WORLD REVIEW OF ANIMAL PRODUCTION

Summaries

Body and Carcass Measurements of DLS and Finn Sheep x DLS Lambs Slaughtered at Three Light Body Weights

Twenty-four DLS and 24 $\frac{1}{2}$Finn $\frac{1}{2}$DLS lambs were measured 2 days before they were slaughtered at 22.7, 32.2 and 40.7 kg live weight. Carcass were taken to evaluate the carcass characteristics of the two genetic groups at these light slaughter weights. Body length, heart girth and circumference of round taken on the life animals were very similar in the two groups at the three slaughter weights. Dressing out percentage was similar in the 2 groups and improved slightly with the increase in slaughter weight. The increase in slaughter weight resulted in a slight decrease in the percent leg and shoulder and an increase in the percent loin-rack cuts of the carcass. As slaughter weight increased, fat thickness over, and content in the 12th rib increased. The results indicated that the carcass of Finn cross with DLS is not inferior to take of the pure DLS and is readily acceptable by the consumer.

Preservation of High Quality Legumes as Hay in Hot, Semi-Arid Regions

The combination of abundant sunshine and dry weather in many regions is favorable to hay making. Making and storing hay from immature high quality forages, alfalfa and Berseem, will help meet the increasing need for a year around supply of high quality forage as the dairy industry develops in many countries. One of the major problems in making hay in dry hot weather is loss of leaves. When leaves are lost much of the protein is lost. A method developed in India, is described, involving chopping the forage before drying, which will reduce leaf loss to a minimum. This method is easily adapted for use by the small village farmer. Data are presented illustrating the effects of maturity of the forage crop on protein content, dry matter digestibility, voluntary dry matter intake and milk production.

Energy Balance Studies with 3 Breeds of Steers

12 steers consisting four of each White Fulani; Crossbred and German Brown and averaging between 175 and 200kg liveweight were used in two separate energy balance trials using all-roughage rations of either hay or fresh grass of *Cynodon nlemfuensis* var *robustus*.

The results indicated no significant differences between the breeds in their utilization of the various nutrients, while maximum liveweight gains of 0.33; 0.37 and 0.36kg/day were recorded for the White Fulani; crossbred and German Brown steers respectively.

The Digestible Energy (DE) and Metabolizable Energy (ME) required for maintenance were 255.3; 208.6 and 198.2 Kcal.DE/wkg$^{0.75}$/day and 130.4; 126.7 and 125.10 (127.4) Kcal.-ME/wkg$^{0.75}$/day for these animals.

The metabolizable energy needs for a kg gain in liveweight by these steers are between 75 - 80% of the recommended value of steers of similar liveweights under the temperate environment.

Effect of Feeding Urea to Lactating Ewes on Fatty-Acid Composition of Milk Lipids

An Experiment was carried out to study the effect of feeding urea to lactating ewes on milk fat production and its fatty acid composition. Results indicated that milk lipid production was adversely affected by urea feeding. The effect on fatty acid composition was not clear, however. It appears that urea may decrease the capacity of mammary gland for the *de novo* synthesis of fatty acids, where it decreased desaturation capacity. On the other hand, urea could have been act through its effect on ruminal fermentation since it was similar to the effect of high concentrate, low roughage diets.

Genetic Stock Effects on Floored Layer Performance in the Subtropics

An experiment was conducted to evaluate the effect of genetic stock on certain egg production parameters. We used W. Leghorn, New Hampshire, and Iraqi birds, and their reciprocal crosses. There was a positive correlation between body weight at maturity and age at maturity. Iraqi birds were the lightest in body weight as compared to all breeds and crosses. There were differences in egg weight of the first 10 eggs due to genetic stock, this trait being correlated with body weight. There was no effect of genetic stock on eggs at 90 days after maturity, egg weight, or egg mass during that period. Egg mass during 280 days after hatch was affected by genetic stock, mainly due to differences in age at maturity. Native birds laid less eggs per year as compared with the standard breeds probably because they were not selected. However, New Hampshire X Iraqi pullets laid the highest number of eggs. The same trend was true for average egg weight and egg mass for one year. This suggests a potential in improving egg production using this cross. From correlation analysis it was concluded that use of part-year records is reliable to evaluate genetic stock for egg mass or egg number; this will save labor, and shortens the generation interval in breeding work.

Sow Litter Recording: Importance, Procedure for and Utilization for Improving the Productivity

Ten years ago a sow-litter recording system was proposed in France for improving the average productivity of animals and herds. Two successive parameters have been proposed to express this productivity on the one hand the number of productive sows and on the other hand the number of sows present in the herd from 200 days of age until culling. The productivity has been determined by some other parameters including for each sow: date of birth, date of recording as a breeding animal i.e. 200 days, farrowing and weaning dates and culling or discarding date. Litter size at birth (animals born alive) and at weaning were also necessary.

Body and Carcass Measurements of DLS and Finn Sheep x DLS Lambs Slaughtered at Three Light Body Weights

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Introduction

«DLS» is a population of sheep produced from a gene pool comprising Dorset, Leicester and Suffolk breeds and has been selected for extended breeding season (Fahmy 1976). Information on the breeding performance (Dufour 1974) and wool traits (Fahmy and Vesely 1977) of the DLS have been reported, however, no data are available on carcass traits of this breed.

In spite of the overwhelming superiority of the Finnish Landrace crosses in fertility and prolificacy, breeders are often reluctant to cross their herds with that breed in view of the often observed, poor conformation, relatively slow growth rate and lack of finish of the Finnish Landrace crosses (McClelland and Russel, 1972, Boylan, Berger and Allen, 1976).

Since a great proportion of the Canadian-produced lambs are consumed at Easter as light-weight lambs, the importance of studying carcass characteristics of the lambs of these two genetic groups at light weights is apparent.

The purpose of this note is to report on some body dimensions and carcass characteristics of DLS and 1/2Finn-1/2DLS lambs slaughtered at three light weights.

Material and Methods

The data comprised of 24 DLS and a similar number of 1/2Finn-1/2DLS uncastrated male lambs, of these 26 were born twins and 22 singles. The DLS lambs were born and raised until weaning (70 days) at La Pocatière Experimental Farm (320 km North East of Lennoxville) and were transfered to Lennoxville after weaning. They represented the third generation of selection. The 1/2Finn lambs were born at Lennoxville to second-generation DLS ewes and Finnish Landrace rams. The lambs were left with their dams for 14 days and were artificially fed on milk replacer *ad libitum* for another 14 days. Calf starter and hay were also available free choice. Both groups were fed on calf starter and hay given *ad libitum* until slaughter. The lambs were assigned

at random to be slaughtered at 22.7, 31.8 and 40.8 kg (50, 70, 90 lbs) live weight. Two days before slaughter the following measurements were taken:

a.-weight of animal after overnight fasting;
b.-body length from the first thoracic to the last lumbar vertebrae;
c.-heart girth;
d.-circumference of the round, and
e.-age of the animal at slaughter.

After chilling for 48 hours the carcasses were weighed and the percentage of these to live weights represented the dressing percentage. The carcasses were split into three commercial wholesale cuts, leg, loin-rack and shoulder, each of which was weighed separately and their percentages to the total carcass weight were calculated. Fat thickness over the out side of the loineye at the 12^{th} rib was measured at each end of the loineye and halfway between these two points. A total of six fat thickness measurements were taken on each carcass, the average of the six measurements represented the fat cover over the 12^{th} rib. The area of both loineye muscles of the 12^{th} rib was measured using a planimeter on a tracing on acetate paper, the average of the two sides was calculated. The 12^{th} rib was separated into bone, fat and muscle and the percentages of these relative to the total weight were estimated. The loineye muscle was then ground and two samples were dried and used to estimate the fat content of the muscle by the ether extract method. The whole-sale cuts were further cut into retail cuts and sold to consumers.

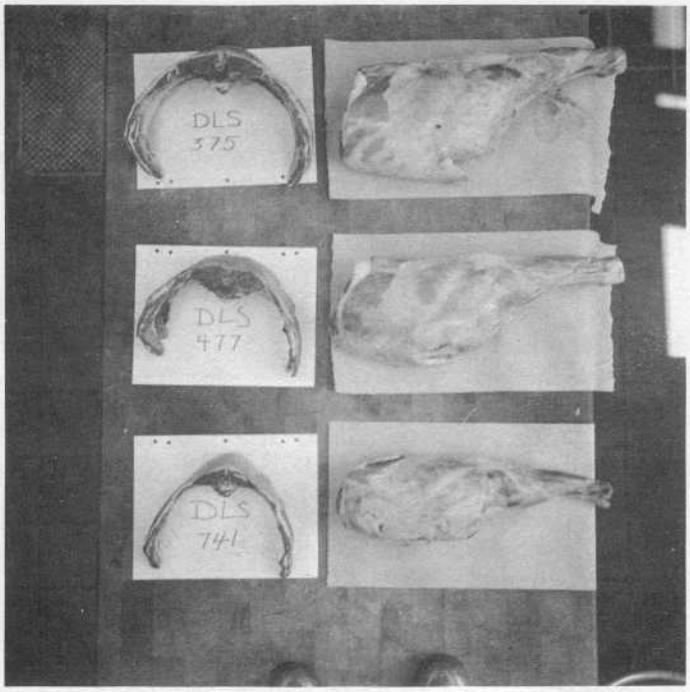
The data were analyzed statistically by the Least-squares method (Harvey 1960). Significant differences among subclasses were detected using t test.

Results and Discussion

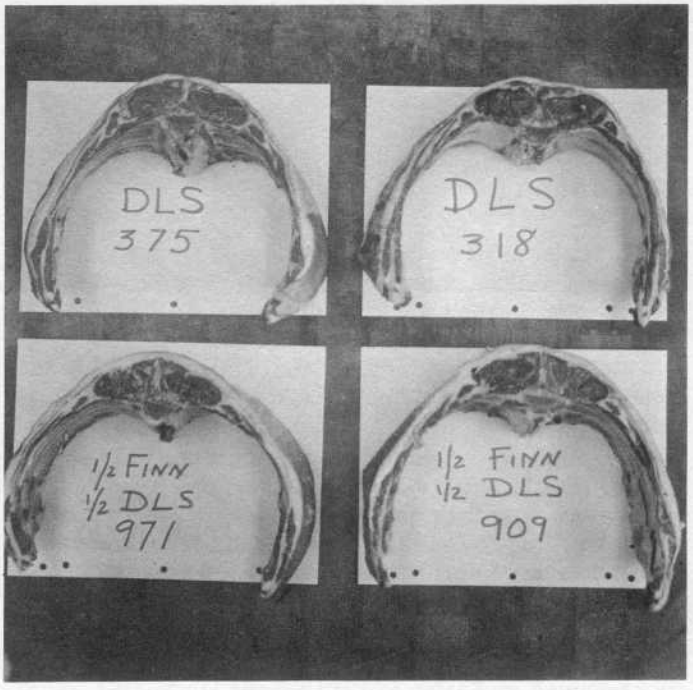
Age at slaughter of the DLS and 1/2Finn lambs at the three body weights is presented in Table 1. The DLS lambs reached the 23 kg slaughter weight in 128 days and required 22 and 51 days to reach the 32 and 41 kg slaughter weights respectively. The 1/2Finn lambs accrue the 9.6 kg live weight in 15 days and grew the 8.5 kg to 41 kg live weight in 25 days. The weight per day of age of both groups reflected an acceleration in the growth rate over the period of the study. Age at slaughter and live (or carcass) weight per day of age are two measurements of growth, and since the two genetic groups in the present study were raised under different management conditions, direct comparisons between the two groups is not valid. For the same reason comparing the results of this study with those reported in the literature should be considered only with caution.

Few studies reported on the performance of Finn crosses at slaughter and the author is not aware of any reported on the performance at different slaughter weights especially at lighter ones. Hohenboken (1977) working on lambs slaughtered at over 45 kg live weight showed that lambs with 50% Finn sheep inheritance were low in average daily gain and weight per day of age (averaged 271 g) as compared to those with Dorset and Cheviot inheritance. The increase in body measurements was higher between the 23 and 32 kg weights than between the 32 and 41 weights and was generally larger in the DLS lambs than in the 1/2Finn group (Table 1). It appears that the DLS and its cross with Finn sheep tend to have basically similar body characteristics.

Dressing-out percentage was very similar in the two genetic



12th rib and leg of lambs slaughtered at (from top to botton) 23, 32 and 41 kg liveweight.



12th rib of DLS and ½ Finn slaughtered at 32 and 41 kg liveweight.

groups and improved slightly (about 3%) with the increase in slaughter weight. The positive relationship between slaughter weight and dressing percentage has been reported by many workers. Hohenboken (1977) showed that for each kilogram increase in carcass weight, from .46 to .79% improvement in dressing percentage is expected. Thomas *et al.* (1976) slaughtered the lambs at either 45.5 or 56.8 kg live weight and found that dressing percentage improved by approximately 3 percentage points. Similar findings were also reported by Dickerson *et al.* (1973) who found that between 22 and 26 weeks of age, carcass weight increased by 4.9 kg and dressing percentage improved by 1.9%. Kemp *et al.* (1970) slaughtered lambs at 36.2, 44.7 or 54.3 kg live weights and reported dressing percentages of 47.8, 49.4 and 50.3% respectively. Lambuth *et al.* (1970) slaughtered at 38,1, 45.7 and 54.2 kg and reported dressing percentages of 49.2, 51.1 and 54.2% respectively. Bradford and Spurlock (1972) reported a positive regression coefficient of 1.15 for dressing percent on carcass weight. On the other hand Fahmy *et al.* (1972) reported that slaughter weight whether at 20 or 40 kg live weight had little effect (.22%) on dressing percentage. The dressing percentage of Finn crosses in the present study ranged from 43.2% at 22.7 kg to 46.8% at 40.8 kg live weight. These estimates were lower than most of the estimates reported for Finn crosses in the literature which are summarized in Table 2. The fact that the lambs

TABLE 1 - Means and standard deviations of the various traits for DLS and 1/2 Finn 1/2 DLS Lambs slaughtered at different weights

Breed group	DLS						1/2 Finn 1/2 DLS					
Weight at slaughter	22.7 ± 0.96		32.2 ± 1.48		40.7 ± 0.85		22.7 ± 0.58		32.3 ± 0.80		40.8 ± 0.68	
Number of lambs	8		8		8		8		8		8	
Age at slaughter (days)	128.4	17.0	150.6	12.6	179.1	17.7	125.2	15.9	140.1	13.2	165.8	8.1
Weight/day of age (g)	177		214		227		181		231		246	
Live measurements												
Body length (cm)	38.3	3.4	47.4	3.2	51.8	3.8	40.9	4.1	46.1	3.9	50.0	4.8
Heart girth (cm)	68.6	2.7	77.9	2.2	86.5	3.7	67.6	3.0	78.3	4.2	84.6	2.3
Circumference of round (cm)	24.3	4.5	34.7	2.1	36.2	5.8	28.2	5.5	28.2	4.4	34.9	6.1
Carcass measurements												
Dressing-out %	43.7	3.9	45.6	1.8	46.8	2.7	43.2	2.2	45.2	2.2	46.8	1.2
Percent whole-sale cuts												
Leg	34.8	0.62	34.6	0.84	34.2	0.70	34.5	0.62	34.6	0.74	32.7	1.01
Loin-rack	23.3	0.74	24.4	0.84	25.1	1.28	23.4	0.85	23.1	0.89	24.6	0.73
Shoulder	41.8	0.89	41.0	0.67	40.7	1.04	42.1	0.66	42.3	0.88	42.7	1.08
12th rib measurements												
Fat thickness (mm)	2.05	0.46	3.66	1.30	4.58	1.16	2.56	0.40	3.37	1.15	5.14	1.03
Loin eye area (cm^2)	8.4	1.4	10.5	1.8	13.3	0.9	7.7	0.9	10.6	1.0	11.9	1.5
Ether extract %	6.4	2.0	7.7	1.6	9.6	1.5	6.3	1.1	7.4	1.3	9.1	1.37
% Fat	25.2	7.3	34.2	6.8	35.8	3.1	30.8	4.5	34.0	6.6	41.8	4.7
% Bone	20.1	3.1	16.0	2.5	16.8	2.9	17.8	1.9	15.6	2.0	12.4	1.9
% Muscle	54.7	5.5	49.8	1.8	47.4	2.4	51.4	3.2	50.3	5.1	45.7	4.4

TABLE 2 - Carcass parameters for Finn crosses from the literature.

Genetic group	Slaughter Weight kg	Slaughter Age days	Dressing out %	% leg	Backfat Thickness cm	Loin-eye area cm^2	
50% Finn 50% Suffolk	43.7		45.3	32.4		10.65	Seale (unpublished data)
75 - 100% Finn	36.3		45.4	31.4		8.64	« «
50% Finn	38.2		44.4	31.8		8.84	« «
25% Finn 50% Suffolk	38.7		43.8	31.7		9.22	« «
25% Finn	44.4		51.4		.29		Dickerson 1977
25% Finn	47.7	217	50.6		.63		« «
50% Finn	50.0				.33	13.22	Boylan *et al.* 1976
75% Finn	50.0				.30	13.29	« «
25% Finn	50.0				.33	14.00	« «
50% Finn	49.3	103.4	48.3		.79		Hohenboken 1977
50% Finn	49.5	133.9	50.5		.49		« «
25% Finn	48.5	116.6	49.7		.54		« «

TABLE 3 - Phenotypic correlations among various live and carcass traits in lambs slaughtered at different weights.

	12th rib												
	Percent muscle	Percent bone	Percent fat	Ether extract	Loin eye area	Fat over 12th rib	Percent shoulder	Percent loin	Percent leg	Circum-ference of round	Heart girth	Body length	Live weight
Age at slaughter	-0.43**	-0.38**	0.47**	0.33**	0.61**	0.61**	-0.16	0.42**	-0.28	0.44**	0.76**	0.50**	0.74**
Live weight	-0.50**	-0.56**	0.60**	0.44**	0.83**	0.73**	-0.04	0.48**	-0.50**	0.60**	0.90**	0.71**	
Body length	-0.39**	-0.29*	0.40**	0.22	0.64**	0.60**	-0.16	0.58**	-0.47**	0.78**	0.62**		
Heart girth	-0.48**	-0.51**	0.57**	0.43**	0.80**	0.72**	0	0.36*	-0.42**	0.53**			
Circ. of round	-0.31*	-0.25	0.32*	0.41**	0.57**	0.47**	-0.06	0.42**	-0.41**				
Percent leg	-0.42**	0.38**	-0.46**	-0.23	-0.24	-0.56**	-0.50**	-0.32*					
Percent loin	-0.40**	-0.32*	0.42**	0.33*	0.51**	0.62**	-0.66**						
Percent shoulder	0.03	-0.01	-0.02	-0.12	-0.27	-0.12							
Fat over 12th rib	-0.68**	-0.53**	0.71**	0.45**	0.57**								
Loin eye area	-0.28*	-0.37*	0.36*	0.46**									
Ether extract	-0.52**	-0.44**	0.56**										
Percent fat	-0.92**	-0.80**											
Percent bone	0.50**												

were raised artificially from day 14 may have had an effect on the deposition of fat.

The increase in slaughter weight resulted in a slight decrease in the percent leg and shoulder and an increase in the percent loin-rack cuts of the carcass. In the 1/2Finn lambs both percent loin-rack and shoulder increased while the percent leg significantly decreased with the increase in slaughter weight from 32 to 41 kg.

In both genetic groups fat thickness over the 12th rib, area of loin eye muscle and ether extract of the 12th rib *longissimus dorsi* increased with the increase in slaughter weight (Table 1). At the two lighter weights the means for the two groups were very similar, at 40.7 kg slaughter weight the 1/2Finn lambs had a markedly thicker fat cover and smaller loineye area as compared to the DLS lambs.

As slaughter weight increased the percent fat in the 12th rib increased while that of bone and muscle decreased, the increase in fat percent was more noticeable in the 1/2Finn accounting for 42%.

The relations between age and weight at slaughter and the different traits studied are presented in Table 3. The correlations were negative with percent muscle and bone in the 12th rib, and percent shoulder and leg in the carcass though these latter correlations were generally small and non-significant. The correlations between live body measurements and the different carcass traits followed the same pattern of that of live weight. Body length was more strongly correlated with the percent of whole cuts whereas heart girth was more strongly correlated with the 12th rib characteristics.

Of the three whole-sale cuts percentages, shoulder was the cut least correlated with the other live and carcass measurements. Loineye area and fat thickness over the 12th rib were highly correlated with live weight (.83 and .73) and heart girth (.80 and .72 respectively).

Judging from the present results and from the general acceptance of the cuts by the consumers it may be concluded that the carcass of Finn cross with DLS was not inferior to that of pure DLS and it compares fairly well with the carcass of the domestic breeds presently available in Canada.

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