PROGENY TESTING FOR MILK YIELD IN TURKISH AWASSI SHEEP

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SUMMARY

A total of 89 Awassi rams were progeny tested on 10.870 yearling ewes between 1992 and 1996. Since 1995 three groups of tested rams have been obtained and used for planned matings with top producing ewes of the nucleus flock. Within the last 5 years lambing percentage from intraviginal AI using 0.2 ml fresh semen has been 80.4%. Average milked yield per ewe increased from 66.9 kg in 1990 to 152.3 kg in 1997, presumably due to the routine screening of the population, the ongoing genetic selection programme as well as the outcrossing effect of the Israeli Awassis introduced to the population in 1977 and 1992.

Keywords: Awassi sheep, lactation, progeny testing.

INTRODUCTION

Awassi, as the local fat-tailed breed of the Middle East, is a dairy sheep with unique physiological characteristics. It is resistant to many diseases and parasites, can walk long distances for grazing, has tolerance to extreme temperatures and can endure adverse feeding conditions. It easily adapts to different environments and performs as well as in its native habitat (Galal and Gürsoy 1994). Due to its high milk producing potential under harsh conditions the Awassi breed can be utilized as a sire breed in improving milk production of many indigenous Asiatic and African breeds.

MATERIALS AND METHODS

This paper reports results from work that is being conducted on the Ceylanpinar State Farm, occupying 170.000 ha in south-eastern Turkey. The farm possesses a unique Awassi population of about 65.000 animals. Between 1953-1990 the total lactation yield increase was about 40 kg; this figure includes improvements due to management and nutrition as well as genetics. Starting in 1992 a selection programme, based on progeny testing, was initiated but the milk, growth and reproduction data obtained from the project has not been evaluated yet for assessing the genetic gains. The wide variation found in milk production in the population led to the idea of open nucleus breeding scheme (James, 1977). Due to the high cost and unavailability of funds for screening the producers' flocks and buying exceptional ewes on an annual basis, breeding plans were modified to a version of a closed nucleus breeding system. This paper attempts to outline the ongoing project with some preliminary results.

The material for the study naturally consists of all the animals on the farm, managed in 10 groups. One of the groups is the nucleus which provides the breeding stock to the other groups.

In 1991 five Awassi rams were imported from Israel in order to test them, along with the Ceylanpinar rams.

Screening of the flocks. Since 1986, at the peak of the lactation (March 15-April 10), all the first and second lactation ewes (about 10.000) are screened regularly and those producing over 1.5 kg at morning milking are marked (500-600) and transferred to the pre-nucleus flock. They are properly recorded the next year and the outstanding ewes are then accepted into the nucleus flock. In 1987 about 400 of the producers' flocks in the provinces along the Syrian border were screened for high milkers and 50 'exceptional' ewes were purchased and included in the population. They were compared with the high yielding ewes of the nucleus flock and a randomly selected group of other ewes (Gürsoy et al., 1992).

Management. At mating, in July 1997, the composition of the population was 22.000 ewes, 2.200 rams, 9.000 female and 2.700 male yearlings (7-8 months). Starting in June sheep graze lentil and wheat stubble until mid November without any supplementation. Then the pregnant ewes are supplemented with about 5-600g/day of wheat screenings, lentil hulls, cracked lentils, corn, lentil straw, alfalfa and some corn silage. Supplementation is increased to 1-1.5 kg towards the end of pregnancy. Lambing is completed by the end of January, and rangeland grazing is avaliable from the second half of February onwards. Hence supplementation is reduced to approximately to 0.5 kg and finally stopped mid April.

The new born lambs are allowed to stay with their mothers for three days only and then allowed to suckle twice a day until weaning. The lambs are offered ground concentrate and good quality alfalfa from the first week until weaning at the age of 60 days. After weaning they are kept in a feedlot until they reach 40-45 kg liveweight, which normally takes about 75-90 days.

Ewes are hand milked once a day from the first week and are milked twice daily from the beginning of February until the June 20th, and milked once a day for another 15-20 days. All the flocks are joined with rams for natural mating in mid-July, which lasts for 45 days, with the exception of the nucleus, pre-nucleus and the progeny testing flocks, which are mated by AI.

Artificial Insemination. The rams are trained for collecting semen using an artificial vagina and the semen are examined 10 days prior to mating, which normally starts in the second half of July. A maximum of two daily ejaculates are collected per ram, depending on the number of ewes in heat daily. Rams are flushed with 2 kg of a concentrate mixture and alfalfa hay is fed *ad-libitum*. Oestrus detection is performed by marker rams, either vasectomized or carefully apronned during detection. Those females showing standing heat in the morning (between 5-7 am) are penned inseminated in the evening (between 5-7 pm), those detected in the evening are inseminated the following morning. Inseminations are made vaginally using 0.2 ml fresh semen. The results of AI are evaluated according to lambing data.

Starting in 1995 only yearlings and the F_1 and B_1 yearlings of the Isreali rams have been used as candidates. All rams are randomly mated to yearlings (18 months of age). The tested rams (3-4

best) are used for planned matings with the highest producing ewes in order to get genetically superior candidate rams for testing. Figure 1 outlines the selection programme implemented at the Ceylanpinar State Farm.

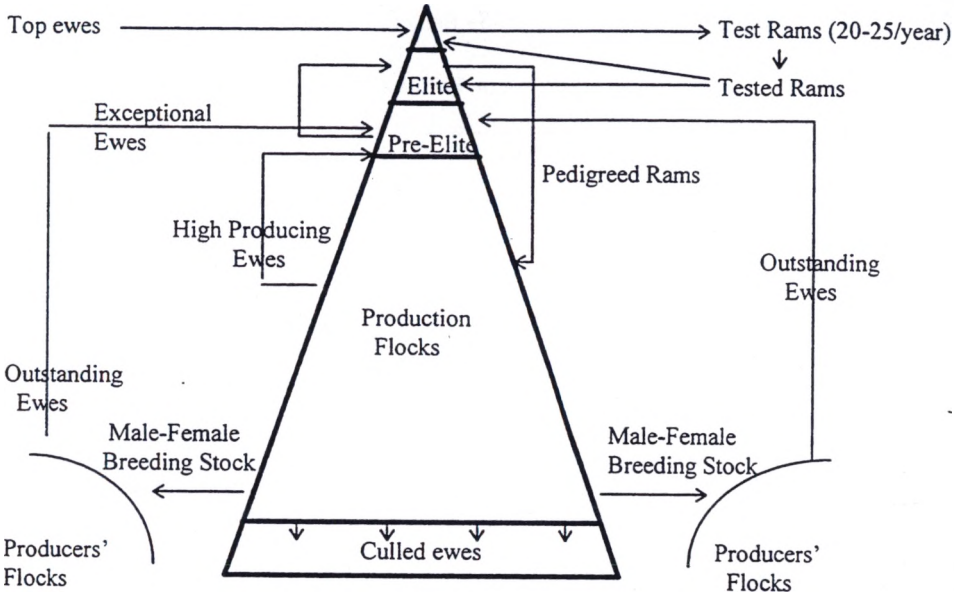

Figure 1 Breeding structure of the Ceylanpinar Awassi flock (NB The elite ewes form the nucleus flock)

RESULTS AND DISCUSSION

Screening of the producers' and Ceylanpinar population. The result of the screening study showed that in the Ceylanpinar population lactation yield varied from 97.5 - 469.2 kg and the top Ceylanpinar ewes produced considerably more milk than the producers' top ewes (Table 1).

Table 1. Comparison of producers' exceptional ewes with the Ceylanpinar ewes.

	PEE	CEE87	CEE88	Control
Lact. length (days)	192^{a}	197^{a}	202^{a}	187^{a}
Lact. yield (kg)	231^{c}	267^{b}	315^{a}	223^{c}
Mean max. indiv. daily milk (kg)	2.15^{c}	2.46^{b}	2.61^{a}	2.10^{c}

PEE: Producers' exeptional ewes; CEE87: Ceylanpinar exceptional ewes from 1987 screening; CEE88: Ceylanpinar exceptional ewes from 1988 screening; Control: Randomly selected ewes; Means with the same superscripts were not significantly different.

The similarity between PEE and Control was not unexpected because the producers were buying their rams and female breeding stock fron Ceylanpinar.

Progeny testing. Table 2 shows the number of rams tested, ewes inseminated and the lambing % due to AI between 1992 and 1996. A total of 89 rams were tested in 5 years.

Table 2. Summary of Progeny testing between 1992 and 1996.

Years	Rams Tested	Ewes Inseminated	Ewes Lambed	Lambs Born
	n	n	%	n
1992-93	21	3050	60.5	1939
1993-94	*17	2206	74.7	1737
1994-95	*18	2271	81.6	1996
1995-96	13	1058	87.1	1034
1996-97	20	2285	81.1	2028
Total	89	10870	80.35	8734

* 4 Israeli rams tested but excluded from these figures.

The percentage of ewes lambing, obtained using 0.2 ml fresh semen intravaginally, was high, with the exception of the first year which was due to the lack of experience in large scale insemination in the field.

It is too early to estimate the genetic gains due to the progeny testing programme but the changes in milk yield on the whole farm are shown in Table 3, along with the numbers of animals disseminated to local farmers. The milked yield has risen from an average of 66.9 kg/ewe in 1990 to 152.3 kg/ewe in 1997.

Table 3. Milk yield per ewe and the dissemination of breeding stock.

	1990	1991	1992	1993	1994	1995	1996	1997
Ewes milked (000)	23.3	17.9	15.5	12.1	14.4	13.0	12.5	13.0
Milked yield/ewe (kg)	66.9	81.3	90.1	133.6	118.3	136.0	141.5	152.3
Males disseminated	1026	524	391	384	239	2512	177	NA
Females disseminated	5285	1940	3134	3498	7502	2260	2499	NA

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