

Stora Fårvallsslätten, a small scale, horse powered farm in Sweden



Webcase
developed and
written by
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Photo by Béatrice Falsen

Agroecology in Practice Program (www.agroecoprac.org) is a SIDA (Swedish international development cooperation agency) – financed program to start University education and training in Agroecology in three collaborating countries: Sweden (Swedish University of Agricultural Sciences-SLU; Ethiopia (Mekelle University) and Uganda (Uganda Martyrs University).

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The Stora Fårvallsslätten Farm

Sweden



Photo 1 by Weronika Swiergiel. Typical landscape in northern Sweden.

Sweden is a sparsely populated country, characterized by its long coastline, extensive forests and numerous lakes. It is one of the world's northernmost countries. In terms of surface area it is comparable to Spain, Thailand or the American state of California.

Sweden's borders have been unchanged since

FACTS

Area: 174,000 sq mi (450,000 km²), the third largest country in Western Europe

Longest north-south distance: 978 mi (1,574 km)

Longest east-west distance: 310 mi (499 km)

Capital: Stockholm

Population: 9.3 million inhabitants

Agricultural land: 8 %

Forests: 53 %

Marshland: 9 %

Grasslands: 7 %

Bare rocks and mountains: 12 %

Lakes and rivers: 9 %

GDP per capita (PPP): USD 35,934

GDP per capita (current

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1905 and the country has not been at war since 1814.

Extreme contrasts

Sweden experiences extreme contrasts between its long summer days and equally long winter nights. In the summer, the sun stays in the sky around the clock in the parts of Sweden north of the Arctic Circle, but even as far south as Stockholm (59°N) the June nights have only a few hours of semi-darkness.

The Gulf Stream

Considering its geographic location, Sweden enjoys a favorable climate. This is mainly because of the Gulf Stream, a warm ocean current that flows off Norway's west coast.

You can find more information about Sweden at the Swedish Institute website: <http://www.sweden.se/eng>

prices): USD 43,147

Most important export goods:

Machinery and transport equipment, chemicals and rubber products, electronics and telecommunications equipment, wood and paper products, minerals, road vehicles, pharmaceuticals

Most important imported goods:

Electronics and telecommunication, chemicals and rubber products, industrial machinery, foodstuffs, road vehicles, minerals

Population in major cities (including suburbs):

Stockholm: 1,960,000
Gothenburg: 915,000
Malmö: 585,000

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Agriculture in Sweden



Photo by 2 by Weronika Swiergiel. Barley field in northern Sweden.

Crop production

Most of the agricultural production is situated in the southern part of the country due to its more favorable climate. Half of the production comes from the plains in the south and another 38 % comes from the forested areas and the transition areas between forest and plains. About 10% of the agricultural area is found in the north.

The production of cereals, oilseed rape and

ACTS

Employs: 2% of population (39% female)

Business entities: 89% are sole proprietorships

Part of GDP: 2% (year 2000).

Agricultural area: 3.1 million ha (incl. 0.5 million ha pasture)

Cereal crops: 4.3 million tones.

Winter wheat: 45 % of the cereal crops.

Peas: 54 300 tones

Beans: 30 500 tones

Turnip rape: 280 900 tones.

Horticulture production value: 3.5 billion SEK

Horticultural crops: field grown; carrots, onions, white cabbage, leek, cauliflower, broccoli, swede, beetroot, iceberg salad, corn, apples, pears, cherries, plums, strawberries, blackcurrant, raspberries and greenhouse grown; ornamentals, tomatoes and cucumbers.

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root vegetables is focused to the plains while the forest, transition and northern areas are dominated by forage production.

Livestock

Since the Second World War the amount of livestock farms has become increasingly specialized and increased the amount of livestock. In 1998 livestock production, mainly milk was responsible for 58 % of the total agricultural income. Southern Sweden dominates the livestock production. Half of the pig production, main part of the egg and chicken production is found in the plains of southern Sweden (Götaland) while dairy cows, cattle and sheep are focused to the forested areas in the south.

Development

Since the Second World War the agriculturally employed population has decreased drastically and the farms have become larger. By 1950 25 % of the population worked with agriculture. This was decreased to 2% by the year 2000. The largest decrease occurred between 1950 and mid 1960-ties. The farmland area has been decreasing from the 3.8 million ha mainly due

FACTS

Cattle: 1 538 281

Average size of cattle herd: 71

Pigs: 1 528 740

Average size of piglets herd: 532

Sheep: 540 487

Average size of sheep herd: 31

Hens and chickens: 7 158 602

Average size of hens herd: 1 591

Average size of chicken herd:
3 312

More information on: www.sjv.se, see: Statistics (English summaries) or Yearbook of agricultural statistics (table headings also in English)

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to shutdown of farms in forested areas during the 1950s and 1960s. Recently the farmland area started to increase again mainly in the plains and is now 3.1 million ha. At the same time the amount of farms is still decreasing meaning that the farm size is increasing. The total production is largely unchanged while the dependency on inputs as: imported fodder, fertilizer, pesticides and fuel has increased.

Income

The farmers' income decreased during the sixties but has improved since then, especially at the larger farms. An increasing amount of farmer receives an increasing amount of their income from outside the farm, especially at the smaller farms which are most common in the north and in the forested areas of mid Sweden (Svealand). The average age of farmers is significantly higher than within other livelihoods, especially amongst small scale farmers.

www.nationalencyklopedin.se,
http://www.ne.se/sverige/n%C3%A4ringsliv/jordbruk?i_h_word=sverige+n%C3%A4ringsliv+jordbruk



Photo 3 by Weronika Swiergiel



Photo 4 by Weronika Swiergiel. Organic vegetables from Ås Trädgård.

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Organic production in Sweden

The farming

Organic agriculture is based on local and renewable resources where chemical fertilizers and pesticides are excluded. Nutrient supply and crop protection is based on a diverse crop rotation where the ley and green manure are of special importance. The livestock is an integrated part of the production system. The amount of animals is adapted to farms ability to produce fodder. The animals produce manure and food. There is also a small amount of organic farms without animals.

The goals

To create a sustainable and globally just society in close cooperation with consumers in which agriculture is a natural part and the farmer plays an important role as food producer and co-creator of the community. Health promoting food, fertile soil, rich bio- and cultural diversity and a natural life for animals are important goals. So is decreasing the use of fossil fuels and other non-renewable resources and to avoid unnatural and polluting substances and processes.

FACTS

Organic certification;

KRAV

<http://www.krav.se/System/Spraklankar/In-English/KRAV-standards/>

Organic production According to the EU regulation (EG nr 834/2007)

DEMETER

<http://www.demeter.nu/> (only in Swedish)



Photo 5 by Milosz Swiergiel. Organic vegetable production at Ås Trädgård, northern Sweden.

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Guiding principles

Naturalness means humans are part of nature and depend upon biodiversity. To follow the *ecological cycles* of natural resources by e.g. reusing nutrients and decreasing the use of non-renewable resources. *Closeness* through knowing the origin of products and better contact between producers and consumers to increase security. Use the *precautionary principle* to avoid environmental damage. The insecurity about effects may result in a technique being dismissed. *Justice* is a sustainable society based on equity and welfare and just distribution of resources between rich and poor.

Källa: www.nationalencyklopedin.se [2010.12.13, 18.30], Källander I, 2005. *Ekologiskt lantbruk. Odling och Djurhållning. Natur och Kultur. Järfälla, Sweden.*

FACTS

Area: 9.8 % (302 900 ha) of the total agricultural area (69 300 ha pasture and meadow).

Cereal crops: 232 300 t. (4 % of the total production of cereals).

Oats: 73 600 t (10 % of the total production)

Peas: 5 100 t (10% of the total production)

Field beans: 14 600 t (56% of the total production)

Rape and turnip rape: 2 400 t (1 % of the total production)

More statistics (tables in Swedish) on organic production at: www.sjv.se press international and statistics or:

http://www.jordbruksverket.se/webdav/files/SJV/Amnesomraden/Statistik%2C%20fakta/Arealer/statistikrapport2010_6/20106_inEnglisch.htm

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Introduction to Stora Fårvallsslätten farm



Photo 6 by Svante Lindqvist and Béatrice Falsén. From left to right at the back: Louise, Béatrice, Horse, Svante. In front left to right: Adeline and Albin.

Stora Fårvallsslätten is a small scale, horse-powered farm focused on self-sufficiency and lactic acid fermentation of vegetables. Béatrice and Svante see the farm as a kind of research that investigates if it is possible to live self-sufficiently and sustainably with a low resource use.

The production

Cereals they only produce for their own consumption since it is difficult to compete with highly mechanized farms when it comes to cereals.

FACTS

Family members: Svante Lindqvist, Béatrice Falsen and the children Louise, Albin, Adeline. The adult children Johanna, Moa, Alexandra, Christoffer do not live on the farm.

Location: Close to the town Skara and lake Vänern, Sweden.

To see a map of Stora Fårvallsslätten write “Stora Fårvallsslätten” in Google maps.

[See videoclip about Stora Fårvallsslätten](#)

Oats: 0,84 ha

Vegetables: 0,8 ha (potato, root and brassica vegetables, onions, herbs, spices, pulses, corn, lactic acid fermented vegetables.)

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The farm includes 7 ha crop fields, 6 ha pasture and 3 ha forest, 3 working horses, a cow providing milk and meat, sheep for milk and wool, rabbits for pleasure, meat and hides and hens for eggs and parasite control in the field.

Since the farm is horse powered, and the horse tools are small and simple, very little fossil fuels are used. Due to the horses there is a lot of ley in the crop rotation. A lot of ley also means less labor compared with more intensively managed crops.

Strengths and weaknesses

The strengths of the farm are that they have very low and convenient loans with low interest. They have a lot of knowledge and can perform almost everything they need by themselves. The couple is good at using what is available and believes that this is an important factor to their success. A difficulty is the poor soil but they know how to handle it. Weeds are also a nuisance as on most farms.

History of Stora Fårvallsslätten

Both Béatrice and Svante have had an urge to grow food and take care of animals since they were children. Béatrice is fascinated by how



*Photo 7 by Weronika Swiergiel.
Permanent grazing land and horses.*

Strawberries: 0,51 ha

Fruit trees: 15 trees of apple, pear, plum and cherries

Berries

Ley: 4,08 ha

Green manure: 0,11 ha

Pasture: 6 ha

Forest: 3 ha

Horses: 3

Cattle: 2-4

Sheep: 4

Hens: 12

Rabbits

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you can create a natural cycle of all resources on the farm and feels as a part of society but also independent. She thinks it is a privilege not having to trust others to grow the food and take care of the animals the way she would like. She is capable of doing it herself. Svante feels that farming is creative and that it is a true growth compared to the economical growth. Svante sais:

“If you are interested in nature you can study it, but as a farmer you are more involved in it. When you grow you get involved into the balance but we try to do it on nature’s terms, for example not using GMOs and pesticides.”

The farm was bought in 1983. Partly due to having low investment capital the farm needed to be small. However at that time it was difficult to buy a small farm since the government was rationalizing agriculture and gave preference to the farmers wanting to buy up larger areas.

At the beginning the farm was focused on milk production and rented land to have enough forage. When the dairy plant stopped receiving their milk since it was such a small amount they turned the production towards lactic acid fermented vegetables.



Photo 8 by Weronika Swiergiel. Goats



Photo 9 by Weronika Swiergiel. Homegrown food.

The Stora Fårvallsslätten Farm



Photo 10 by Weronika Swiergiel. Son Albin, friend Tora and Calf.

The products were sold to a biodynamic farmer that sells organic vegetables boxes directly to consumers. With time they started to sell to additional local customers. To lower the workload raw vegetables are sold directly from the farm to a reseller that sells the vegetables in a shop in the nearby town Skövde. The year 1986 a locale was built for lactic acid fermentation.

After having worked hard for many years Béatrice and Svante felt they needed a new kind of challenge. At the beginning everything was new and it was a challenge to manage a cropping season. It requires many and intensive working hours. You need to take care of your body since it is hard work. After 25



Photo 11 by Weronika Swiergiel. Soil preparation by Svante and horses in the greenhouse.



Photo 12 by Weronika Swiergiel. Vegetables for sale.

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years it is not as new and entertaining. They still wish to continue as small-scale farmers but they do not have the same strength as before. Hence the challenge is to find smarter ways, which might require some money and investments.

The last years Béatrice have started studying at the university and the couple decided to reduce the commercial farming and focus on self-sufficiency and renovating the house and other buildings.

Béatrice and Svante also wished to have more company and share the farm work with others. Since this year Astrid and Maxime are renting the neighboring house which Svante and Béatrice bought in 2001. The plan is to share the farm work and possibly the lactic acid fermentation business. Since the cooperation is just starting and it is uncertain how it will impact the farm development, the farm case will be presented as it looked before Astrid and Maxime moved in.



Photo 13 by Weronika Swiergiel. The families house.



Photo 14 by Weronika Swiergiel. Astrid and Maxime making goat and cow cheese.

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Climate and landscape

Stora Fårvallsslätten is found in the inland of southern Sweden between the two great lakes Vänern and Vättern. The landscape is a blend of mixed forest (broadleaf and pine) and agriculture. These areas (called mellanbyggd) are less suitable for large-scale industrial farming and hence have maintained more medium to small scale farms. Information on soil type can be found in table 1, chapter "Crop Production". Due to the long Swedish winters the growth season is 190-200 days a year. The last day of spring frost occurs at the end of May or sometimes even at the beginning of June. The first day of autumn frost comes around mid September. According to Svante the winters were mild with little snow during the 80s and 90s but the last winters have been very cold and snow rich. Svante recalls that July and sometimes August normally is the most rainy month.

Below you will find a diagram 1 and 2 over the maximum, minimum and mean daily temperature and precipitation per month based on data from the period 1961 to 1990.



Foto 15 by Weronika Swiergiel. Svante and the horses.

The Stora Fårvallsslätten Farm

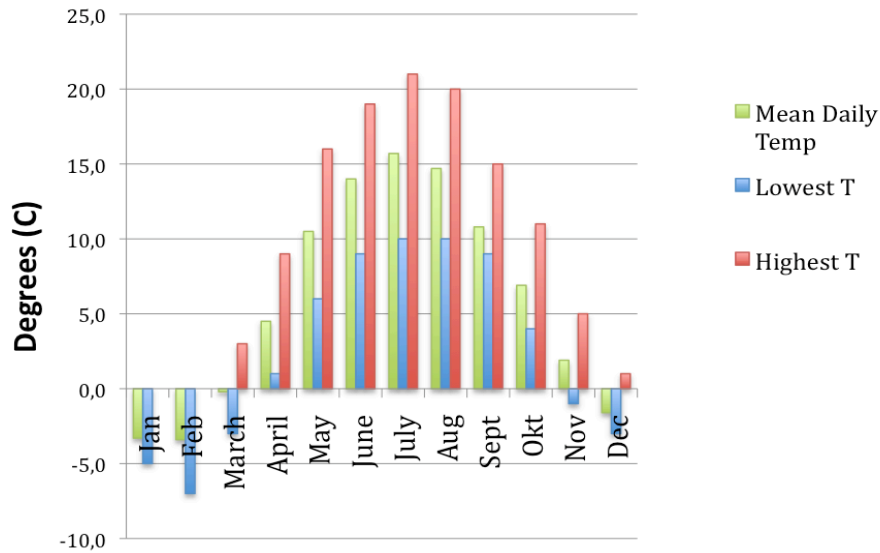


Diagram 1. The highest, lowest and mean daily temperature per month based on average data from the period 1961-1990.

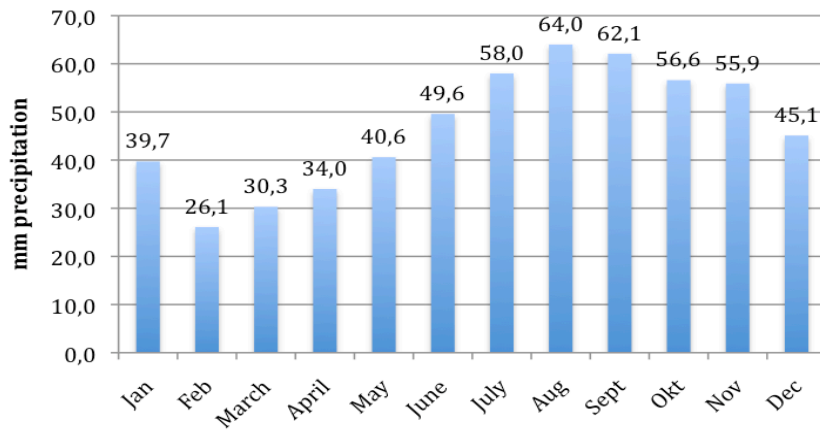


Diagram 2. Mean precipitation (rain and snowfall) in mm based on average data from the period 1961-1990.

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Knowledge acquisition and support

Neither Svante nor Béatrice were raised on a farm and they have not used much extension services. To get knowledge of how to manage a small-scale farm was a learning process that took a lot of time. Some projects must be handled stepwise while others are more crucial as knowing how to weld and do construction work. To build by yourself saves a lot of money and it helps to know basic electronics and plumbing.

They have taken courses in welding, sheep husbandry, hoof caring, horse driving in forest work and cheese making. At a small-scale farm there are a lot of areas to cover when it comes to animal husbandry and arts craft.

The reality is often more difficult than what it seems and there is not enough time to learn all that is needed. A lot of information is lost with the older generation. Svante learnt the basics of horse driving from a farmer and since then has received help and ideas from people he knows. Mainly though, he learnt by doing.

There is cooperation between small and medium sized organic farmers in the area. The farmers help each other, share tools and



Photo 16 by Weronika Swiergiel. Goat cheese.

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Svante and Béatrice even share a strawberry field with one of the neighbors. They also stay in contact with people with a similar livelihood all over the world, especially since there are few people living on horse powered small-scale farms. Associations as Småbrukarna (Small scale holders) and Skogshästen (The Forest Horse) are important for the feeling of community and belonging.

Other important social interactions come through the children, school, orientation club and the Green Party. The consumers are a very positive and important support and their opinion have a large influence on the farm.



Photo 17 by Weronika Swiergiel. Farmer to farmer learning at Stora Fårvallsslätten.

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Crop Production

Information on crops, amounts, varieties and costs can be found in table 4 under chapter "Regulations and Economy".

The cropping calendar

Spring

The cropping activities start at spring in March and just over 10 h per week are dedicated to this work. Last year's green manure is ploughed under and this year's carrot and potato fields are ploughed. The same fields are harrowed in April together with the bean, parsnip and cucumber fields. Approximately 30 h a week are dedicated to cropping in April.

In May 40 h per week are spent on cropping. The old grazing is ploughed and left in fallow until the end of June.

The new ley (often sown into cereals), beetroots, parsnips and carrots are sown at the beginning of May when the potatoes and onions are planted. The potatoes are thereafter ridged during the rest of the month while carrot fields are flamed 10-12 days after



Photo 18 by Béatrice Falsen. Soil cultivation at spring.



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sowing against the emerging weeds, onions are harrowed and hand weeded. Dill is sown at the end of May at the same time as the cabbage crops are planted.

Summer

June is the work peak with more than 70 h per week. The first trimming of the single variety leys is performed. Beans (after the last day of frost), corn and cucumber are planted. Peas and oats are sown and intercropped. Carrots, cabbage and onions are inter-row cultivated against weeds with an additional hand weeding. Potatoes are hand weeded.

In July the cultivation work increases to about 50 h per week with continued weeding in carrots, onions and cabbage. Harvest of beetroot, potato and onion fields starts.

August has the same work load as July and included the trimming of the ley, continued weeding in carrot, corn and cabbage fields and the harvest of dill, cucumber, beans, corn, parsnip and carrots begins. By mid August the last onions are harvested.

Autumn

At the beginning of September the last cucumbers, beans and the first cabbages for



Photo 19 by Béatrice Falsen. Inter-row cultivation in cabbage and carrots.



Photo 20 by Béatrice Falsen. Carrot

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lactic acid fermentation are harvested. After that the last potatoes and then corn and beetroots are harvested. Just about 42 h per week are dedicated to cropping in September.

By mid October it takes about 35 h per week to harvest the last carrots and parsnips and ploughed some of the fields.

Sometimes autumn sown cereals are sown after the vegetables in September and if there is time the carrot and parsnip field are disc harrowed against weeds. This work takes no more than 12 h per week.

Winter

During December and January there are no cropping activities due to the cold and snow. At this time maintenance, forest management, administration and planning are performed.

Most crops are sensitive or very sensitive to frost. Some crops (e.g. some brassicas, cereals, root vegetables) survive frost and some even survive the winter (e.g. winter wheat and common vetch) if they are small enough or frost hardy enough.

Plant protection

The most common pests and diseases are diamond back moth, cabbage white butterfly,

harvest.



Photo 21 by Weronika Swiergiel. White cabbage.

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cabbage moth, snails and potato late blight. The insects are managed by covering the young crops with fiber cloth. Resistant potato varieties are chosen and the potatoes are pre-germinated. In august the foliage wilt and the potato growth stop. They get about 2 kg/m length.

A high biodiversity is maintained to achieve a resilient plant protection. They create habitats for natural enemies by keeping permanent and tree covered pastures, bush hedges and stone walls. The hens are allowed to graze in the fields and help to keep the parasite levels low. Landraces are less susceptible to disease and parasites.

Fertilization

At spring manure, animal and human urine is spread in the fields (human urine on leys). Possibly new rules for organic certification will ban the use of human urine.

The rye receives some manure when it is sown at autumn. They always try to split the fertilization on different occasion to avoid nutrient leakage to water and air.

They use green manure and have a lot of legume rich leys. The soil has improved over



*Photo 22 by Weronika Swiergiel.
Permanent pasture*



*Photo 23 by Weronika Swiergiel.
Irrigation pond.*

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the years. Svante estimates that they have a good nutrient circulation on the farm without losing and adding any significant amounts of nutrients.

When it comes to nitrogen they have increased the nitrogen storage in the soil. Phosphorus is probably added by food from outside the farm. Sometimes they also buy some straw and hay but most of the fodder and fertilizer originates from the farm. Svante estimates that they have a pretty good nutrient balance on the farm.



Photo 24 by Weronika Swiergiel. Ley with Vetch.

The Stora Fårvallsslätten Farm

Table 1. Field information and seven year crop rotation.

Field	Map no	Area (ha)	Soil type	Access to irrigation	Crop Rotation						
					2010	2009	2008	2007	2006	2005	2004
2A	3630	0,23	Clay	Yes	Ley	Ley	Ley	Oats	Vegetables	Green manure	Ley
2B	3630	0,23	Clay	Yes	Ley	Ley	Oats	Vegetables	Oats	Ley	Ley
2C	3630	0,22	Clay	Yes	Strawberries/fallow	Vegetables/oats	Ley	Ley	Ley	Ley	Ley
2D	3630	0,22	Clay	Yes	vegetables/green manure	Ley	Ley	Oats	Oats	Ley	Ley
2E	3630	0,22	Clay	Yes	Oats	Ley	Ley	Ley	Ley	Ley	Ley
2F	3630	0,23	Clay	Yes	Ley	Ley	Ley	Ley	Ley	Ley	Ley
5A	7036	0,37	Clay/humusrich sand	Yes	Ley	Ley	Ley	Ley	Ley	Ley	Oats
5B	7036	0,37	Clay/humusrich sand	Yes	Ley	Ley	Ley	Ley	Ley	Oats	Vegetables
5C	7036	0,37	Clay/humusrich sand	Yes	Ley	Ley	Ley	Ley	Oats	Vegetables	Ley
5D	7036	0,37	Clay/humusrich sand	Yes	Oats	Oats/peas	Ley	Ley	Ley	Ley	Ley
5E	7036	0,37	Clay/humusrich sand	Yes	Oats	Ley	Ley	Ley	Ley	Ley	Ley
5F	7036	0,37	Clay/humusrich sand	Yes	Ley	Ley	Ley	Ley	Ley	Ley	Ley
8A	2024	0,2	Sand	Yes	Greenhouse vegetables	Greenhouse vegetables	Greenhouse vegetables	Greenhouse vegetables	Greenhouse vegetables	Greenhouse vegetables	Greenhouse vegetables

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Table 1. Field information and seven year crop rotation.

Field	Map no	Area (ha)	Soil type	Access to irrigation	Crop Rotation						
					2010	2009	2008	2007	2006	2005	2004
8B	2024	0,3	Sand	Yes	Ley	Ley	Ley	Ley	Green manure	Green manure	Ley
8C	2024	0,3	Sand	Yes	Ley	Ley	Ley	Ley	Ley	Rye	Vegetables
8E	2024	0,3	Sand	Yes	Vegetables/ Green manure	Green manure	Ley	Ley	Ley	Ley	Ley
8F	2024	0,3	Sand	Yes	Vegetables/ fodder legumes	Vegetables/Oats	Green manure	Ley	Ley	Ley	Ley
8G	2024	0,3	Sand	Yes	Ley	Vegetables/Rye	Vegetables	Vegetables	Oats	Ley	Ley
8H	2024	0,3	Sand	Yes	Ley	Ley	Oats	Vegetables	Green manure	Ley/Vegetables	Ley
8I	2024	0,3	Sand	Yes	Ley	Ley	Oats	Fodder legumes	Vegetables	Vegetables	Green manure

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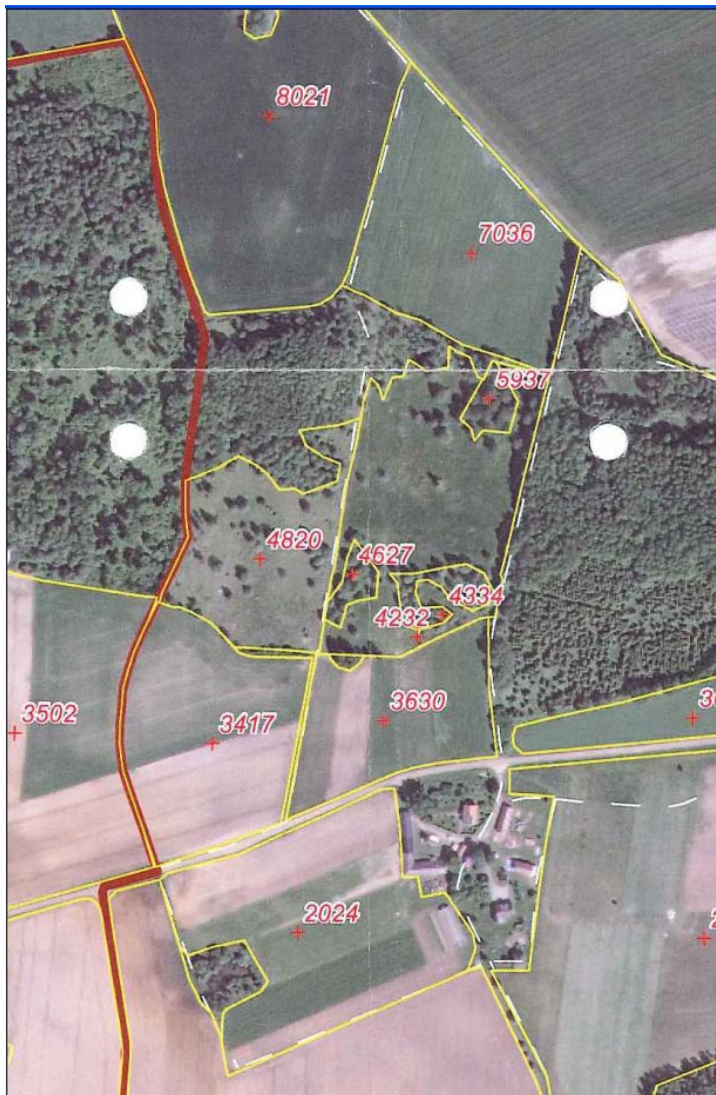


Fig 1. Map of Stora Fårvallsslätten.

Field	Map no.
2A	3630
2B	3630
2C	3630
2D	3630
2E	3630
2F	3630
5A	7036
5b	7036
5C	7036
5D	7036
5F	7036
8A	2024
8B	2024
8C	2024
8D	2024
8E	2024
8F	2024
8G	2024
8H	2024
8I	2024
pasture	4232
pasture	4334
pasture	4627
pasture	5937

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Crop rotation

A good crop rotation is very important for nutrient management, pest and disease control according to Svante. The crop rotation mainly includes ley, green manure, oats and vegetables (see table 1). On the clay soil cabbage crops are grown while the remaining vegetables are grown on the sandy soil. Each soil type has its own crop rotation. Often the ley is sowed into the oats. Cabbage is commonly planted after the ley since it requires a lot of nutrients.

To plough a ley field with horses is a labor-intensive activity on the farm. Hence the crop rotation is adjusted to be optimal for the working capacity of the horses.

The ley is normally left for 4-5 years and contains much Lucerne (*Medicago sativa*), cock's-foot (*Dactylis glomerata*), timothy (*Phleum pratense*) common bird's foot-trefoil (*Lotus corniculatus*) and some white clover (*Trifolium repens*) since it is more resistant over the years compared to red clover.

Green manure and ley species are chosen to



*Photo 25 by Weronika Swiergiel.
Ley with Plantago lanceolata.*

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suit as fodder for sheep, horses and cow, to tolerate grazing, to be productive in long-term leys (4-5 years), to be drought tolerant and to compete well against weeds. Species' that need frequent cuttings are unsuitable since there is no time to cut more than 1-2 times. The ley must dry in the field before it is transported to the hayloft. It is important to have time to cut as much as possible before the rain comes. The animals also do not manage to graze the whole area fast enough.

In the farmers experience lucerne makes a good ground cover against weeds but is sensitive to grazing and too much gives problems with drying the hay with barn hay drier. Cock's-foot grows fast in spring and competes well against quack grass but senescens very fast and is not so popular amongst the animals. Timothy (*Phleum pretense*) has been tried but has a scarce coverage and is hence an unsuitable weed competitor. There is some white clover (*Trifolium repens*) since it is more resistant over the years compared to red clover.



Photo 26 by Weronika Swiergiel.
Ley with common and hairy vetch.



Photo 27 by Weronika Swiergiel.
Vegetable crop rotation.

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Animal husbandry



Photo 28 by Weronika Swiergiel. Rabbits.

The animals are mainly used for drought power and own consumption. Some sheep and rabbit hides are sold. The horses are used in all agricultural management that otherwise requires a tractor. It takes a lot of knowledge and work to teach a working horse but the family loves horses and it helps them to be almost independent of fossil fuels.



Photo 29 by Weronika Swiergiel. Horses.



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The caring of the animals takes about 20 h per week in January-March. Lambing occurs in april and this is also the time when the pens are constructed. This work takes an additional 20 h per week. The horses are released to the new grazing land in May, which lowers the workload to about 10 h per week from May to September. After the season the horses feed on the old permanent grazing lands. Horses mainly feed by grazing and some additional craft fodder during hard work. The slaughter is performed at the end of October until the start of November and takes about 30 h per week including the normal tending of the animals. Horses and cows are to a large extent adapted to the winter and can be kept outside for exercise over the whole winter (with access to an indoor stable or roof and straw and unfrozen water). The sheep are kept in the green house during the winter. Further information on the animals including their products, services, costs and incomes is found in table 5 under chapter "Regulations and Economy".

*Photo 30 by Weronika Swiergiel.
Kidlings.*



*Photo 31 by Weronika Swiergiel.
Cow.*



*Photo 32 by Weronika Swiergiel.
Sheep.*

The Stora Fårvallsslätten Farm

Resource location, management and flows:

According to Svante small production units as Stora Fårvallsslätten give a larger landscape diversity:

"When each farmer does a little bit differently a larger biodiversity and species richness is created".

Today's development with the merging of large production units and strict standardized management regulations make the landscape more uniform. Svante tells us that they favor biodiversity by growing organically, keeping permanent grazing land and preserving stonewalls and bush hedges.

At Stora Fårvallsslätten they try to use the natural resources as efficiently as possible and connect the soil, animals and household into one resource cycle. They seek to minimize the use of external resources and the farm is independent when it comes to fodder and manure. Since they use workhorses the farm is self-sufficient on draft power too. They only buy seeds, fiber cloth, fodder minerals and some concentrated fodder for when the horses need to perform hard work. All leftovers from



*Photo 33 by Weronika Swiergiel.
Old stonewall with high insect
biodiversity.*

The Stora Fårvallsslätten Farm

root vegetables become horse and cow fodder while food leftovers from the household are given to the hens. The sheep receive oats just before and after lambing. At times limestone and algae are bought to enrich the soil since the vegetables are very nutrient demanding crops and a lot is lost at harvest. From the forest they get mushrooms, berries and elk meat. Against cold, caught and sour throat they pick Iceland lichen in the pine forest.

Purchased services are; mobile sawmill, sludge drainage, veterinary and insemination. For the production of lactic acid fermented vegetables they purchase spices, salt, glass jars, labels, cardboard boxes and large plastic barrels. They try to cycle the nutrients within the farm. The feces and urine are separated and the urine has been used as fertilizer in the ley. New regulations for organic production might put an end to that practice. The grey-water passes through a root zone before it enters the pond.

The house is 150 years old and renovated by Svante when needed, as are all other buildings and machinery. This work requires about 2-3 h



*Photo 34 by Weronika Swiergiel.
Root zone for cleaning of grey water.*



*Photo 35 by Weronika Swiergiel.
Plastic barrels for lactic acid fermentation.*

The Stora Fårvallsslätten Farm

a week mainly in Mars-June, Aug-Sept and November-December. They aim to make the house as energy efficient as possible and still maintain its old character. A mobile sawmill comes to the farm and makes plank out of their wood. For isolation organic materials called Ekofiber and Termoträ are used.

Information on land use other than crop production can be found in table 6 under chapter "Regulations and Economy".

Fuel and energy consumption

Since most of the work is performed by hand or with horses not much fuel is needed. Mainly the chainsaw and the weeding platform demand a few liters of fuel per year. The electricity used is environmentally certified and a biogas car is used for delivering the vegetables and private transportation. The transportations are coordinated to minimize the driving.

The household is heated with firewood from their forest. The forest and woodwork requires about 5 h per week in January to March and May. An accumulation tank is connected to the



Photo 36 by Weronika Swiergiel.
Fuel driven weeding platform.



Photo 37 by Weronika Swiergiel.
Albin in front of wood stove in the kitchen.

The Stora Fårvallsslätten Farm

wood stove in the kitchen and provides hot water to the taps and radiators. A thermostat turns off the circulation tank during the night to save hot water to the morning.

Other Farm Activities

Except for the cropping and animal husbandry Béatrice and Svante also tend to the forest from which they extract wood, berries and mushrooms. They give courses in lactic acid fermentation technique, receive study visits from other farmers and schools and they participate in participatory research groups working on horses in agriculture and agriculture with minimum impact on climate change. The administrative work and the food conservation work will be described below.

Administrative work

The administrative work normally takes a few hours a week with a peak of 5 h/week in February and March due to EU subsidy applications, planning and ordering of seeds. In May the tax declaration is performed.



*Photo 38 by Weronika Swiergiel.
Visit to the farm.*



The Stora Fårvallsslätten Farm

Food conservation

The lactic acid fermentation including packaging and sale takes about 25 h / week in august, 50 h / week in September - October, 25 h / week in November through to March and then slowly decreases in April and May to completely stop in June and July.

Berries, fruits, tomatoes are turned into jams, juices and sauces or are frozen and dairy and meat products are made for the households own consumption. Since the family normally does not buy these products it requires from a few hours per week to about 12 h per week in June to September and 20 h in October and then decreases in November and December.

*Photo 39 by Weronika Swiergiel.
Participatory research on farm
ecosystem services.*



*Photo 40 by Weronika Swiergiel.
Lactic acid fermentation locale.*



*Photo 41 by Weronika Swiergiel.
Lactic acid cucumber, beetroot,
cabbage and carrots.*

The Stora Fårvallsslätten Farm

Machinery and Buildings:

The buildings, machinery and tools are mostly adapted to horses, leys and vegetable production. In table 2 and 3 you can find information on the properties, use and state of these.

Table 2. Farm buildings.

Building	No on map	Size	Use	State
Bow greenhouse	42	9*30 m	Vegetable production, Sheep house wintertime, Peachtree.	Plastic exchanged 2010
House	13	200m ²		Additional isolation is being performed.
Machine hall		7*18		planning to cast concrete ground.
Hen-coop		2*4		
Barn	43	8*10		
Barn hay drier		7*8		
Lactic acid fermentation room	40, 45	7*18		Partly painted internally 2010
Cold storage		4*2		

The Stora Fårvallsslätten Farm

Table 3. Farm machinery and tools.

Machines/tools	Photo no	Properties	Use	State
Milking machine with milk bucket			Milking cow	Good
Electric scissors			Cut sheep	Good
Harrow	44	Several c and s curved spring tooth and disc harrows from 1 to 3 m wide.	Harrowing the soil	Old harrows in varying state. Point must be exchanged at times.
Plow	47	White horse machine.		Bought 2005
Plow		Överums vulcan		From the 50ties
Ley mower	46	2-horses		Old but functional
Ley mower		1-horse		
Binder	49	Active	To bind the hay	Old but functional
Tedder	48	IH	To turn the hay around	Good
Forecart	51	White horse machine.	An "adapter" to drive small tractor tools with horses	Bought 2005
Inter-row cultivator		Lilla Harrie		From the 50ties
Inter-row cultivator	50	I&J		Bought 2005
Hay loader		Rekordverken	To collect the hay	From the 50ties
Forest wagon		Horse driven tool	Forest work	Home made
Ejector	52		Fan that blows the hay into the barn.	Bad
Weeding platform	36	Fuel engine	One-man platform to rest upon in laying position why weeding.	From 1995
Gas flamer		Gas driven	Thermic weed control	Home made
Potato lifter	55	Horse driven		
One-row sowing machine		One-row, hand driven	Sow vegetables	
Sowing machine		Horse driven	Sow cereals	Old and will needs to be exchanged
Hand seeder			Sow lay and green manure	
Thresher	54	Stationary, electrical		

The Stora Fårvallsslätten Farm



Photo 42 by Weronika Swiergiel. Svante in front of bow greenhouse.



Photo 43 by Weronika Swiergiel. Barn and stable.



Photo 44 by Weronika Swiergiel. Disc harrow.



Photo 45 by Weronika Swiergiel. Lactic acid fermentation locale with cold storage.

The Stora Fårvallsslätten Farm



Photo 46 by Weronika Swiergiel. Ley mower.



Photo 48 by Weronika Swiergiel. Tedder.



Photo 47 by Béatrice Falsen. Plow.



Photo 49 by Weronika Swiergiel. Binder.

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Photo 50 by Weronika Swiergiel. Inter-row cultivator.



Photo 51 by Weronika Swiergiel. Forecart.



Photo 53 by Weronika Swiergiel. Forest wagon.

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Photo 52 by Weronika Swiergiel. Ejector.



Photo 54 by Weronika Swiergiel. Thresher.



Photo 55 by Weronika Swiergiel. Potato lifter



Photo 56 by Weronika Swiergiel. Manure spreader.

The Stora Fårvallsslätten Farm

The Market and marketing

Today they sell fresh vegetables directly from the farm. A reseller buys their vegetables and sells it in a store in the nearby town Skövde. Selling the lactic acid fermented vegetables through stores has been their most important link to consumers and they receive a lot of appreciation from them. Since it is not a tourist area or close to a town a farm store would have been too difficult.

They sometimes participate in autumn and Christmas markets nearby. This has been an important forum for marketing, to find new business opportunities and contacts. They hand out pamphlets stating why the lactic acid fermented vegetables are so healthy and where to buy them.

The stores offer similar information and sometimes trial tasting. Previously they had a homepage. However Svante found it too time consuming and the homepage was closed. Otherwise they have not invested in more marketing and do not feel the need to do so.



*Photo 57 by Milosz Swiergiel.
Kohl rabi.*



*Photo 58 by Weronika Swiergiel.
Lactic acid cucumber, beetroot,
cabbage and carrots.*

The Stora Fårvallsslätten Farm

Regulations and Economy

Economy

According to Svante and Béatrice to live a life of low resource use is a choice that does not require much money. That is why it is of less importance that the farm does not bring in a lot of money. They argue that at a farm with a high self-sufficiency aim the economy cannot be presented in mere monetary values but in the true meaning of economy - management of natural resources, labor and capital.

The natural resources have been presented elsewhere and will only be mentioned here in the form of produced goods and services.

On a self-sufficient small-scale farm it is rational to diversify, not to depend on only one or a few activities or products. The cow is very important for all the dairy products, fertilizing and meat that would have been very costly to buy.

The logic of the farm is to strengthen the ecosystem services e.g. by biodiversity



*Photo 59 by Weronika Swiergiel.
Cows.*



*Photo 60 by Weronika Swiergiel.
Permanent forest grazing.*

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management instead of depending on external inputs as fertilizers, pesticides and fuel. Some of the services are too difficult to quantify as the ecosystem services of soil fertility or crop protection by natural enemies, which is enhanced by the biodiversity management of the farm. The social service of childcare or the value in spending more time with your children is also hard to quantify and cannot be simply exchanged by a purchasable service.

In table 4, 5 and 6 you will find information on the resource use and production including monetary costs and income. The costs are mere approximations and include i.e. taxes but not labor.

The value of products aimed for own consumptions are approximations based on what locally produced food of the same quality would cost. This is the food the family would have bought if they did not produce it themselves.

Svante and Béatrice emphasize that at a farm with high self-sufficiency focus it is difficult to separate what is work and what is free time.



*Photo 61 by Béatrice Falsen.
Svante is plowing with Adeline
following his tracks.*

The Stora Fårvallsslätten Farm

For example where does child care during the day fit in? Making your own cheese and sausage? Or renovating the house by yourself including all from cutting the trees to painting the house.

It is also difficult to count the work hours since you do not go on a schedule. The allocation of work to different outcomes is another challenge. Forest work is timber and firewood production as well as biodiversity and forest grazing management. Due to these difficulties and in order not to lose the important information by simplifying the cost of labor is left out and instead the approximated amount of work allocated to different tasks will be described in relevant chapters of this case study.



*Photo 62 by Weronika Swiergiel.
Earth cellar for storing food.*

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Table 4. Products and services from crop production

Crop	Variety	Area (ha)	Yield	Use	Amount (kg)	Price SEK /unit	Income (SEK)
Oats	Ivory	0,84	2,2 tons/ha	Fodder	1850	2	3700
				Straw	1000	1	1000
Ley	Blue alfalfa	4,08		Hey	18000	2	36000
Green manure	Oats/ common vetch	0,11		manure, soil structure improvement, weed control			
Permanent grazing		3+3 ha		Fodder, animal health			
potato, root and brassica vegetables, onions, herbs, spices, pulses, corn, lactic acid fermented vegetables.		0,8		Own consumption			20000
potato, root and brassica vegetables, onions, herbs, spices, pulses, corn, lactic acid fermented vegetables.		0,47		Sale			200000
Berries							Incl. in veg. for own cons.
apple, pear, plum, cherries.		15		Own consumption			Incl. in veg. for own cons.
Strawberries		0,51					6200

The Stora Fårvallsslätten Farm

Table 5. Products and services from livestock production.

Animal	Photo no	Race	No	Products/services	Amount/ year	Unit	Price /unit	Value	Price variation/unit
Horse	29	Ardenner	3	Draught power					
Cow	31	Fjällnära	1-2	Milk for own consumption	2000L		8	16000	6-10
				Cheese, crème cheese, brie etc	150Kg		100	15000	80-200
				Yoghurt, sour milk	250L		10	2500	10-15
				meat, minced meat, sausage, head cheese etc.	100Kg		50	5000	
Cow and Calf				Butter	30Kg		50	1500	
				Other	30Kg		50	1500	
Calf	10	Fjällnära	1-2	Meat			Incl, in cow		
Ewe	32	Gotland Sheep and Finull	4	Wool	20Kg		20	400	
				Meat	100Kg		65	6500	
				Hide	10		500	5000	
Hens		Landrace Blommehöns	12	Meat	20Kg		20	400	
				Egg	1400		2	2800	
				Parasite management				0	
Rabbits	28			Meat	40Kg		80	3200	
				Hide	7		250	1750	
Total value								61550	

The Stora Fårvallsslätten Farm

Table 6. Non-agricultural natural resource use.

Resource	No on map	Area (ha)	Yearly outtake	Unit	Use	Price/unit	Total Value	Total cost	Covers the need?
Mixed forest			30	m ³	Firewood, own consumption	300	9000	1000 SEK/ton	
Mixed forest			500	m	Building wood own consumption	10	5000	Incl. in firewood own cons.	
Pond		10*30 m			irrigation				Yes
Root-zone	34	Few m ²			Cleans the household grey-water				Yes

Labor

The distribution of labor not only changes depending on the month but also over the years depending on the amount of commercial production relative to self-sufficiency. Both Svante and Béatrice have done most of the different tasks on the farm including household work as childcare, cooking and some food conservation.

Béatrice also drove the horses until she became pregnant the first time. During the years when the children were very young she worked more with the household tasks than Svante including producing jams, cheese, sausage etc. Now that she is working as a



Photo 63 by Weronika Swiergiel.
Svante by the permanent grazing area.

The Stora Fårvallsslätten Farm

school psychologist Svante performs much of the household work during the day which gives less time for farm work. She normally takes care of the children evening time since this is the only time during the day she can spend time with them.

They share the milking and since Maxime and Astrid moved to the farm they also help out. A difference is that Svante works more in the forest, does construction work and lactic acid fermentation while Béatrice works more with food conservation and selling. They plan the farm work together, while Svante works out the details of the cropping and manages the administrative work.

A normal day

The working days are longer, but mainly more intensive, during the summer months due to the very short and intense growth period and the many hours of sunlight. Wintertime there is less work and very few hours of sunlight making the outdoor work per day shorter.

The days start at 6.30 preparing the children for school and taking turns milking the cow.



*Photo 64 by Svante Lindqvist.
Potato harvest.*

The Stora Fårvallsslätten Farm

Béatrice goes to work at 7.30 while Svante takes in the wood and continues with household work and childcare. About 8.30 Svante starts the farm work and continues until he prepares lunch at noon.

During the afternoon the children come back from school and require some attention. Svantes work continues until 17.30. Normally Béatrice prepares dinner when she is back from work. The days Svante prepares dinner he stops farm work at 16.00.

After dinner they take turns milking the cows and Svante does some administrative work while Béatrice takes care of the children.

Saturdays they wake up an hour later and maybe only work until 15.00 with farm work. Sundays they take care of the animals as usual but otherwise they do only little farm work and spend more time with the children or for example renovating the house. Summer time when the schools are closed Béatrice works more on the farm.

The Stora Fårvallsslätten Farm

Regulations

EU regulations

According to Svante there is some work trying to follow the different EU regulations. He There is very little possibility to influence the EU regulation. On the other hand many of rules them you only need to follow in order to get subsidies. Before you had less bureaucracy and hence less money. Many of the regulations concern the environment and that does not give them any more work then what they always have done because they wanted to. For example due to the large amount of leys they do not have any difficulty to follow the rule of keeping a certain % of the land covered by a crop. The animals must be registered and marked. They have never had any problem following the animal protection regulation

KRAV organic certification

The same goes for the KRAV regulations (organic certification). There is a certification cost but also a subsidy for being certified. Svante tells that several organizations and movements but mainly small-scale farmers



Fig 2. EU flag.

The Stora Fårvallsslätten Farm

started the organization. Today mainly the large-scale farmers are complaining about the high certification cost and make lobbying to their favor. KRAV has some influence over their production but it does not prevent them from doing what they wish to do. They have not really tried to influence KRAV.

Cost of control

The cost of control has varied over the years. The municipal food control cost is increasing and there are many rules to comply but the municipality has so far been relatively reasonable and understanding. The water tests are expensive. Except for the two annual water tests a more extensive test is made every three years and costs at least 7000 SEK.

Food industry regulations

Both Svante and Béatrice emphasize that the lactic acid fermentation sometimes becomes tiresome due to the many food industry regulations and the constant revision and addition of new rules. They feel that even though many rules are good and necessary,



Fig 3. KRAV label.

The Stora Fårvallsslätten Farm

too many regulations are too general, adapted to large-scale producers and often based on what can be controlled by looking at it. For example rules for how storage should be built to facilitate cleaning. Svante says;

“If you do not have the right knowledge it does not help to have good looking buildings. It’s often a lot of work for little effect.”

They have been producing lactic acid fermented vegetables for so many years and no one has ever become sick. Béatrice says:

“At the same time the Swedish government is planning to make Sweden the next food country. Do they wish to do this with the help of the large-scale food industry cooperatives as dairy ARLA and Swedish Meats? Sweden is not good at promoting food handicraft.”

The couple feels this is a general view amongst farmers. It is possible to influence these regulations to some extent but it is very hard work. In other parts of Europe they have made exemptions for small-scale farmer but not in Sweden. The organization for food handicraft called Eldrimner has helped them to see that they are not alone in this. The



Photo 65 by Weronika Swiergiel.
Food handicraft.

The Stora Fårvallsslätten Farm

information and exchanges organized by Eldrimner has empowered them.

Subsidies

Rural development program

The Swedish rural development program comprises various forms of support. They are intended to encourage efforts to increase competitiveness, help the environment, and improve quality of life in rural areas.

You will find more information on this at:

<http://www.jordbruksverket.se/swedishboardofagriculture/engelskasidor/ruralopportunities.4.6621c2fb1231eb917e680003734.html>

Or enter www.sjv.se and press “international” at the top of the page. Then enter “rural opportunities” and find your way to information about the rural development program.

The farm receives three kind of subsidies presented in table 7.



Photo 66 by Weronika Swiergiel. Sunflower.

The Stora Fårvallsslätten Farm

Table 7. Farm subsidies.

Subsidy	Subsidy provider	% of farm income	Requisites for obtaining subsidy
Farm subsidy (gårdsstöd)	County administrative board (Länsstyrelsen)	3	Based on amount of cultivated land. Need to cultivate the land and comply with the environmental, animal welfare, fodder and food security regulations of the Swedish government (Tvärvillkoren).
Subsidy for natural pasture with high nature values.	County administrative board (Länsstyrelsen)	2	Keep grazing animals and clear shrubs
Subsidy for organic production	County administrative board (Länsstyrelsen)	2	To follow the rules for organic production

Future Plans and Considerations

Béatrice and Svante explain that living of a small-scale farm requires that you are ready to work hard for a small pay. At the same time they have a desire to make certain investments for the future of the farm. If they had access to more money they would make the farm even more self-sufficient on energy by investing in a wind power station.

Within five years they would perhaps like to have a business together with Astrid and



Photo 67 Falsen and Lindqvist family

The Stora Fårvallsslätten Farm

Maxime that rent their neighboring house. They are still investigating the different possibilities of cooperation but would probably focus on lactic acid fermentation and / or bakery since Maxime is a baker. They would like to share the resources and work on the farm with the couple in order to have more company and more free time to do other things.

Béatrice would like to have more time for creativity and to be able to choose what to do depending on what you feel like doing at the time. She would like to start her own therapy business at home.

Svante plans to build a work-shop which is a big step to take since it implies taking a loan and large expenses which they are not used to being self sufficient.

They both would like to have more time to spend together with their children and be out in nature.



*Photo 68 by Weronika Swiergiel.
Red clover with bumblebee.*