Awassi lamb performance in New Zealand quarantine

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ABSTRACT

Liveweight gain, wool weight, wool characteristics, age of onset of oestrus and animal health data were recorded for purebred Awassi (n=37) and Coopworth (n=40) lambs in quarantine from birth to six months of age.

No significant differences, between the Awassi and Coopworth lambs were recorded in: birth weight, liveweight gain (birth to weaning), and liveweight gain (weaning to 6 months). A trend for the Coopworths to have greater liveweight gains was noted. Significantly less wool was clipped from Awassi lambs (0.83 ± 0.06kg) than Coopworth lambs (1.46 ± 0.06kg). In comparison with the Coopworth, Awassi wool was coarser (31 v 35 μ), higher yielding (74% vs 82%), more yellow (Y-Z: 1.8 vs 4.2), of similar bulk, longer in the staple (72 vs 106mm) and more tender (57 vs 39 N/ktex). The teaser ram marked 94% of the Coopworth ewe lambs, but no Awassi's. The faecal egg counts of the Awassi lambs were lower ($p<0.05$) than the Coopworth's.

Keywords: Awassi, growth rates, puberty, diseases.

INTRODUCTION

The Awassi sheep breed is the most numerous and widespread type of sheep in South West Asia (Epstein 1985). The Awassi has productive attributes that are novel to the traditional New Zealand agricultural system. Average lactation yields range from 100-185 kg in Turkey and up to 500 kg in Israel. The fat-tail of the Awassi can account for 5 - 25 % of the total liveweight (Epstein 1985) and acts as a store of fat for the animals, resulting in a lean carcass.

The Awassi is a long wool sheep with an open and moderately lustrous fleece with distinct wide crimps. The fleece consists of an outer coat, undercoat and kemp and is characterised by brown to black coloration (Hatcher 1991).

The aim of this work was to measure the liveweight gain, wool growth and characteristics, age of onset of oestrus and animal health of Awassi lambs in the first 6 months of life in comparison to the Coopworth, a conventional New Zealand sheep breed.

MATERIALS AND METHODS

Animals

Thirty six Coopworth ewes, implanted with Awassi embryos, lambed in a specially designated 105 hectare quarantine station at Flock House Agricultural Centre from October 2 to 10, 1991.

Thirty three Coopworth ewes, mated in May to Coopworth rams, were selected from a larger mob by ultrasound scanning for ewes that would lamb in early October 1991.

The Coopworth ewes carrying the Awassi lambs, lambed indoors under 24 hour supervision. Thirty seven live Awassi lambs, (18 ewes and 19 rams) were born. Forty Coopworth lambs, (18 ewes and 22 rams) born outdoors between October 1 and 15, were used for comparison.

Management

All the ewes and lambs were housed nightly until 1 week of age. After this they were paddocked outdoors with shelter available. Four weeks after lambing both mobs of ewes and lambs were combined and run together. The lambs were weaned at 10 weeks of age and rams and ewes separated. All the lambs were shorn on February 12, 1992 aged 19 weeks.

Half of the ewe lambs from each breed were docked with a searing iron and half with rubber rings from 3 days of age. None of the ram lambs were docked. Concentrates were fed to the ewes at a rate of 500g/ewe/day beginning at lambing. Starter rations were creep fed to all the lambs from 2 weeks of age and from 10 weeks of age the lambs were fed ryegrass and white clover pastures and up to 400gms of concentrates per head. This ration increased to 600 gms per day by 20 weeks of age.

A harnessed vasectomised ram was run with the Coopworth and Awassi ewe lambs from the 1st of April until the end of May 1992. The colour of the crayon in the harness was changed every 2 weeks.

The lambs were orally dosed with an anthelmintic once before weaning, then monthly afterwards. All lambs were give an oral dose of vitamin B1 (J and H vitamin B1 powder, Jones and Hoskyns Ltd) at 6 weeks of age, thereafter 6 weekly to prevent polioencepahalomalacia. Lambs were vaccinated with a multiple strain clostridial vaccine at 12 and 16 weeks. Sodium selenate was applied as fertiliser to the whole quarantine unit at a rate of 1 kg/ha in November 1991.

The lambs were weighed at birth and then fortnightly until June 1992. The ram lambs were only weighed until 29 April 1992, when the breeds were split and the Awassis' trained for semen collection.

At shearing all the coloured wool was seperated from the Awassi fleece and weighed separately. Bulk samples of the white Awassi fleece were sent to the New Zealand Wool

Testing Authority to measure yield, fibre diameter, colour, bulk, length and strength.

From the 1st of April 1992 the ewe lambs were checked fortnightly for any tup marks.

Faecal samples were taken prior to the next drench from 10 lambs of each breed to assess the efficacy of the drenching programme. Bi-monthly blood samples were taken and analysed for copper, cobalt and selenium status.

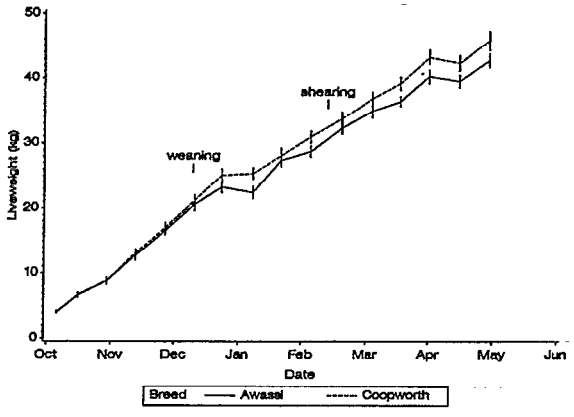
Statistical analysis

Least squared means and standard errors of liveweight, liveweight gain and fleeceweight were calculated. Faecal egg count data was normalised by square root transformation prior to analysis. The data was analysed using the general linear models procedure of the SAS statistical computer programme (Statistical Analysis System Institute, 1987). The effects fitted were breed and sex and their interaction. Due to the narrow lambing period age effects were not significant.

RESULTS

There were no significant differences between breeds for liveweight or liveweight gain (Table 1), although the Coopworth lambs tended to have a greater liveweight gain (Figures 1 and 2).

FIGURE 1: Liveweight gain of Coopworth and Awassi ewe lambs grazed together from October 1991 to May 1992



Awassi lambs produced lighter fleeces ($p<0.001$) than Coopworth lambs (Table 2). The Awassi wool was 4 microns coarser, 34 mm longer, and 18 N/ktex weaker than the Coopworth wool (Table 3). The fleeces contained 5 % kemp fibres, 3 % fully medulated fibres and 4 % partially medullated fibres. The fibre diameter (mean ± SE) of the different fibres

FIGURE 2: Liveweight gain of Coopworth and Awassi ram lambs grazed together from October 1991 to May 1992

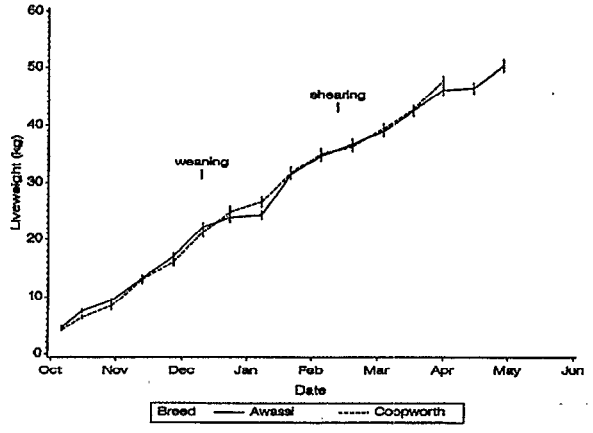


TABLE 2: Wool weights (mean ± SE) from Coopworth and Awassi lambs shorn at 19 weeks of age

Breed	Coopworth		Awassi	
Sex	ram	ewe	ram	ewe
Wool weight (kg)	1.43 ± 0.05	1.49 ± 0.06	0.84 ± 0.06	0.82 ± 0.06

TABLE 3: Lamb fleece characteristics for Awassi and Coopworth lambs at 19 weeks of age

	Coopworth	Awassi
Mean fibre diameter (microns)	30.8	35.0
Yield (%)	74.2	81.6
Colour		
X	63.9	57.7
Y	65.5	59.2
Z	63.7	55.0
Y-Z	1.8	4.2
Vegetable matter base	0.3	0.0
Bulk (cm^3/gm)	23	22
Mean staple length (mm)	72	106
Mean staple strength (Nt/ktex)	57	39
Position of break (%)		
Tip	90	79
Middle	10	16
Base	0	5

was; kemp 110 ± 1.1 μm, medullated 73.4 ± 0.9, partially medullated 64.8 ± 1.3. 95% of the Awassi lambs had coloured wool in their fleece. The proportion of coloured wool in the

TABLE 1: Birth weight, weaning weight, 6 month liveweight and liveweight gain (LWG) (mean ± SE) of Coopworth and Awassi lambs

Breed	Coopworth		Awassi	
Sex	ram	ewe	ram	ewe
birth weight (kg)	4.24 ± 0.21	4.17 ± 0.19	4.66 ± 0.24	4.24 ± 0.24
weaning weight (kg)	21.34 ± 0.93	21.14 ± 0.92	22.27 ± 0.77	20.59 ± 1.02
6 month weight (kg)	47.81 ± 0.72	43.21 ± 1.08	46.18 ± 1.06	40.18 ± 1.07
LWG birth-wean (gms/d)	288 ± 46	274 ± 30	266 ± 36	248 ± 25
LWG wean-6mths (gms/d)	237 ± 40	201 ± 36	209 ± 57	188 ± 50

fleece varied from 0 to 27% of the total fleece weight.

Two weeks after the teaser ram was introduced, 61% of the Coopworth ewe lambs had tup marks, after 4 weeks 77% were marked and after 6 weeks, 94%. No Awassi ewe lambs were marked.

Generally the Awassi lambs had less ($p<0.05$) nematode eggs (0, 30 and 50 epg) in their faecal samples than the Coopworth lambs (120, 140 and 10 epg). Blood selenium, copper and cobalt values were all in the normal range with no difference between breeds and no treatment was required.

DISCUSSION

The Awassi lambs grew at the same rate as the Coopworth when fed identical rations. Visually the Awassis appeared taller, longer and leaner than the Coopworths with a distinctive fat tail. The Coopworth lambs appeared in extremely good condition. The liveweight gain of the lambs averaged 200gm/day throughout the trial period; a high growth rate compared to pasture fed lambs in New Zealand (Rattray *et al.* 1987). There were some notable dips in liveweight gain during January when enzootic pneumonia affected all the lambs and interdigital dermatitis (scald) affected the Awassis. Both conditions resolved rapidly once treated. Interdigital dermatitis was an ongoing problem in the Awassi's requiring regular footbathing with zinc sulphate.

The wool has obvious differences; the Awassi has a mostly coloured, high yielding, medium strength, coarse, hairy fleece. The average fleece weight of Awassi ewes is about 2 kg (Aziz 1990). The fleeceweight of the Awassi lambs was about 60% of the Coopworth lambs and contained up to 27% coloured wool lessening the amount of useable white fleece. The wool from the Coopworth lambs in this trial was considerably stronger (57 N/ktex) than the Awassi lambs under the same environmental and feed conditions. Insufficient data were collected in this experiment to explain the difference. The wool strength of the Awassi (39 N/ktex) is suitable for most processing systems (Hunter 1987), but the wool strength of the Awassi wool needs to be evaluated under less favourable feeding conditions, as the wool from the Coopworth lambs in this experiment was stronger (57 N/ktex) than would normally be found under New Zealand grazing conditions (Newman and Paterson 1991).

The white fleece of the Awassi was duller (Y 59.2), and yellower in colour (Y-Z 4.8) than the Coopworth. The colour of raw wool in one of the most important fibre characteristics influencing the performance and price of wool. The intrinsic colour of wool limits the range of shades the yarn may be dyed and hence has a strong influence on the flexibility of end use (Andrews *et al* 1988).

The coarse fibre diameter, yellow colour, and proportion of coloured fibres in the fleece may limit the usefulness of Awassi wool.

At the same liveweight almost all the Coopworth ewe lambs showed oestrus and were marked by the teaser whereas no Awassi ewe lambs were marked. The Awassi ewe is reported to reach puberty around 9-10 months of age at a minimum liveweight of 50 kg (Epstein 1985).

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