BULL BEEF PRODUCTION

J. B. Cassells and P. N. P. Matthews
Ruawhata, Pahiatua and Agronomy Department, Massey University

Abstract

The development of a 74 hectare bull beef production system is outlined. With pasture development regarded as a high priority techniques used to apply sufficient grazing pressure to change pasture composition are discussed. The combination of stock classes and pasture management changes has allowed a dramatic increase in the proportion of ryegrass and white clover in the sward. Currently a slightly modified one year bull beef system is being operated. Spring calves (140) are farmed through to 16-18 months of age and in addition autumn reared calves (60) are taken through to slaughter at 19-20 months. Performance and management objectives are given for this production system and the key factors relating to their practical implementation are discussed.

INTRODUCTION

Faced with the chance to purchase a 74 hectare block of land 16 km away from our dairy farm led to consideration of the options available to improve our farming enterprise. What management options are available, what alternatives will be profitable, which ones will be workable? A lifelong background in intensive dairying logically led to thoughts of pasture based systems. Winter grazing for the milking herd, grazing of heifer replacements with the balance taken up with bull beef production seemed the logical land use.

Looking around for data on bull beef production systems revealed little available detailed information. So like others faced with the same question the principles and practice learnt in dairying were transposed to the bull beef system. Like other dairy farmers the stocking rate chosen was too high, animals were grazed too hard and liveweight gain was too low. The last four years have shown bulls to be a challenge but that the interaction between pastures, animal intake, animal performance and profitability are not the same as for dairy cows. A whole new set of management objectives and management philosophy has evolved.

In this paper I intend to briefly cover how far I have come in bull beef production in these four years, what my current management objectives are and give a few thoughts as to future developments.

BACKGROUND

Prior to purchase the bull beef unit had been farmed as a leased cropping proposition. The standard of improvements, fertility and drainage were less than desirable. Pasture composition was predominantly browntop. Ragwort was the only weed problem. During the first twelve months the following improvements were made:
- A ring race was constructed.
- Re-fenced and subdivided into forty-six, 1.6 hectare paddocks.
- A new water reticulation system installed.
- Stock yards and weighing facility constructed.
- All wet areas tiled and mole drained (35% of farm).
- 900kg superphosphate applied per hectare.

In other words the traditional elements of a development programme were put in place.

Pasture development was regarded as a high priority. To apply sufficient grazing pressure to change the pasture composition it was thought necessary to use dry dairy cows in the winter months and have some bulls autumn reared. Autumn bulls allowed for reduced weight gains without sacrificing liveweight targets.
The following changes have been made to improve pasture composition:
- Sixteen hectares block grazed each winter with dairy cows at high grazing intensities and high levels of hay supplement.
- A change from set-stocking to rotational grazing over the spring.
- Preventing pasture surpluses developing in the late spring/early summer.
- Six (6) paddocks have been sprayed and direct drilled with either Nile ryegrass, Wana cocksfoot or Maru phalaris.
- A combination of 40% Autumn • 60% Spring born bulls has been used.

The combination of stock classes and pasture management changes has allowed pressure to be put on browntop at critical periods (winter/late spring) and whenever possible to encourage ryegrass and white clover (in particular in the autumn, late winter and early spring). The change has been so dramatic that no further regrassing is likely at this stage. It has also been concluded that conditions on the farm are not extreme enough to warrant the introduction of Wana cocksfoot or Maru phalaris.

In 1987 no dairy cows were wintered and in recent years it has been more economic to graze replacement heifers off the farm. A positive decision has now been made to separate the bull beef and dairy systems. As a support unit for the dairy unit the returns cannot compete with bull beef - the old story of a run-off being a poor investment!

CURRENT BULL BEEF POLICY

The present farming system (Table 1, Figure 1) is a slightly modified one year bull-beef system. Spring calves are farmed through to 16 to 18 months and in addition autumn reared calves are farmed until slaughter at 19 to 20 months.

Performance levels in the spring calves have almost reached the target weight at the end of November suggested by Morris and McCrae (1985) (Figure 1). It appears, however, that there is a greater reliance on a late run in the spring to obtain target weights. This is despite higher than target liveweights in the autumn. As a result of this observation target weight gains over the winter months have been increased from 0.3 to 0.5 kg per head per day leading to average weights above target on 1 August 1987 (Figure 1). It is apparent that at a stocking rate of 3.0 bulls per hectare these target weights are obtainable. This supports the observation of Morris and McCrae (1985).

Autumn bulls are farmed as they allow flexibility. They can, at times, be treated as low priority stock yet still reach killable weights in October and November. It is important to have the flexibility of killing stock in the late spring to enable the remaining one year bulls to reach target weight without any detrimental effects on the young calves. Autumn bulls have at this stage been preferred to a class of two year bulls due to their lower winter feed requirements.

Can you imagine feeding milking cows in order to produce 1 kg milkfat per cow per day every day of the year? Impossible? This is what we are attempting to do in a one year bull beef system. The bulls must grow on average almost 1 kg liveweight every day we are farming them. To my mind this performance level brings with it the herbage allocation, pasture quality and grazing pressure requirements similar to our 1 kg milkfat per day cow.

Figure 2 outlines the pertinent features of the overall and seasonal management of the bull unit.

WHERE TO NOW?

I am still learning about bull beef production and as yet some of the objectives previously outlined have not been met.

It is still possible to increase killing weights. More critical attention must be placed on weaner calves; their age, weight and breed. We should be starting with a 100 kg liveweight
Figure 1: Liveweight (kg) of spring bulls relative to published targets (Morris and McRae 1965)

Table 1: Farm statistics

<table>
<thead>
<tr>
<th>Year</th>
<th>Cows milked</th>
<th>Total Milkfat (kg)</th>
<th>Milkfat/cow (kg)</th>
<th>Milkfat/ha (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1963/64</td>
<td>273</td>
<td>40,000</td>
<td>147</td>
<td>568</td>
</tr>
<tr>
<td>1964/65</td>
<td>275</td>
<td>36,000</td>
<td>136</td>
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<td>226</td>
<td>44,700</td>
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<tr>
<td>1966/67</td>
<td>262</td>
<td>35,000</td>
<td>134</td>
<td>515</td>
</tr>
</tbody>
</table>

eweans on 1 November. Individual bulls do not all respond the same. The distribution of liveweights on 22 July 1987 are presented in Figure 3. There is a need to establish why. Is it possible to get improved calf identification and therefore be able to target high growth performance bulls in the Dairy Board team?

The bull system developed on this farm can be regarded as an efficient one-year bull beef production system. To meet animal performance requirements, however, the amount of pasture harvested per hectare is low. Massey University students’ estimates for feed harvested per hectare ranged from 7500 to 9000 kg DM ha⁻¹ on the bull beef unit. A similar exercise on the dairy farm suggested in excess of 15,000 kg DM ha⁻¹ was being harvested. Can we find ways of increasing utilisation from a bull system or is it a cost we must live with?
AUTUMN

OBJECTIVES
- To set turnips up for winter.
- Average cover target at start of winter not more than 1800 kg DM/ha.

POTENTIAL WEIGHT GAIN
- Autumn (R) Vicia Faba - 1.5 kg/ha per day.
- Sugar Cane - 0.8 kg/ha per day.

ACTUAL WEIGHT GAINS
- Autumn beans - 0.75 to 0.9 kg/ha per day.
- Sugar cane - 0.5 to 0.6 kg/ha per day.

PRIORITY STOCK
- Spring canes.

PASTURE COVER
- Average cover at the end of autumn 1800-1900 kg DM ha^{-1}.
- No benefit in a snow-covered pasture.

GRAZING MANAGEMENT
- Quality on par.
- Gradually lengthen rotation over autumn.
- Late April - 40 days.
- May May - 80 to 120 days (winter rotation).
- Lengthening rotation advisable at the cost of beefweight gain. Autumn beans if necessary reduced to maintain good dry matter intake.

Figure 2: Management objectives

WINTER

OBJECTIVES
- To try and weight gain over season from 0.3 to 0.9 kg/ha per head per day on all classes of one year-olds.

POTENTIAL WEIGHT GAIN
- 0.8 kg/ha per day (not realistic).

ACTUAL WEIGHT GAIN
- 0.3 kg/ha per day per head.
- This year the highest targets have been achieved over June and July.

PRIORITY STOCK
- None. All had to achieve similar weight gains.

PASTURE COVER
- Average cover at start of winter 1800-1900 kg DM ha^{-1}.

GRAZING MANAGEMENT
- Redraw DM after grazing in the case winter down to below 2000 kg DM ha^{-1}.

MANAGEMENT OBJECTIVES
- To maintain feeding levels and allow for gradual decrease in cover over lengthening autumn 50-60 days.
- Reduction gradually reduced through August to 20 days (early September).
- Once conditions become wet all grasses shifted in laying conditions bulls should aim at:

SUPPLEMENTS
- I consider it unpractical to feed supplements to bulls. Only a minimum amount is made and fed out (at lakes, pay for milk warmed).

springs
- Weaning, a cow done on a monthly basis from February onwards.

ANIMAL MANAGEMENT
- A rises during the weaning period must be undertaken. All bulls are castrated from weaners to 1 month of age. Reduced weight gains due to warm weather are expected.
- Bulls have no better than a problem. Over the spring all bulls are bled to gain weight.
- Breeding steers has caused the weight gain, and the only fault is electric fences.
- Starch levels are 2%.

PASTURE MANAGEMENT
- Pasture cover is regularly assessed over the autumn/winter season.

- This is an high priority, if quality falls, try to maintain pasture cover.

- Stock quality is: average, yielding decoder, strawcol 
- class of mark and pasture quality

- (see seasonal work).

WINTER

OBJECTIVES
- To make maximum use of the high weight gain potential over this period by high levels of high quality pastures.
- To have bulls at highest weight safely enough to prevent pressure on young spring calves.
- All autumn Bulls calved in the late spring.
- To benefit from any early spring premiers offered by local companies.

POTENTIAL WEIGHT GAIN
- 0.9 kg/ha per head per day in autumn calves.

ACTUAL WEIGHT GAIN
- 0.7 kg/ha per head per day in autumn calves.

PRIORITY STOCK
- N/A. Potential for high weight gain is too high. You can afford to weight down.

PASTURE COVER
- Hold the 1800-1900 kg DM ha^{-1} range.

PASTURE QUALITY
- This is an high priority. If quality falls, intake falls. Yield drops with low cover and high quality pastures at the end of winter.
- This is an average over the season with a stock reduction of 1700 kg DM ha^{-1}. Maximum of 1200 bales of hay, or at recommended turning strategy of 1 turn per paddock.
- Metabolism: Control. All farmers receive an strategic stock plan.
- Cut low, as possible preferably turn the turn. Don't top too early or with misted southerly mist.
Brougham (1975) harvested up to 13,788 kg DM ha\(^{-1}\) under intensive bull beef production at high stocking rates. The weight gains achieved and the final target weight obtained under high stocking rates are unacceptable from a beef production/marketing point of view. On the other hand if higher rates of gain/target weights are required there will be a corresponding reduction in the stocking rate carried and the amount of herbage harvested per hectare.

Future challenges must be related to increasing the efficiency of bull beef systems while at the same time maintaining liveweight gains and liveweight targets. The simple one year bull production system may not be the ideal. Other classes of stock may need to be introduced to provide a low priority animal to harvest pasture at present being recycled as organic matter. Such a class of stock would increase the requirements for supplements over the winter period unless a buying and selling policy is adopted. Perhaps the autumn bulls are already partly filling this role.

References