**Application**

This study demonstrates that using alternative forages such as forage brassicas has a role to play in lamb finishing systems. The results demonstrate the type of performance achievable when grazing during the winter months and how this compares to other systems.

**Introduction**

Scottish Blackface (SBF) lambs can grow up to 240 g/day and attain a carcass weight of 118-23 kg when offered ad-libitum concentrates while using terminal sires crossed with SBF ewes has also been shown to increase lamb growth rates and lamb carcass output in comparison to purebred SBF lambs (Claffey et al., 2018). However, ad-libitum concentrate systems are not always practical for some producers and not all hill ewes can be crossbred. Finishing these type of lambs using forage based diets has the potential to increase the options for lamb finishers but there is a paucity of information on these finishing systems. The objectives of this experiment was to compare the performance of SBF lambs and Texel X SBF (TXSB) lambs when grazed on either perennial ryegrass based pastures, forage brassica crops or offered ad-libitum concentrates indoors.

**Materials and Methods**

This study was performed over three production cycles (October to February each year) and was a 3x6 factorial design. Factors were lamb type and diet type. Lambs were blocked by live weight (within lamb type category) and balanced for source farm with 25 TXSB entire male, 25 SBF entire male and 25 SBF castrate male lambs randomly allocated to one of six diet types; ad-libitum concentrates, forage rape (FR), hybrid brassica (HB), kale (K), permanent pasture (PP) and perennial ryegrass re-seed (RS). Lamb live weight was recorded every 14 days until lambs were drafted for slaughter. Lambs were drafted for slaughter at ≥40 kg live weight with a target carcass weight >18kg. Carcass conformation was scored using the EUROP grid system (E= excellent and P= poor) and carcass fat cover was scored using a one to five scoring system (1=low fat cover; 5 = high fat cover; Hopkins, 2021) with a target fat score of three. Data residuals were examined for normality using the UNIVARIATE procedure of SAS (Version 9.4) and data was analysed using the MIXED procedure of SAS (Version 9.4). Individual lamb was the experimental unit for all animal parameters analysed and was included as a random effect. Lambs offered PP and RS are excluded from the post slaughter lamb performance analysis, as 6% and 14 % respectively were drafted for slaughter over the three years creating an un-representable sample for the analysis.

**Results**

As presented in Table 1. TXSB, SBF entire male and SBF castrate male lambs all had higher average daily gains (ADG) when offered ALC in comparison to all other diet types (P < 0.01). There was a lamb type by diet type interaction. Texel cross Scottish Blackface lambs achieved a higher ADG compared to either SBF entire male or SBF castrate male lambs offered ALC, FR, K, HB and RS (P < 0.05). Scottish Blackface entire male lambs achieved a higher ADG compared to SBF castrate male lambs offered ALC, FR and PP (P < 0.05). There was no difference in ADG between SBF entire male and SBF castrate male lambs offered HB, K and RS (P > 0.05). Lambs offered ALC had higher slaughter weights and carcass weights compared to lambs offered FR, HB and K (P < 0.01). Kill out percentages were similar among diet types, with no difference observed between lambs offered ALC, FR, HB and K (P > 0.05). There was also no difference in carcass fat or conformation scores across all diet types (P > 0.05).

**Table 1.** Effect of treatment diet on average daily gain (g/day) of TXSB, SBF entire male and SBF castrate male lambs offered ALC, FR, HB, K, PP and RS

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | ALC | FR | HB | K | PP | RS | SEM | P-value |
| All lambs | 243.7a | 129.5b | 132.6b | 126.2b | 36.8d | 73.7c | 4.25 | < 0.01 |
| SBF Entire | 241.7a | 130.8b | 127.8b | 122.5b | 37.2d | 67.0c | 6.57 | < 0.01 |
| SBF Castrate | 195.7a | 103.2b | 109.4b | 114.0b | 16.8d | 54.8c | 7.17 | < 0.01 |
| TXSB | 292.4a | 152.4b | 158.2b | 144.5b | 53.3d | 95.0c | 7.12 | < 0.01 |

a–d Means within a row with common superscripts do not differ (P > 0.05)

TXSB = Texel x Scottish Blackface entire males, SBF E = Scottish Blackface entire males and SBF C = Scottish Blackface castrate males

ALC = ad-libitum concentrate, FR = forage rape, HB = hybrid brassica, K = kale, PP = permanent pasture, RS = reseed

**Conclusions**

The current study demonstrates that SBF and TXSB lambs perform best when offered ALC but forage brassica crops are a viable alternative. In contrast, perennial ryegrass swards alone were not suitable for finishing lambs in the autumn/winter period due to the decline in forage quality and subsequent effects on lamb performance. Lambs grazing forage brassica crops performed to a satisfactory level throughout the winter period which conveys the potential in using these crops in lamb finishing systems

**References**

Claffey, N.A., Fahey, A.G., Gkarane, V., Moloney, A.P., Monahan, F.J. and Diskin, M.G., 2018. Effect of breed and castration on production and carcass traits of male lambs following an intensive finishing period. Translational Animal Science, 2(4), pp.407-418.

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