

## ***Alternative finishing strategies for male Friesian calves***

### **Johnstown Castle, Co. Wexford**

In the Irish beef sector, 41% of calves available for beef production are sired by Friesian bulls (AIM, 2016). Finding the optimum production system to maximise profits from these dairy born calves is crucial for successful dairy beef production.

From 2010 to 2015, a large-scale dairy calf-to-beef unit was established at Johnstown Castle to compare the performance of spring born male dairy calves across a range of production systems. The ultimate aim of this research is focused on establishing blueprints of production for these calves. Animals were finished as bulls and steers and slaughtered at different ages. Avenues were explored to refine these blueprints in an effort to reduce the costs of production; increase the utilisation at pasture and increase carcass output per hectare.

### **Blueprints for Friesian steer systems**

#### **21-month steer system:**

For spring-born calves, winter finishing can be avoided by slaughtering cattle at a lighter carcass weight at the end of the second grazing season. In this production system, steers are finished at the end of the second grazing season having been supplemented with 5kg concentrates for the final 60 days of the grazing season. The concentrate input for the finishing period of this system is therefore approximately 350 kg. Calves must have good life time performance and have an early birth date for this system (Jan/Feb born).

Target carcass weight is 280 kg (550 kg live weight at slaughter). For Holstein-Friesian steers conformation scores are predominately 'P+' O-' (85%) with fat scores of '2=/'+' . Kill out proportion is 514 g/kg. Calves must have good lifetime performance and have an early birth date for this system (January/February born). Research at Teagasc achieved carcass weights of 264 kg and conformation and fat scores were 'O-' and '2+' respectively.

**Key Points:** This system is heavily dependent on high levels of grassland management. Sub-optimum herbage quality will reduce animal performance and increase the likelihood of having to incur winter finishing. This system has the potential of carrying a high stocking rate as animals are slaughtered at a younger age.

#### **24-month 'traditional' steer system:**

In this system, steers are finished during the second winter, approximately 100 days. During the second winter, cattle are offered good quality grass silage and 5 to 6 kg concentrates. Concentrate input during the finishing period for this system is 600 kg.

Target live weight at slaughter is 620kg, with a target carcass weight of 320 kg. Conformation scores are predominately 'O' (80%) and the remainder are 'P'. Fat scores are '3'. Research in Teagasc achieved carcass weights of 317 kg. Conformation score and fat scores were predominantly 'O-' and '3=', respectively.



**26 to 28-month steer systems:**

In this system the animals are at pasture for the second grazing season. They are then housed on a grass silage only diet for the second winter. During this period animal performance is typically 0.50 kg/day. Steers are then turned out to pasture in late February/early-March and slaughtered in June.

Average daily gain during their third season at pasture is approximately 1.3 kg. In this system Holstein-Friesian steers are slaughtered at 28-months of age and achieve a carcass weight of 350 kg. Conformation scores are predominately 'O=' with fat scores of '2+'. In this system approximately 65% of live weight gain is achieved from grazed grass.

**Key Points:** Lifetime concentrate input is low (350kg/head) and animals are slaughtered in May/June when beef price has been historically high. A large proportion of their diet is from grazed grass with low levels of silage and concentrate inputs. The stocking rate of this system is lower than the 21-month and 24-month systems but a high carcass output is achieved.

***Performance targets for the dairy male calf to beef steer systems***

	21 Month	24 Month	28 Month
Sale Date	November	February	June
Final Weight	550 kg	620 kg	650kg
Carcass Weight	280 kg	320 kg	350kg
Confirmation	50% 'P' & 50% 'O'	80% 'O' & 20% 'P'	O=
Fat Score	50% '2' & 50% '3'	85% '3' & 15% '2'	2+

## Blueprints for Friesian bull systems

### 15-month bull production system:

A target carcass weight of 270-275 kg is required for bulls in this system with conformation scores of O=/O+ and fat scores 2=/2+. Meeting these targets at less than 16 months of age is necessary to satisfy UK market specifications.

In research experiments carried out at Teagasc, Johnstown Castle, the target carcass weight for this system was difficult to achieve. Results show that calves supplemented with 2.0 kg of concentrates daily during the first season at pasture and finished on a diet of ad-libitum concentrates from November to slaughter (May/June) produced carcasses of 265 kg. Conformation and fat scores were O=/O+ and 2=/2+, respectively. Total concentrate input during the finishing period was 1.8 tonnes.

This system is heavily reliant of high concentrate supplementation making it very vulnerable to changes in concentrate prices. Also, the requirement for grazed grass in the system was low to the point that it could not be a stand-alone system.

Alternative finishing strategies were also explored where bulls were finished on grass ad-libitum silage supplemented with 5.0 kg/day of concentrate for the finishing period. While the costs of production were reduced, the carcasses were significantly lighter and carcass conformation score was also lower.

**Key point:** It is critical that calves in this production system reach a housing live weight of 250 kg in November, at the end of the first grazing season, in order to successfully meet the market specifications. It is important to note that close communication with the beef processor is required for a bull beef system to be successful.

### 19-month bull production system:

Animals were turned out to pasture for 100 days in early March, housed in June and finished over a 100 day period. Concentrate input during the finishing period for bulls in this system was 1.2 tonnes and carcass weight was 320 kg. Conformation score was 'O=' with a fat class at slaughter of '2+'.

Alternative finishing systems where bulls were finished off pasture supplemented with 5.0 kg of concentrates daily for 100 days pre-slaughter had lower carcass weights with lower fat scores.

Despite these factors, it was more profitable to finish the bulls at pasture due to the saving in concentrate input costs. However, it is essential to have a market for these animals since demand is limited for bulls finished at older than 16 months of age.

### **Performance targets for dairy calf to beef bull systems**

	15 Month Bull	19 Month Bull
Slaughter date	May	September
Finishing concentrate input	1.8 t	1.2 t
Carcass weight	270 kg	320 kg

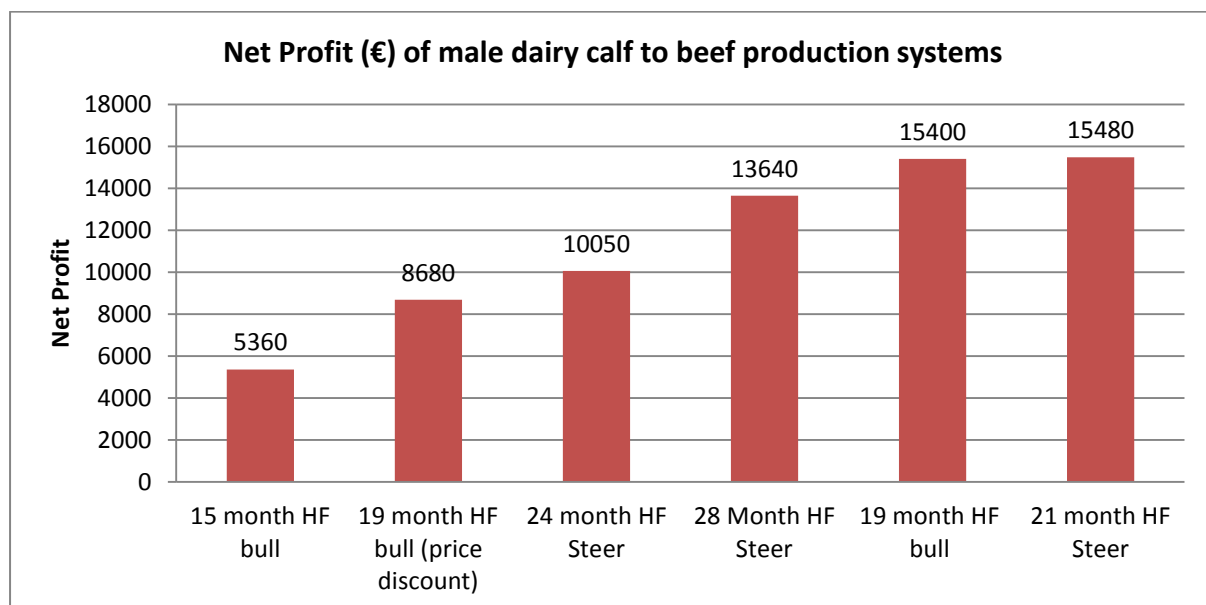
## Profitability of male dairy calf to beef production systems

A net profit analysis was compiled based on a 20 ha farm model. Price assumptions were made; male Holstein Friesian calf purchase price of €100, an R3 steer beef price of €4/kg and a finishing concentrate price of €255. The impact of a 30c/kg discount on 19 month old bull was also investigated.

The results clearly indicate that huge variation in profit exists across production systems. The 15-month Holstein-Friesian bull system has a very modest land requirement (although it is important to bear in mind the organic nitrogen and slurry contribution of these cattle with regard to the stocking rate and slurry capacity limitations of the Nitrates Directive). This system was the least profitable on a 'per head' and 'per hectare' basis.

Although the traditional 24-month steer production system is profitable, grass-based production systems (21- and 28-month Holstein-Friesian steer production systems) were the most profitable systems. While the 19-month Holstein-Friesian bull is one of the more profitable systems, the impact of a discount in beef price has the potential to render it one of the least profitable systems. Therefore, close communication with meat processors is required.

Results from the research at Johnstown Castle have shown that systems where a high proportion of weight gain was achieved from grazed pasture were the most profitable. The success of these systems is highly dependent on good grassland management to optimise animal performance from pasture.



## Conclusion

Various production systems can be employed on Holstein-Friesian calf-to-beef enterprises. The success of the system is based on achieving a high proportion of total life time gain from grazed grass. Aside from the selling price of beef, the profitability of these beef systems is vulnerable to increases in calf purchase price and concentrate input costs.