

Pasture-based systems for early-maturing dairy-beef heifers

Spring born, early-maturing (Angus and Hereford) dairy-beef heifers can form high output, low input systems when finished during the second grazing season at 19 – 21 months of age. Despite the lower carcass weight potential of heifers compared to steers, pasture-based dairy-beef heifer systems have the potential for a high carcass output/ha. This is due to the potential to increase numbers of animals finished/ha, at younger ages from pasture, thus eliminating or reducing the need for an indoor finishing period. Heifer systems are particularly suited to farms with limited housing facilities, and good grazing infrastructure.

- Heifer systems are desirable as animals have the potential to be slaughtered at young ages, allowing for increased animal numbers and avoid the need for a second winter indoors.
- It is important that heifers in these systems achieve carcass weights in excess of 230 - 240 kg as lighter carcasses are more difficult to market, and do not avail of breed bonus payments.
- Early-maturing dairy-beef heifers have the lowest chance of meeting minimum market specification, so producers must be realistic when assessing calves carcass potential at purchase, and reflect this in purchase price.
- Spring born heifers finished at pasture are being marketed in autumn when supplies of finished cattle are at their highest and when beef price is traditionally low.

Elements of success

- Complete a thorough budget before calf purchase; dairy-beef systems are sensitive to fluctuations in calf purchase, concentrate and beef price.
- Purchase healthy calves from a trusted, known source – preferably direct off farm.
- Purchase high beef genetic merit (high Commercial Beef Value) calves.
- Implement a comprehensive herd health plan, to include a robust vaccination protocol, ensure adequate housing ventilation and space allowance, and awareness of reducing anthelmintic resistance through the use of multiple agents.
- Excellent grassland management, implementation of a rotational grazing system, incorporation of clover and the production of high quality silage (>72 DMD) are required.
- Monitor weight gain frequently and draft finishing cattle regularly.

Key performance indicators

- Finishing age 19-21 months
- >60% finished from forage diet
- >240 kg carcass, ≥O= conformation and 3- to 3+ fat score
- Lifetime concentrate 450 kg
- Lifetime ADG 0.8 kg



Heifer management guidelines

- To achieve a lifetime daily gain of 0.8 kg the calf rearing stage is critically important to ensure the heifer has an adequately developed rumen capable of utilizing grazed forage post turn-out.
- Weanling heifers for this system should be on average 200 kg at housing in the autumn. This requires excellent grassland management, and a well-implemented parasite control programme. Supplementation should cease 2 weeks post turn-out, recommencing in September (1-1.5 kg/hd/day), to account for the declining quality of grazed pasture.
- Over the winter a moderate growth rate of 0.6-0.7 kg/day is targeted from a diet of high quality grass silage (>72 DMD) and 1-2 kg of concentrate.
- Yearling heifers should be turned out in early spring and should gain 200 kg over a 220 day grazing season.
- Typically, a large proportion (60%) of the earliest born heifers will achieve desirable fat levels from a grass only diet, however later born heifers may require ~3 kg/hd/day of concentrate over 60 days (at pasture or indoors) to achieve desired carcass fatness and weight.
- Grazing management for calves and yearlings needs to be excellent, rotationally grazing high quality grass-clover swards.

Early-maturing dairy-beef heifer research

At Teagasc Johnstown Castle the contribution of pasture type (perennial ryegrass-only, perennial ryegrass plus red and white clover and multi-species swards that included perennial ryegrass, red and white clover, plantain and chicory) have been evaluated within an early-maturing beef heifer system (standard beef merit animals). The perennial ryegrass pasture received 150 kg of chemical N/ha annually, double that of perennial ryegrass plus red and white clover and multi-species sward types (75 kg N/ha).

When dairy-beef heifers were drafted at a target fat score of 3=, CLOVER animals achieved the greatest net margin compared to the other two sward types (Table 1). This was due to a greater carcass weight, a lower chemical nitrogen

application rate, and a greater proportion of these animals being finished at pasture during the second grazing season, which reduced overall costs. Incorporating clover or clover+herbs, allowed the inorganic chemical nitrogen application level to be halved due to biological fixation by the clover plants, whilst still achieving the same herbage production, resulting in significant cost savings.

Despite having a light carcass weight, dairy-beef heifer systems have the potential to have a high carcass output level per ha, and are profitable, and this can be further improved by including clover or clover+herbs into pastures. The inclusion of clover or clover+herbs generated an additional €150 to €100 net margin/ha, respectively, through improved animal performance and lower input costs, offering farmers an opportunity to improve system efficiency.

Table 1. The effect of pasture type on animal, financial and environmental performance of dairy-beef heifers finished in 2022 and 2023

	PRG	CLOVER	MSS
Finishing performance			
% drafted from pasture	68	86	75
Age (months)	19.6	19.2	19.2
Finished weight (kg)	482	492	490
Carcass weight (kg)	243	250	249
Carcass conformation score	O=	O=	O=
Carcass fat score	3=	3=/3+	3=/3+
System			
Stocking rate (LU/ha)	2.65	2.37	2.48
Animals finished on 40 ha	139	127	131
Lifetime concentrate (kg DM/head)	400	370	380
Carcass output (kg/ha)	849	791	813
Financial performance (40 ha farm) (€0,000)			
Net margin (€/40 ha farm)	38,000	43,880	42,000
Net margin (€/ha)	950	1097	1050
Net margin (€/head)	273	347	320
Base price of €4.56/kg on the QPS grid; €0.20/kg QA payment and €0.20/kg breed bonus. Finishing concentrate price €400/t. Protected urea price €550/t. * Net margin excludes land & labour charge and assumes a calf purchase price of €150 per head for early-maturing breed heifer calves.			

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