



Most frequent bovine diseases in cattle herds in the West-Transdanubian Region

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SUMMARY

The political and economical changes in 1989 and 90 influenced Hungary's agriculture greatly. The transition hit the branches of animal husbandry more than plant growing. Cattle husbandry is one of the most important branches of agriculture in Hungary. Its production is equally important both for the domestic and for export markets. Under the present market conditions Hungary will only be able to maintain its cattle stock if the profitability and competitiveness of the branch can be enhanced considering the requirements of the European Union. Therefore the hidden causes of economic losses should be revealed and solutions have to be found in order to eliminate them. It is only possible if data on the health state of the herds are available.

Several factors influence the profitability of running a dairy farm. Some of them cannot be influenced at all or little but there are a few factors, which can be changed considerably. Mastitis, fertility problems and metabolic diseases, lameness and several other infectious diseases like bovine virus diarrhoea (BVD) and infectious bovine rhinotracheitis (IBR) cause great losses in dairy herds in Hungary. They also cause high losses in countries with developed cattle breeding.

In our study we wanted to answer the questions: "What are the most frequent stock health problems on cattle farms in the West-Transdanubian region?" and "How high is the rate of cows culled because of diseases?" We summarised and evaluated the data from questionnaires about the spread of the following diseases on 30 cattle farms: foot diseases, placenta retention and metritis, clinical and sub-clinical mastitis. Among them sub-clinical mastitis came highest (13.1%) followed by placenta retention (12.4%), metritis (9.6%) and clinical mastitis (9.5%). Culling owing to diseases reached 20.1% on average during the period of the investigation.

Keywords: stock diseases, culling, calving interval period, losses.

LITERATURE REVIEW

Several factors influence the profitability of a dairy farm. Some of them cannot be influenced (e.g. milk price, energy prices, amortisation costs etc.), some of them can be greatly influenced (production level, udder health, fodder quality, rate of calf mortality, sperm costs, vet costs, spread of metabolic diseases etc.). Although it is often said that the higher the performance level of the dairy farm the higher the yield per cow is, many of them doubt and strive to develop an "optimal performance level" because that is "cheap" (Elek 2001).

Rate of losses induced by different diseases

Hungary is a full member of the European Union where competitiveness has a priority in the agricultural policy. In order to meet these requirements one should reduce losses of cattle stocks (caused by diseases) and establish a healthy stock. In Hungary main losses are caused by different types of mastitis, fertility problems and metabolic diseases, different infections, e.g. virus diarrhoea (BVD) and infectious rhinotracheitis (IBR). These diseases cause considerable economic losses in countries with developed cattle farming, too.

Mastitis

Mastitis is an inflammatory process of the bovine mammary glands caused mainly by bacterial infections. After the infection of the mammary glands clinical mastitis or sub-clinical mastitis may develop, which may go on without symptoms. Sub-clinical mastitis is more frequent it makes out about 70% of all mastitis diseases.

Hungarian and foreign data confirm that mastitis diseases cause the highest economic losses in stocks as a result of lower milk yield, premature culling and vet costs. Lower milk yield and milk quality result in lower revenues caused by separating the milk of the treated cows. Ózsvári *et al.* (2001a) calculated a yearly loss higher than 10 million HUF caused by lower milk yield on a dairy farm with 1550 milk cows. Kovács (1999) estimated losses higher than one billion HUF per year for the cow stock in Hungary in 1999.

Fertility problems

The profitability of cattle breeding depends on the calving interval period. The shorter this period is the more calves will be born and the higher milk yield can be expected. This period can be controlled by proper breeding policy based on adequate animal health and fertility situation. In Hungary this is one of the greatest problem of cattle breeding, which has not still been settled. The national average is about 420–430 days (Széles 1998), much higher than necessary, therefore breeders should do their best to achieve a period not longer than 400 days. Szenci (1999) estimates if this period was 10 days shorter it would reduce costs by 2 billion HUF, although he does not consider the profit coming from calving and higher milk yield.

Metabolic diseases

Production diseases are caused by the disharmony of genotype, feeding and keeping failures that result in metabolic problems. Their occurrence, spread and severity of symptoms rise parallel with higher yields and fertility. First of all we must mention acetoanaemia, which reduces the milk yield and prolificacy. Cows suffering from acetoanaemia produce daily 10 litres milk less than healthy cows. Veterinary examinations confirm that on average 40 out of 100 cows in lactation fall sick with sub-clinical acetoanaemia once, and 5 out of 100 fall ill with clinical acetoanaemia. (Brydl 1997). Calculating with a minimal loss of 10% per year it will result 600–800 litres non-produced milk per cow, a loss of 43–57 thousand HUF per cow per year at present milk prices. On a dairy farm with 500 cows the loss estimations are as high as 11–14.5 million HUF per year (Brydl 1997). Researchers assume that real losses are much higher because the damage is more complex. Diseases after calving can cause premature culling, which may reduce the beneficial lifetime of the cows by 3–4 years (Brydl 1997). Considering the mentioned losses the only possible way to increase the profitability of dairy stock is the reduction of losses and disease prevention.

Foot diseases

According to the investigations 25% of lameness is long lasting, up to 17 weeks at the beginning of the lactation and later on it may last 12 weeks. Milk loss in the first period of lactation may exceed 440 kg, later on it goes back to 270 kg, and i.e. milk yield reduces at a higher rate at the beginning of lactation (Coulon and Landais 1989). Cows with well built foot exceed the average milk performance of the group in the lactation periods 2 and 3 by 200–300 kg. The highest rate of losses, about 65%, is the result of milk yield reduction and poor quality (Bargai and Levin 1993). Returning lameness can be blamed for 640 kg milk loss during the total lactation period. Losses are not only caused by the reduction of milk quality but also by the fact that milk of infected cows cannot be utilised owing to antibiotic treatments. Foot diseases influence the cows' condition, their fertility, vet costs and culling rate growth. In the UK there is an average loss of 45\$ per year and per cow (Esslemont 1998). World wide 25% of cows must be treated because of foot problems (Nagy 2001). Data published by USDA (1993) confirm that 15% of dairy cows are slaughtered due to lameness. Lameness is the third of most important diseases after infertility (26.7%) and mastitis (26.5%) that involve not wanted culling. Among the causes we should mention failures in animal hygiene, keeping, placement and floor conditions, deficient farm buildings as well as climatic and stress factors.

Bovine Infectious Diarrhoea (BVD)

BVD infection is wide spread in dairy herds of Hungary. The virus can cause several damages not only in infected stocks, but in those without symptoms and in their offspring. A summary of losses caused by the virus indicates how much higher income could be reached if the stock were virus free. Ózsvári *et al.* (2001b) elaborated some software that

is suitable for Hungarian circumstances to trace economic losses caused by the disease including production and price data. The yearly average loss caused by BVD is around 630 million HUF, but if the volume of infection is higher its impact is higher too, so it may exceed 1 billion HUF. Regarding the stock we should calculate with 1600 HUF higher costs per cow per year. Costs mainly derive from calve and young stock mortality. Acute infections indicate a loss of about 1 billion HUF in a herd of 1000 cows. A summary of costs generated by the virus show the rate of income that could be achieved if the stock were virus free (Ózsvári *et al.* 2001b).

Bovine Infectious Rhinotracheitis (IBR)

IBR is a respiratory disease of young cattle and is spread world wide and causes considerable losses mainly in large scale keeping. According to the publications 80% of the stock of large scale farms are infected, however the stock of small dairy farms is less infected, only 15%. According to the data of HCOS (Hungarian Central Office of Statistics) there were 490,000 infected animals and 438 out of them were calves and young stock in 1989. Losses caused by the disease exceeded 3 billion HUF per year in the country, which was more than 14,000 HUF calculated on one infected cow in 1999. It is a result of premature culling of calves and young stock. Yearly loss of a dairy farm with 1000 cows comes around 14 million of HUF owing to sub-clinical IBR and 34 million of HUF owing to clinical IBR (Ózsvári and Bíró 2001).

MATERIAL AND METHOD

In our investigations we aimed to answer the questions: "What are the most frequent diseases in dairy herds in the West-Transdanubian Region" and "How high was the rate of culling in the same region in 2002". Data were collected after handing out questionnaires to 30 dairy farms. The questions were about the health situation of the stock. In 5 out of the investigated farms cows were kept in boxes and in 25 they were kept unbound in barns and outdoor with floor management. Each farm had a fodder mix plant and most of the them used herringbone milking systems, but there were parallel, standing or pipe-lined types, too. 21 farms used Alfa-Laval systems. Farms were leucosis free and IBR-immunisation was going on at the time of the investigation.

RESULTS AND CONCLUSION

Table 1. show the health situation of the dairy herds.

Outraging is dairy farm No. 24, because the calving interval period was 90–100 days longer than the farms average. Dairy farmers explained it with fat-mobilisation problems and high rate of infertility.

Table 1. Stock health indices of dairy farms

Farm number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
Cow stock	580	550	220	98	300	1200	220	427	730	580	380	950	260	485	120	530	330	790	760	250	780	130	349	650	399	455	430	600	340	80		
Number of inmilk cows	420	420	198	70	240	1100	220	341	550	440	240	800	210	290	80	375	263	680	640	210	523	75	275	530	320	350	359	480	270	68		
Service index (A.I.)	2,3	2,3	2,8	2,8	2,8	2,8	2	3	2,5	2,3	2,2	2,8	2,2	2,7	3,5	2,3	2,1	2,3	2,6	1,7	3,5	2,2	1,9	2,5	1,8	1,9	2,2	2,2	2,8	1,8		
Calving interval period (days)	410	410	410	410	398	405	365	430	450	412	400	400	400	420	420	410	405	400	440	340	431	390	400	510	400	400	400	400	414	400		
Most frequent diseases																																
Foot diseases (%)	3	5	2	4	1	6	3	3	2	1	3	2	5	2	4	6	4	2	5	1	4	2	1	5	4	5	3	2	1	2		
Placenta retention (%)	10	10	10	8	8	30	5	10	10	2	1	2	20	10	1	60	10	3	10	1	16	3	1	60	10	15	9	30	6	3		
Metritis (%)	1	10	2	8	8	40	1	0,5	5	15	5	15	50	5	1	20	-	7	2	3	2	3	2	20	7	5	6	10	15	20		
Clinical mastitis (%)	2	3	3	5	5	5	1	10	5	2	2	5	5	20	10	10	10	3	1	5	60	10	15	5	10	20	8	5	40	1		
Sub-clinical mastitis (%)	5	-	10	20	20	2	2	10	20	2	4	30	25	30	30	15	15	8	20	5	30	20	10	5	0	20	2	20	10	4		
Number of culled cows because of disease (%)	30	20	25	30	33	25	10	15	20	30	10	10	15	10	15	20	25	20	18	8	30	7	25	30	10	30	22	20	30	10		

Table 2. is a summary of herd data. It clearly shows that the 30 farms kept 466 cows on average. The average service index (A.I.) was 2.4 and in 2002 the calving interval period was 409 days long on average. These fertility problems are considerably higher than optimal especially those referring to the calving interval period. Stock health problems included first of all sub-clinical mastitis and placenta retention, but metritis and clinical mastitis were around 10%. So mastitis (clinical and sub-clinical together) hit the stock greatly (22.6%). Foot diseases came lower. Dairy farmers say that foot diseases and lameness might be caused by unfavourable floor and bedding conditions. Therefore clawing should be done twice a year in order to eliminate foot diseases in dairy farms.

Table 2. A summary of average health indices of dairy farms in the West-Transdanubian Region

Description	Average
Average number of dairy cows	466
Average number of in-milk cows	368
Service (A.I.) index	2.4
Calving interval period (days)	409
Most frequent diseases	
Foot diseases (%)	3.0
Placenta retention (%)	12.4
Metritis (%)	9.6
Clinical mastitis (%)	9.5
Sub-clinical mastitis (%)	13.1
Number of culled cows because of disease (%)	20.1

The average rate of culling (owing to the disease) was higher than 20% – calculating with a culling rate of 25–30% on average – shows that only a few cows can be involved into breeding from the stock, so the selection stress for the sake of genetic improvement is quite low. The results of the questionnaire show that acetoanaemia (especially sub-clinical) and fat liver are the main causes of high rate placenta retention and metritis, which can be attributed to feeding failures. In case of metabolic problems we should not only mention food quantity but quantitative and qualitative feeding as well that are needed for proper milk performance. Feeding should be done according to seasons, to the metabolic profile and performance of the cows. Lower culling loss can be observed because of the displacement of the rennet, which is a result of feeding failures mostly.

Based on the questionnaires from 30 dairy farms we can say that sub-clinical mastitis (13.1%) was the most frequent disease of the stocks, placenta retention (12.4%) came lower followed by clinical mastitis (9.5%) and foot diseases (3%).

A leggyakoribb állományszintű betegségek a nyugat-dunántúli régió szarvasmarhatartó telepein

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ÖSSZEFOGLALÁS

Az 1989–90-ben végbement politikai és gazdasági rendszerváltás jelentős változásokat eredményezett a magyar mezőgazdaságban. Az átalakulás súlyosabban érintette az állattenyésztés ágazatait, mint a növénytermesztést. A szarvasmarha-tenyésztés hazánk mezőgazdaságának egyik legfontosabb ágazata. Termékei mind a belső fogyasztói, mind az exportban értékesíthető árualapok előállításában nélkülözhetetlenek. Magyarország csak akkor lesz képes szarvasmarha-tenyésztését megtartani, ha az ágazat jövedelmezőségét és versenyképességét az EU kihívásoknak megfelelően, a nyitott piaci viszonyok mellett is fokozni tudja. Ez azonban csak akkor lehetséges, ha az ágazatban feltárjuk a rejtett veszteségek forrásait, és mindent megteszünk annak elhárítására. E feltételeknek megfelelni csak az állomány állat-egészségügyi állapotának az ismeretével lehetséges.

Egy tehenészet gazdaságos működését számos tényező befolyásolja. Ezek közül vannak melyeken nem, vagy csak kismértékben tudunk változtatni, és vannak, amelyek jelentősen változtathatók. Hazánk szarvasmarhatartó telepein a legnagyobb veszteségeket a különböző tőgygyulladások, a szaporodásbiológiai problémák, az anyagforgalmi betegségek, a sántaság, valamint a különböző fertőző betegségek, pl. a vírusos hasmenés (BVD) és a fertőző rhinotracheitis (IBR) okozzák. Ezek a betegségek a fejlett szarvasmarhatartással rendelkező országokban is komoly gazdasági kárt okoznak.

Vizsgálataink során arra kívántunk választ kapni, hogy a nyugat-dunántúli régió szarvasmarhatartó telepein melyek a leggyakoribb állomány-egészségügyi problémák, és mekkora a betegség miatti tehénselejtezés mértéke. A következő betegségek elterjedtségét vizsgáltuk meg 30 tehenészetben végzett kérdőíves felmérés adatai alapján: lábvég problémák, magzatburok visszatartás, metritis, klinikai és szubklinikai tőgygyulladás. Ezen betegségek közül a legnagyobb arányban a szubklinikai tőgygyulladás (13,1%) fordul elő, de magas a magzatburok visszatartás (12,4%), a metritis (9,6%) és a klinikai tőgygyulladás (9,5%) elterjedtsége is. A betegség miatti selejtezés a vizsgált időszakban átlagosan elérte a 20,1%-ot.

Kulcsszavak: állományszintű betegségek, selejtezés, két ellés közötti időtartam, veszteségek.

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