



SWEDEN

MILK

MILK

From the Cow to the Table



Intro

Milk contains many things.

It is bursting with nutrients,
historically vital for Swedish public health.

It also contains traces of social change
and tells us of revolutionary innovations
as well as trends and effects.

The progression from hand to robot,
from a female to a male dominated workforce
and from the churn to the mass-produced carton.

Here you can follow the journey milk takes from the cow to the table.

Theme 1 – Ongoing change

Summary

Milk production was totally changed by science and technology.

Dairy work went from cottage industry to computer-managed mass production, from a traditional job performed by women to a male-dominated branch.

Today, milk production is characterized by its large scale and source of competitiveness. At the same time it is possible to see a growing interest in local production and consumption.

Milk has constantly been a source of political discussion.

In the beginning of the 1900s the population suffered from malnutrition and milk was seen as a solution.

Milk propaganda became the method for increased milk consumption to obtain better health, and profitability for the industry.



From the farm to the dairy

From the farm to the dairy

Before dairies, milk was used fresh straight from the cow and the farmer's production could only sustain his own family. In the middle of the 19th century farms were able to sell their milk to the newly-started dairies. At this point, women still had responsibility for the production whilst men delivered the milk by horse and cart. Improved agricultural methods, transportation and technology led to the fast expansion of the industry. People moved to the growing towns and cities and became consumers instead of producers.

The ever-growing demand made it necessary to increase production.

In the beginning of the 1900s, dairies and milk shops were opened in the towns and cities.

Farmers started cooperative dairies that they owned together.

Mjölcentralen (The Milk Centre), later known as Arla, soon became one of the largest.

From the dairymaid to the dairyman

Well into the 20th century, dairy work was hard and heavy going. High levels of noise, long hours, low wages and work related injuries were commonplace. Modernisation made the dairies more technical, efficient and clean. The dairies became industries and production and distribution changed. More and more people were replaced by machines. The more technical they became, the more male dominated they became. The dairymaid became the dairyman.

Today, the milk experts have been replaced by computer experts. Fewer people are needed to manage the large quantities of milk.

The work is no longer as heavy and the working environment has improved. However, the high rate of production can mean inconvenient working hours and shifts.

Yes, I think it's strange. Once it was all done by hand you could say. There were no machines. Now it's all mechanized and because of that it's manly? (Linnéa Andersson, former dairymaid)

The working day was rarely less than twelve hours, often it was more. The work was hard but fun and we were sweating nearly the whole time. (Bruno Österberg, former dairy worker).

Today of course milk comes in a tanker. You have no contact with the milk. And this is one of big changes; that you don't have any contact with the base product because it is within a sealed system instead. (Lennart Göransson, former dairy worker).

Three revolutionary inventions:

Pasteurization

Pasteurization made it possible to drink fresh milk without risking your health. One example of this was that the spread of tuberculosis could be stopped. Milk was heated up causing dangerous bacteria to die. Louis Pasteur's method was first used towards the ends of the 19th century and was of great significance for milk consumption.

The milk-cream separator

The mechanical separator made dairy production more efficient and became a major industrial success at the end of the 19th century. Gustaf de Laval's invention meant it was no longer necessary to separate cream from milk by hand.

Tetra Pak

For a long period of time, milk was delivered in heavy and clumsy glass bottles. In 1952, the first milk cartons were launched. Firstly, it had a tetrahedron shape (triangular with four faces) but later became rectangular box. The tetra packaging simplified production, distribution and consumption.

The milk market

Preamble: The milk market

From the 1930s and onwards, the Swedish milk industry was protected from all international competition.

The Swedish population needed nourishment. In order to increase milk consumption and branch profitability a campaign of milk-propaganda was used.

At the same time, the number of dairies reduced and production became more large scale. Competition increased from the end of the 1980s and onwards.

Today the industry has flexible production and new distribution and sales methods.

At the same time as closures and mergers take place, the demand increases for locally produced milk.

Drink Milk!

The authorities, politicians and researchers were all in agreement.

Milk could improve the health of the Swedish population.

Milk became a part of the vision of a welfare state and was associated with modern living, purity, order and progress.

The Milk Propaganda Association was founded in 1923.

The profitability of agriculture was to be guaranteed and the message about the benefits of milk was to be spread.

Advertisements, brochures and films were produced.

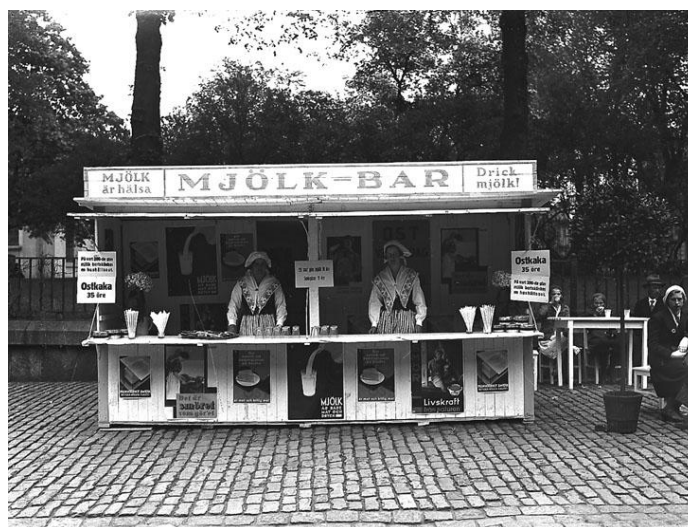
Milk days were arranged and milk bars were opened.

Farmers, politicians, doctors and scientific researchers were all active in the association.

State subsidization of the dairy industry was significant as well as the level of cooperation between milk producers and the authorities.

Milk still has a significant position as a food product.

Today, the Swedish National Food Administration recommends a 5 dl daily intake of low fat milk or milk products.



If they say that we should eat a lot of bread, then we will eat a lot of bread, if they say that we should drink a lot of milk, then after 10, 20 years we will be drinking a lot of milk. And that is actually true of everything. That means the state controls things. (Andreas Johansson, Consumer).

Factbox

The Milk Propaganda association is now known as the Swedish Dairy Association. They work to promote milk consumption. The association is part of the Swedish Milk organisation which in turn is owned by the seven largest dairy concerns in the country. This organisation works to improve the terms and conditions for milk producers in Sweden.

Milk and politics

For a long time, milk has been one of the base-food products that has awakened public and political opinion in Sweden, not least when it comes to the price.

1917: Demonstrations against the price of milk

During the First World War there was a milk shortage in Sweden and prices went up. Women workers in Stockholm organised a protest against the price of milk. About 6 000 people took part in the demonstration on the streets of Stockholm.

The 1930s: Bargaining about milk

Sweden was a major exporter of butter when international depression broke out in the 1930s. Farmers were badly hit by the sinking price of butter. Dairies joined forces and demanded that they be protected from international competition. The Swedish parliament agreed. The result was regulation of the price of milk and increased influence for milk producers. This compromise came to be known as the 'Cow trade'. Cow trading is today an expression used in Sweden to describe political compromises (much the same as 'horse trading').

The 1970s: The women of Skärholmen protest.

The supply of milk was low in the beginning of the 1970s. To maintain milk production the price was increased. A group of women from Skärholmen in Stockholm started a protest movement which grew and resulted in the government introducing a price ceiling for certain dairy products.

The 1980s: Milk gives strong bones in the Swedish parliament

In 1989 the government proposed that milk subsidies should be scrapped. It was believed that public health would be better served by drinking less milk. The government was accused of running a propaganda campaign in order to save money on subsidies. The opposition, including former Prime Minister Carl Bildt, allowed themselves to be photographed whilst jumping in the parliament, as a part of the Arla dairy concern's "Milk gives strong bones" advertising campaign.

Where did all the dairies go?

In the 1930s a lot of investment was made in large-scale dairy production. Efficiency and centralisation were to result in greater profitability.

The high demands made on how milk was handled, on hygiene and facilities proved beneficial for larger dairies. Smaller dairies struggled to survive and the number of dairies became fewer and fewer.

When deregulation of the milk market began at the end of the 1980s, competition increased. The major companies grew all the more.

For a long time, closures have been the cause of protests from employees, the unemployed and the unions.

Of the 1 600 dairies that existed in the 1930s, only 36 remain.

Today there is so much pressure. If we can't deliver effectively, cheaply and well then someone else will. And then we are out of the picture. (Ove Jarlö, Administrative Manager, Arla Foods, Linköping)

Picture: After 20 years under threat of closure, Arla's dairy in Uppsala was closed in 1997, despite strong protests.

A meeting of national and local

Production, distribution and sales

are concentrated more and more to larger facilities.

Major concerns cooperate in order to increase profitability.

Local shops are often forced to buy milk via intermediaries and find it more and more difficult to compete with larger food shops.

At the same time, the demand for locally produced milk is on the increase.

More and more local dairies are founded and larger companies launch milk marked as local produce. The Skåne dairies produce milk marketed as coming from the south and east of the country, whilst Arla markets milk as coming from Skåne in the extreme south, the west coast and the island of Gotland.

It is a struggle about who is nearest the consumer.

As a consumer it is not easy to see how 'local' the milk actually is.

We are nonetheless sixty percent, that is to say Arla's. We are sixty percent of the dairy farmers in Sweden and we are those absolutely the most local. (Inger-Lise Sjöström, Arla farmer)

We are optimistic and quite convinced that we will constantly grow. Our concept of being local and producing locally feels totally right. (Christer Sandahl, Marketing Manager Emå dairy).

Theme 2 – From the Meadow to the Stomach

Summary:

The food we eat affects the environment.

At the same time as milk production has become more and more large scale, the distance between the meadow and our stomachs has become that much greater.

The stages in the milk supply chain have increased and have become more difficult to see as a whole.

With the help of a life-cycle analysis it is possible to study how the route our food takes affects the environment.

It shows where the greatest efforts can be made.

The most significant environmental impact of milk is at the farming stage, but improvements can be made along the entire chain.



All the hands involved

1. Feed production

Cows need a lot of food in order to produce milk. Part of this is produced on the farm whilst the remainder is bought. Sometimes this feed is transported from the other side of the world.

2. The dairy farm

On the farm, the cows are milked. The milk is sucked into a cooling tank to avoid the destructive effects of bacteria.

3. Transportation

A tanker from the dairy collects the milk from the farm several times a week. The milk is pumped through a hose into the tank. The milk is tested to check the quality.

4. The manufacture of milk cartons

5. The dairy

At the dairy, quality assurance tests are carried out on the milk again. It is then refined into various dairy products. The milk is pasteurized, given the correct fat content, packaged and then transported to cold storage.

6. Transportation

Dairy products are loaded onto waiting lorries by fork-lift trucks. On a normal working day, many deliveries are made to shops; but also to schools, petrol stations and catering companies.

7. The shop

On arrival at the shop, the personnel take delivery of the products and sort them into the dairy counter. It is not always easy to plan the total number of dairy products. Both weather and tradition affect what we buy and in what quantity. Milk can be bought everywhere; in shopping centres, local shops, petrol stations and kiosks.

8. Consumption

Milk is consumed in many ways and in many places; in the home, at school, on the bus and in the café.

9. Package recycling

If the empty milk carton is returned to a recycling station then it can be reused or turned into energy. Throwing it away results in higher emissions. Today, every fourth milk carton is thrown away.

How does milk affect the environment?

How does milk affect the environment?

A life-cycle analysis of milk shows that the absolute greatest environmental effect takes place on the farms.

The impact caused by the transportation of products and dairy production is less. The car journeys made by consumers to and from the shop affect the environment all the more. Nevertheless, some would point out that the energy used for milk production and consumption is well invested, considering its nutritional value.

It is not easy to know what the most environmentally friendly alternative is in the dairy counter.

Dairies may have environmentally friendly technology and methods but they may also have long transportation distances. Ecological production may result in lower impact but even these products may have to travel long distances to the supermarket shelves.

Arla is building a new dairy, the world's largest, just outside London. It relies upon transportation. And if we can't find a solution to the problem of transport energy consumption then we will have to break things down

again. Smaller units when it comes to farming, processing and retail. Just look at retail; it's all based on road transport. (Christer Birgersson, farmer, Östgöta Milk)

Fact box: The effects of the cow

When a cow digests its food it produces methane gas. Every year, a cow releases between 120 and 130 kilos of methane in the form of flatulence and faeces. This has a negative effect on the environment. However, the cows also have a positive effect. They keep the landscape open and through this they contribute to biological diversity. With the help of genetic modification, it is hoped that new feeds and species can be produced that reduce the methane emissions from cows.

Fact box: The greenhouse effect

The greenhouse effect is a natural process that makes life on Earth possible. But too much greenhouse gas can have serious consequences. The climate changes and this affects people, animals and nature in a negative way. Examples of how mankind contributes to the increase of greenhouse gases are the emissions from motor vehicles and food production. The greenhouse effect is a major global challenge.

Theme 3 – The Farmer and the Cow

Summary:

In advertisements we are presented with a picture of grazing cows in beautiful landscape. Sometimes we catch a glimpse of the farmer. Rarely we see the work on the farms, the dairies, the technology, the tankers and road transports.

Modern technology, chemical fertilizer, feed and breeding have all made farming more efficient.

The farms have become fewer and greater.

The cows produce all the more.

Once, a lot of faith was put into the progression towards large-scale farming.

High quality food with high levels of hygiene would save Sweden from poverty.

Today we can detect a feeling of suspicion towards modern technology, whilst at the same time, a more romantic vision of agriculture has grown.

That which is scientific has become considered as unnatural and the distance between people and milk has increased.

But how natural can it be?

How many people would choose to drink milk directly from a cow?



Cows per farm

1850s: 2-3 cows

1930s: 4-5 cows

1960s: 5-6 cows

Today: 59 cows; in the county of Östergötland 94 cows

Dairy farms

1960s: about 100 000

Today: about 8 000

Swedish dairy cows

1930s: about 1 900 000

1960s: about 1 200 000

Today: about 360 000

Annual milk production per cow

1500s: 300-400 kg

1860: 1 000-1 500 kg

1930: about 2 200 kg

Today: about 9 000 kg

Age of cows

1800s: about 15-20 years

1940s: about 15 years

Today: about 5 years

The farmer's work – then and now

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Once, the farmer's work was heavy and nearly everything was done by hand.

Today it is technically advanced with many machines involved.

The working environment has improved but a lot of the work remains heavy.

Developments in technology have reduced the number of farms and employees.

At the same time, the number of cows per farm has increased.

Cows produce all the more, but the total production in Sweden is decreasing.

One explanation is the low profit margins for the dairy farmers.

Financial survival for smaller farms has become more and more difficult.

It is expected that the number of dairy farmers will decrease further.

Productivity in relation to working hours has increased dramatically. But to stand here and claim that we are so much better than our predecessors would be overstepping the line. Because we have to bear in mind that this productivity increase is nothing more than a result of us having access to machinery and the energy to power it. Earlier it was human energy and power in the form of working animals such as horses and oxen.

(Christer Birgersson, farmer, Östgöta milk)

Photo: The white whip

Hand milking often conjures up a romantic image but up until the 1940s it was a hard form of labour for many women. When a man accepted employment on a farm he had to sign a so-called "spouse clause". This meant that his wife was forced to milk the farmer's cows 365 days of the year without payment.

The farmer – a person of many talents

The farmer has always been capable of many things but progress demands new kinds of skills.

Today, a lot of the work is automated and computerized.

This means that the farmer has to be skilled in many different areas.

Cultivation, economics, computing, project management, ecology technology and animal care.

Additionally, one needs to be aware of national and European regulations and guidelines.

Actually you have to be a Jack of all trades if you're going to succeed. Because it involves a little technology, a lot of economy and of course the basics of cultivation, and then there's the animals. And all of this has to come together. You need to be a strategic planner as well.

(Per Pettersson, farmer, Arla).

I believe that we have benefitted from the EU; that we have - I believe that actually. But there would have been so much more freedom without all the regulations. (Lars Svensson, farmer, Arla).

From hand to robot

A series of technical innovations has eased the work on the dairy farms.

Running water

A running water supply meant that drinking water for the cows no longer had to be carried in heavy buckets.

Milking machines

In the beginning of the 20th century, the first milking machine was constructed in Sweden. It took a long time before these machines became commonplace but it did lead to a change of gender roles on the farms. Milking also became the responsibility of men.

Cooling tank

In the 1960s, the dairies increased the quality demands on milk. It became obligatory to have a cooling tank on every farm. Earlier it was difficult to store milk and ice blocks and running water had to be used.

Tanker

Once, farmers had to transport heavy milk cans or churns to milk platforms that were positioned at the side of roads. In the 1960s, dairies began to collect milk from the farms using tankers.

Tube milking

Tube milking was introduced in the 1960s. It meant that the milk was transferred directly to a tank via tubes instead of being carried in buckets to a storage room by the farmer.

Milk carousel

A milk carousel makes milking more efficient. The cow stands on a rotating platform which leads it to the milking machine. When the milking is complete, the cow leaves the carousel.

Milking robot

The growing number of cows per farm has resulted in many farmers opting to use milk robots. The cow itself chooses when it wants to be milked by positioning itself in the robot.

Feed

The milk production of cows has increased and much of this is due to the development of feed. Computer programs calculate how much feed each cow should have. Today there are automated feed trolleys.

Cow sheds with or without stalls

It is becoming more common to have cows moving freely in the shed as opposed to having them placed in stalls.

A day on the dairy farm

Listen to what the farmers have to say!

A typical day for the cow – then and now

A typical day for a cow

Whatever affects the work of a farmer affects the everyday life of a cow.

Highly developed breeding, feeding and methods of care have resulted in cows producing more milk.

When compared to the farms of old today's large-scale equivalents resemble industrial facilities.

In order to give milk a cow has to have a calf.

When about 300 days have passed, she is inseminated again.

After a few years, when she is no longer productive she is sent to the slaughter house. Some would call it over-exploitation.

Others would say that this development has increased health levels among animals and that cows in the past had a hard and difficult life.

A sick cow that gives no milk is an expensive cow.

Information texts:

Grazing

During the summer months the cows are put out to graze. Grazing cows contribute to keeping the landscape open. This in turn helps to maintain biological diversity. Some say that

long periods spent inside prevent the cows from interacting socially. Sweden is one of few countries where cows are supposed to be put out to graze by law.

When we let the cows out in the spring, it almost feels like a kind of release both for me and them when they come out, run around and enjoy life. It's no fun anymore in the autumn when it's muddy and dirty in the fields where a herd has gathered and trampled the ground. At the same time it feels good when they come into shed. They are content in here when they come into the warmth and I get to come in and feel the warmth as well.
(Lars Svensson, farmer, Arla).

It would be wrong to deny that when you have a stock of ten or fifteen cows, the animals feel like family members. But this is not the case when you have four-hundred of them. But to say that the cows have a harder time on the basis of that, I don't know. I wouldn't be able to give you that in writing. (Christer Birgersson, farmer, Östgöta Milk)

Food and nutrition

Today's cows are milked much more than their predecessors were a hundred years ago. A lot of this is a result of breeding and genetic modification. These genetic methods result in nutrition for the cows that contributes to milk production in the first instance and to a lesser degree when it comes to the immune system and the formation of fat. A lot of food is required in order to produce a lot of milk. This is strenuous for the body. An average cow lives to be five years old and during that time the cow gives birth to three calves.

Cattle shows and styling

These shows give breeding companies and livestock owners the opportunity to exhibit and market their animals. Before the show, the cows are *styled* in order to give them the best possible appearance. Cattle shows are arranged at both a local and national level.

Insemination

The breeding industry developed in Sweden during the 1950s. Seminal fluid from the best bulls resulted in larger cows that produced more milk with higher quality. Some argue that breeding methods have gone too far. Highly productive cows with large udders can suffer from inflammation and disease. The challenge is to breed cows that live longer, have better health and produce milk. Once a cow has calved the milk production begins. With the help of artificial insemination and concentrated feed, calving can be spread across the whole year. This in turn results in a more even level of milk production.

How cows are named

A heifer calf is often given the same name as its mother. Today, all cows in Sweden are tagged with an individual number. This means that a cow can be called Rosemary and at the same time have the number 135.

Cow questions:**What is a calf?**

This is a cow's young. A newly-born calf weighs around forty kilos. Heifer calves which are born on the farm become dairy cows. Bull-calves are sent for slaughter; a few of them however are saved for breeding.

What is a heifer?

This is a cow which has not as yet given birth to a calf. A heifer is inseminated for the first time at the age of fifteen months. She carries her young for nine months.

What is a cow?

A cow is a heifer around two years old which has calved. The cow gives milk for a period of ten to twelve months after giving birth.

Theme 4 – Consumption

Summary:

For a long time, Swedish milk consumption has been high when compared to many other parts of the world.

Most people in Northern Europe tolerate fresh milk whilst in other parts of the world it makes people unwell.

Fat and nutritious milk has helped people to survive in parts of the world with little sunlight.

For a long time, milk has been a symbol for what is considered traditionally Swedish. It is associated with healthy living, open landscape, tradition and all things natural.

Milk still has an important position as a nutritious food product but milk consumption is on the decrease.

The dairy industry is faced with new challenges and the range of products available has exploded.



This has probably something to do with the milk we received from our mothers. Even if this is another kind of milk I believe it remains as an important base for a strong and healthy body. And for that reason it is one of the most important food items. (Chister Sandahl, marketing manager, Emå dairy)

The Swedish diet has an incredibly high dependency upon milk; sauces, pancakes and creamed macaroni are typical examples of where milk is needed. (Ingela Ihrman, consumer)

Drinking milk

For a long time there was only milk, cheese, butter and cream in the dairy counter.

From the 1970s and onwards the product range expanded.

Today there are dairy products for all kinds of lifestyle.

Whilst milk consumption has decreased since the 1980s the consumption of other dairy products has gone up.

The dairy industry must continuously adapt its products and advertising in order to keep up with new trends, discoveries and the demands of the consumers.

The competition from other products is tough.

Swedish milk consumption, then and now:

1960: about 170 litres per person per year

1980: about 160 litres per person per year

2010: about 97 litres per person per year

Buying Milk

For a long time, milk was sold in special milk shops which could be found in every neighbourhood.

The shop assistant poured milk into a can which the customer brought with them.

These cans were later replaced by glass bottles and in the 1950s dairy products began to be sold in ordinary food shops.

Paper-based milk carton packaging was launched.

Milk became easier to distribute, sell and carry home.

The arrival of the refrigerator meant that we no longer had to buy milk every day.

Today there is a wide range of packaging.

Different kinds for varying lifestyles.

In the “grab and go” culture we do things in a hurry.

The screw top has become more and more common.

We used to buy milk in a can. And you had a smaller one for buying cream. And you went every day and bought those litres of milk from that milk shop. And there were the milk ladies, as we called them, standing there with their measures. (Gunni Mantefors, consumer)

Changes in availability:

Free of lactose, free of milk

It has become more and more common for people to experience stomach problems resulting from milk. Lactose intolerance means that the body has difficulty in breaking down the lactose in milk. Others are allergic to milk proteins. Some consumers choose milk-free milk alternatives because of ethical or political reasons. The range of products available has grown in recent years.

Healthy or unhealthy?

Milk has always held a strong position as a nutritious food item. But even this has been questioned. For a long time, fat milk was regarded as being good for your health. Skimmed milk was introduced in the 1960s. The Swedish National Food Administration promoted lower fat in food and during the 1970s skimmed milk had its heyday. Extremely low-fat *mini milk* was launched during the 1990s.

Back to nature

The earlier milk production on farms is associated with health risks. Modern large-scale and high-tech production is associated with hygiene and modern living. Today, the interest for small-scale, local and ecologically produced milk products has increased. Words like natural, local and traditional are used willingly by small and large dairy companies alike.

Milk in coffee

As a response to the ever-decreasing milk consumption, a “café au lait campaign” was launched during the 1980s. The idea was that more milk in coffee would reverse the decline. The campaign was not very successful. There was however a “latte campaign” at the end of the 1990s. Across the country, barista schools and coffee-drink competitions were started. Earlier, coffee was regarded as a competitor to milk. Today, a quarter of all the milk sold gets poured into coffee.

German milk

Lidl started selling German milk in Sweden in 2003. This awakened strong debate and this event was described as a threat to the Swedish farmers, public health, the environment and livestock care. Maybe Swedish milk remains a national symbol. Today, Lidl sells milk from Swedish cows.

Instead of milk

As an alternative to milk, Swedes drink more water, beer and soft drinks.

Milk powder

It is uncommon to use milk powder for drinking. Normally it appears as an ingredient in bread, meat products or as a replacement in ice-cream, sauces and ready-cooked food. Most of it is exported to other countries. Exports to developing countries were subject to debate as it was believed they could harm local production.

Slide show: Consumer voices



