

THE CURRENT SITUATION IN RABBIT PRODUCTION IN HUNGARY

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ABSTRACT: At present slaughter rabbit production in Hungary is 6 651 tonnes - less than half of that achieved in the peak years of 1982 and 1991. In 1998 live rabbit production amounted to a total of 13 903 tonnes. This production is exported in its entirety; there is practically no rabbit meat on the domestic market. Previously approx. 90% of rabbits slaughtered were sold to Italy. At present Italy accounts for 65-70% of Hungarian rabbit exports and Switzerland for 20-25%. The export of live rabbits practically ceased in 1986. In 1998 export shipments comprised 68% whole carcasses and 32% meat products. The majority of Hungarian rabbit abattoirs are now under foreign ownership or involve foreign partners. The abattoirs work on

a one-shift system, at 50% of their shift capacity. Previously 95-98% of rabbits for slaughter were produced on small farms with 5-15 does. Now two abattoirs operate large-scale farms with 10,000 does, and there are approximately 60-70 medium-sized farms with between 100 and 3,000 does; 26% of meat rabbit purchases now originate from commercial production farms.

Angora rabbit production reached its peak in 1988. With an annual output of 190 tonnes of Angora wool, Hungary was then the largest exporter in Europe. The dramatic drop in wool prices has forced production down to a sales level of approximately one tonne per year.

RÉSUMÉ : Actuelle situation de l'élevage du lapin en Hongrie

La production de lapins de chair aujourd'hui en Hongrie, est de 6 651 tonnes c'est à dire inférieure à la moitié de celle atteinte durant les meilleures années, entre 1982 à 1991. En 1998, la production de lapins vivants atteint 13 903 tonnes. La totalité de la production est exportée ; il n'y a presque pas de viande de lapin disponible sur le marché national, ce qui est spécifique à la Hongrie. Auparavant environ 90% des lapins abattus étaient vendus à l'Italie. Aujourd'hui l'Italie importe environ 65-70% et la Suisse 20 à 25 % des lapins hongrois. L'exportation de lapins vivants a pratiquement cessé en 1986. En 1998 les exportations comprennent 68 % de carcasses entières et 32 % de découpes. Aujourd'hui, la majorité des abattoirs de lapins hongrois appartiennent à des étrangers ou comprennent

des partenaires étrangers. Les abattoirs fonctionnent, avec une seule équipe travaillant de jour, à 50 % de leur capacité de nominale (deux équipes). Auparavant 95 à 98 % des lapins de chair étaient produits dans de petites unités ayant 5 à 15 mères. Maintenant, deux abattoirs gèrent des élevages industriels de 10 000 mères, et il y a environ 60 à 70 élevages moyens ayant entre 100 et 3 000 mères ; actuellement, 26 % des lapins de chair proviennent d'élevages industriels. La production de lapin angora a atteint un pic en 1988. Avec une production annuelle de 190 tonnes de poil angora, la Hongrie était le principal exportateur européen. La chute dramatique des cours du poil a réduit la production à un niveau approximatif de 1 tonne par an.

MEAT RABBITS

Rabbit breeding has a long tradition in Hungary. In the past, however, rabbits were produced for family consumption or for the local market. A specific feature of the rabbit industry today is that practically the entire quantity purchased is destined for export. Domestic trade is minimal. This is why Hungary, although producing in relatively small quantities, is currently the second largest exporter in the world and the largest in Europe. This is fundamentally the case, despite some economic reports placing Belgium first among European exporters for 1998.

Production and export

Organised purchasing and export activity began in the 1960s. Impressive development was seen in the first decade. Production figures increased until 1982. Only a few minor, occasional interruptions in this increase occurred (Table 1). The first notable crisis emerged in 1982 and lasted three years. This was termed the 'Rabbit War' and had several negative consequences. During this period the abattoirs invested all their efforts in competing in a price war. At sites where this situation was accompanied by competition for the purchase of slaughter rabbits prices rose to unrealistic levels. However, at other points in time or at sites only a few villages away, prices were very low. Prices fluctuated

unpredictably, and the producers were powerless to influence them. This difficult period was brought to an end by the joint efforts of the abattoirs and the establishment of an integrating company called Nyúltermeltetési GT (Rabbit Production Agricultural Company). Production subsequently increased and export figures approached their previous peak.

The next slump in production was caused by the political transition and the economic changes which took place in agriculture (i.e., changes in ownership), together with the dramatic rise in livestock feed prices. The situation was exacerbated by a decline in rabbit prices on the world market at that time. In addition, Italy, which was the most important market for Hungarian exports, cut its imports, and the value of the Italian lira also dropped.

There has been no change in the situation since 1994. The Italian livestock feed scandal of 1995 and the enterocolitis problem have resulted in various periods of uncertainty and drops in export sales. Unfortunately, at the end of 1998 several hundred tonnes of rabbit meat products remained in cold storage. Thus, despite production on a scale similar to that of 1997, rabbit meat exports decreased in quantity.

Hard currency returns have followed production figures (Table 2). Despite the recession, annual returns on rabbit exports still amount to almost 25 million US dollars.

Table 1: Meat rabbit purchase and rabbit exports (in tonnes) between 1966 and 1998

Year	Purchase (production)	Exports	
		Live	Carcass
1966	1.501	171	692
1967	2.474	423	741
1968	3.297	478	1.382
1969	4.080	465	1.989
1970	8.542	2.919	2.980
1971	9.549	5.192	2.309
1972	10.269	6.118	2.200
1973	16.818	12.748	2.157
1974	30.982	22.992	4.234
1975	33.091	20.797	6.515
1976	31.372	17.478	7.363
1977	31.831	11.576	10.734
1978	33.033	11.344	11.494
1979	30.850	9.250	11.447
1980	36.155	11.107	13.274
1981	34.324	9.548	13.130
1982	37.064	9.325	14.700
1983	31.385	5.133	13.912
1984	24.601	1.434	12.277
1985	21.523	685	11.043
1986	22.469	140	11.833
1987	25.475	-	13.500
1988	31.513	-	16.700
1989	33.096	-	17.541
1990	33.468	21	17.696
1991	37.132	58	19.563
1992	34.444	61	18.478
1993	26.255	23	14.396
1994	15.732	-	8.815
1995	16.939	21	9.613
1996	15.959	-	9.256
1997	13.743	-	8.246
1998	13.903	-	6.651

Table 2 : Export sales in rabbit production

Year	Export sales, million US\$
1986	26.4
1987	35.1
1988	43.3
1989	45.9
1990	52.3
1991	58.3
1992	57.9
1993	41.0
1994	27.7
1995	31.8
1996	32.2
1997	27.1
1998	23.2

Originally only live rabbits were exported from Hungary. However, many advantages are involved in slaughtering rabbits in this country and exporting them as carcasses, so rabbit abattoirs have been established one after the other. Live exports have decreased steadily since 1975 and, since 1985, have dwindled to very low levels (Table 1). The abattoirs now operating (in Baj /2/, Baja /3/, Csabrendek /1.5/, Gyomaendrőd /2/, Jászberény /1/, Kisvárdá /2/, Környe

/4/ and Lajosmizse /2/ /the numbers in brackets denote the annual rabbit slaughtering capacity of each abattoir in millions/) cover the country uniformly with the exception of certain regions (e.g. southern Transdanubia) (Figure 1).

The abattoirs were formerly owned by the government and some cooperatives. At present one is 100% owned by a Swiss individual, another is owned by a Hungarian. The majority of shares in the others are owned by foreign parties (mainly Italians).

The new conditions of ownership have influenced the Hungarian export market structure. Before 1990 Italy was the destination of over 90 % of Hungarian rabbit exports (COLIN *et al.*, 1996). Since the arrival of the new Swiss-owned abattoir in Lajosmizse in 1990, Hungarian rabbit exports to Switzerland have increased from 1-2% to 20-25%, while the Italian share has declined to 60-65% (Table 3). The proportions accounted for by other countries (Germany, France, Belgium, the Netherlands, Russia, England, Spain and Ireland) vary from year to year between 0 and 5 %.

A notable change that has taken place in the past few years is that the ratio of carcass parts and other prepared rabbit meat exports has increased to 30% (Table 4). Previously, Hungary exported only whole carcasses (with or without the head); this is still the form preferred by the Italian market. In Switzerland and Germany, the buying preference is for hind legs, loin and about twenty other cuts. It is not always realistic to compare yearly exports by individual countries on the basis of quantity, since in some cases only the most valuable cuts are exported. Similarly, it cannot be concluded from a slight drop in export figures that production (i.e., purchases) has decreased. Chilled goods account for 85% and frozen goods for 15% of the total quantity of rabbit meat products exported.

The present slaughtering capacity of the abattoirs would enable 15-20 million rabbits to be slaughtered every year (COLIN *et al.*, 1996). The introduction of extra shifts would increase this capacity. Unfortunately, however, as production declines exploitation of abattoir capacity is also tending to deteriorate. In 1990 some abattoirs were still operating at almost 100% of capacity. The national average then was 78%. There is now only one abattoir still able to maintain such levels. Even ignoring figures for the abattoirs at Káptalanfa (which has now closed) and Környe (which has been restarted), the present exploitation rate is still only 50 %. This, naturally, results in reduced profitability at the abattoirs and reduction of purchase prices paid to farmers.

A new phenomenon is the regular availability of rabbit meat in certain chain store supermarkets in Hungary. The proportion of the total rabbit meat production that enters domestic commercial distribution is 1-2 %. The prices are US\$ 3.00-3.50 per kg in whole carcass form. Independently of this, slaughter for home consumption has always accounted for considerable proportions of total production at the smaller farms.

Tasks for innovation:

- To seek out foreign markets and commercial opportunities for the purpose of exploiting the abundant slaughter capacity available, thus establishing the base for gradual but long-term increase in production.



Figure 1 : Abattoirs and research facilities in Hungary

- To establish new business relationships similar to that already enjoyed with the Swiss partner. This Swiss partner has brought with him a large share of the Swiss rabbit market, which has resulted in a wider range of export opportunities.

- In previous times, when 97-98 % of rabbits were collected from small farms, the integrating companies (particularly the abattoirs) provided many kinds of assistance and support to the producers. It would be useful to re-introduce some forms of such assistance.

- It is a task of pressing importance to encourage people to eat more rabbit meat. There are precedents in other countries (e.g. Mexico). The Marketing Centre for Agricultural Products (AMC) and the Rabbit Production Board have published an attractive book containing rabbit meat recipes, and both support product promotion events. The market is generally sluggish in the summer. It would therefore be a good practical measure for discount prices to be offered in the summer months, and also for more effective promotion campaigns to be staged during the summer for

the purposes of familiarising people with rabbit meat and working to popularise it. Organic products from almost all species of domestic livestock are now available. There is also a need for organic rabbit meat products. In the traditional, previously well-organised small-scale system, within specialised groups formed by producers, and in regions in which organic agriculture is gaining ground the fundamentals for organic rabbit production to meet the specific quality standards could be created relatively easily. This is also true of near-natural management systems and feeding methods.

Farm size

Every five years a questionnaire is sent to producers (CSONKA *et al.*, 1985; KUSTOS and CSONKA, 1992; KUSTOS, 1985; KUSTOS and SZENDRŐ, 1996). According to the most recent survey, the most common farm consists of 6 to 15 does, but the proportion of such farms decreased from 70% to 50% between 1984 and 1994. During the same period the proportion of breeders keeping more than 20 does increased from 6 % to 20 %.

In previous times there were two large rabbit farms in Hungary, each consisting of 10,000 does. The site at Dunavarsány has been closed down, while that at Bikal has been privatised. The Bikal site now keeps approx. 3500 does. Private entrepreneurs need to keep over 100 does to ensure some degree of profitability. It is pleasing to note that the number of such farms has increased in the past five years. About 40 of

Table 3 : Rabbit exports per country (in percentages)

Countries	1986	1988	1990	1992	1994	1996	1997	1998
Italy	78.7	86.7	92.0	84.3	68.0	71.1	65.3	60.6
Switzerland	4.4	3.7	2.5	8.5	25.0	20.3	24.0	25.5
Germany	2.3	1.7	1.0	3.5	3.5	4.3	3.7	6.2
France	5.4	0.6	0.5	2.0	2.0	0.2	0.3	0.5
Belgium	7.3	6.6	3.0	-	-	3.9	5.0	4.3
The Netherlands	1.6	0.4	0.5	1.0	1.0	0.1	1.0	-
Russia	-	-	-	-	-	0.1	0.7	2.7
England	0.2	0.3	-	0.5	-	-	-	-
Spain	-	-	-	0.2	-	-	-	-
Ireland	-	-	-	-	-	-	-	0.3

Table 4 : The ratio of whole and cut rabbit carcasses in exports

Year	Whole carcass (%)	Cut product (%)
1986	98	2
1988	97	3
1990	93	7
1992	84	16
1994	77	23
1996	73	27
1997	72	28
1998	68	32

these are situated in the neighbourhood of the Olivia Co. Ltd. (in Lajosmizse). Each of the two largest abattoirs has, by means of its own investment, established a large rabbit farm consisting of 10,000 does.

A relatively new initiative is that one of these large farms simultaneously transfers several thousand weaned young rabbits to fattening units and subsequently purchases the fattened rabbits for slaughter. The outcome of endeavours towards specialisation would ideally be that one central farm would produce young stock, to be fattened by other producers on a contract basis. However, this initiative is accompanied by certain risks with respect to animal health and hygiene. It is unfavourable for some fattening units to be situated up to 200 km from the abattoir while the breeding farm, on the other hand, is located near to the central unit.

Possibilities for development

- From the example of countries with developed rabbit production it is evident that the rabbit farm of the future is one consisting of several thousand does. The aim is to produce large, homogeneous quantities of quality fattened rabbits which can be scheduled for slaughter in accordance with a fattening programme (programmed slaughter). This tendency is already emerging in Hungary. Such a production system generally requires capital and entails risks; therefore, financial support both from the state and from the abattoirs is needed for the purposes of ensuring more rapid development.

- Rabbit breeders should be offered the same opportunities to obtain subsidies (i.e., by means of applications for funding) as breeders of other livestock species.

- The separation of reproduction and fattening in terms of site (that is, specialisation) represents a new opportunity,

but also bears risks. In other countries several attempts have ended in failure, while there are also a number of successful models to follow.

Breed

In Hungary there is one rabbit breed which can be regarded as indigenous: the Hungarian Giant. For several decades the coloured breeds (chinchilla, Vienna Blue, etc.) were in the majority. The first substantial populations of New Zealand White and Californian rabbits were imported to Hungary in 1967, to be kept at the Small Animal Research Institute in Gödöllő. Gödöllő was the origin in 1970 of the first (and, as yet, the only) Hungarian rabbit hybrid, the White Pearl. The expansion farm and the distribution rights to this hybrid were the property of the Bikal State Farm. (When this state farm ceased to operate the White Pearl hybrid was discontinued.)

In former times breeders received a premium for white rabbits, which was favourable for more widespread production of the intensive breeds. When this premium was abolished the proportion of mixed colour stocks began to rise again. The Faculty of Animal Science of the Pannon University of Agriculture developed a new breed, the Pannon White (SZENDRŐ *et al.*, 1997). Registration of this breed was completed in 1995. It is the only Hungarian breed and is very popular among breeders, and constitutes the stock of most enterprise-size farms. The German hybrid ZIKA was previously imported into Hungary, but this hybrid is now used only in laboratory experiments. The Hyplus hybrid is of French origin; two varieties of this are kept on the farms of Olivia Ltd. and the Bácska Co., while the Hycole hybrid is produced on the farm of Gerend Ltd.. At present, only the Pannon White and the Hycole are approved by the breeders' organisation, the registration procedure for the other two hybrids is still in progress (Table 5).

When breeders decide whether to use a pure breed or a hybrid a number of aspects have to be considered, such as production capacity, the conditions required for production, the intensity of production, the price of breeding stock and replacement rate, and economic efficiency. Alongside these considerations the subjective opinions of the breeder (i.e., impressions relating to this choice) may also play a decisive rôle. The significance of this factor is illustrated by the fact that rabbit hybrids are kept mainly on farms owned by Swiss or Italian investors, who have more confidence in results achieved in other countries and have the resources to undertake costly investment. The majority of enterprise-sized rabbit farms in Hungary keep the Pannon White type, but the conditions for rabbit production in this country will

Table 5 : Breeds and hybrids available in Hungary

Breed, hybrid	Breeder or extension farm	State approval
New Zealand White	Research Institute for Small Animal Breeding and Nutrition, Gödöllő	Breed association/organization registration in progress
Californian	Research Institute for Small Animal Breeding and Nutrition, Gödöllő	Breed association/organization registration in progress
Pannon White	Pannon Agric. University, Faculty of Animal Science, Kaposvár	Approved/registered breed and breed association/organization
Hycole	Gerenc Ltd., Kerekegyháza	Temporarily approved breed organization
Hyplus Medium	Bácska Co., Baja	Temporarily approved breed organization
Hyplus	Olivia Ltd., Lajosmizse	Temporarily approved breed organization
Zika	Labnyúl D.C., Gödöllő	Kept for laboratory experiments

remain more favourable to the pure breeds and the simpler crossing combinations for some time to come.

New routes to follow

- A major task for those involved in rabbit breed improvement is to develop new crossing combinations based on the populations already available, while also developing new lines, for the purposes of improving prolificacy and rearing ability through the exploitation of the heterosis effect. Such crossing combinations would exhibit higher levels of performance, perhaps approaching the levels of performance attained in hybrids. The resulting genetic material might then serve as the base for a new hybrid in the future.

- In the interest of improving quality, assistance and support similar to that provided for other domestic livestock species need to be ensured for the purchase of breeding stock guaranteed to have a beneficial effect on breed improvement.

Housing

On small farms (consisting of a single household) rabbits are accommodated in various types of buildings and cages, often developed according to the resourcefulness of the breeder. Most enterprise-sized rabbit farms use converted buildings, rarely new ones. Most sites have inefficient ventilation systems, and, due to a lack of cooling panels, temperatures inside the buildings may in some cases rise above 25 °C in summer. Due to the low efficiency of the heating systems used it is quite common for rabbit house temperatures to fall below 10 °C in winter. Only 20-25 % of the larger farms have modern heating and air cooling systems. Some rabbits are kept in old cages, some second-hand, in certain cases originating from the Angora farms previously in operation. The cages on the farms owned by the two abattoirs and by the Swiss investor are mostly ones brought in from other countries. Cages of types developed in Hungary are also commercially available, and are used on a number of enterprise-sized farms. The realisation of every technical aspect can, theoretically at least, now be accomplished. However, a problem still remaining is to ensure the levels of accuracy in the measuring of dimensions and in assembly attained by highly mechanised, automated manufacturing plants producing large quantities of cages in other countries. The indisputable advantage of cages produced in Hungary is their relatively low price.

Tasks in development

- Housing conditions should be improved, by means of the heating of buildings in winter and air conditioning in summer, combined with effective ventilation. In addition to technical development attention should also be paid to cost analysis.

- Alongside improvement in the quality of cages, technological development with respect to the necessary equipment should also be emphasised as a priority. Apart from the manufacture of traditional type cages, construction of cages with dimensions conforming to EU requirements and with plastic rather than wire mesh floors, may also be necessary. The use of plastic in cage manufacture is constantly a topical issue, but as yet remains unresolved.

- Besides the development of cages, the elaboration and testing of various alternative management systems is also an

important task to be accomplished. Public interest in rabbits reared in near-natural systems is presently on the rise. Some consumers do accept the higher prices arising from elevated production costs.

Feeding and nutrition

Feeding rabbits with pelleted feed is the general norm in Hungary. On smaller farms the feed is usually provided together with forage (green grass and hay). It is also a common practice to add grain concentrate. This dietary regimen is a suitable feeding system for smaller farms. Another feeding system involves the use of a granulated concentrate formulated to meet the nutrient requirements of rabbits when supplemented with forage and grain mix in the recommended proportions. The use of this system is an interesting and justifiable proposition, appropriate mainly to the conditions prevailing on smaller farms.

The enterprise-sized and larger farms feed their stock exclusively on pelleted rabbit feeds. The composition of pelleted diets, medicated or not, is adjusted to meet the energy, crude protein, crude fibre, etc. requirements of rabbit populations of different ages and types of utilisation. The feed mills operating in this country are now owned partly by Hungarian and partly by foreign companies. At least one form of rabbit feed is commercially available in every town or village in Hungary. The larger rabbit production concerns maintain direct contact with the feed mills. These companies generally purchase feed in bulk for storage in silos. The method of feeding most generally used involves two types of feed (a feed for rabbits destined for breeding and a fattening feed) or three (a feed for rabbits destined for breeding, a medicated starter, and a finisher without medication). Feeding programmes consisting of 4 or 5 elements are uncommon. Unfortunately, however, there are very few examples of the machine distribution of feed on the farms.

Fields in which progress is necessary in the future:

- Suckling does and those in the advanced stages of pregnancy (particularly primiparous does) are not capable of feed intake at such levels as to meet their energy requirement; therefore their reserves are mobilised. In such periods fat deposits become depleted and body condition deteriorates. Dietary components to enable the problem of energy input to be solved need to be identified. Greater attention must be devoted to meeting the feed and nutrient requirements of weaned young rabbits.

- It is to be anticipated that the addition to rabbit diets of certain growth enhancers and antibiotics will be restricted or prohibited in the future. There is a need for substitutes for these agents to be found. Promising results in this respect have been obtained with e.g. some probiotics.

- In areas of high livestock density the manure produced may represent a burden to the environment. In the interest of reducing nitrogen and phosphorus excretion, planning of animal nutrition programmes should give consideration not only to increasing economic profitability but also to the problems entailed by such environmental burdens.

- With respect to livestock nutrition the improvement of meat quality (e.g. the proportions of vitamin E or/and fatty acids in diets) constitutes a topical subject for research in the future.

- The nutrition of rabbits kept on organic farms will present researchers with a new task to be accomplished.

Reproduction

The smaller rabbit farms operate solely on the basis of natural mating. Although semi-intensive reproduction rhythms (re-mating 10-12 days after parturition) would be the ideal pattern to follow, producers still re-mate their does at a relatively late stage subsequent to kindling. This entails a reduction of one of one litter per doe per year.

Artificial insemination is the procedure applied on the larger farms, and is considered general practice in this country. Hungarian specialists in this field have contributed greatly, on the international scale, to the basic and further development of this procedure for practical application, from its first large-scale application to the formulation of gelatine dilutors. The most common practice is for does to be given preliminary PMSG treatment two to three days before insemination, for the purpose of ensuring synchronised oestrus. A small buck rabbit production site provides a postal delivery service for gelatine-diluted semen (SINKOVICS, 1995; SINKOVICS and BODNÁR, 1996).

The larger rabbit farms work on the basis of synchronised reproduction. Does are inseminated on the 10th-12th day after kindling. The one-batch system is rare. The most commonly used system is the two-batch system in which does are divided into two groups and inseminated every third week. Thus, those remaining open are inseminated again on the 21st day. Both methods allow an all-in-all-out system (i.e., total emptying followed by repopulation of the entire site) to operate.

Tasks in development:

- Regular PMSG treatment may entail adverse effects on does. There is also growing apprehension with regard to hormone treatment. Research is therefore now in progress for the purpose of developing a natural method for the induction of heat (biostimulation). An international team, the IRRG, including Hungarian members, is engaged in this research.

- Various dilutors (e.g. gelatine) enable fresh semen to be kept fertile for several days. However, the production and utilisation of semen independently of time and location can only be made possible by means of a method of deep-freezing, which remains to be developed. This is one of the most topical areas of development in this field at present.

ANGORA RABBITS

Before the Second World War there were a considerable number of production sites for Angora rabbits in Hungary. The production of wool and its purchase from these farms, together with every stage of the wool processing operation, functioned smoothly. Unfortunately, after the war the organised purchase of wool was discontinued and the producers lost interest, in consequence of which Angora rabbits were scarcely to be seen at exhibitions by the late 1970s.

Angora wool, which is extremely fine in texture, is a highly appropriate material for underwear and other clothes. The subsequent upswing in demand for these quality products exerted a favourable influence on Angora wool prices on the world market. Demand was higher than the quantities producible, and Angora rabbit farming held out the prospect of excellent profitability. Breeding populations were imported, mainly from Germany. Both prices and wool purchase figures increased rapidly (Figure 2). The processes of the housing of breeding rabbits and the placing of cages, artificial insemination, shearing and wool purchase were all primarily organised by a company named Hungangora, which also provided a well-operated consultancy service. Within a few years Hungary had become the largest Angora exporter in Europe, the principal purchaser of this wool at that time was a German-Swiss company named Medima.

The first signs of overproduction were seen in 1985, when prices began to fall. There was no immediate reaction on the part of the producers to these unfavourable developments; they suspected only temporary concerns, and did not reduce the number of Angora rabbits kept for wool production. Despite matings being discontinued, there was very little change in the size of the wool producing rabbit population. Prices continued to fall and sales were increasingly reduced with the rather drastic consequence that producers were reduced to selling the remaining wool producing rabbits for slaughter. Both wool production and sales dropped to one tenth of their original values from one year to the next, and subsequently reached minimal levels. A determining factor in this was the fact that despite the fall in world market prices from US\$50 to \$15 there was no decrease in Angora wool production in China. Consequently

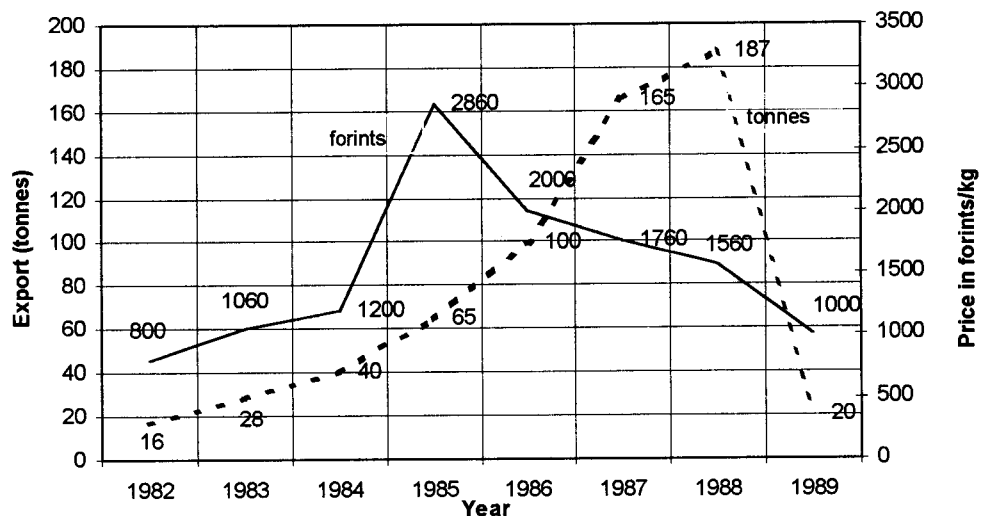


Figure 2 : Trends in Angora wool exports and wool purchase prices

a decline in wool production ensued, not only in Hungary but throughout Europe. At present there are only a very limited number of Angora rabbit farms in Hungary. Annual wool sales now amount to only about one tonne.

The future of Angora rabbit production

- *The rapid increase in Angora production experienced in the 1980s provided evidence that producers are ready to respond rapidly to any favourable changes in market conditions. Given a similarly beneficial market situation to that prevailing in the past, Angora rabbit production in Hungary may again begin to gain ground.*

RESEARCH

In general it is difficult to compare research on the international scale, but in the case of rabbit production there do exist grounds for certifiable comparison. At the World Rabbit Congress held in the USA in 1992 LEBAS and COLIN (1992) evaluated the respective rôles and positions of individual countries and research institutes. With respect to the number of publications to which reference was made in the course of this, the highest number was attributed to the USA, followed by Italy, Spain, Germany, France and then Hungary. Three of the top twelve rabbit research institutes featured on the list of the 216 were Hungarian. In terms of the number of presentations given at the World Rabbit Congress held in France in 1996, Hungary occupied third place after France and Italy. Several oral presentations were given by Hungarian researchers. Thus, Hungary followed the leading countries of the world with respect to research activity in this field.

The major research groups in Hungary operate at the following locations (Figure 1, in alphabetical order).

- Debrecen University of Agriculture, Faculty of Animal Husbandry at Hódmezővásárhely;
- Gödöllő University of Agriculture at Gödöllő;
- Pannon University of Agriculture, Faculty of Animal Science at Kaposvár;
- Research Institute for Small Animal Breeding and Nutrition, Gödöllő;
- University of Veterinary Science, Budapest.

In the past ten years Hungarian researchers in this field have published or given almost 300 articles or presentations. Over 90% of the results achieved in rabbit production research in Hungary during this period originated from the above five establishments.

In 1988 Budapest provided the venue for the World Rabbit Congress. Since that time a Conference on Rabbit Production has been held every year in Kaposvár, with the participation of the world's leading scientists. Ten such conferences have been held to date. These have included almost 200 presentations, with the total proceedings amounting to over 1500 pages. A publication summarising

the research findings of the past ten years has also recently been produced.

There is now a high level of activity among senior scientists for the purpose of educating young researchers in the field of rabbit breeding. Several researchers in this group have attained a higher scientific degree (two D.Sc. and eleven Ph.D. degrees), while the number of those working on Ph.D.s these in the field of rabbit breeding science now approaches ten. These members have made a significant contribution to the success of the research group.

The production of rabbits and rabbit products constitutes only a modest segment within the entire scope of rabbit production in Hungary. In spite of this, the country can boast a favourable position on international comparison with respect to the export of rabbit meat (and, in the past, that of Angora wool), both throughout the world and within Europe. A high level of education, well-trained staff and active research work are the fundamental keys to the successful commercial performance of the country in this field.

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