

AGRICULTURAL SCIENCE STUDY GUIDE

Week 7



Milk production

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Rearing replacement heifers and dairy calves

With the abolition of milk quotas in 2015, there has been a dramatic increase in the number of dairy cows in Ireland

The average replacement rate in dairy herds is 20% to 25% annually, which leaves 75% to 80% of calves either entering the suckler herds or being reared for beef.

Qualities required when selecting replacement heifers

- ↪ Good teeth, feet and udder.
- ↪ Four well-placed teats (any supernumerary teats removed).
- ↪ Good temperament – quiet.
- ↪ Good fertility.
- ↪ High milk yield.
- ↪ Good conformation (BCS from 3.2 to 3.4 at calving).
- ↪ Daughter of good economic breeding index (EBI) bull.
- ↪ Daughter of good high-yielding, prolific cow.
- ↪ Healthy.
- ↪ Dairy breed – Holstein/Friesian/Jersey/Holstein X Jersey, etc.
- ↪ Easy calving.

Over the past few years, there has been a dramatic move away from bull beef to steer beef due to the very limited market, uncertain price, aggressive nature of bulls and the safety concerns about handling them.

However, beef animals that have not been castrated have higher ADG, higher slaughter weights and a higher kill-out percentage. Farmers who are rearing bulls should have a confirmed market prior to entering the production system.



Exam questions

Question 5 (c) 2016

Discuss how the age and condition of breeding heifers in a dairy herd may influence the date of first calving

Age

- ↪ Heifers need to be 15 months at mating to ensure they calve down at two years (24 months) of age.
- ↪ They need to be a target weight of 300kg to 320kg at mating to ensure they reach a target weight of 500kg to 580kg at calving.

Condition

- ↪ Heifers need to be a body condition score of 2.8 to 3.2 for heat to ensure they are a 3.2 to 3.4 BCS at calving.
- ↪ Poor body condition causes irregular heat/calving difficulties and should not be put in calf.

Question 3 (option two) - 2015

(a) Discuss in detail the following points in relation to a dairy enterprise

(i) Management of calving

- ↪ Isolate the cow/supervise the process.
- ↪ Assist if required – experienced stock person/vet.
- ↪ Calving jack.
- ↪ Cut umbilical cord.

- ↪ Dip navel in iodine – prevent navel ill.
- ↪ Dry calf – if cow doesn't lick the calf – rub with straw to increase circulation and warm up the calf.
- ↪ Remove mucus.
- ↪ Irritate nose if not breathing – piece of straw up the nose.
- (ii) Environmental conditions in the first three days after birth
- ↪ Indoors.
- ↪ Clean and disinfect area – lime.
- ↪ Warm, draft-free and well-ventilated.
- ↪ Separate pens with dry bedding
- (iii) Feeding principles in the first three days after birth
- ↪ Colostrum (4% to 7% fat and 14% to 16% protein) from mother.
- ↪ Require 10% body weight (three to five litres) – suck mother/bottle/stomach tube in first 12 hours of life.
- ↪ Whole milk/milk replacer.

(b) Discuss in detail the rearing of dairy calves, from age three days to first housing, under the following headings:

(i) Management

- ↪ Ear tag and send away BVD sample.
- ↪ Dehorning (disbudding).
- ↪ Castrate male calves – if not being kept for bull beef.
- ↪ Good dry bed with good ventilation and draught-free.
- ↪ Disease prevention – vaccinated for IBR, coccidiosis.
- ↪ Weaning at eight weeks at a target weight of 90kg.

- ↪ Grass – leader-follower grazing.
- ↪ Parasite control – dose throughout summer and after housing
- ↪ Group according to size/weight.
- ↪ House on slats/straw bedding (keep clean)
- ↪ House at 180kg to 220kg.
- (ii) Feeding principles required for optimum growth
- ↪ Whole milk/milk replacer.
- ↪ Introduce hay at seven days – scratch factor.
- ↪ Introduce concentrates (high protein ration).
- ↪ Grass at turnout (eight weeks).
- ↪ Feed meals after turnout to grass.
- ↪ Grass is scarce – feed meal.
- ↪ Leader-follower grazing system (calves are selective grazers; best-quality grass and excellent parasite control).

(c) (i) What is the expected liveweight of dairy calves at first housing?

- ↪ 180kg to 220kg.

(ii) Explain why most beef animals are slaughtered at two years of age.

- ↪ Target weight reached (550kg to 700kg).
- ↪ Fat is laid down instead of muscle after two years.
- ↪ Better quality meat.
- ↪ Better kill out % – carcasses grade better.
- ↪ More grass available for other stock – better stocking rate.
- ↪ FCR decreases with age – fat deposition.

Table 1: target weights, nutrition and housing of dairy calves (Holstein Friesian) in their first year

	Target weight	Nutrition	Housing	Health
Newborn: weaning	40kg to 90kg	Colostrum (4% to 7% fat and 14% to 16% protein) – first few hours as antibody absorption very little after 24 hours. Whole milk/milk replacer. Straw/hay – source of fibre; 'scratch factor' (straw preferably as hay can reduce amount of concentrate intake). Concentrates (high protein); need to consume 2kg to 3kg/day at weaning.	In pens – grouped according to age. Straw bedding – dry and clean. Good ventilation and draught-free. Clean water.	Iodine on navel – prevent navel ill. Colostrum – antibodies (passive immunity). Dehorning (disbudding). Vaccination – IBR, coccidiosis, pneumonia, leptospirosis (depending on location).
Weaning (eight weeks to 12 months)	90kg to 280kg	'Critical period' in replacement heifers – ADG max 0.8kg/day. Male calves should be reaching this target also – avail of compensatory growth in second year. Diet Grass: leader-follower/rotational/block grazing. Silage: ad-lib 70% + DMD. Fodder crop: kale/stubble turnips and straw/silage (fibre source to prevent acidosis). Concentrates: 1kg to 2kg may be required, depending on silage quality.	Leader-follower/rotational grazing system. At housing: slats/straw bedding/cubicles (heifers); grouped according to size/weight Good ventilation and draught-free. Fodder crops: grazed in situ (strip grazed) – animals overwintered.	Parasite control – leader-follower/dose with anthelmintic (Endo and Ecto parasites). Booster vaccinations.
Yearling	280kg to 300kg	Silage (70% + DMD). Early grazing. Concentrates.	Slats/straw bedding/cubicles. Grass.	Parasite control.