



**Leaving Cert Agricultural
Science**

Free Notes

Dairy



Topic – Dairy

Facts about dairying and cows:

- + Weight at birth 40 kg
- + Reaches puberty 1 year old & weighs 250kg
- + Oestrous (Heat) cycle is 21days, duration is 18 hours
- + Gestation (pregnancy) period **283 days 9.5 months**

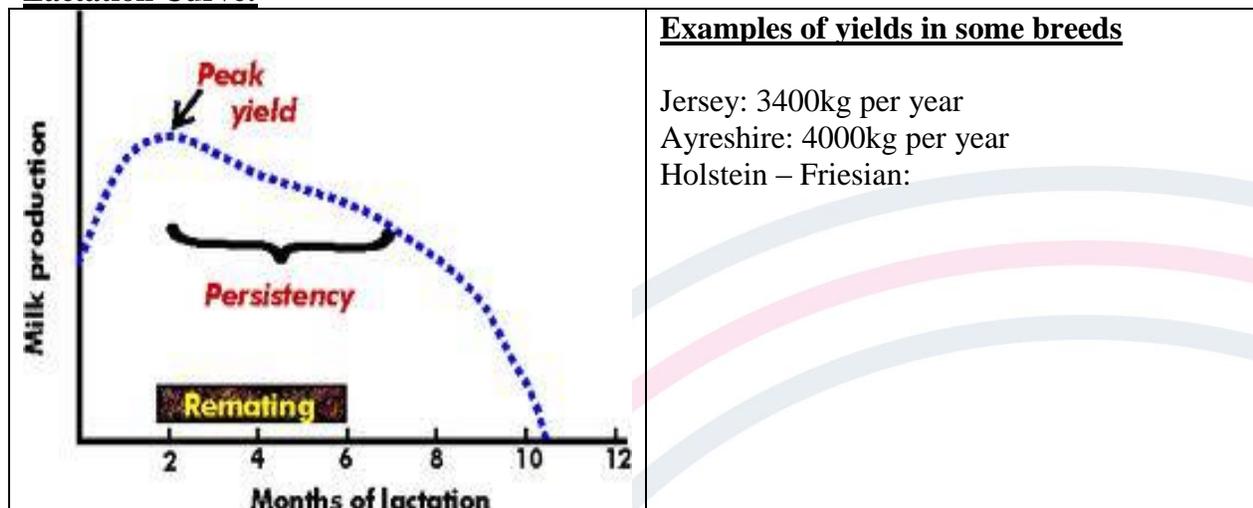
Breeds Dairy used in Ireland

<p><u>Jersey</u></p> 	<ul style="list-style-type: none"> • Small animals (not dual purpose) i.e. not suitable for beef production. • Jersey milk has high protein and butterfat content, but yield would be lower than that of the Friesian. • The Jersey cow can however frequently calve at just two years and may have up to 10 or 11 lactations.
<p><u>Ayrshire</u></p> 	<ul style="list-style-type: none"> • Medium-sized cattle weighing over 1,200 pounds at maturity. • Strong, rugged cattle that adapt to all management systems including group handling on dairy farms. • Ayrshires excel in udder conformation and are not subject to excessive foot and leg problems. These traits make Ayrshires outstanding commercial dairy cattle
<p><u>Holstein Friesian</u></p> 	<ul style="list-style-type: none"> • Large animal, distinctive black and white coat, <u>weighing up to 700kg.</u> • They are characterised by <u>consistent milk yields and high butterfat content.</u> • The Friesian is a <u>fast growing, beefy animal, well suited to continental beef market.</u> • Friesians are examples of a <u>dual purpose breed.</u>

Lactation:

- ✚ Lactation means “**milking period**” and it begins as soon as a cow has a calf.
- ✚ The farmer's aim is to have one calf born per cow each year.
- ✚ A cow **will go dry (dry period)** and stop giving milk 2 months before calving.
- ✚ In **spring calving** this occurs in **November and December**
- ✚ Therefore the standard lactation of dairy cows is **305 days (10 months)**.
 - If the cow does not get pregnant it will continue to produce milk for 2 years.
 - The main aim to have cows milking 305 days (10 months) and farmer aims to have all calves born at the same time (strict calendar)

Lactation Curve:



The events in the above graph

- a) **Early Lactation:** from 4 to 10 weeks after calving the milk yield increases steadily to reach a peak. The farmer adds supplements the animal with greater amounts of concentrate ration. The cows must be fed for maintenance and production to reach their lactation peak. For a spring calving herd, early grazing of spring grass includes magnesium in the diet needed to prevent grass tetany
- b) **Mid Lactation:** the BCS is a major factor here and it should be 2.75 by now to increase chances of conception. Milk production declines by up to 10% per month. Paddock and strip grazing provides leafy digestible grass for the cow.
- c) **Late Lactation:** a reduction of milk yield continues to eventually drop off to a level where the cow dries off.
- d) **Dry Period:** by day 305, cows are drying off. The udder is treated with a drying off medication. To prevent mastitis from over milking.

Factors affecting Yield and Composition of Milk

- ✚ Breed (Jersey Vs Friesian) Can vary within the same herd, WHY?

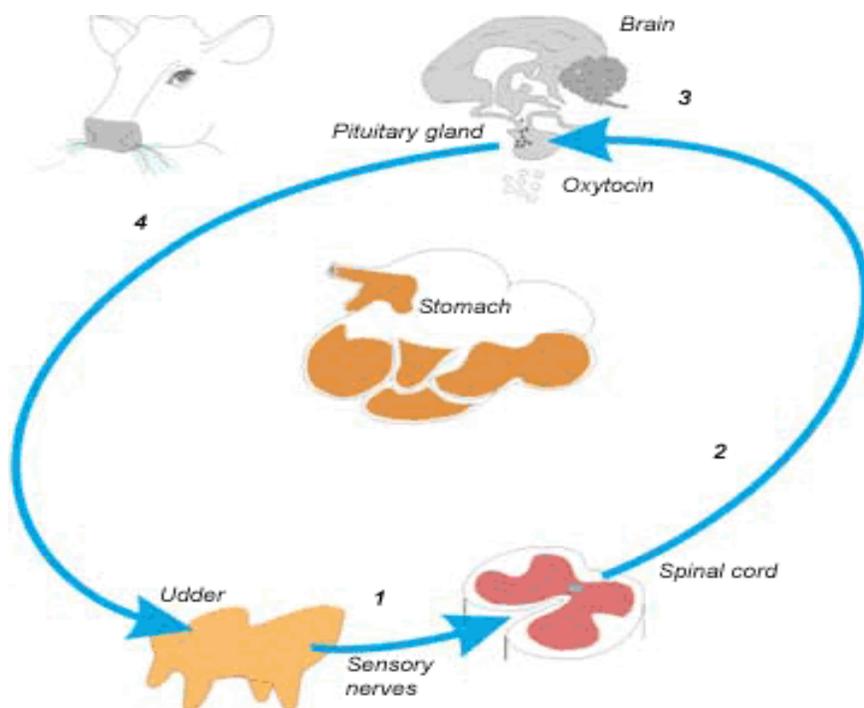
- + Age (Above 7 years yield decreases drastically)
- + Diet
- + Stage in lactation i.e. has low milk protein in February but High amount in November
- + Health of cow e.g. Is she free from Mastitis and other diseases/infections?
- + Milking interval (ONLY TWICE A DAY), In the US they are milked 3 times a day, not economical overall and it puts pressure on cows udder.

Milking:

- + Frequently milked cows have highest daily & lactation yields.
- + Twice day milking is most often used because it would be uneconomical
- + It is performed in a 14/10 or 13/11 hour interval e.g. 6am and 8pm or 6am and 7pm.

MILK LET-DOWN:

- When the cow is relaxed in her position and when the calf is allowed to nuzzle on the udder this begins the process.
- The milker can rub the udder with a warm wet cloth.
- This allows for the stimulation of sensory nerves which sends electrical impulses to the brain.
- This in turn creates a chemical (hormone) oxytocin to be released into the bloodstream.
- It is released from the pituitary gland and the hormone travels in the blood to the udder.
- This hormone causes stored milk in the alveoli in the cow's udder to contract i.e. releases milk.
- This occurs during the milking of cows by the teat cups and clusters in the milking parlour as well as the process of the calf suckling above.



Milk Quality:

✚ Raw milk collected must comply with the quality standards of EU Regulation 583 of 504.

1) Bacterial test – Total Bacterial Count (TBC)

✚ A sample is placed on a sterile disk and incubated for 3 days. The number of bacteria per ml of milk is read of an electronic machine and must not exceed over 100,000 over a two month geometric average.

2) Somatic Cell Count – (SCC)

✚ An electrical cell counter counts the amount of WBC's. A high somatic cell count in the bulk tank must not exceed over 400,000 over a 3 month geometric average.

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