

Future Trends in Dairying

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Summary

Trends in dairying can be split in three different areas i. e. in milk production, the milk processing industry and the trade incl. consumption of dairy products. All three are in interaction by influencing and being depending on each other. In this paper the present situation and likely tendencies in different regions, with special regard to Europe are discussed. Obviously, the conditions, problems and solutions are different for the regions of the world. Milk is not only a valuable natural food but has become primarily an agropolitical and social problem, whether as surplus or scarcity.

Dairying plays an important role in agriculture of many countries, in some even the most important. This refers to milk production, to milk processing industry and the trade incl. consumption of dairy products. Correspondingly, the trends can be split in these three areas. They are in interaction, depending on each other and influencing the future developments of accompanying industries such as the manufactures of equipment, packaging, cleaning and sanitising agents etc.. The mentioned trends are different throughout the world.

In Western Europe, due to surplus of milk and dairy products, a quota system has been introduced over 10 years ago. In addition, aggressive marketing with a large variety of high quality products promotes the consumption of dairy products.

On the other side, there are the developing countries lacking milk and which are trying with more or less success to increase their milk production, but, due to population growth, the milk production per capita more or less stagnates. Even so, the increase of milk production is mainly due to the rising number of cattle and much less to higher milk yield per cow as the feeding resources have not been improved correspondingly.

Milk production in countries in transition will recover faster and will become in future an important factor on the world dairy market, provided that they will compete both with improved quality and price.

The following figures clearly show the great differences in milk production between regions in the world. The milk production in Europe with 332 kg per capita is 15 fold of that in Africa with only 22 kg per capita. Or, the average milk production per 1 ha of agricultural land is in Europe 756 kg, in the Far East 89 kg, in the Oceania 28 kg and in Africa only 14 kg. While in developed countries with 30% of the world cattle population, the average milk production per cow amounts to 3550 kg, the yield in developing countries, having 70% of the world cattle population, is only 870 kg (Jasiorowski, 1994).

The quoted examples demonstrate how unjustified it would be to generalise the present situation in milk production and, accordingly, the future trends. They have to be estimated for different regions in the world, for each country and even smaller areas.

Quotas resp. contingents which are applied in the European Union (EU) for each country and, correspondingly, for each farmer, have brought milk production more or less under control, however, with some consequences. Due to limited production, the number of dairy cows has been decreasing, being the main factor to curb the total milk production. This trend will continue, as the quotas have been constantly decreased even for EU countries that already had deficit in milk (Italy, Greece). In future this could have the effect that some countries which are presently milk exporters might become milk importers. It is already difficult to explain to farmers why they have to reduce their milk production, while the country imports milk.

The number of dairy cows per herd is increasing. This trend will continue due to economical and technological reasons. Specialised farms with large herds can easier fulfil the requirements for milk quality which ask for new investments. Regulations concerning milk quality which are already in power, and the new ones introduced in January 1998, will in many cases demand new investments and improvements for cowsheds, milking installations, coling equipment, water supply etc. Generally in larger herds greater attention is paid to hygiene and milk yield, as milk represents a greater part of the income, and so will be the case also in future. Farmers will have to be more able to compete on the market with quality and price. Larger herds can produce milk more economically and also milk collection and transport are cheaper. The growth of herd size might, however, be limited in some areas due to ethical and environmental reasons.

In future, greater attention will be paid to mastitis control and preservation, as the problem grows with increasing herd size. In large herds there is less individual care while the milk yield per cow is steadily being

increased. Thus, the risk of mastitis, known as a professional disease of high yielding cows, is increasing.

Milk yield will continue to increase up to genetic potential of the breeds and physiological capacity of individual dairy cows. This trend is stimulated by favourable grain prices and, consequently, higher concentrate input. Some countries have already reached on average more than 6000 l per cow (Sweden, Denmark, The Netherlands), not to mention Israel with close to 10'000 l per cow. As the higher yielding animals are more sensitive and susceptible to udder inflammations, more intensive care is needed in future. In this respect, better and permanent education of farmers and well organised advisory and veterinary service, regular control of milking installations, supply of correct spare parts etc. will be necessary.

In some countries, showing lately an unusual increase of the average milk yield, the improvement is not the result of better feeding, genetic improvement, better care etc., but simply caused by replacing low yielding cows.

The number of dairy farms has been rapidly decreased. This trend will continue and will primarily hit small and part-time farmers, especially in marginal (mountain) areas, where the milk quantity per farm is too small and the transport too expensive to justify the collection. Small farmers with few cows will not be able to compete with their milk price and quality with larger farms. In general, only large enough, well managed farms managed by educated farmers will remain in dairy business, especially as the trade liberalization enables competition from everywhere. The consequences will be felt soon in economical, social and ecological sense. In some cases, they might become of strategical importance (Table 1).

Table 1: Trends in dairy herds and dairy cow numbers in some countries

	Change between 1970 and 1990 - %	
	Herds	Cows
Belgium	-69	-15
Canada	-73	-42
Denmark	-77	-35
Finland	-78	-50
France	-68	-28
Germany	-56	-13
The Netherlands	-60	+2
UK	-59	-12
USA	-55	-7

Source: OECD paper 1994.

An alternative, depending on the conditions in each country or area, must be found for farmers who are for economical reasons forced out of dairy business. The worse solution would be to abandon agricultural production or activity on farms, for which generations were working very hard. The policy and solutions are in the hands of governments and their services, as well as in the hands of the farmers themselves. The sooner the better they find alternatives. Direct sale of milk from farms or investments in very small dairies which already occurs in some areas, is a short term and doubtful solution.

A reduced number of farms and cows can not be compensated with higher yield per cow. However, this trend could be expected to continue. In Slovenia, with a present average of 3.3 cows per farm, a slight increase in herds has lately taken place, the number of dairy farms and cows, however, rapidly decreased. Some years ago there were close to 60'000 farms, now there are less than 30'000 with the tendency of further decrease. In spite of these figures, the amount of milk delivered to the dairies steadily increased, inflicting surpluses and difficulties to the dairies due to loss of markets in the former Yugoslavia as well as to still very low consumption of 180 l per capita. A further growth of herd sizes is expected, but the limiting factor will be the lack of possibility to obtain more agricultural land for milk producing farms.

The consequent payment of milk according to quality had a double effect i.e. the number of farms which are not able to fulfil the new hygienic requirements decreased, and in the same time, a rapid improvement in bacteriological and chemical quality of the milk from the remaining farms has been achieved. Presently, 80-82% of the delivered milk to the dairies is in the 1st class (<100'000 cfu/ml), and more than 60% of it even in the S class (<50'000 cfu/ml). Fat increased from 3.7 to 3.92%, protein from 3.15 to 3.24% and the solids-non-fat from 8.5 to 8.64%. The control of somatic cells is still not satisfactory.

The improvements obtained in very short time are clearly demonstrating that only the strict policy of the dairies, permanent advisory activities and control can lead to success. Previously, generations of experts have spent their time teaching the farmers how to produce clean milk, but due to shortage of milk, the dairies neglected regulations and bought everything looking white, the advises were in vain. In the next few years, only 10'000-12'000 farms with larger herds delivering milk to the dairies could be expected. At the same time the general trend will be similar to that in Europe, i.e. more milk per

cow and per farm. This will inflict difficulties to the government, especially if no clear agricultural policy is defined regarding alternatives for farmers leaving milk production.

It should be mentioned that in Slovenia few large herds from previous agro-industrial combines (200-600 cows each) with average milk production of over 7500 l per cow still exist. Their future is uncertain due to loss of land (denationalisation) and political tendency to eliminate such large units. It would be a pity to lose these high yielding herds, which are excellent nucleus for the general improvement of milk production. Solutions should be found in new ownership and management.

Trends in other countries in transition differ from country to country. In most East-European countries the land was nationalized after the 2nd World War and big agroindustrial combines were formed, usually with very large herds from few hundred to few thousand cows. Due to denationalization processes they have in many cases lost the land and have either been dissolved or slowly reduced their milk production. The result of such development is that some countries, which were milk exporters, are now hardly covering their own needs. Extreme measures were taken in Albania where all large units but one, were dissolved and the small new farms have now on average only one cow per farm (actually more farms than cows) and no organised milk supply. In spite of the latest improvements it will take time and great effort to find a solution for the future. In the previous German Democratic Republic, the out-of-date technologies have been replaced with new management and new technical solutions and the milk production successfully continued.

The competition demands the lowering of milk production costs. The trend goes to specialised family farms with highly mechanised and computerised production, even with robotization, to reduce the labour to a minimum because it is becoming scarce and very expensive for farm works. Only larger farms will have the chance to follow this trend.

Obviously, there are different conditions, different problems, different solutions and different trends. Milk is not only the most perfect natural food but it became primary an agropolitical and social problem, regardless if it appears as a surplus or scarcity.

The world dairy trade is dominated by the EU, New Zealand, Australia and the USA, which together are supplying approximately 85% of dairy products to the international market. The dominating position of the EU is probably due to high degree of state intervention on the dairy market, high productivity as well as export subsidies. The future international trade will

be influenced by the recent GATT agreement which is implementing reduction of export subsidies and giving access to import to the EU gradually up to 100 thousand tons of milk per year. The greatest benefit from this agreement could have New Zealand, which is not subsidising the export. Mostly affected will be EU countries with high current domestic dairy prices and subsidised export (Jasiowski, 1994).

In the dairy industry, the trend is and will be the concentration to few processing sites in each country. These few and large dairies will cover not only the home market but aggressively invade the market world-wide. For easier and successful presence on foreign markets, multinational companies are expected to get in possession of the local dairies getting, thus, the status of home industry. Dairies with capacities of 100'000 and even more litres of milk per day will be either integrated in this large systems as specialised plants or shut down. Only few products will be produced in large series more economically. These companies will also organise their own R&D departments, PR services and strong marketing organisations, in order to gain advantage in competition and be able to sell large quantities of products world wide. Careful studies will be necessary to foresee the trends in different markets, keeping in mind, that markets are not given, but made and fought for.

Concentration of experts from different fields of activities will result in greater efficiency, provided they are integrated in the top management and their competence is equivalent to their responsibility. The trend goes toward high quality products with long shelf-life. To achieve this and to improve the sensorial properties and consistency of all dairy products great attention will be given to bacteriological and biochemical quality of raw milk. Nondairy ingredients such as fruit and vegetable juices, tea, drinks for sportsmen etc. will be increasingly included in the production programmes. Robotization of different processes will be applied wherever possible. Less personnel but with much higher knowledge and ability will be required. The education system should be adequately adapted.

The manufactures of machines and equipment for dairy farms and industry are carefully investigating the trends and are developing products with greater capacity and better technological and ecological acceptability. Packaging and wrapping material of high quality will be accepted only if recyclable, low weight, and efficiently cleanable with low concentration of cleaning and sanitising agents.

There are tendencies to establish new small dairies by individual or group of farmers in which liquid milk and/or other dairy products, primarily cheese, are produced. The small entrepreneurs have to be aware of the fact that small dairies with capacities from several hundred to few thousand litres of milk per day have to meet the same regulatory and hygienic requirements as large dairies. In addition such small units might have difficulties in marketing their products especially in case they are situated in a remote area far from the market. The way to success could be the production of special so called, "niche-products" as it is the case in France, where 11 thousand tons of cheese per year are produced on farms. In western countries on-farm processing represents, however, only 1% of the total cheese production. Generally, there will be less chances for the survival of small dairies in the future.

Very variable are the trends in consumption of dairy products. Some general trends can still be foreseen. In developed countries, the consumption of liquid milk will stagnate at around 100 l per capita and year, the consumption of fermented products, especially those made with probiotic cultures as well as cheese, is increasing. In 1965 only 15% of the total world milk production was processed to cheese while in 1992 it already amounted to 35%. Leading countries in cheese consumption like France with over 22 kg per capita and Germany with over 20 kg are good examples for many countries which are far behind these figures. In countries with high standard of living the demand for "light" and "semi-light" products, i.e. with none or reduced fat and less sugar will increase. It must be stressed that hysteria about "dangerous" butter fat and cholesterol is in this connection far from any reason. First of all, the consumption of butter fat with milk and dairy products is small, even in part of the world with the highest milk consumption. Behind the campaign against milk fat is obviously the potential capital of industries which are competing and gaining from reduced consumption of dairy products. It is most cynical to launch a general campaign against milk consumption as even in developed countries there are so many undernourished people who would be only too happy to get a glass of milk per day. Does the advocated danger from dairy products apply to millions of starving people in different parts of the world, among them so many children?

Still, more and a large variety of "light" and "semi light" products will be produced and consumed in future primarily for slimming reasons. But, there is always a "but". For instance, the reduction of butter fat content in

cheese is limited, as it influences the consistency and the taste. Who would consume rubber like, tasteless cheese, just because it is "light"?

The dairy industry will certainly take part in the emerging market of nutraceutical foods in order to sell profitable intermadiary products to dietetic and pharmaceutical industries. The consumption of dairy products in developing and under developed countries will continue to differ. It will be further influenced by poverty, possibility to produce milk in unfavourable conditions, health reasons etc. Again, generalisation is not possible.

A new problem in livestock, especially in cattle breeding, can be expected in connection with the appearance of BSE disease. In many countries there is a drop in meat consumption which has a severe influence on farmers, slaughter houses, meat industry and trade in general. This might have an influence on milk production as in Europe 80% of beef production derives from the dairy herds. Further implications in this respect are difficult to foresee in spite of the fact that there is no evidence that BSE is harmful to humans and that it has no influence on milk and dairy products.

BUDUĆA KRETANJA U MLJEKARSTVU

Sažetak

Kretanja u mljekarstvu mogu se podijeliti u tri različita područja: proizvodnju mlijeka, preradu i trgovinu (potrošnju) mliječnih proizvoda. Ona djeluju međusobno, utječu i ovise jedna o drugim. Zajedničke su im velike razlike u različitim dijelovima svijeta kao i u Europi. Raspravlja se o suvremenoj situaciji i vjerojatnim budućim kretanjima u različitim područjima i posebnim osvrtom na Europu. Očito, različiti su uvjeti, problemi i rješenja te kretanja.

Mlijeko nije samo gotovo savršena prirodna hrana, već je postalo osnovni agropolitički i socijalni problem, bez obzira da li se javlja kao preobilje ili manjak.

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