

Dairy-beef performance under three stocking rate intensities

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Summary

- High stocking rate (SR) has a significant effect on carcass weight in heifers and lifetime average daily gain (ADG) in heifers and steers.
- Preliminary economic analysis shows higher net margin/ha for medium SR heifer and steer systems.

Introduction

Previous research at Johnstown Castle identified blueprints for dairy-beef production systems. The most significant factor determining profitability of these production systems was output per ha. The current research programme is evaluating the effects of stocking rate on the performance of dairy × beef crossbreed cattle.

Experimental design

Each year, 216 reared dairy-beef crossbred calves are purchased and assigned to a SR treatment; low (2.65 LU/ha), medium (2.92 LU/ha) and high (3.18 LU/ha). Each treatment consists of 36 heifers and 36 steers, and all treatments are balanced for breed (AAX, HEX and LMX). All animals were finished off grazed pasture and received 2.5 kg of concentrate for 60 days pre-slaughter. The heifers begin their finishing period in August/September and are finished by December/January. The steers are all housed for the second winter, turned out in the spring and killed off grass in June/July.

Results to date from the stocking rate trial

ADG was similar for the high, medium and low SR treatments during the first season at pasture, first winter and third season at pasture (steers only). ADG during the second season at pasture (heifers and steers) and the second winter (steers only) was lowest for the high SR treatment. Carcass weight was higher in the low and medium SR heifers, but there was no effect of SR treatment on carcass weight in steers. Conformation and fat scores and days to slaughter were similar across the three SR treatments for both steers (Table 1) and heifers (Table 2). A preliminary economic analysis compared the 21 month heifer and 26 month steer systems across the three SR treatments. The assumptions included a calf price of €200, a finishing period of 60 days on 2.5 kg concentrate/day and a meal price of €257/tonne. The medium SR system produced the greatest net margin/ha (Figure 1.)

	High	Medium	Low
ADG 1 st season at pasture (kg)	0.82	0.81	0.79
ADG 1 st winter (kg)	0.60	0.64	0.59
ADG 2 nd season at pasture (kg)	0.83	0.94	0.86
ADG 2 nd winter (kg)	0.49	0.60	0.55
ADG 3 rd season at pasture (kg)	1.26	1.20	1.16
Lifetime	0.68	0.71	0.70
Carcass weight (kg)	330	339	340
Fat score (1–15)	9.0 (3+)	9.0 (3+)	8.5(3=)
Conformation score (1–15)	5.3 (O=)	5.5 (O=/+)	5.2 (O=)

	High	Medium	Low
ADG 1 st season at pasture (kg)	0.68	0.73	0.68
ADG 1 st winter (kg)	0.64	0.64	0.65
ADG 2 nd season at pasture (kg)	0.84	0.90	0.93
ADG finishing period	1.18	1.16	1.17
Lifetime	0.72	0.74	0.75
Carcass weight (kg)	250	257.5	259
Fat score (1–15)	8.5 (3=)	8.7 (3=/+)	8.7 (3=/+)
Conformation score (1–15)	5.5 (O=)	5.7 (O=/+)	5.7 (O=/+)

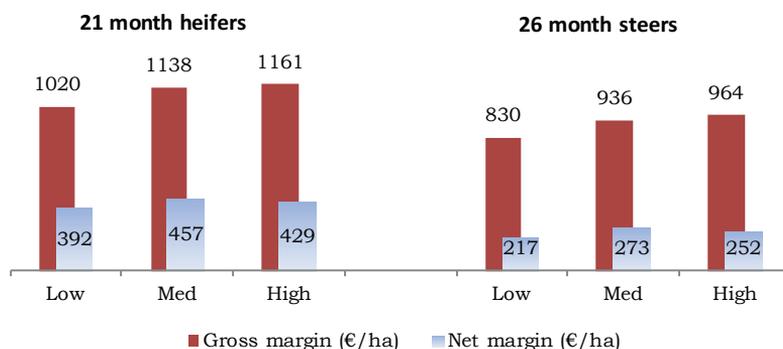


Figure 1. Economic analysis for 21 month heifer and 26 month steer systems under three stocking rate treatments on a 40 ha farm

Conclusions

Significant differences between the SR treatments were observed for carcass weight, second season ADG and lifetime ADG. This was a result of the greater herbage allowance available to the low and medium SR treatments. On a whole farm basis, the high SR treatment had greater gross margin/ha as a result of greater carcass output. However, high fixed costs associated with higher stocking rates resulted in the medium SR treatment achieving the highest net margin per hectare. Additionally, a reduction in housing and feeding requirements for 21 month heifer systems resulted in greater margins compared with 26 month steer systems.