

0.051) of decreasing with ZH supplementation. Also, the liver decreased in size ( $P < 0.05$ ) for treatments in which ZH was included. In conclusion, using a daily ZH dosage of 0.2 mg/kg of BW produced the best productive performance and carcass characteristics in hair-breed rams.

**Key Words:** carcass characteristics, sheep performance, zilpaterol doses  
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### 668 Daily ration intake and performance of semi-feedlot lambs in integrated crop–livestock system.

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The objective of this study was to evaluate the effects of corn (*Zea mays* L.) silage intercropped with palisade grass [*Urochloa brizantha* (Hochst. ex A. Rich.) R. Webster cv. Marandu] and pigeonpea [*Cajanus cajan* (L.) Millsp.] in summer/fall and oversowing modalities of black oat (*Avena strigosa* Schreb.) in winter/spring on lambs' production in semi-feedlot. Crossbred male lambs ( $n = 48/\text{yr}$ ;  $27.2 \pm 0.6$  and  $24.0 \pm 0.7$  kg initial BW in the first and second growing seasons, respectively) were used in a completely randomized design. Treatments were arranged in a  $2 \times 2 \times 2$  factorial arrangement of 2 silage production systems (SPS; corn + palisade grass + pigeonpea [C+PG+PP] and corn + palisade grass [C+PG], 2 black oat oversowing modalities (BO; drilled vs. broadcast), and 2 grazing cycles (GC). Animals spent the day grazing in the black oat (fixed stocking rate and rotational grazing), and during the night, they were herded into a barn and separated by treatments in collective pens, where they received concentrate and corn silage (C+PG+PP or C+PG) of their respective diets. Diets were formulated to be similar in energy and protein contents. Daily ration intake of concentrate + silage (DRI) was calculated as the difference between ration supplied and remaining. Every 18 d, lambs were individually weighed for ADG calculation. Data were analyzed using PROC MIXED, with SPS, BO, GC, and their interactions considered fixed effects. Animal (SPS  $\times$  BO  $\times$  GC) was considered a random effect. Treatments were considered different when  $P \leq 0.05$ . Daily ration intake (DRI) was lower for C+PG+PP compared with C+PG ( $P = 0.05$ ; 0.754 vs. 0.800 kg/d) and in pastures with black oat oversowing drilled compared with broadcast ( $P = 0.03$ ; 0.751 vs. 0.803 kg/d) in the first growing season. In first GC of the first and second growing seasons, the DRI was lower than in the second GC ( $\{P < 0.001\}$  0.547 vs. 1.007 kg/d and  $\{P < 0.001\}$  1.76 vs. 2.51% BW) and  $\{P < 0.001\}$  0.559 vs. 1.283 kg/d and  $\{P < 0.001\}$  1.98 vs. 3.45% BW], respectively). The ADG was lower in the first GC than in the second GC ( $P = 0.005$ ; 0.222 vs. 0.264 kg/d) in the first

growing season. This difference was due to the greater forage availability in the first GC reducing the DRI. Consequently, the greatest DRI resulted in increased ADG in the second GC. In conclusion, corn silage intercropped with palisade grass and pigeonpea did not affect performance of semi-feedlot lambs, being a strategy in integrated crop–livestock system.

**Key Words:** black oat, palisade grass, pigeonpea  
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### 669 Effects of replacing corn with dried distiller's grains plus solubles and poultry fat on performance and meat quality of lambs consuming bermudagrass hay.

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The Southeastern United States, with warm climate and relatively high humidity, is not suitable for wool production. For these reasons, hair-type sheep are being raised for meat. Grazing is the most economical way of raising livestock. Pasture quality is subjected to seasonal variations leading to nutrient deficiencies that limit animal performance. Supplements are often needed to improve animal performance. Grains are used for energy and soybean meal is used for protein supplementation. Corn and soybean are diverted for biofuel production, reducing their use for animal feed and thus increasing the cost of animal production. Dried distiller's grains plus solubles (DDGS), a byproduct of the grain biofuel industry, that is rich in protein and digestible fiber could be used to replace corn and soybean meal in livestock diets. A study was conducted to determine the effects of replacing corn with DDGS, poultry fat, or in combination on feed intake, growth, carcass characteristics, liver mass, and meat quality of lambs consuming Bermudagrass hay using 40 Katahdin  $\times$  Dorper intact males (6 mo old). Treatments consisted of a Bermudagrass hay-based diet supplemented with corn (Control), DDGS, poultry fat (OIL), or DDGS plus poultry fat (DDGSOil). Diets were balanced for energy and protein and then fed once daily for 60 d to individually housed lambs. Lambs were processed at the end of the 60-d experiment after a 24-h fast. Data were analyzed as a completely randomized design using the mixed model of SAS. Results indicate that total protein intake %BW ( $0.4834 \pm 0.0183$ ), final weight ( $44.6 \pm 1.24$  kg), slaughter weight ( $42.5 \pm 1.49$  kg), hot ( $24.4 \pm 0.74$  kg) and chilled carcass weights ( $72.5 \pm 0.74$  kg), initial carcass pH ( $6.5 \pm 0.06$ ), cooking loss ( $16.6 \pm 0.87\%$ ), and meat protein ( $21.2 \pm 0.39\%$ ) were not affected ( $P > 0.05$ ) by supplement type. Total DMI ( $1.66$  vs.  $2.07$ ,  $2.15$ , and  $2.22 \pm 0.07$  kg for OIL, DDGS, DDGSOil, and Control, respectively) and liver weight ( $561$  vs.  $635$ ,  $674$ , and  $678 \pm 27.9$  g) decreased ( $P < 0.01$ ) with OIL supplement alone. Rumen pH was lowest ( $P < 0.05$ ) with corn supplementation ( $7.23 \pm 0.06$ ) compared with DDGS ( $7.4 \pm 0.06$ ), OIL ( $7.5 \pm 0.06$ ), and DDGSOil ( $7.6 \pm 0.06$ ). Thiobarbituric acid reactive substances for DDGSOil ( $0.36 \pm 0.0351$

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