

Research has consistently supported that Lifetime milk yield, 305-day lactation yields, and lifetime profit of replacement heifers are maximized when they calve for the first time between 23 and 25 months of age.

Why it is not advisable from the economical point of view to delay the introduction of replacement heifers into breeding

Heifers that calve earlier spend a greater proportion of their life producing milk, and therefore returning profit to the farmer. Delaying the age at first calving results in a greater number of replacement females needed at any given time to maintain the herd size.

Effect of cull rate and age at first calving on the number of replacement heifers needed per year to maintain herd size on a dairy with 100 mature cows (Adapted from Fricke, 2003)

Cull rate (%)	Age at 1 st calving (months)					
	24	26	28	30	32	34
24	53	57	62	66	70	75
26	57	62	67	72	76	81
28	62	67	72	77	82	87
30	66	72	77	83	88	94
32	70	76	82	88	94	100
34	75	81	87	94	100	106
36	79	86	92	99	106	112
38	84	91	98	105	111	118
40	88	95	103	110	117	125

Assumes approx. 10% loss from calving.

The recommended age of 24 months at first calving means that the heifers need to start cycling before 15 months of age. Age at onset of puberty is related to body weight, and Holstein heifers normally exhibit their first estrus at a body weight of between 550 to 650 pounds.

Feeding

Nutritional management of prepubertal heifers profoundly influences age at puberty, age at first breeding and hence age at calving.

	Yes	No
Do you identify future replacement heifers among your calves before they reach 2 months of age?		
Do your future replacement heifers achieve a daily weight gain of 0.6-0.7kg/day at weaning (2 months)?		
Do you apply defined heifer feed ration for the future replacement heifers from the age of 6 months?		
Do you feed a total mixed ration in your replacement heifers?		
If pasture represents the main feed source for your heifers, do you supplement the ration with grain or concentrates?		

	Yes	No
Do all your heifers have the same chance to get adequate access to the feed bunk?		
Does the lying surface give the cow enough grip to lie down and rise easily?		
Do you monitor the body weight (or body condition) of your replacement heifers every month?		

Health

General health and especially respiratory and digestive tract infections have a profound influence on the feed intake and growth ration in calves and your heifers.

	Yes	No
Do you ensure that the calves receive enough colostrum (3.5-4 L) during the first 6 hours of life?		
Do you have a colostrum quality monitoring system in place?		
Do you have a defined vaccination program against respiratory infections in your replacement stock?		
Do you have a prevention program in your cows that prevent neonatal diarrhea in calves?		
Do you start deworming program in the replacement heifers as soon as the calves move into the group pens?		

	Yes	No
Do you monitor the hoof condition in the young replacement stock on a weekly basis?		
Do you experience diarrhea in your replacement stock on average in less than 5% of animals <1 month of age?		
Do you experience diarrhea in your replacement stock on average in less than 5% of animals >1 month of age?		
Do you experience respiratory problems in your replacement stock on average in less than 5% of animals?		