April 2022	
May 2022	
June 2022	Check bodyweight. May need another drench, assess by bodyweight gain, FEC. After this date FEC much less useful due to immunity. Do BBSE on bulls. May also check infectious disease status.
July 2022	
August 2022	Mating start date 22/08/2023. Bulls may start joining or may wait until end of AI period (depends in bulls used over heifers or AI)
September 2022	Check bodyweight at end joining period.
October 2022	
November 2022	
December 2022	Drench
January 2023	

February 2023	
March 2023	
April 2023	Vaccinate (7 in 1 and maybe include scours etc). Move onto transition feeding.
May 2023	
June 2023	

After this year each year bull will be retained unless fails BBSE, unless management decides too old for maintaining for joining (may have maximal bull age policy), unless fails infectious disease check, unless fails behaviour eg. charges people!. Each year likely to get summer drench and yearly vaccination or possibly twice yearly.