у всі вікові періоди відзначаються добрим розвитком статей тіла, які за своїми параметрами є оптимальними для даної породи. Значну кількість ярок даної групи віднесено до І класу та класу еліт, які якісно покращать стадо господарства.

УДК 636.3.033.05.087.2

EFFECT OF DRIED DISTILLERS' GRAINS FROM WHEAT ON LAMB PERFORMANCE

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The „boom" of bioethanol industry rapidly rised the number of bioethanol plants, resulting in increased availability of co-product feeds, called distillers' grains (DG), which can be used in a lamb diets. The enzymatic fermentation of cereal grains for ethanol production results in a co-product that remains after distillation of ethanol. The solid fraction, called dried distillers' grain (DDG), with approximately 90% DM and a threefold concentration of non-starch nutrient components (protein, lipid and fiber). Because of the properties of the remaining nutrients (energy or protein), DG is well suited for ruminant diets.

In practice, recommended optimal dietary inclusion levels of DDGSw in lamb total rations are 10 % (www.wcfin.ca.pdf).

Few experiments were carried out to evaluate the effect of DDGS on lambs performance. Published data differed among studies – some authors achieved higher ADG and DMI (Ham et al., 1994; Iliev et al., 2008), but other didn't found effect (Erickson et al., 1989; Schaur et al., 2006).

The current trial was conducted to determine how higher levels, exceeded fourfold standard recommendations for weaned lambs, of wheat DDGS in lamb diets

influence performance (DMI, ADG, G:F, nutrient conversion (DM, CP, PDI, FUG) per 1 kg gain).

Experimental animals. The study was conducted at the Institute of Animal Science, Kostinbrod, BG, with thirty lambs (IBW 10.65 ± 3.06 kg, 25-d) of Synthetic Bulgarian Dairy Population (SBDP) from our own farm. They were weaned and randomly allocated (by weight, sex, day of birth, type of litter) into two dietary treatments (n=15) – control diet (CD) with SFM and experimental diet (ED) with DDGSw. Lambs were weighed (without withdrawal of feed or water) prior to feeding twice a month throughout experimental period (114-d), and to obtain initial (days 0, 1) and final (days 113, 114) live weights – in two consecutive days. Based on weights obtained on day 0, lambs were sorted by weight for assignment to one of two treatment diets (n=15).

Dietary Treatments. The concentrate mixes containing DDGSw and SFM, as a protein source, were formulated to be isocaloric and aligned in Ca, P and protein truly digestible in small intestines (PDI). Daily rations were consisted of 29 % meadow hay (MH) and 71 % concentrate mix (as-fed basis) and was formulated to meet and exceed all nutrient requirements of fattening lambs (NRC, 2007). Diets contained 3 % supplement, which provided Ca (limestone) and vitamin-mineral mix (manganese-60.0 mg, iron-1.3 mg, copper-1.0 mg, iodine-1.6 mg, zinc-60.0 mg, cobalt-1.0 mg.Vit.A-5000IU, Vit.D-2000 IU, Vit.E-10.0 mg). Feed was offered twice daily - concentrate mix (offered at 8.00 and 14.00 h) and roughage (offered at 10.00 and 16:00 h) were fed separately throughout the experimental period. Feed intake was adjusted weekly to allow an excess of 5% of their anticipated intake expressed as fed basis. Animals were provided *ad libitum* access to feed and water throughout the study.

Sample Collection and Analyses. Diet ingredients were sampled monthly and composited for analysis. Remainders were collected and weighed daily and analized twice a month. Samples were analyzed for DM by drying in a forced-air oven at 65^{o}C for 48 h and then 105^{o}C. Dried feed samples were ground to pass through a 1-mm screen and analyzed for Crude Protein (CP) (Kjeldahl Nx6.25), Ether Extract (EE), Crude Fibers (CF), Ash, Calcium and Phosphorus (Sandev, 1979; AOAC, 2002).

Parameters. Dry matter intake (DMI) was calculated as (feed delivered /remainders collected) x % DM of the diet fed. Average daily gain (ADG), DMI, feed conversion rate and gain:feed (G:F) were determined in each 15-d period which animal weights were obtained (per group).

Statistical Analysis. Feed intake and DMI /average per lamb/, average daily gain, gain efficiency and other parameters were analyzed using MS Office 2007 and Student's t-test.

Diet composition. Chemical analysis of wheat DDGS was comparable with other research. One of the concerns with DDGS is nutrient variability as just any other co-product (Olentine, 1986; Spiehs et al. 2002; Nuez-Ortín and Yu, 2010).

Content of CP varied from 20–38 % (Aldai et al., 2009), EE from 2.5–6.7 % (Aldai et al., 2009), NDF from 18.6–25.4 %, phosphorus from 0.81 - 1.11 and sulfur from 0.39–0.48 % (Nuez and Yu, 2010). In the current study, the nutrient content of the DDGS was within the lower range of the reported values.

SFM had similar CP content (36,55 % of DM) with DDGSw (36,85 %). Approximately similar values about DDGSw were observed by Thacker, 2007; Cozannet, 2009; Kluth, 2010. On the contrary, relatively higher % was found by Oryschaк (2010); Slominski et al. (2010); www.wcfin.ca. Also significantly lower values were published by Vilarino, 2007; Cozannet, 2009; Dimova et al., 2009; Zarnela.pdf.

Among the studied feedstuffs, DDGSw has the highest level of EE (5.7 % DM). This result is in the range noted by Thacker et al. (2007); Vilarino et al. (2007); Kluth et al. (2010); www.wcfin.ca, but lower than the values found by Cozannet et al. (2009). DDGSw was particularly poor in CF (6.6 %). The observed values corresponded to these reported by Vilarino et al. (2007), but were lower than those found by Kluth (2010); Oryschaк (2010); Zarnela.pdf.

Calcium:phosphorus ratio of the total ration was formulated to meet and exceed requirements of fattening lambs (NRC, 2007). According to some authors dietary Ca in excess of requirements has improved gain or feed efficiency in some trials (Huntington 1983; Brink et al. 1984; Bock et al. 1991). However, excess levels of limestone have reduced DMI and even gains in other trials (Ricketts et al., 1970; Russel et al. 1980; Hironaka 1988; Erickson et al. 1999).

Dry matter intake. The feed intake reported as $g.day^{-1}$ was negligible affected among SFM and DDGSw treatments (980.29 vs. 958.44 $g.d^{-1}$) or 2 %. DMI of concentrate mix (C), roughage (R) and total ration (TR) presented as $g.day^{-1}$ (Fig. 1) was not different among the groups (CD vs. ED) + 1, - 0.5 and + 1.04 %, respectively.

The hay intake were similar (0.28 $kg.d^{-1}$), on the contrary concentrate mix consumption among SFM and DDGSw treatments was different – 0.7 and 0.68 $kg.d^{-1}$ (- 3 %). DDGSw at 38 % dietary inclusion was not high enough to depress DMI. When the concentration of fat exceeds 7 – 9 % of the diet DM, the DM intake is depressed (Morand-Fehr, 2005).

Other factors known to suppress DMI, such as the production of specific VFA (Baile1971; Baile and Forbes 1974) and pH reductions (Fulton et al. 1979), may also have been moderated, when DDGS was substituted for the rapidly fermentable forage.

Average daily intake (CD vs. ED) of nutrient ingredients (on DM basis, %) was higher (table 3) in CP (+ 15 %) and EE (+ 9 %), but lower in CF (- 26 %).

The intake of DDGSw diets in the current study agrees with the reported data by other authors (Huls et al., 2006; Zelinsky, 2006, Schauer et al., 2008). They found no difference in feed intake and DMI in finishing lambs fed DDGS, which replaced a portion of grain and protein source in the diet.

There were differences among treatments (Fig. 2) in values about DMI (5.17 vs. 4.38 kg), CP (0.88 vs. 0.85), PDI (0.63 vs. 0.49) and energy as FUG (5.94 vs. 4.96) per 1 kg (PDI and FUG was calculed on literature data). It was observed benefits from ED in conversion of DMI, CP, PDI and FUG (- 15, 4, 22, 16 %) per 1 kg gain compared with CD.

Growth performance and gain efficiency. Average daily gain was higher for ED ($p<0.05$). Lambs fed DDGSw diet had significant improvement on ADG for whole experimental period. ADG was 160 and 191 $g.d^{-1}$ (+ 19 %) for the diets containing SFM and DDGSw, respectively (table 4). Our data corresponded to these reported by Lodge et al., 1997; Zelinsky, 2006; Schauer et al., 2008.

The corresponding values for gain efficiency expressed as ADG/DMI (G:F) were 0.16 and 0.20 for lambs fed SFM and DDGSw, respectively (+ 22 %). There were significant differences among treatments in FBW ($p<0.05$), ADG ($p<0.05$) and G:F ratios. Initial BW were not different among diets.

In DDGSw-based diets, feeding on lambs has no impact effect on DMI (+1.04 %) but significantly ($p<0.05$) improve performance when included at

38 % of diet DM. It was amended the ADG by 11 % and feed conversion by 22 %. The results of this study indicate that DDGSw can completely replace sunflower meal and a portion of wheat in the supplement and up to 38 % of the diet when feeding fattening lambs without any compromise to performance. The lack of detectable negative effect among treatments and the better performance of experimental diet may be attributed to the inclusion of relatively high level of DDGSw.

Протягом 122-денного, включаючи 8 днів підготовки експерименту з годівлі телят (поч. маса – 10,65±3,06 кг) синтетичної болгарської молочної популяції, отримували раціон, який містить 29 % лугового сіна, 3 % добавок, 19 % зерна та різні джерела протеїну – 30 % соняшникового шроту (борошно крупного помолу) в одній групі та 38 % висушених гранул пшениці після перегонки з розбавниками. Все інше в раціоні складала пшениця. Добавка гранул замість соняшникового шроту вагомо не вплинула на споживання сухої речовини (+1,04 %), але достовірно (р<0,05) збільшила середньодобові прирости на 11 % та рівень конверсії корму (+22%). Тобто, гранули після перегонки пшениці на біопаливо є вдалим альтернативним джерелам білка та замінником соняшникового шроту в годівлі ягнят.

CZU 636.22/082.262

STUDY ON THE EFFECT OF THE NUMBER OF COWS ON MILK PRODUCTION AND AVERAGE NUMBER OF LACTATIONS IN DAIRY FARMS

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Dairy cattle breeding is an extremely important sector for the Bulgarian economy. In recent years there has been a trend towards consolidation of the size of dairy farms as the main factors that led to this are the higher prices of raw cow milk for larger farms, subsidies for quality milk, the import of high productive animals from EU countries, legislation changes, especially these in veterinary requirements that influenced over the consolidation process in dairy cattle breeding.

However, average the milk production for the country is still low compared with EU countries, which determines the unsatisfactory results in terms of quality and quantity of the produced cow milk. Bigger part of cows