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## Breeding aims to develop sheep milk production

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**SUMMARY** - The Awassi Corporation imported 450 Awassi sheep from Israel in 1989-1990 to create a nucleus flock of a high yielding dairy sheep in Hungary. Based on this breed a three level (extensive, semi-intensive, intensive) production system was developed using the local Merino, Cigája and Racka breeds to find the best utilisation of their poor quality lands. On the basis of the experiences, an extensive dairy sheep farm integration model was developed, organizing the breeding, technology and product marketing for the region.

**Key words:** Awassi sheep, breeding goals, protecting environment, production system.

**RESUME** - "L'amélioration génétique en vue de développer la production de lait chez les brebis". La corporation Awassi a importé 450 animaux Awassi en provenance d'Israël en 1989-1990 afin de créer un noyau de brebis à haut rendement laitier en Hongrie. En se basant sur cette race, un système de production à trois niveaux (extensif, semi-intensif, intensif) a été mis sur pied en utilisant les races locales Mérinos, Cigája et Racka, afin de valoriser au mieux leurs terres marginales. En partant de ces expériences, on a mis au point un modèle d'intégration pour les exploitations extensives de brebis laitières, qui organise l'amélioration génétique, la technologie et le marketing des produits pour cette région.

**Mots-clés** : Ovins Awassi, objectifs de l'amélioration génétique, protection de l'environnement, système de production.

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### Introduction

The Awassi Corporation is a privately owned company specialized in increasing the yields of sheep products. The company manufactures sheep cheese, wool textiles, processes mutton and lamb meat on a contractual basis in two meat processing plants, and is now beginning to make available ram semen and embryos from its genetic laboratory located on the farm. A procedure for processing sheep meat was licensed by the Hungarian authorities. The owners of the Corporation are sheep farmers as well. A part of the sheep farms is situated on a landscape-protection area. The utilisation of this land by sheep is very advantageous for protection of the environment.

Because of low-quality alkaline soils and traditions of animal breeding, sheep farming is very common in this east region of Hungary.

In our paper we introduce the multi level breeding system and the extensive dairy farm integration model developed for the Corporation and for the farms of the region.

## Develop of production system

In 1989 the precursor Awassi Corporation imported 450 Awassi sheep with high milking ability from Israel. The first aim of the programme was to increase the number of animals, so the traditional sheep keeping system was used as the starting point.

After the political and economical changes in Hungary the large scale agricultural farms were reorganized (some of them went bankrupt) and the main part of the sheep stock was transferred to the private property. In 1990 a private farm was established. In 1992 some 15 sheep-barns suitable for 250 heads were built and stocked and furnished with ALFA-LAVAL milking system, milk cooling and storing equipments, etc.

On the bases of these investments the Corporation developed a three level production system in order to spread the genetic material of Awassi sheep around the region and to have better possibility to utilize the available land:

(i) The extensive system. The ancient native Racka ewes were mated to Awassi rams to create a new genotype which has the ability to resist against the environmental effects, tolerates the harsh conditions and yet gives an increased quantity of milk. The requested level of milk yield is between 80-100 litres.

(ii) The semi-intensive system. Cigája and Merino ewes were mated to Awassi rams to develop a better milk producer than the Racka crossbreds. The F1 female progenies here are divided into subgroups. Those ones yielding less than 100 litres of milk will be utilized for meat production topped by Suffolk or Dorset rams. The others, especially the ones with the milk production above 120 litres are backcrossed by Awassi rams to get R1 progenies. The R1 ewes have to produce 170 litres of milk during the 150 days of lactation. The ewes are kept on semi intensive nutritional level in this system.

(iii) The intensive system. The imported Awassi and their pure bred progenies born in Hungary are in this level of production. A serious nucleus breeding programme is going on in the flock, where the top 10% of the ewes are functioning as the nucleus. The minimum level of milk yield is 400 litres in the nucleus, the average milk production is between 300-400 litres within the whole Awassi flock. Of course, these ewes are intensively looked after and received the best feed available.

The milk production of the ewes belonging to the three production levels is controlled four weekly, twice a day between 1<sup>st</sup> April and 1<sup>st</sup> September. The lambs are weaned at around 25-30 days of age in the intensive system and a couple days later in the other ones.

The average milk yield of the F1, R1 and pure bred Awassi ewes were 122.3 - 168.9 - 314.4 litres, respectively. The average maximum production data were 1.08 - 1.31 - 2.6 litres in the same order.

The lactation curves of the F1, R1 and pure bred Awassi ewes are shown in Figs 1, 2 and 3 respectively.

The questions to be discussed and answered are as follows:

(i) Is it economical to have such a long suckling period?

(ii) Would it be worthwhile to use milk replaced?

(iii) If yes, what is the best time to start with it?

(iv) This crossbreeding has the benefit of 48 litres of extra milk in the F1 and 45 litres in the R1 populations. Could we increase these results improving the feeding system?

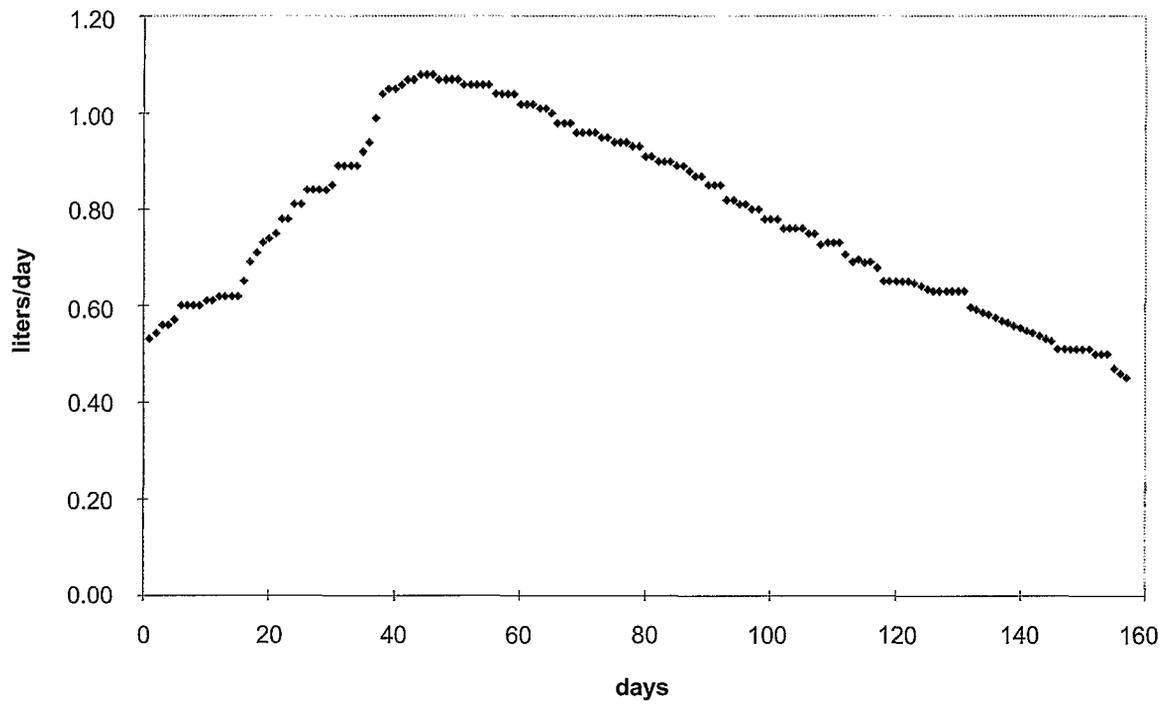


Fig. 1. Lactation curve of F1 Awassi ewes.

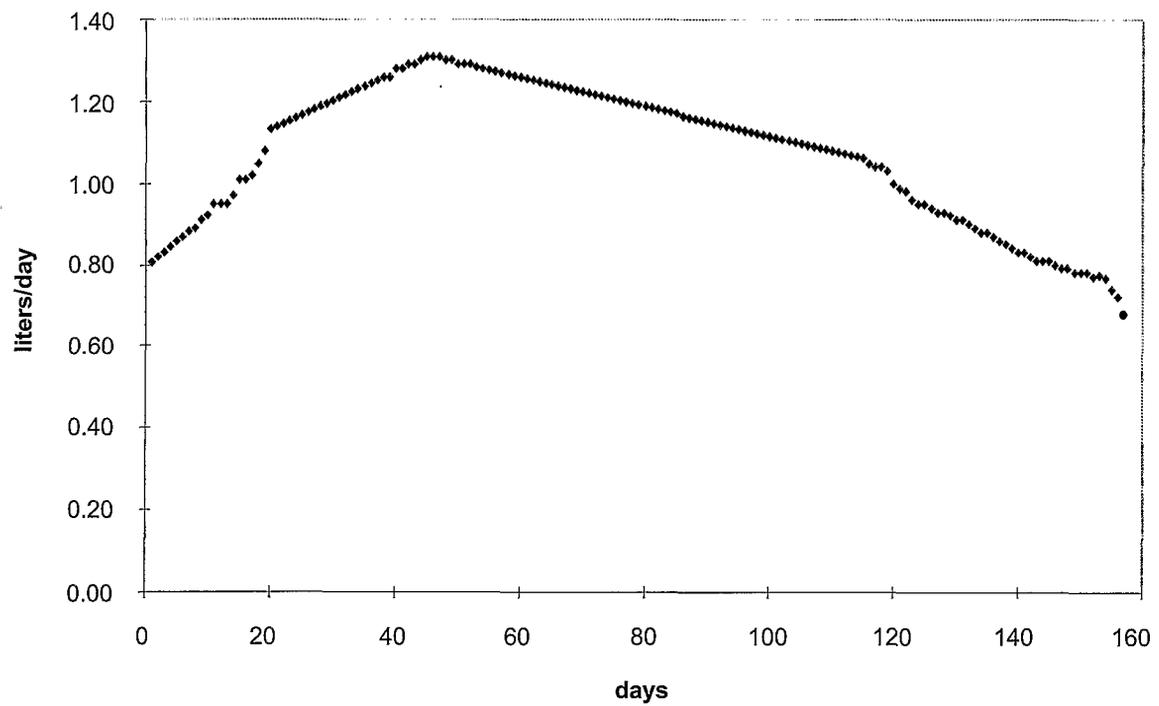


Fig. 2. Lactation curve of R1 Awassi ewes.

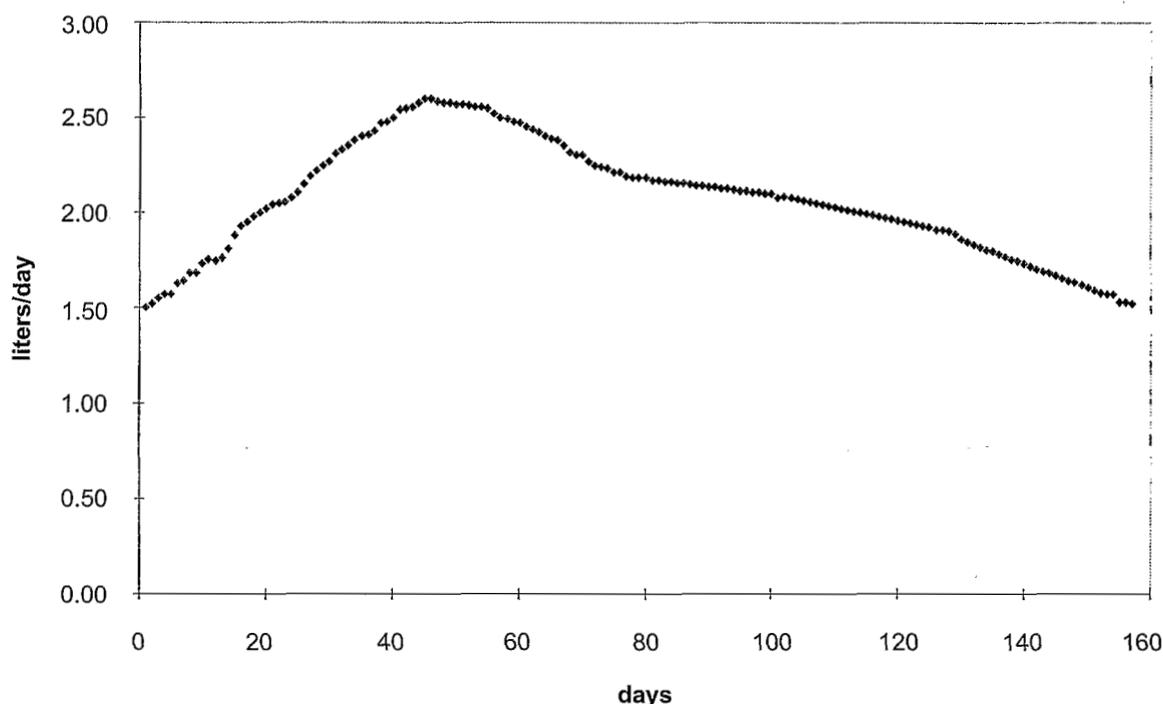


Fig. 3. Lactation curve of pure bred Awassi ewes.

## The integration model

For extensive sheep production, the "Extensive dairy sheep farms integration model" has been developed by Awassi Corporation. The sheep breeding could continue in those neglected lands and on landscape-protection areas to some extent, which have not yet been utilized. That is why this project is a special sort of practical realization of the harmonious relationship between man and environment.

The essence of the integration model is that 200 Awassi x Racka sheep are allocated to those farmers who have their own pasture and at least one tractor. This number of sheep is enough for covering the living costs of a four-member family.

So the Corporation gives the animals, the milking system, the technology of keeping sheep, the reproductive biology services, the technology of pre-processing sheep milk and checks the incoming data continuously. The pre-processed milk is collected to the cheese plant from where the cheese is exported after the necessary ripening time.

The incoming data are computerised with the application of Total Quality Management/TQM/ model. The quality assurance and control system of TQM model relates to education, output, technology and sale.

The data collection system is complex covering the animal labeling, member recording and farm information. The model and network system (e.g., individual animal labeling) is being now developed. The incoming data are analysed, evaluated and appraised daily and required advice could be supplied.

The quality control system consists of two parts: (i) laboratory and (ii) computerised analyses.

The forage and products (e.g., milk and meat) data of the members of integration will be analyzed by the application of MSIS decision support system and the required evaluation and advice will be given. Then the required advice could be supplied as well.

The system of the project based on 2000 Racka females and their progenies is shown in Fig. 4 .

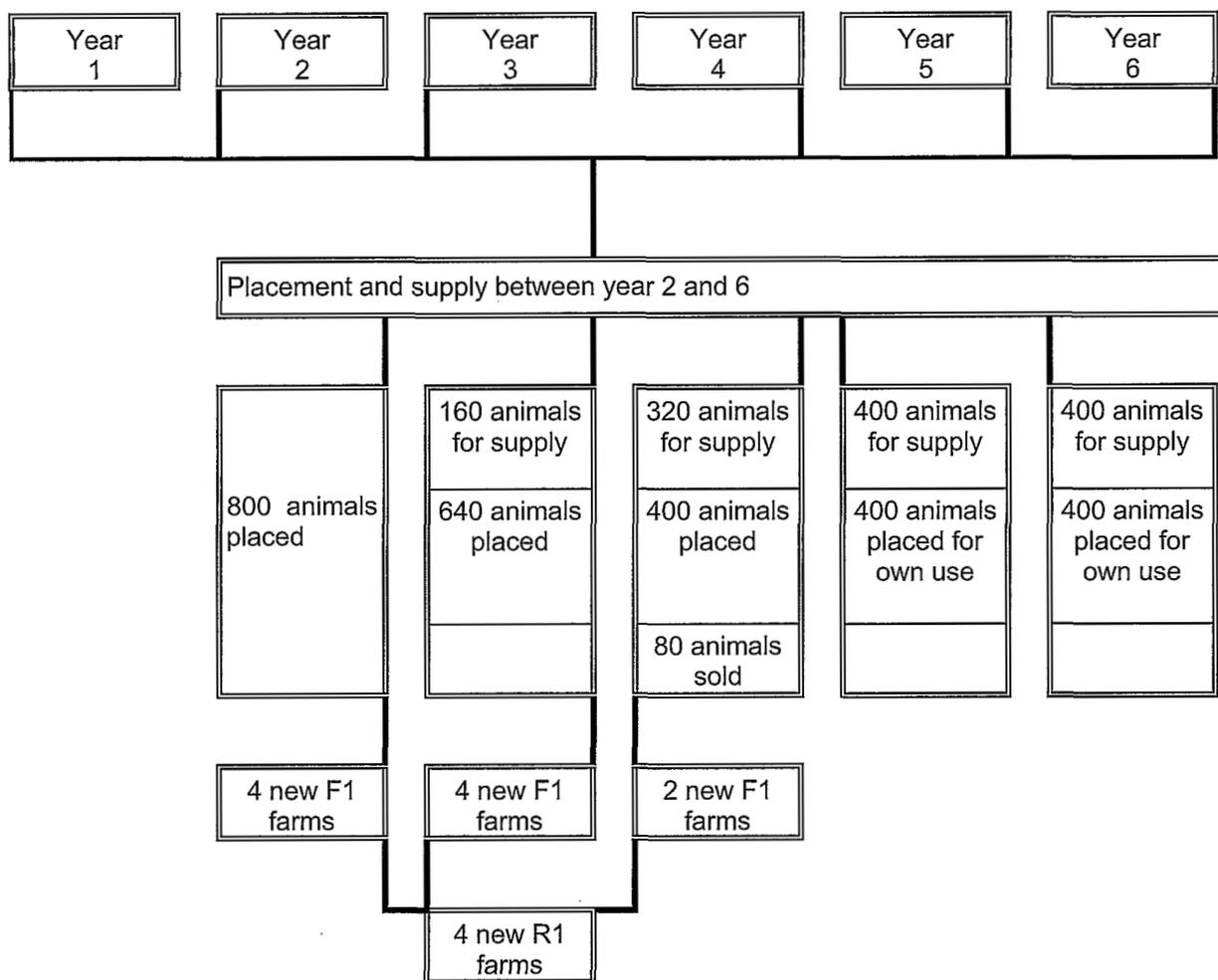


Fig. 4. The integration model.

### Conclusion

After six years of experiences the Awassi sheep could be classified as the one which adapted to the Hungarian circumstances. As the results of crossbreeding, the milk production ability of native breeds could be increased by a very reasonable amount of milk.

Using different kinds of genotypes a three level productions system -or three production systems- could be developed and utilized within the given circumstances on mainly poor lands.

Adapting this three level production system a sheep farms integration model can be created and used for better utilization of the sheep and the lands in the given region.