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Bull beef finishing systems from the beef cow herd



Key external stakeholders:

Irish suckler beef farmers and beef finishers, meat processors, ICBF, Bord Bia and Teagasc advisory

Practical implications for stakeholders:

The outcome/technology or information/recommendation is that grazed pastures can have a significant role in the production of suckler bulls.

- Grazed pasture can have an important role in spring-born suckler bull production systems where slaughter age is at 18-20-months.
- A liveweight gain of 0.5-0.7 kg/head/day during the winter is sufficient for weanling suckler bulls returning to pasture for a second grazing season.
- Suckler bulls can achieve daily liveweight gains greater than 1.4 kg/day over the first 100 days post turnout.
- A finishing period of 85-100 day, on *ad libitum* concentrates, is sufficient to achieve an adequate carcass fat cover.
- In this production system, late-maturing suckler bulls had acceptable finish (fat score equal to or greater than 3-) at a carcass weight of 380 kg.
- Early-maturing bulls had greater fat scores at lighter carcass weights, but were fatter at heavier weights compare with late-maturing animals.
- During the finishing phase (last 100 days on *ad libitum* concentrates) late-maturing animals were more efficient especially at heavier finishing weights.
- While bulls remaining at pasture until slaughter were under-finished at 18-20-month of age, the economics of late-summer/autumn concentrate supplementation, while at pasture, was questioned. Finishing indoors on *ad libitum* concentrates for 85-100 days was the most reliable way to finish bulls.

Main results:

- Target liveweights at turnout to pasture in spring and rehousing in mid/summer are 400-420 kg and 530-550 kg, respectively. Slaughter weights of 680-710 kg should yield carcass weights of 390-410 kg.
- When offered good quality grass silage plus supplementary concentrates during the first winter, target daily gains of 0.6-0.7 kg/day were adequate for bulls returning to pasture for a second grazing season. Achieving daily gains in excess of these, as a result of additional concentrate supplementation, were generally uneconomical as such higher winter gains were associated with lower gains at pasture.
- Daily gains on un-supplemented pasture in spring/summer were typically greater than 1.4 kg/head/day. The additional liveweight response to supplementing with concentrates was not economical.
- On un-supplemented pastures, gains were typically ~1 kg/head/day in the late summer/autumn period, yet the response to concentrate supplementation was uneconomical.
- An indoor finishing period of 85-100 days (on *ad libitum* concentrates) was sufficient to achieve an acceptable degree of carcass finish on late-maturing suckler bulls at a carcass weight at ~380 kg.
- Early-maturing suckler bulls could be produced at a lighter weight, but were less efficient when produced at a heavier carcass weight.
- Performance at pasture, even when supplemented with concentrates, was invariably less than that achieved indoors on *ad libitum* concentrates.
- Concentrate supplementation of yearling suckler bull on spring/summer pasture was invariably not economical.

Opportunity / Benefit: Data produced from this study are directly applicable to Irish beef producers. Animal weigh and growth targets can readily form the basic blueprint for suckler bull beef production.

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1. Project background:

The suckler herd accounts for ~50% of Irish beef output and ~75% of the progeny are classified as late-maturing. While steer beef production predominates, there has, nevertheless, been an interest in retaining the males intact as bulls. Higher daily gain, better carcass conformation, higher lean meat yield and better feed conversion efficiency in bulls compared with steers and, with the possibility of finishing bulls before the second winter, have all highlighted an increase in bull production which now accounts for ~20% of male beef production. Earlier bull production systems focused on intensive indoor finishing on high concentrate diets and once housed in the autumn bulls seldom return to pasture. Such systems rely on high inputs of purchased concentrates and as these feedstuffs are invariably imported, Ireland has no obvious competitive advantage in copying such blueprints. However, as grazed pasture offers a competitive opportunity for feeding livestock, the challenge of replacing expensive concentrates with grazed pasture needs to be explored for bull production in Ireland. This study, thus, examined the role of grazed pasture, as a feed source, for growing/finishing bulls.

The study examined the opportunities whereby yearling bulls return to pasture for a second grazing season and where offered high quality pastures to replace purchased concentrates.

2. Questions addressed by the project:

When returning yearling bulls to pasture for a second grazing season:

- What level of performance can be expected with suckler bulls at pasture in spring/summer and summer/autumn?
- Can a 3-month period at pasture replace an equivalent indoors high-concentrate phase and what carcass weights and levels of finish (fatness) can be achieved?
- Is there a role for concentrate supplementation at pasture in the spring/summer or summer/autumn periods?
- How do early- and late-maturing suckler bulls compare in such a system of production?

3. The experimental studies:

A number of experiments including animals at pasture and indoors were carried out to address these questions.

4. Main results:

- Target liveweight at turnout to pasture in spring and rehousing in mid/summer are 400-420 kg and 530-550 kg, respectively. Slaughter weights of 680-710 kg should result in carcass weights of 390-410 kg.
- When offered good quality grass silage plus supplementary concentrates during the first winter, target daily gains of 0.6-0.7 kg/day were adequate for bulls returning to pasture for a second grazing season. Achieving daily gains in excess of these, as a result of additional concentrate supplementation were generally uneconomical, as such higher winter gains were associated with lower gains at pasture.
- Daily gains on un-supplemented pasture in spring/summer were typically greater than 1.4 kg/head/day. The additional liveweight response to supplementing with concentrates was not economical.
- On un-supplemented pastures, gains were typically ~1 kg/head/day in the late summer/autumn period, yet the response to concentrate supplementation was uneconomical or at best was close to break-even.
- An indoor finishing period of 85-100 days (on *ad libitum* concentrates) was sufficient to achieve an acceptable degree of carcass finish on late-maturing suckler bulls at a carcass weight at ~380 kg.
- Early-maturing suckler bulls could be produced at a lighter weight, but were less efficient when produced at a heavier carcass weight.
- Performance at pasture, even when supplemented with concentrates, was invariably less than that achieved indoors on *ad libitum* concentrates.

5. Opportunity/Benefit:

The project has shown the opportunity to produce finished spring-born suckler bulls at under 20-months of

age, thus removing the requirement of a second winter which is typically associated with the production of steer beef. The study results set out clear production targets and feeding regimes to achieve a finished animal at the younger age. Working closely with the industry partner has enabled many producers to produce bulls to the specifications developed in this project

6. Dissemination:

Data generated during the course of the study have been used at Open Day presentations, industry meetings, in-service training and Beef Newsletters. In addition data generated has been presented at National Beef Conferences and Scientific meetings. One PhD thesis will be generated from the data gathered on this study. Many visiting groups were exposed to the data generated from this study.

Main publications:

O'Riordan, E.G., McGee, M., Moloney, A.P. and Crosson, P. (2012). Bulls from the beef cow herd: effect of system of production on growth and carcass characteristics. In: Proceedings of the Agricultural Research Forum, Tullamore, Offaly, 12-Mar-2012, p53.

Marren, D., McGee, M., Moloney, A.P., Kelly, A. and O'Riordan, E.G. (2013). Comparison of early- and late-maturing suckler bred bulls on contrasting production systems slaughtered at three carcass weights. In: Proceedings of the Agricultural Research Forum, Tullamore, Co. Offaly, 11-Mar-2013.

McMenamin, K., Marren, D., McGee, M., Moloney, A.P., Kelly, A. and O'Riordan, E.G. (2014). Effects of concentrate supplementation level during winter and subsequently at pasture on performance and carcass traits of late-maturing suckler bred bulls. In: Proceedings of the Agricultural Research Forum, Tullamore, Co. Offaly, 10-Mar-2014, p27.

Popular publications:

O'Riordan, E.G., McGee, M., Moloney, A.P., Crosson, P., O'Kiely, P., Marren, D., McMenamin, K. and Lenehan, C. (2015). Feeding strategies to optimise performance from pasture in steer and bull finishing systems. In: Proceedings of the Teagasc National Beef Conference 2015, Hodson Bay Hotel, Athlone, 13-Oct-2015, p40-51

O'Riordan, E.G., Marren, D., McMenamin, K., McGee, M. and Moloney, A.P. (2013). Economics of weight gain - Optimum winter growth rates for weanling suckler bulls when returning to pasture in spring. Teagasc Beef Advisory Newsletter, November.

7. Compiled by: E. G. O'Riordan