AGRICULTURE

ETH Studio Basel
Contemporary City Institute
Elena Chestnova, Anne Keser

Prof. Jacques Herzog, Prof. Pierre de Meuron
Lisa Euler, Manuel Herz, Charlotte von Moos,
Shadi Rahbaran

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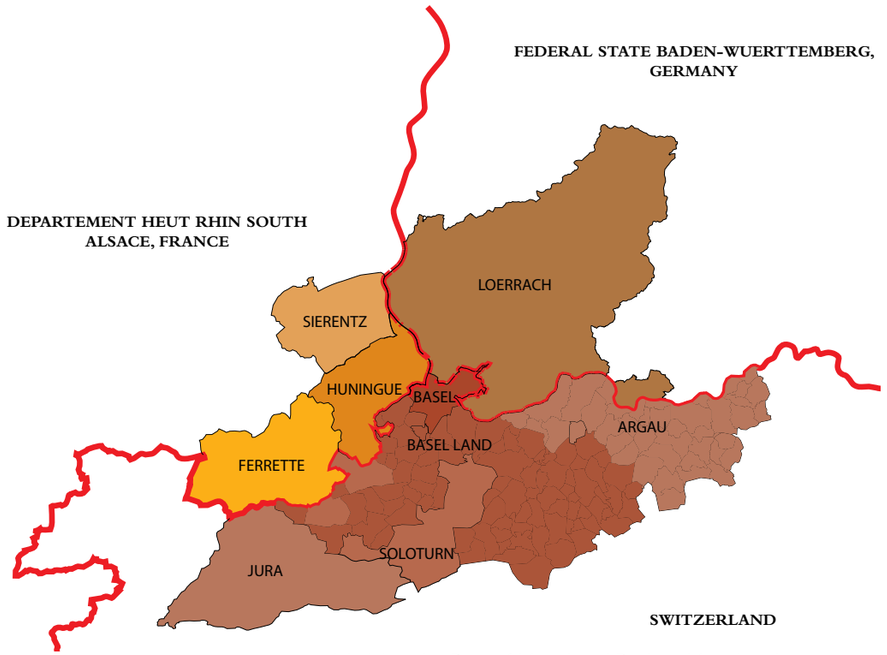
INTRODUCTION

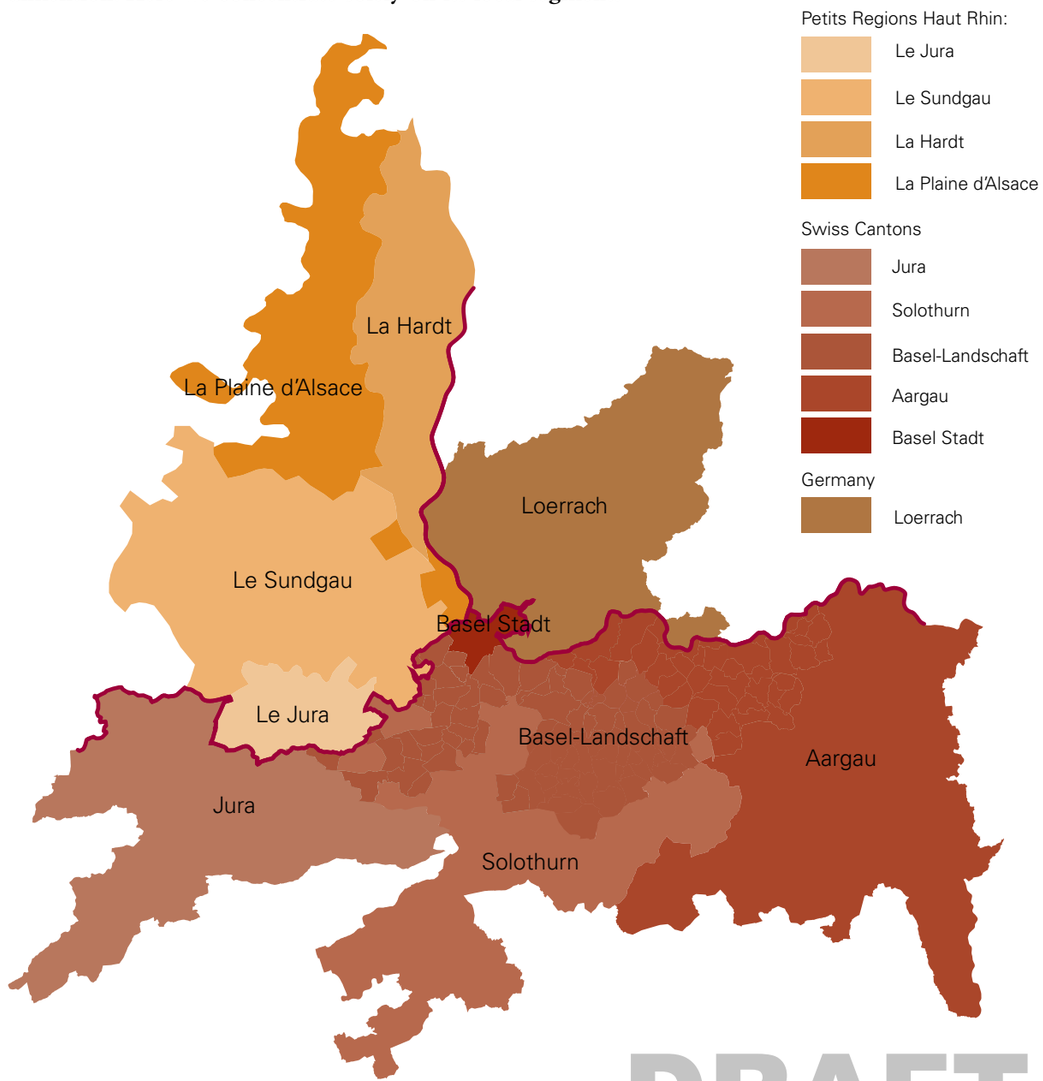


Administrative Parts of Metrobasel Region - Metrobasel

Agriculture Metrobasel - Definition of the Region

The starting point for the definition of the borders of the region of this study was the definition of Metrobasel as given on metrobasel.ch. We quickly found out however that the definitions of the areas of agricultural administration forced us to speak about a much larger are if we were to be successful at collecting useful information about the characteristics of the region's agricultural production. For this reason the area considered in this project includes the whole of cantons of Basel Stadt, Basel Landschaft, Jura, Solothurn and Aargau in Switzerland, Landkreis Loerrach in Germany and the agricultural areas of Jura, Sundgau, Hardt and Plaine d'Alsace in the Department Haut Rhin in France.

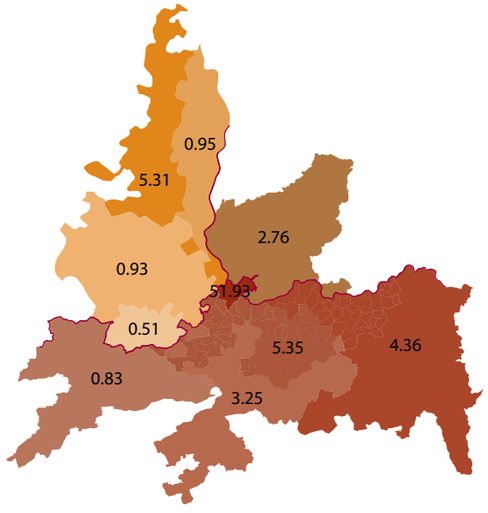
In this chapter we concentrate on agricultural production in the Metrobasel Region. Different sources, however structure the information in different ways in relation to the geographic entities and we had to adjust the borders of teh region to fit this situation. This alone already tells us something about the relationship between the administration imposed from the city and the reality of the countryside. In our work we have focused on what agricultural production activities take place in the Region and which are the main factors that influence them. If one considers the full agricultural background of the food that is consumed in Basel, the emerging picture would have a global dimention. Here we concentrate solely on its local segment.



Agricultural Regions that Contribute to Metrobasel (Source: Chambre D'Agriculture Haut Rhin, Federal Office of Statistics, et al)

Key Statistics of the Region

Total areas of the region is 630 616 hectare with 45% of this being agricultural land on the whole. This however varies from 12% in Basel Stadt to 70% in Sundgau. If we compare this with the population density the pattern is the opposite way around: Basel Stadt has the highest population density with nearly 52 people per hectare while Sundgau has one of the lowest with 0.93. Of the total population of the region 67% live on swiss territory, and 11% on German land. The remaining 22 percent are French residents. The highest absolute amount of agricultural land is located in canton Aargau.



Population density, persons / hectare

Petits Regions Haut Rhin:

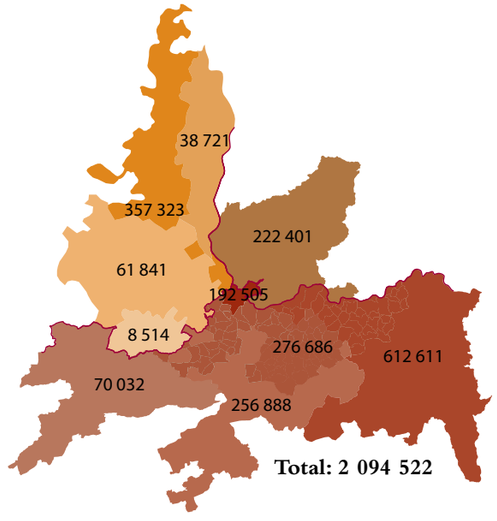
- Le Jura
- Le Sundgau
- La Hardt
- La Plaine d'Alsace

Swiss Cantons

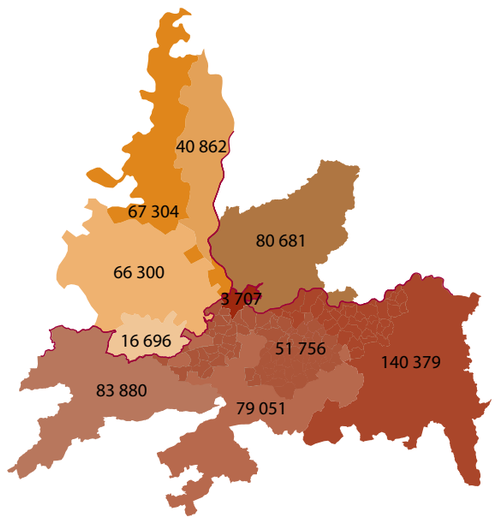
- Jura
- Solothurn
- Basel-Landschaft
- Aargau
- Basel Stadt

Germany

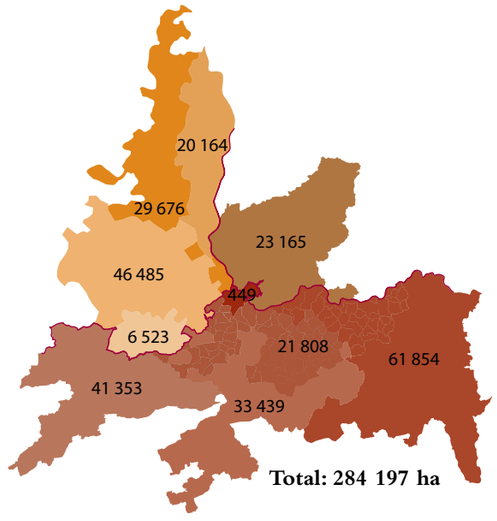
- Loerrach



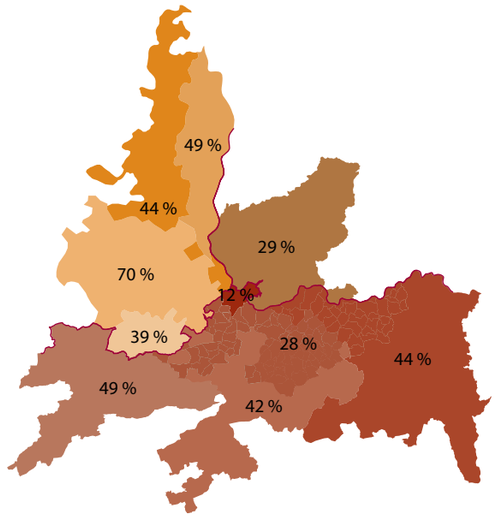
Population, persons



Total area, hectare



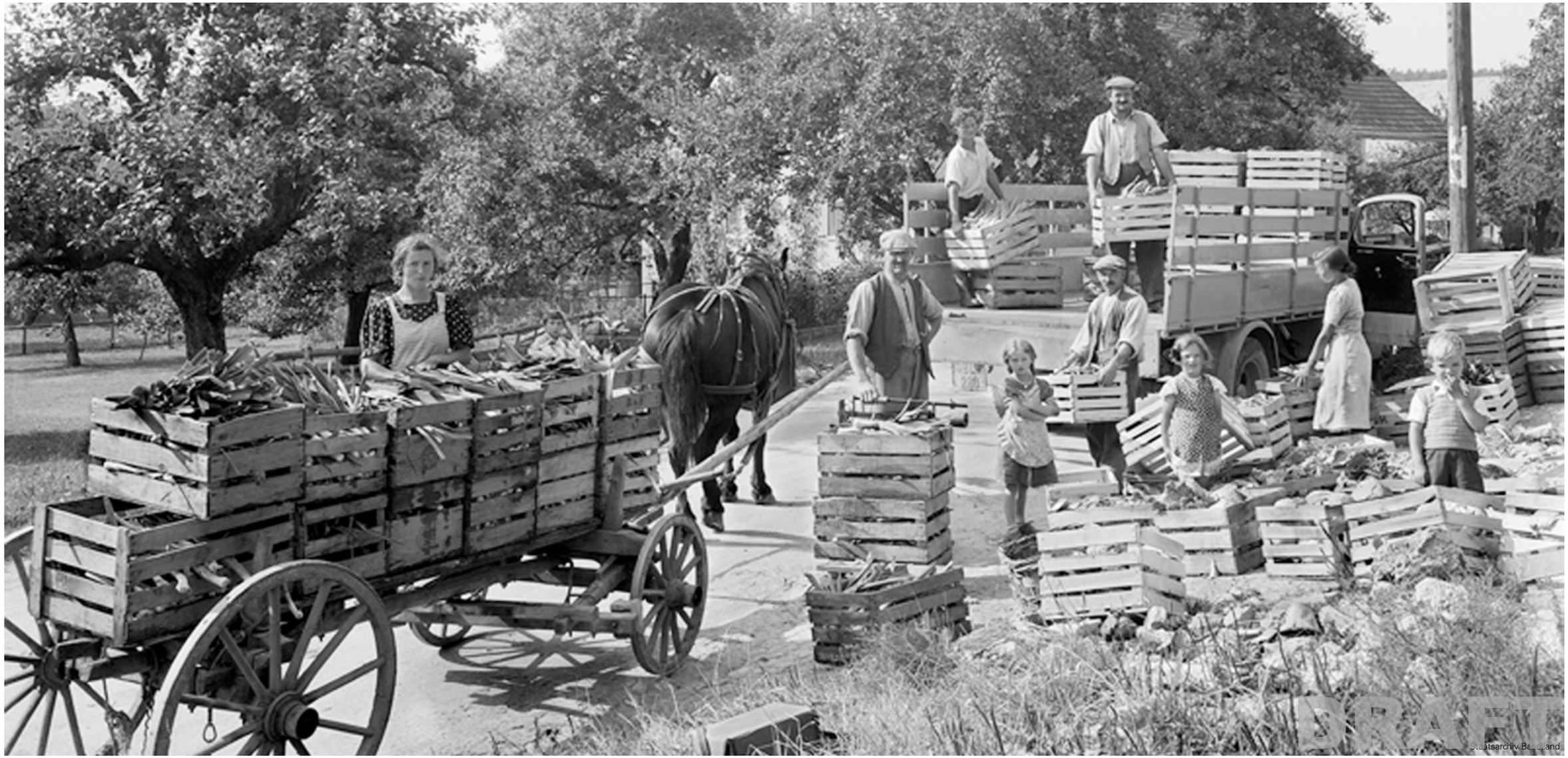
Agricultural area, hectare



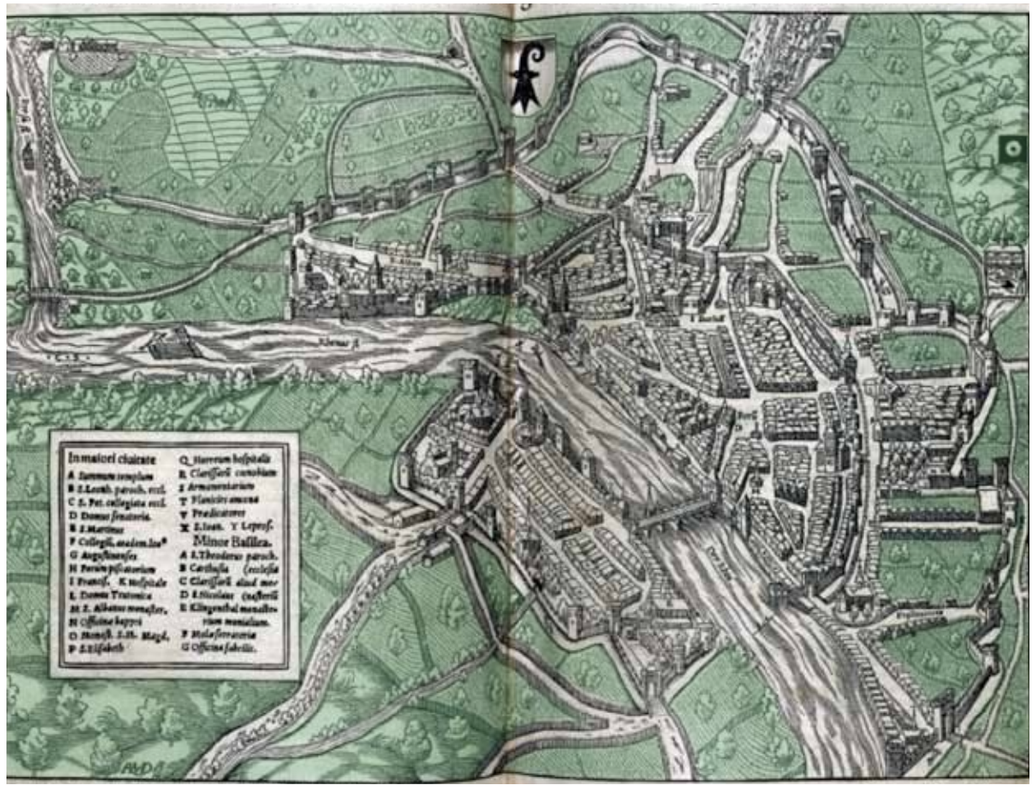
Agricultural area as % of total

HISTORY

Agriculture has undergone significant transformation over the period of existence of Basel and especially in the last 2oo years. This happenned in response to the growing population and demand for food. The hinterland of Basel has growing together with it in the course of its history and its agriculture has changed.



Staatsarchiv Basel-Land



Agricultural land on the plan from Sebastian Münster, 1550; Scale 1:17 000

History of Agriculture in Basel

In the 13th. century the inner wall-ring was expanded by significant extension through construction of suburbs.
Wodden constructions with stone basements dominated the centre of the city, giving it a somewhat rural appearance.
The townscape was defined by churches, a monastery and houses of noblemen.
Gradually the towers of the noble buildings became integrated into larger building complexes and the thatched roofs replaced by tiles.
"Little Basel" was surrounded by walls. Within this city limit active construction took place. Broad roads were made mostly from natural earth-bricks. Paved roads were an exception.
An important role in the development of the city of Basel was played by the water system. Channels and ponds were utilized by the business and are dominating the city appearance.
The Rhine was too big counld not be controlled by the means available at that time. The water was supplied by fountains.
The waterways were important for the water-wheel driven business but also for the garbage clearance.
The function of the walls of the city of Basel was to have a line of defence but not a legal boundary, more important were the border stones which were mandatory for the legal situation.
Agricultural zones were located outside of the suburbs. Smaller towns and single farmyards appeared in the region.

Agricultural land on the Merian plan from Matthäus Merian in the Topographia Helvetiae, Rhaetiae et Valesiae, 1642; Scale 1:13 000

Following the 14 th. century Basel was in the phase of growth, its population and area were increasing.
Various changes in the city of Basel were driven by e.g. the council (1430 – 1440), the foundation of the university (1460) and the burgundy wars, which were supporting a large system of alliances.
Between 1200 and 1500 the population of the city had doubled, even though there were several epidemics of plague in that period.
Whereas during the 13th, century between 5000 and 6000 people were living in the city, by the 15th century this figure had reached 8000. About 60% to 70% of the population of Basel were craftsmen.
The remaining population was distributed into groups of travelling workers, mercenary soldiers, foreign merchants, beggars and homeless people.
The city was agriculturally self-sufficient in wine, grains, fruit and livestock.
The residents were active in agricultural work, for their own supply but also for business purposes. Thanks to local production various economical divisions were founded, such as tannery, butchery and the textile production based on the flax crop (raw material for making linen).

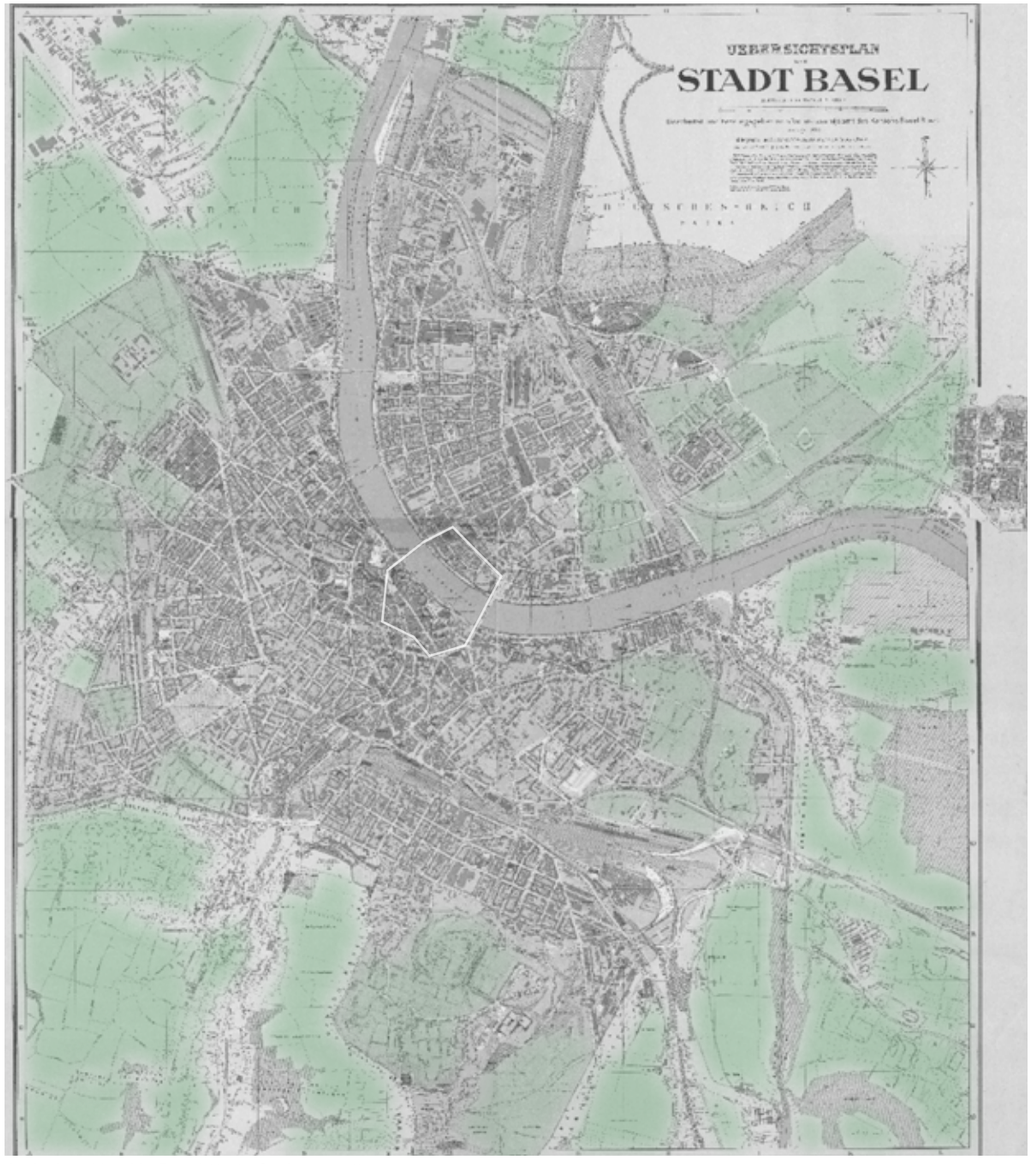
Agricultural land on the Loeffelerplan 1857-59; Scale 1:20 000

Emerging Markets

In the middle of the 19th. century the region was connected to the existing European rail-way system. The railway was the symbol of industrial growth: industrial cities were connected to agricultural and rural zones which provided food and raw materials. While in the first half of the 19th century, the modernization of agriculture in the Basel area was in the foreground, the second half of the century brought the need for agriculture to adjust to new conditions brought about by the industrialization,

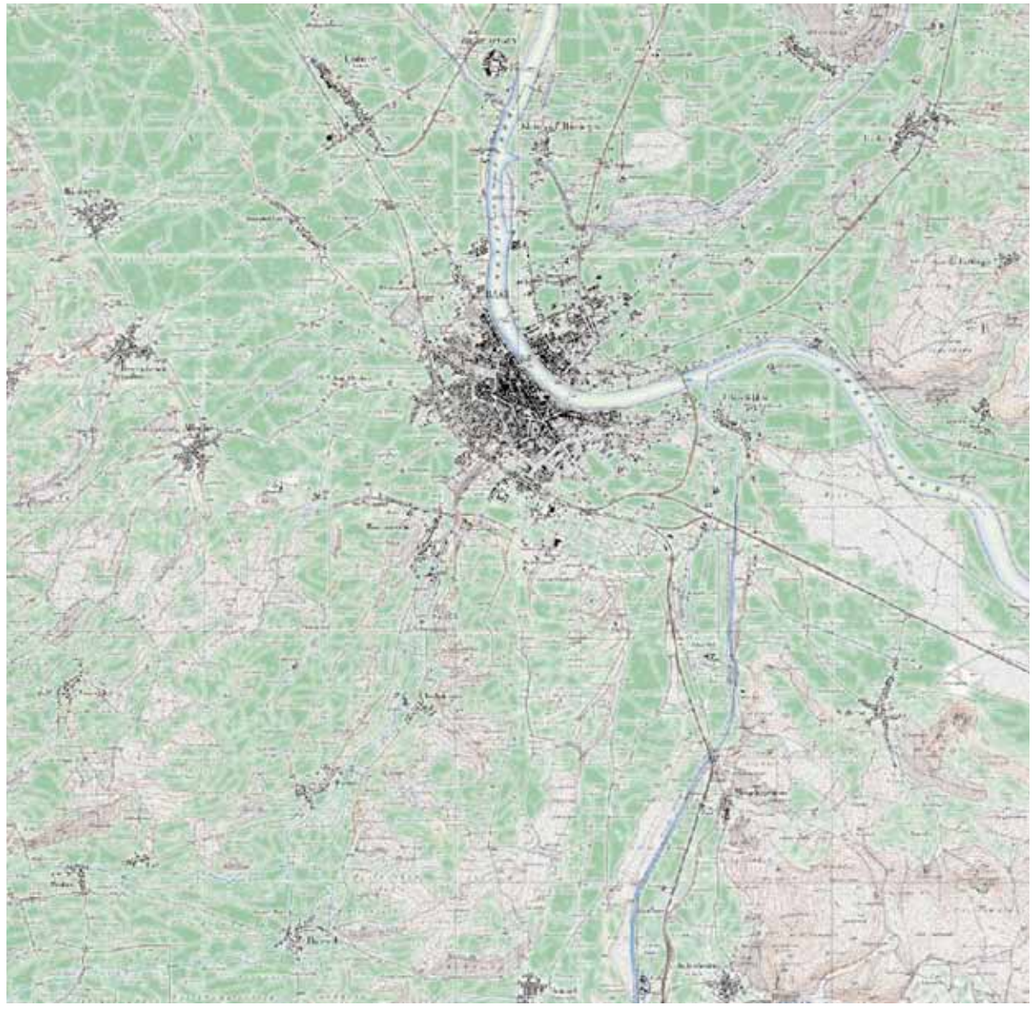
Railway and industry had a tremendous impact in 2 aspects:

1. Because of the connection to the european railway network, the agriculture has lost the advantage of locality which was a profit factor in the past. Agricultural products growing better or at lower cost in other regions, were pushed into the Basel area market in competition to the local production.
2. Due to the industrialization the number of consumers of



Agricultural land in Basel 1940; Scale 1:40 000

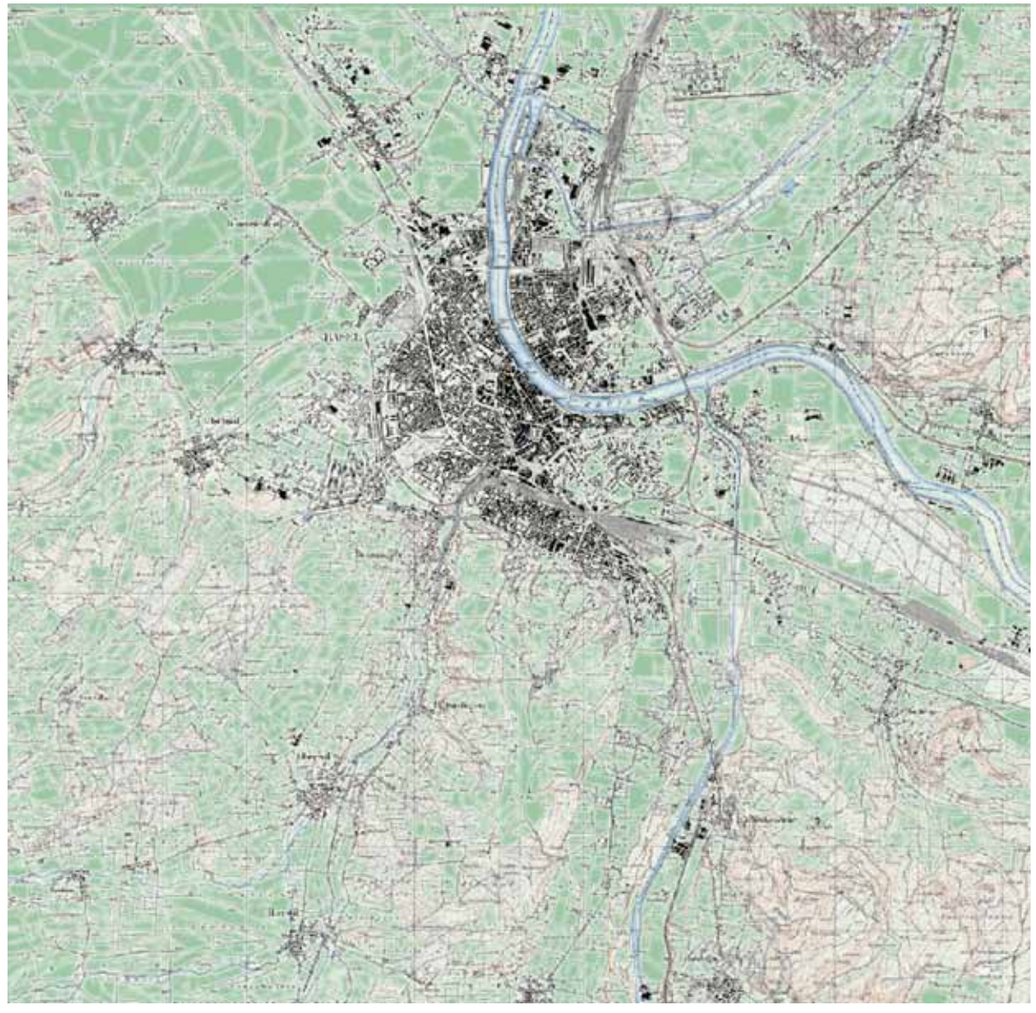
agricultural products had increased. While Posamter-families (Posamenting was the name for work-at-home in the silk-weaving business) were self-sufficient due to their own agricultural production, people working in the factories of the city or the bigger of the valley communities, were hardly able to grow their own food. Thus, due to the industrialization, the Basel area´s agriculture had a growing group of consumers of agricultural products.



Agricultural land on the Siegfriedmap, 1880; Scale 1: 100 000

Urban Agglomeration

The suburbs in Basel area - the communities near the city of Basel - emerged predominantly in the 19th century. In the 20th century, however, the agglomeration had reached a new and different scale with more and more communities integrating, which lay further away from the city. This had several effects. The demand for housing, as well as the restrictions on the land for housing, have driven up the prices for land and for rent in the city. The lack of housing and the difference between rental price in the city and in the suburbs were making the tenants look for apartments in the adjacent areas. The local public infrastructure of the suburbs became vital: the better the access by public transport or by bycicle, the more prefered is a home for commuters in the city.
Businessmen, who did not build for their own purpose, but were looking for a lucrative investment, were casing sprawl into the rural landscape. The increasing demand and low-cost residential land was promising for good sales and big profits.
Slowly but steadily residental space even in the suburbs



Agricultural land on the Siegfriedmap, 1945; Scale 1: 100 000

became rare and expensive. As a result, the same process occurred between basel and the towns of the larger agglomeration, which took place earlier between the city and the suburbs: people had to move further away from the centre.

Men and women process tabacco leaves during WWII as part of a planting campaign 1942 (http://www.geschichte.bl.ch)

Emergency Cultivation Plan

In order to ensure secure food supply for Switzerland, the nationwide cultivation plan envisaged by Friedrich Wahlens in the 1930s called for an increase in the agricultural area to 350000 hectares and in case of emergency even to 500000 hectares. His vision did not agree with the planning of the farmer association and the political establishments. However, soon this idea came to be seen as the concept for the future. In 1939 Wahlen's idea was approved by the parliament, a modification programm was agreedand when the World War II began it was radicalised in the form of a war strategy.
The "Cultivation Battle" was therefore understood as a contribution to the resistance against National Socialism, suitable to keep the country away from the war. The established farmers' representatives accepted this plan as an emergency plan during the time of war, because it strengthened the position of the farmer association as the food provider.

The plan of Wahlen resulted in the canton Basel-Landschaft in an increase of farmland between 1940 and 1945 by total 3000 hectares up to 8017 hectares and of life-stock up to 19450 cattle by about 4500 units compared to 1936. The total economic targets of the plan were, however, not achieved. The farmer families, especially the women, saw the "Cultivation Battle" as an additional burden. The men had to perform active service and were away from the farm, while the women had to run the business and make ends meet.

Tractors after WWII (http://www.geschichte.bl.ch)

Modernization and Downfall of Farmers

Melioration, combining commodities, draining of land, but also modernization of the facilities enabled the farming In the 20th century to become more efficient. Essential part was played by mechanisation. There were about 3500 horses in the stables of Basel area in 1945. 16 years later there were a little more than 2000 - the tractor became the symbol of agriculture. It is however, just a substitution for mowing- and treshing machinery and milking equipment that was essential for modernization of livestock.
The mechanization and enforced application of chemicals resulted in a total change of structure of agriculture. Industrialization of family entities did not generate large scale operations, but reduced the required staff at the farmsteads drastically. The canton Basel-Area belongs to the cantons most affected by the decline in number of farming families. In 1980, still 4335 people made their living from agriculture, representing 2% of the population. In 1910 it was 21% - exactly 13 956 people. Alone from 1950 to 1980 the agricultural population was reduced by 73% in sections were there was a general decline in production, such as the cherry-harvest typical of the Basel area, which saw a significant decline during the last 30 years.

Agricultural Hinterland of Basel during 19 th. Century and 20 th. Century

1816/1817 Supply-Crisis
Poor harvest and awkward atmospheric conditions resulted in a supply crisis. Prices for food were Increasing so much that the non-rural population with low income were In poverty. The supply of the canton Basel-area was still on the regional basis. Imports at the most came from the nearby adjacent areas. Nevertheless, in Basel-area there was not such an extreme hunger crisis like in other regions of Switzerland, mainly due to the inventory stocks accumulated in previous years.

1846 Potato disease
The 1840s have been cold years: in winter quite frosty and in spring still too cold. In summer a lot of rainfall , in autumn again wet and persistantly frosty. This combination of awkward atmospheric conditions together with extensive potato disease (mainly between 1845 and 1846) were triggering a supply crisis. The potato disease was caused by a fungus which initially destroyed the bushes, later also the lumps. The strong spreading of the potato disease has increased the prices and driven up the inflation.

From the 20th century onwards large wine-yard areas were abandonded and instead houses were built. The sunny, southern locations of most of the wine yards was also interesting for home-builders. To sell land was more profitable than the hard work in the wine yard. At such procedure almost all Basel-area wine yards disappeared whereas the population during the 2nd half of the 20th century was growing significant.

World War I
The impact of World War I seen in agriculture directly: The fellow-countrymen became soldiers and the women had to increase their efforts by far in order to cope with the work-load, children education, household. Although the release in 1917 of an order for increase of cultivation, the population in 1918 was near to poverty.

World War II
After 1940 the potato cultivation was supported in particular, in order to avoid rationing during normal harvest. Maize, sugar beet, poppy and rape belong to the cultured plants which were more expanded after the cultivation plan in Switzerland. This implementation was an effort to support self-suffiency because sugar and oil have been import products exclusively. Despite significant increases, Switzerland was constrained by foreign imports.

Agricultural modernization
For the agricultural use of land new owner conditions have been generated: the option to buy out from land-lease and from duty.
Foundation of agricultural unions.

1818 formation agriculturalr society

From 1850 onwards, in the upper part of the canton, cheese dairies- and milk-unions were founded.

In 1902 the association of Basel-area livestock union was established.

The swiss farmer-union was established in 1897

1951 Agricultural Law
The legal framework for agriculture was defined by the Agriculture Act, which promoted healthy conditions for the farmers and productive agriculture.

1971 organic farming method
The farming manor Ebenrain in Sissach switchedto to organic in 1971; it became the 1st government-owned school and lecture farm for organic agriculture in german-speaking Europe.

1940 Foot- and Mouth-disease
The interference of the state in the economy has been massive and the support for the agriculture was very high. Affected farmers received financial aid.

Farmers' downfall
Just between 1950 and 1980 the agricultural population was reduced by 73%.

1800 1820 1840 1860 1880 1900 1920 1940 1960 1980 2000 2020

During the 19th century the dairy- and the life-stock business increased versus the cultivation of cereals. The transition from the collective 3-field-agriculture to the individual fruit-growing business has resulted in effective economic growth. Keeping live-stock in stables allowed for more effective use of organic fertiliser.

Maize was a first great success during this crisis period and was a great relief for the poverty.

The cereal farming has declined substantialy since about 1830.

Big expansion of the potato in the 19th century - it became an important everyday dish.

The meaning of this plant for the nutrition can be demonstrated by the fact that during WWII it was attempted to increase the production up to a level necessary to avoid rationing - a target, which was accomplished.

Basel-area Cherry was already in the 18th century an important export item. The cherry tree became more and more the landmarkr of Basel-area´s agriculture.

In the peak year of 1944, the cherry harvest in Basel-area was 1 146 000 Kilogramme.

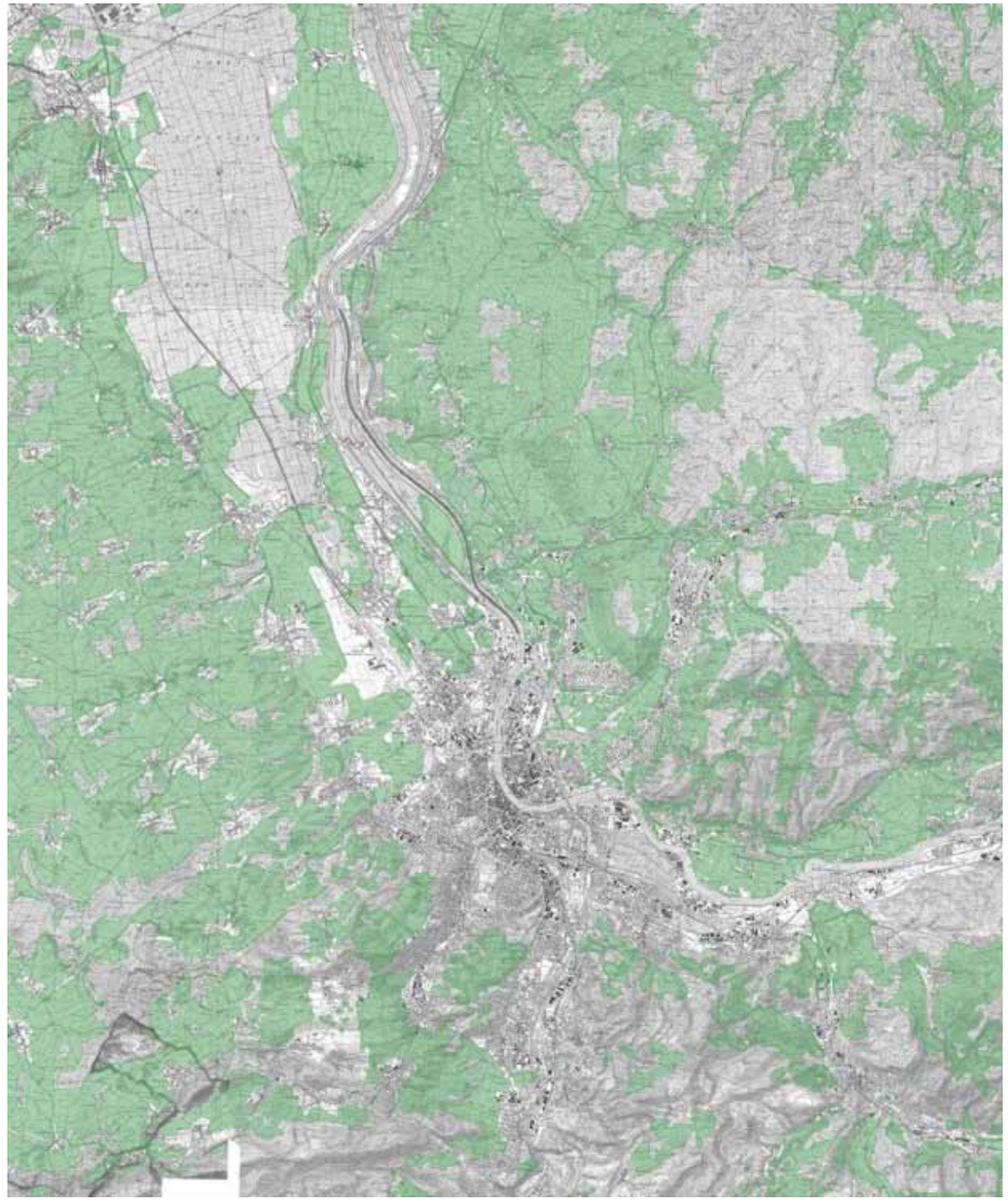
The integration of the international railway systems has caused competition to the regional wine cultivation in the 19th century by cheap imported wine. 1st reason was the Gotthard tunnel which allowed import from Italy. The blight disease was brought from America, which was an additional factor in the decline of wine cultivation.

1860 counted for 650 Hektares vineyards.
Middle 1980´s the vineyard land has shrinked to 71 Hektares.
In the 1990´s the vineyard area was modest with 94 Hektares.

Hinterland of Basel Today

Today's city of Basel only contains a limited amount of agricultural land, as can be seen on the map. The surrounding countryside however is up to 40% agricultural. Ten farms located in the city are green islands in the sea of buildings. Today the fertile soil of Basel provides the city with part of its demand for milk, beef and veal, wheat, rye, spelt and rapeseed for human consumption and barley, maize, oats and triticale for animal feed. Potatoes and sugar beets are not grown in the hilly regions since the soil there does not have appropriate properties.

To maintain the quality of the soils farmers practice crop rotation. On every field crops are grown in particular sequence and for this reason the landscape looks different from year to year. At the moment the tendency for crop cultivation is to shrink due to falling profits. Many farmers are forced to work part time or do additional jobs. They often perform tasks such as garden maintenance, pruning, compost, forest clearing, snow clearing and drainage for organisations and individuals. Many women in farming families train to do a second job and are able to contribute to the family income by these means.



Agricultural land of Basel 2011, Scale 1: 200 000

Hinterland of Basel through the Ages

This diagramm represents the growth of the hinterland that the city of Basel has required over the ages to feed itself of the basis of demand of 0.3 ha per person. This demand correxponds to a daily diet of following products if teh are farmed organically:

200 g dairy
50 g fish
200 g fruit and veg
300 g grain and starch
100 g white meat
30 g egg
30 g oil

1 202 calories (no alcohol, no red meat)

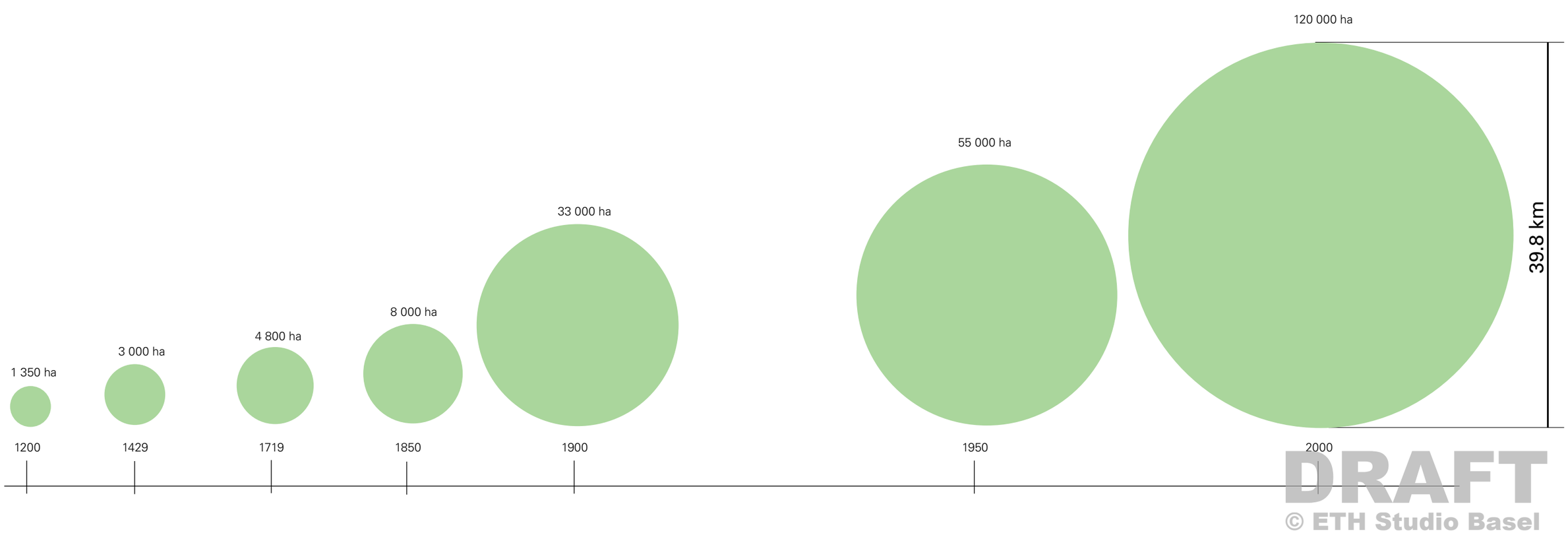
and following if they are farmed with methods of modern conventional agriculture:
farmed conventionally

200 g alcoholic drink
200 g dairy
100 g fish
300 g fruit and veg
600 g grain and starch
150 g red meat
100 g white meat
100 g egg
60 g oils

2 262 calories

(Source: Landshare.org)

This assumption was made because calculating the actual size of the hinterland of Basel at different times would be very complex because of teh change in consumption and in agricultural methods which meant that yields per hectar have improved. The estimates we made for the time before start of the 20th century are likely to be too small because people used to eat a much more caloritic diet due to physical labour and the efficiency of production was not as high as it is today, although there was certainly less wastage.



CONDITIONS

The agriculture is affected by several factors, like geological, morphological, hydrological, climatic and utilization characteristics. These factors are the basics for the evaluation and assessment of cultivated areas concerning production factors and profitability.

Over many thousands of years, bare rocks and screes change into fertile soil (www.lid.ch/de/service/fotogalerie/)

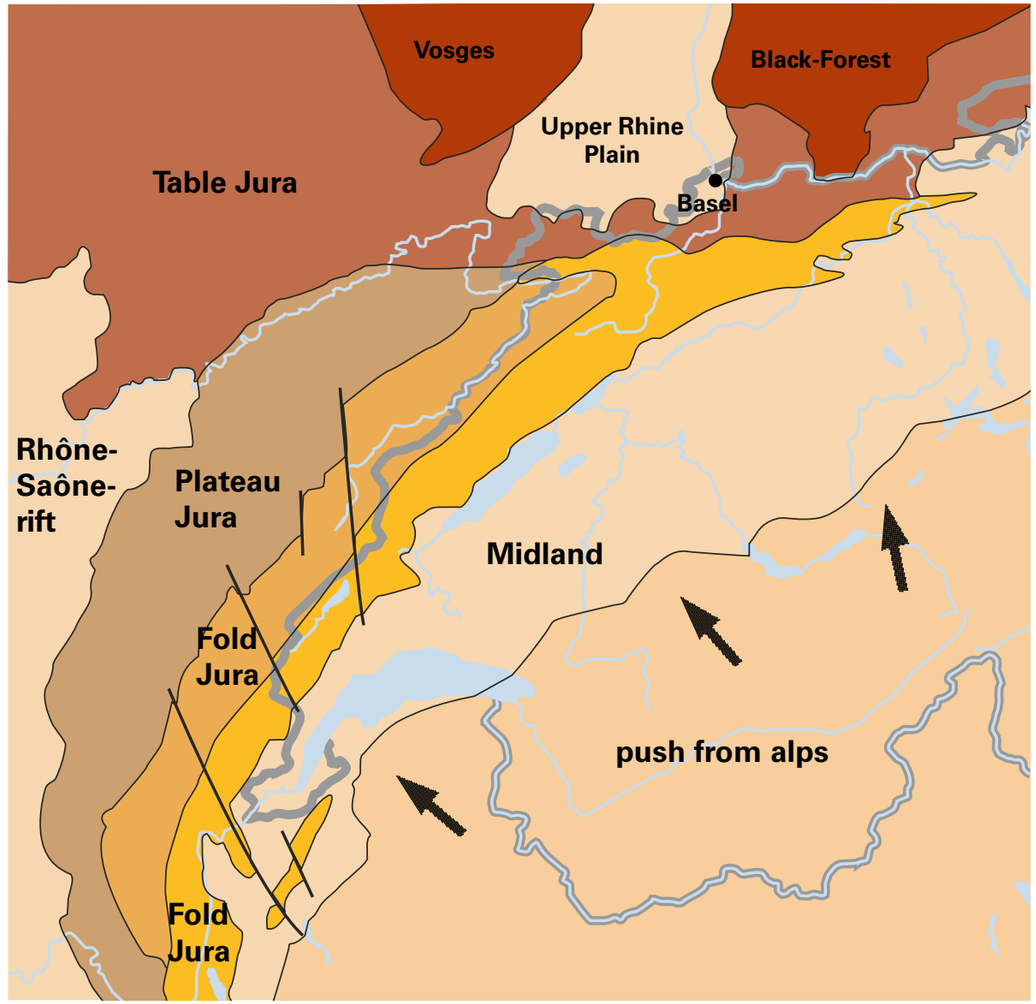
Geological Formation of the Region

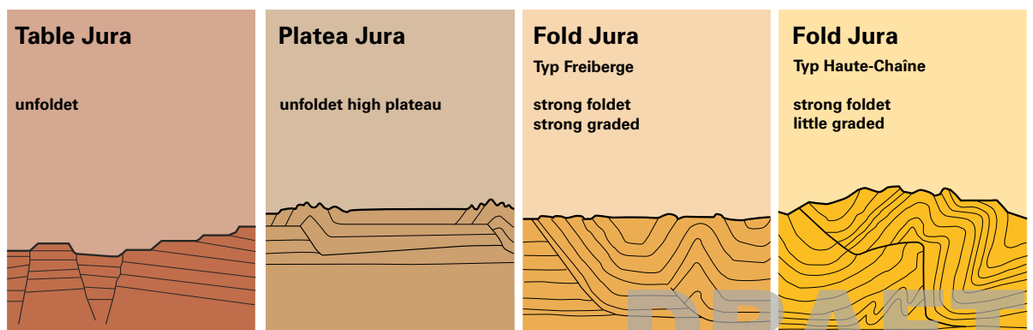
The basic structure or the geo-tectonics of the landscape between Jura mountains and Rhine was formed about 2 to 37 Million years back in combination with the folding of the alps. In the area of the late table Jurassic, the calcareous sediment layers, which covered the older basic mountains in our area, have been broken up only and the sediment layers have been moved vertically against each other. During this process rifts and uplifts of strata have been formed. This created the early landscape of todays table areas, which were enforced by the erosion of the rivers, which again were the basis of todays valleys. In the area of the later Jurassic chain the sediment boxes were folded / pressed into wrinkles, in the far distance of the alps. In addition the Black forest and the Vosges drifted away from each other, the upper Rhine rift was opened.

The stone layers were lowering, this space was gradually filled with sediment. The upper Rhine rift is still in the area of a lateral spreading of the crust of the earth, from the view of geological aspects, similar to the middle-atlantic ridge, which has probably generated the ocean.

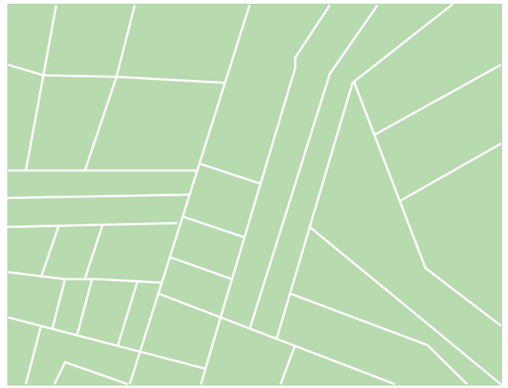
The modifications happened extremely slowly, per annum about just a few millimetre. This development is still going on as per today, however, measurable with state of the art measuring devices.

The broad public knows about this movements primarily because of the regular earth quakes in this region.

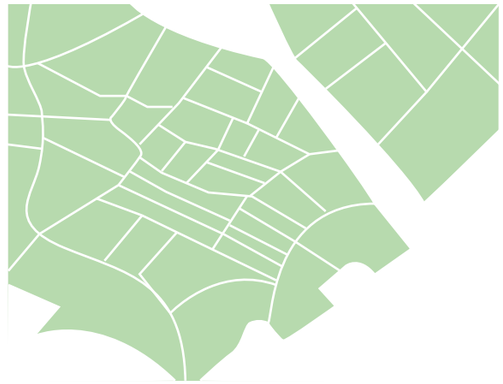




Geological Formation of the Region



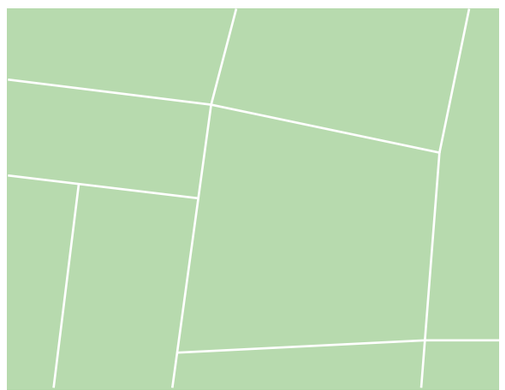
Basel-Land



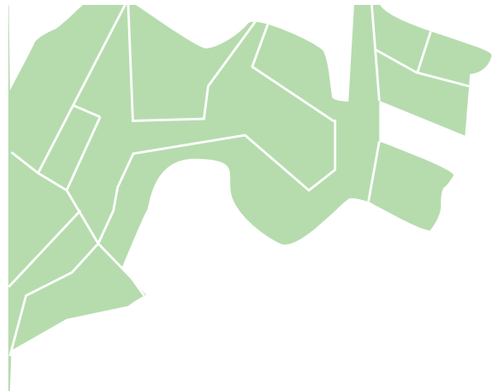
Basel-Stadt

Upper Rhine valley in Germany

Black Forest



Upper Rhine valley in France



Vosges

Land-Patterns of the Region

We have employed this simple method at looking at the pattern of land boundaries to detect differences in the structure of landscape in different parts of the region. The diagrams are all at the same scale. The differences in sizes of plots and their form become apparent. In the Upper Rhine valley (Oberrhein) the land is flat so the plots boundaries follow a more or less geometric structure. The plots in France are much lareger than those in Germany. In the hills of the Black Forest and the Vosgese agricultural land is strongly constrained by topography and the forest which dominates the landscape. The divisions between the plots are irregular and tend to follow the contours of the slopes. The plots are small.
In canton Basel-Landschaft near the city of Basel the plots are also relatively small, but geometrically structured, since the land there is relatively flat. Finally, in the city of Basel itself, agricultural land is strongly constrained by the built-up areas and because of this fragmented. The plots are small and relatively irreglar, but this is probably due to historical rather than topographical reasons.

Landscapes of the Region

The Landscape of Basle area.

The result of the early geo-tectonic large movements is the century lasting landscape basic structure of Basle area.
As a rough break-down, 5 areas can be outlined.

1. The eastern part of the Sundgau hill country, starting from Allschwil via the Leimen-valley to the eastern boundary of the Bruderholz area. Characteristic for this low altitude hilly landscape are extensive loess areas. Loess is the fertile, sandlike sediment from moraine dust, deposited by the wind during stone ages, at the boundary of the glaciers.

2. The Birs- and the Rhine valley, are typical for river wetlands and areas of gravel terraces. Valley wetlands and debris cones are reaching from - eastern to southern direction – along the remaining rivers and creeks, the Ergolz or both Frenken in narrow corridors far into the landscape.

3. The escarpment territory of the table Jura. The typical forested precipices and the flat areas, positioned over the valleys, cultivated table areas.
This landscape shapes the middle and large areas of the upper canton.

4. The Blauen and the southern boundary are located in the fold- or chain Jurass with narrow valleys and high, steep ridges.

5. The Laufen valley is covering the Birs- and Lützel valley, the unique Laufen basin in the canton and also the slightly raised hillside south of the Blauen. Within its boundaries, this area is formed by the structures of the Jura fold.

The Laufen valley (http://v16.lscache4.c.bigcache.googleapis.com)

The Sundgau hill
(http://mg-friesen.pagesperso-orange.fr/fricouv.jpg)

The table Jura
(http://www.raonline.ch/images/argovia/gallery/ag_Tafeljura801.jpg)

The Birs- and the Rhine valley
(http://www.menz-projekt.ch/hist/Exkursion_04.pdfv)

Chain Jura
(http://archiv.onlinereports.ch/images/J/picJuraLandschaft.jpg)

The Vosges (http://3.bp.blogspot.com)

Vosges and Black-Forest

The formation of this middle-rock mass was in tertiary (precisely Eocene) about 50 Million years ago by a tectonic caused accentuation, from which initially a rock-mass resulted, connected with the Black-Forest. Then the Upper-Rhine rift has lowered, both hill ranges are separated territorial up to date.

The Vosges are build up from gneissic rock, granites, paleontology schistose and Volcano and are similar to the Black-Forest. In the North and West, the base rock-mass is lowering under the variegated sandstone, in the East, the area is lowering at step-stone quarries to the Upper-Rhein level, there are also deposits from the Trias and Jurassic existing.
The mining for lead and silver (later also Baryt) did play similar role as in the Black-Forest (e.g. at Sainte-Marie-aux-Mines, Sainte-Croix-aux-Mines), in the South small quantities of stone coal could be found.

The South of the Black-Forest
(http://www.naturpark-suedschwarzwald.de/sites/default/files/bildergalerie/suedschwarzwald-radweg/hochschwtaelerblick.jpg)

The Vosges are the initial big barrier for the humid air mass from the Atlantic and therefore higher rainfall as the adjacent Black-Forest. During the previous stone-ages therefore stronger glacier activities have happened.
At the extensively un-forested altitudinal of the Vosges mountain pasture cultivation takes place. In total the agriculture use is less intensive in the upper regions, which counts often for a wild landscape scenery, rocks and stone-blocks are not moved away, bushes and broom are sprawling over the slopes; also the forest is variegated as in the Black-Forest with its name-giving spruces.

In the South Black-Forest mainly Green-land is found and cultivated, for the production of milk and premium beef-meat.
Because of the mainly bad quality of the poor soil, difficult basic conditions at the steep Black-Forest slopes as well as the rough climate, the farmers In the nature park South-Black-Forest can generate mostly revenues next to non-viable.

Upper Rhine valley
(http://img.fotocommunity.com/images/Landschaft/Lebensraeume/Blick-vom-Hochblauen-Suedschwarzwald-in-die-Oberrheinebene-Breisach-a26017896.jpg)

The Upper-Rhine Rift

The upper Rhine rift is flushed – in fact within the approximately 350 Kilometer long section Upper-Rhine. The southern part of the low-lands is located in North-East Switzerland surrounded by the city of Basel, the south-west section is located in the north-east French region of Alsace, the north-western part and the entire region east of the Rhine belongs to Germany.
The formation of the Kaiserstuhl volcano in Tertiär represents the peak level and also the final level of the volcano activities in the Upper-Rhine rift.

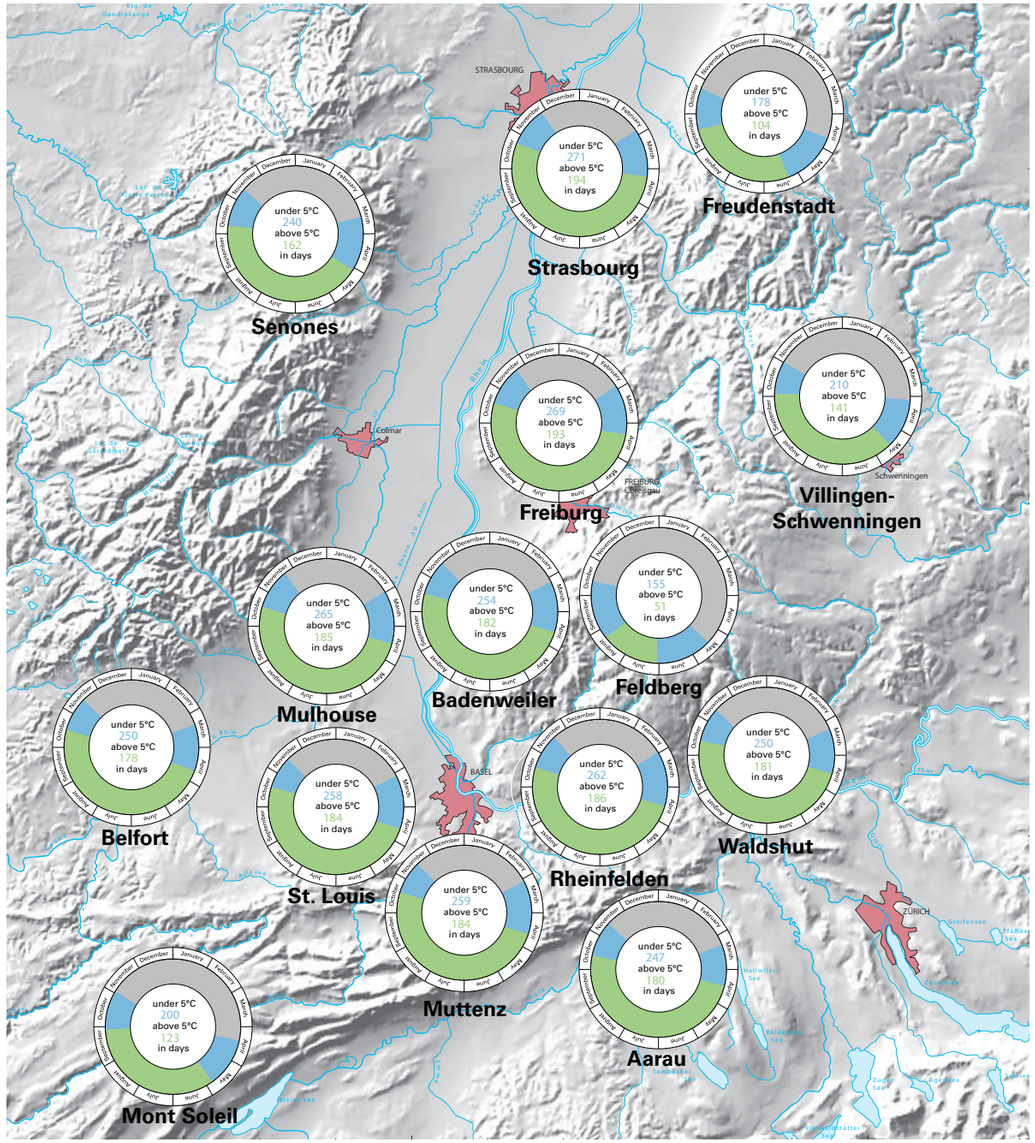
The fertile soil has rendered possibilities of agriculture since the early days, thereby the area is used for cultivation by up to 50 %. The Upper-Rhine rift, thanks to the moderate climate, has high sun-shine periods and more than sufficient water supply because of the Upper-Rhine Aquifer, offers very good qualification for the production of food and natural stimulants. Many special-cultures are existing, such as vegetable- and fruit cultivations (among others: Asparagus, Plum, Cherry, Strawberry, Vegetable, Hops, Tobacco) also wine growing.

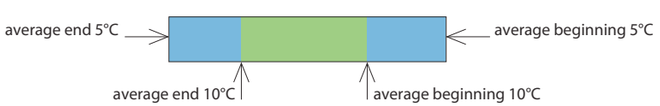
Lookig south towards the Alps from south Black Forest over the hills of Jura massive in Aargau
(http://www.cw-ballon.ch/galerie/php/bdata/images/bildBild_gross_bdataImageExtJPG/588_heissluftballonfahren_Luftbild_Galerie_Aargau_Jura_Alpen_Suedschwarzwald_m.jpg)

Climate of the Region

The Sky above Basel Area

A large part of the atmosphere also belongs to the landscape. climate and weather conditions were affecting former societies quite direct, because at present time, awkward weather conditions and atmospheric conditions are less important because technologies and other appliances are able to compensate, respectively swappping the food production to other areas globally. The climatic situation of the Basle area is in general characterized by a reduction of the thermal favor at higher altitude. The valley areas from Birseck and Upper Rhine Valley also the Laufener basin are part of the climatic favorable wine yard area, the valley locations in the jurrasic folds and in the jurassic table as a whole complex however belongs to fruit-farming stage and partially to pure farming area. The higher areas in the jurassic folds are extending into upper cultivated land. At the plateau areas of the jurassic table towards east it is getting gradually cooler.(1)
The rainfall conditions are quite variable because of the topographic conditions. In general the quantity of rainfall is increasing in line with higher altitude and nearer to the jurassic main rock outcrop The Birseck belongs still to the Upper-Rhine low-lands and has therefore significant less annual rainfall, like 1000 Millimeter relatively dry. In the upper Rhine valley the rainfall is increasing to 800 Millimeter near Muttenz reaching more than 1000 Millimeter near Möhlin.
Table and jurassic folds have significant higher rainfall. Such as from less than 1000 Millimetern in the lower Ergolz valley up to approximately 1300 Millimeter in the mountain peak areas.



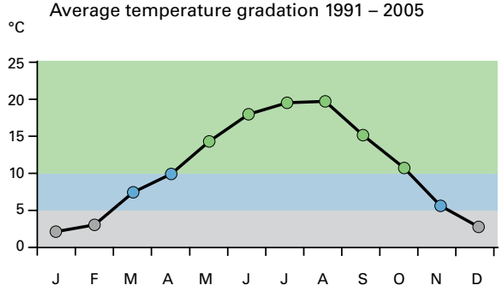


Period of the growing

Air temperature / growing season average beginning, average end and average duration in the middle of the day from maximum 5°C and 10°C.

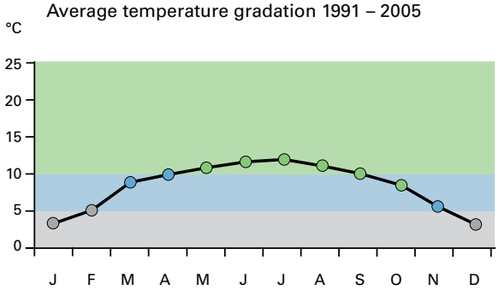
Basel; 260 MSL

Average temperature gradation 1991 – 2005



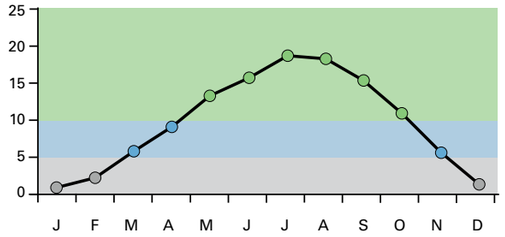
Todtnau; 659 MSL

Average temperature gradation 1991 – 2005



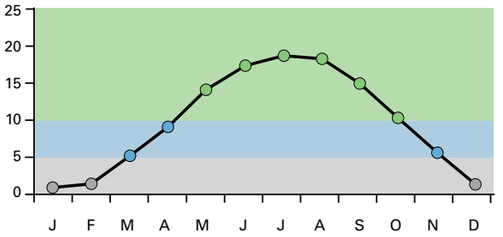
Lörrach; 294 MSL

Average temperature gradation 1991 – 2005



Colmar; 194 MSL

Average temperature gradation 1991 – 2005

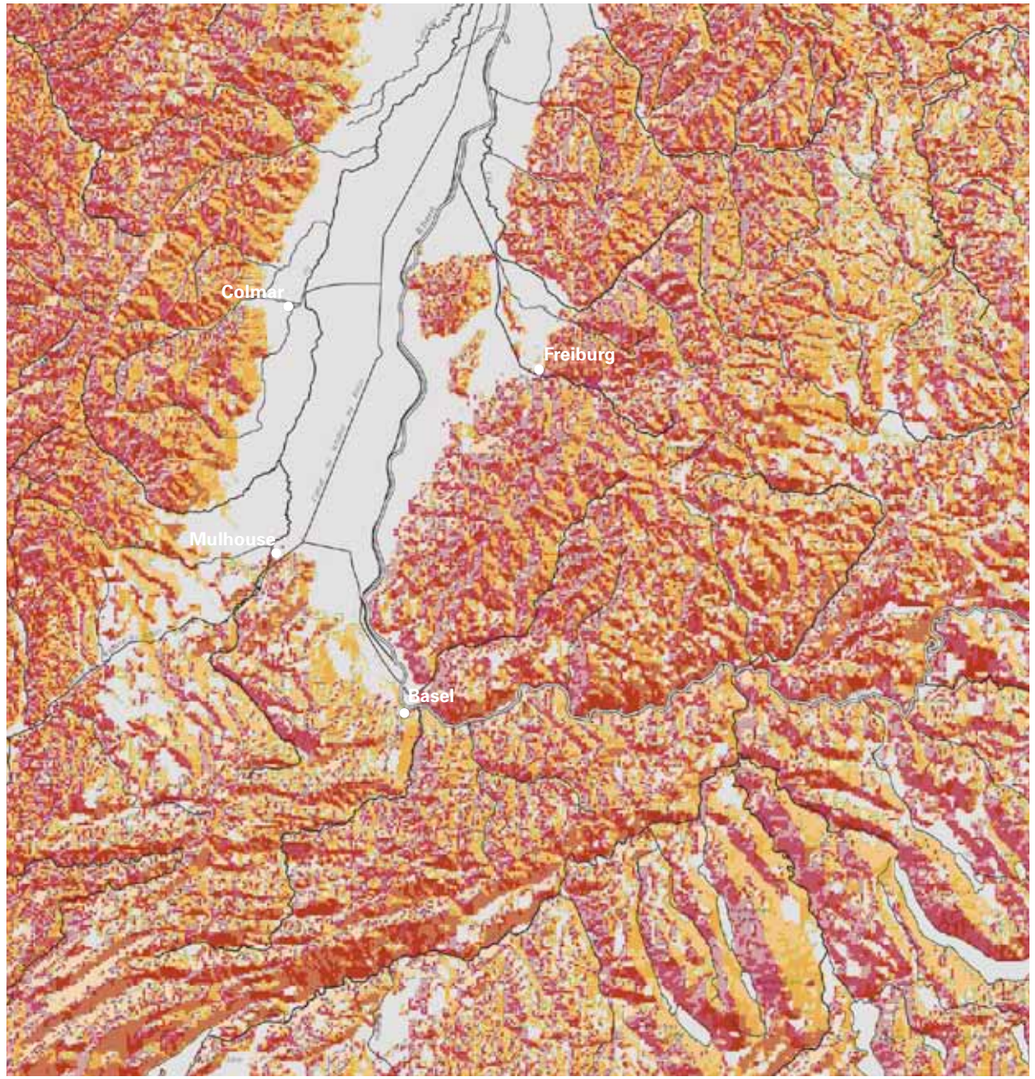


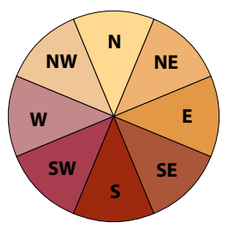
Starting, ending and period of the growing season.

The beginning, the ending and the period of time within the year when air temperature is reaching 5° respectively 10 ° C or even exceeding, the available growing period. In general this is called the growing period.

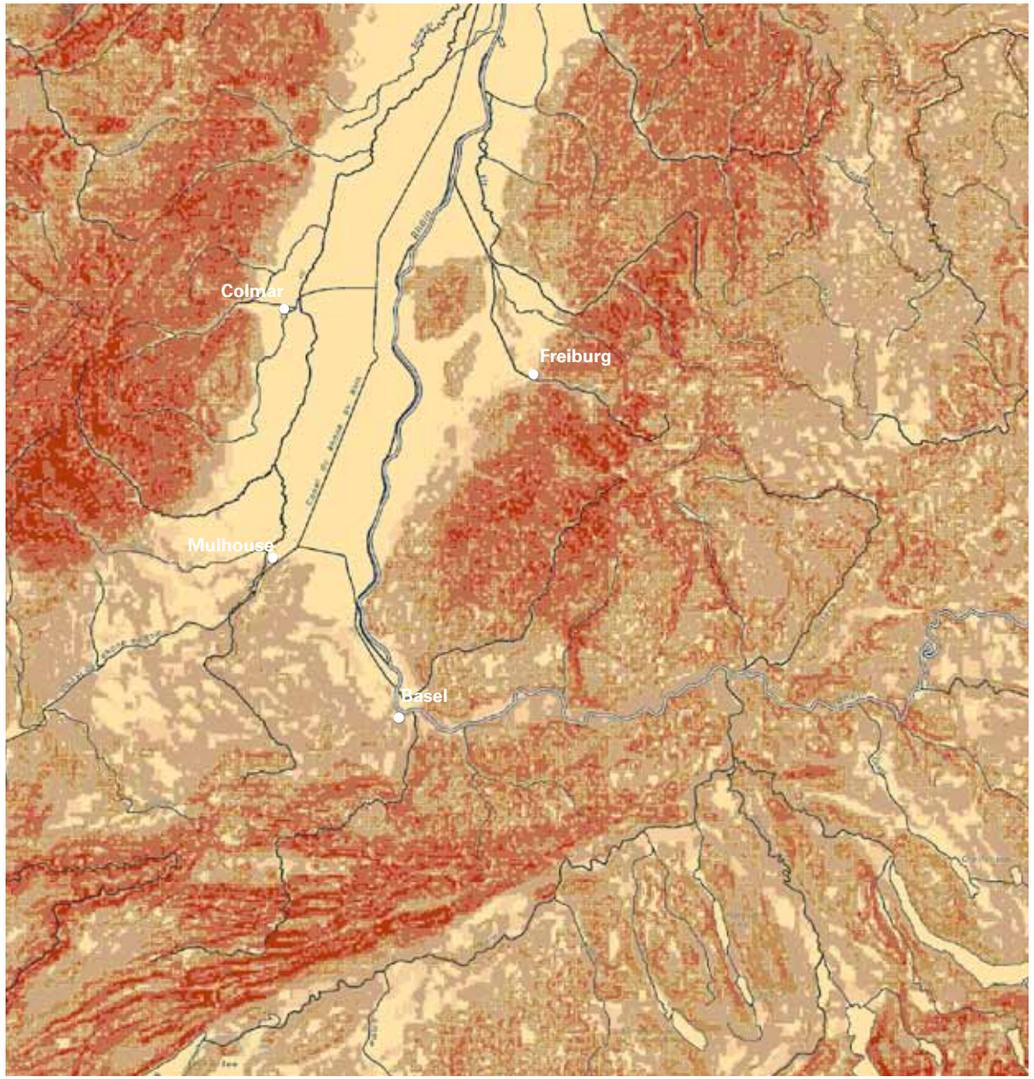
In order to calculate the "growing period" we assume the following prospect: Within this year there is a long, continuous period of days reaching or exceeding the 5 days overall average temperature of 5°C .
So called the core-period is beginning in April and and ending in October. Before and after the core period there are short cycles of days reaching the same temperature. These cycles are the part-periods interrupted by breaks.

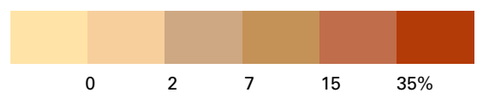
The begin of a growing period is settled from the 1st day of the earliest part-period, which has a minimum duration same as all the following breaks. According is the end of the growing season the last day of the part-period, which has a minimum duration, the same as the previous breaks. The maximum upper limit for the duration of the breaks are fixed with 15 days.
Applying this process is relevant to calculate the periods with temperatures of 10°C.
This is the method of measuring the growing period of plants with higher temperature requirements.



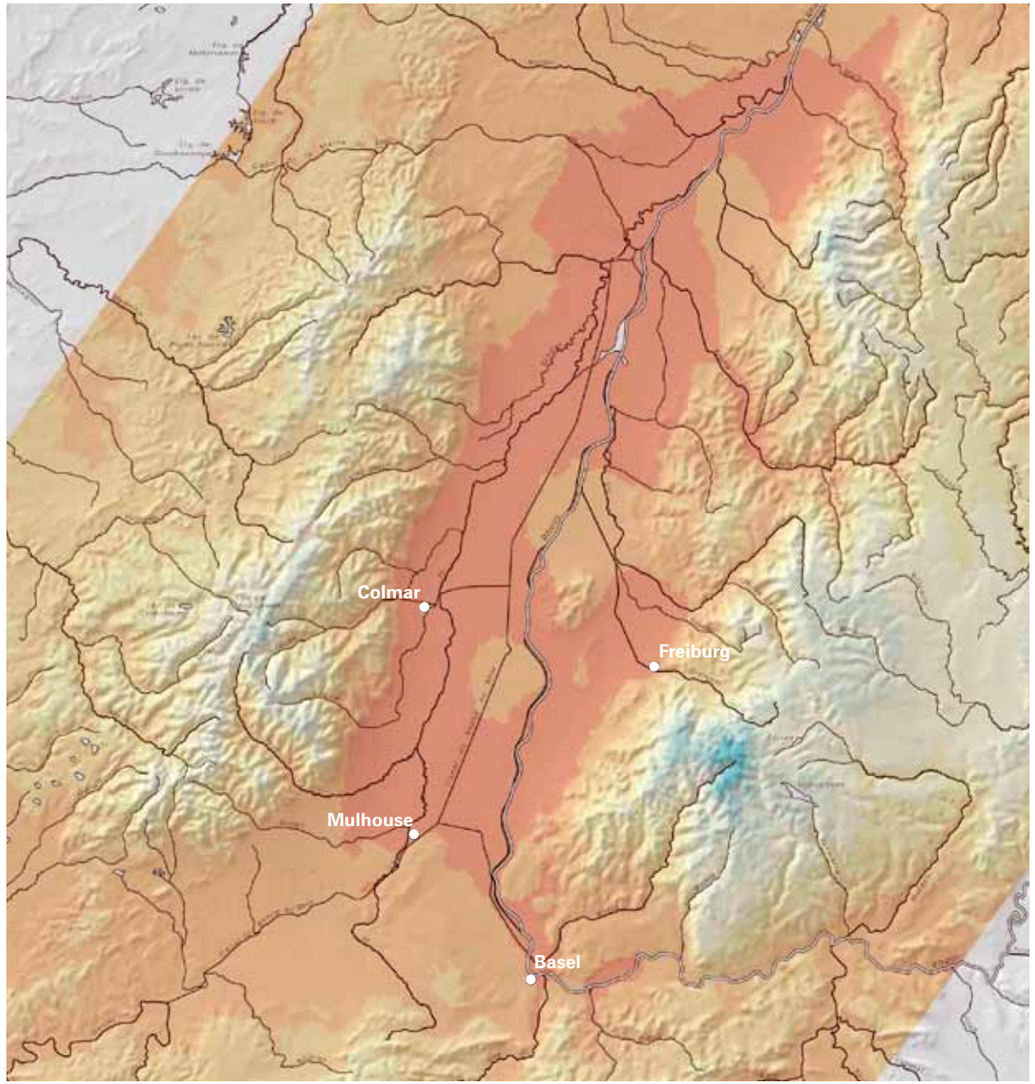


Slope exposure

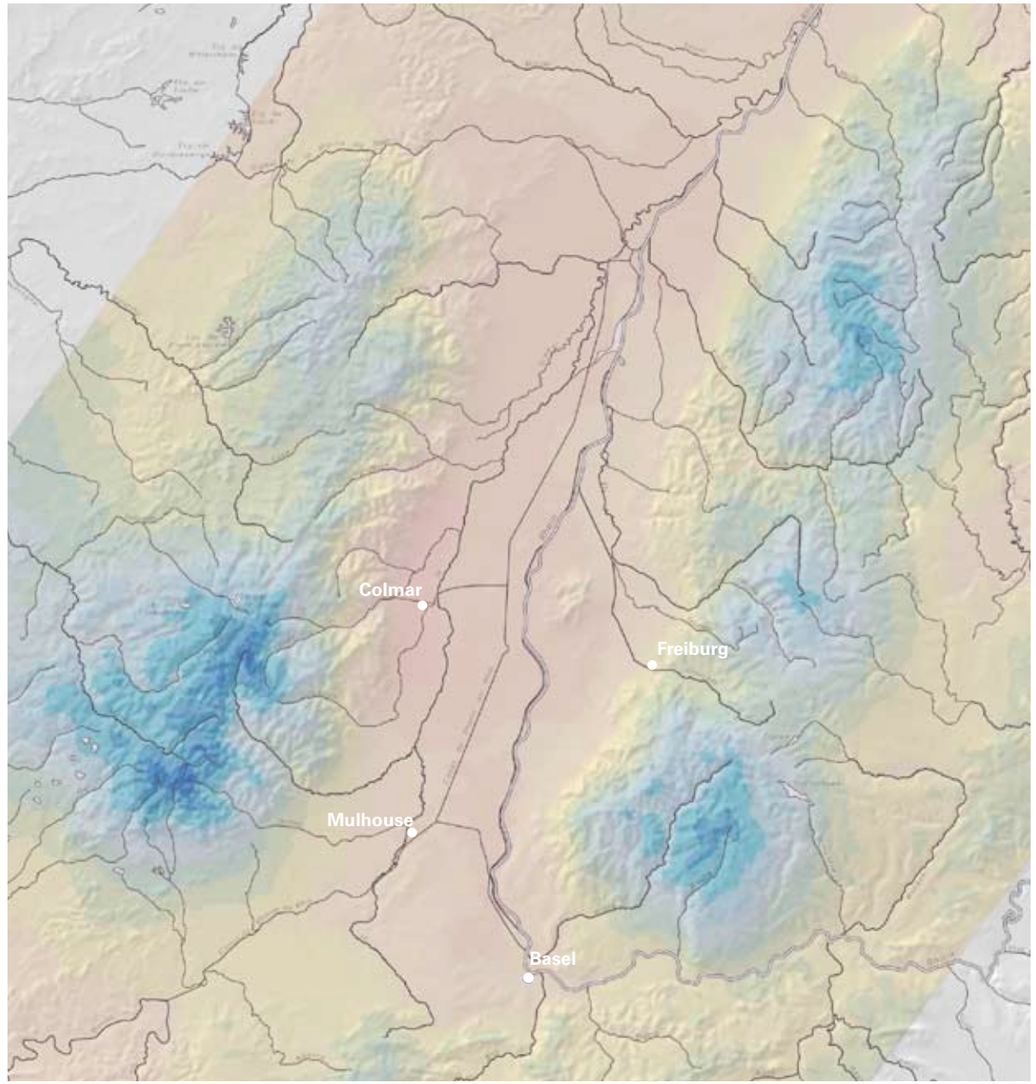




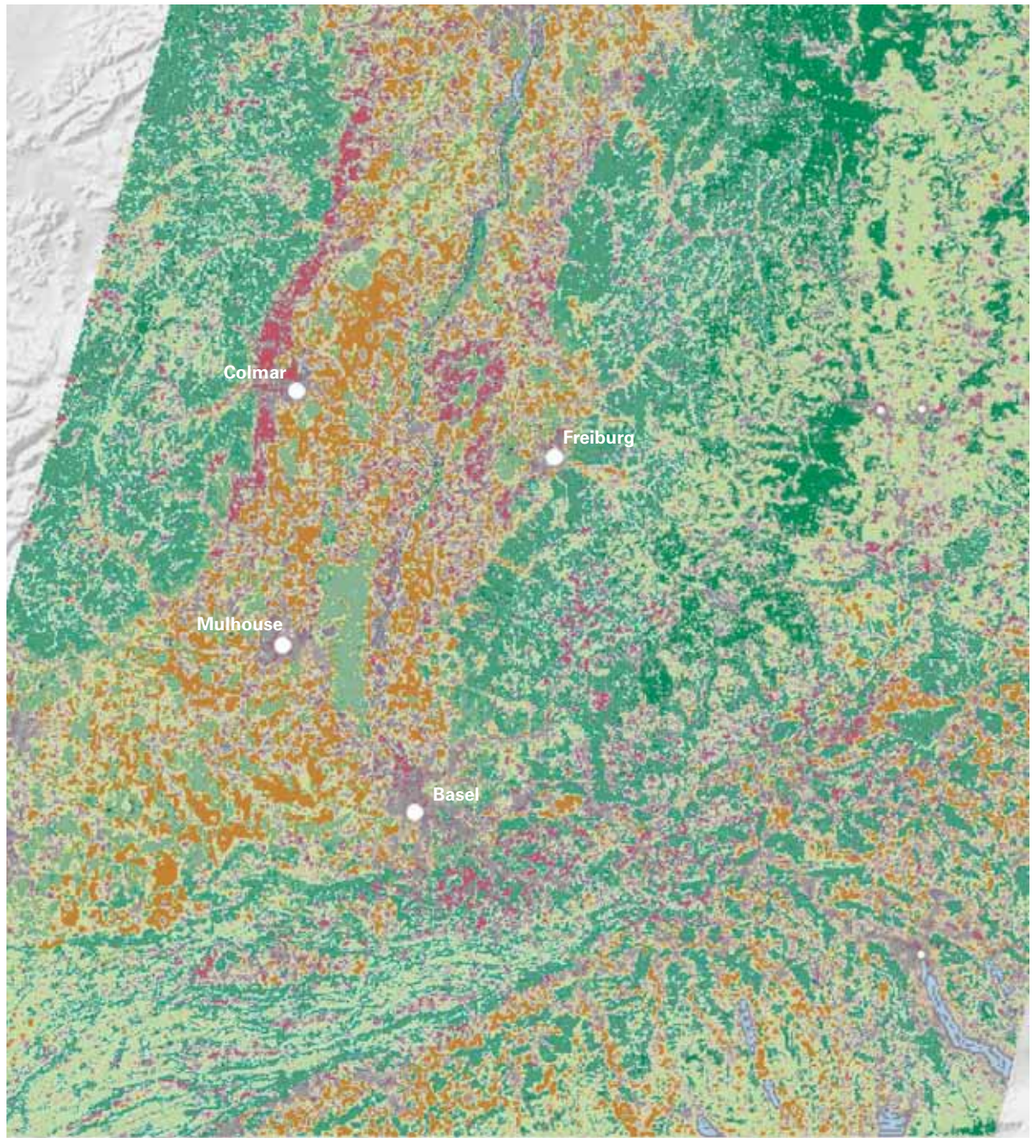
Slope gradient



Temperature



Precipitation



low density settlement
average density settlement
high density settlement
industrial and transport areas
deciduous forest
coniferous forest
mixed forest
green areas
crop agriculture
fruit and grape growing
bodies of water

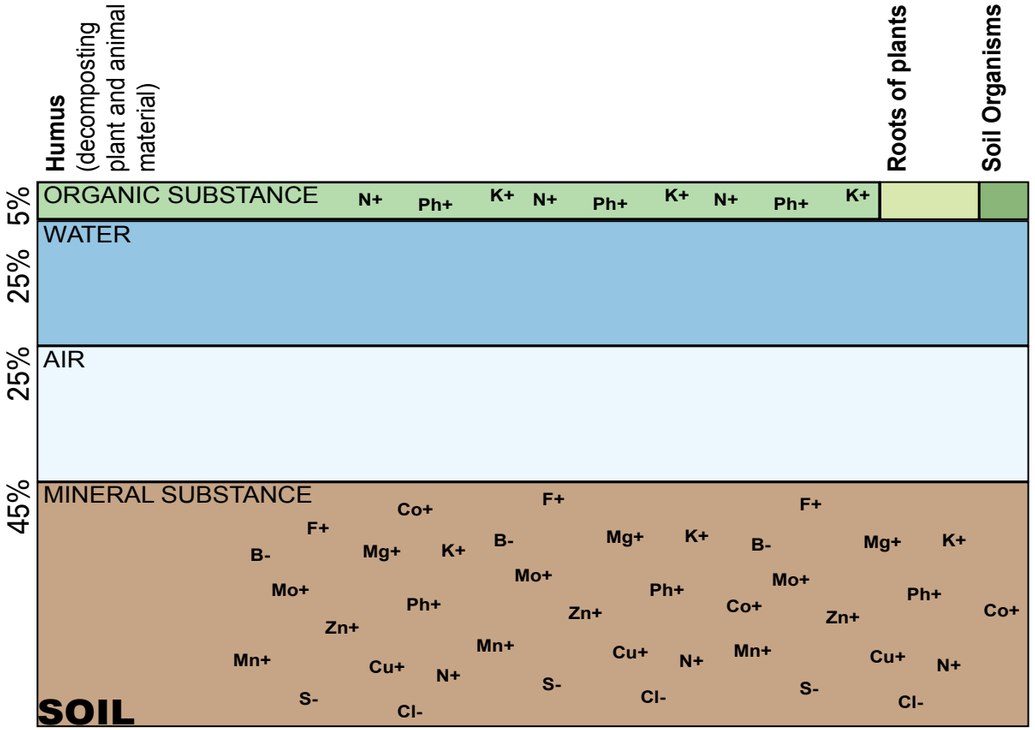
Landuse

Landuse

Due to the increasing alteration of using the land, humans interfered since ever into the climate. Because at present time the modification of our landscape happens significant rapid and broad, it occurs that the regional climate conditions are significant more intensive than in previous centuries, in the future, with increasing earth population, increasing number of agglomerations, urbanization of complete zones and growing industrialization, will continue. An impressive example for such enduring alteration was is the straightening the Rhine, made by TULLA in the last century.
Straightening the Rhine, is an artificial shortcut, previously the river had many "ox-bows".
Straightening the river was made in Germany between 1817 and 1876 by the engineer Johann Gottfried Tulla and his successors, thereunder Max Honsell. The Rhine straightening project was a necessity for making the Rhine navigable up to Basle, which has started in 1907.
This engineering achievement has significant impacts up to date for the ground-water management, the plant covering along the Rhine and consequently for the regional climate.

A comparison of the present appearance of the Vosges and the Black-Forest shows that the alterations of both sides of the Rhine has taken place in variable modes. The portion of broad-leaved forest in the Vosges versus the portion in the Black Forest is significantly higher.
Besides such, processes lasting partially over many centuries, there were many changes in smaller areas within short periods of time, whose climate effects can be found rather in local map scales. Due to the large wine yard re-alloction, e.g. in the Kaiserstuhl, in many areas the topographic situtation was changed. The Increasing risk of frost at the new designed wine terraces is proven by many researches. (ENDLICHER 1980).
Due to the fact that the upper Rhine rift is an important economic development axis within Europe there were, many creeking changes in the use of the land.
The growth in the cities and communities as well as the increasing consumption of landscape for the industry and the traffic have increased significantly, in all 3 countries of this area. Such urban sprawl and the sealing process of the landscape has a direct impact on the thermal cycling und for this reason also to the local and regional climate.

Deep in the upper Rhine rift, between the Vosges, the Black-forest and the Jurassic, the cultivation of land is dominating. Greenland has been pushed back, and the forest is limited to a few locations. Just east of Mülhausen, north of the Kaiserstuhls and between Strassburg and Karlsruhe there are larger, connected areas of forest. All bigger cities are located in the upper Rhine land level or in the exits of the valleys. From Basle In the south, to Mulhouse, Colmar, Freiburg, Offenburg and Strassburg up to Karlsruhe in the north, all cities are showing a detailed, Inner-city differential with townships of different density and industrial zones. Along the Rhine, one of the most important european waterways, it can be realized north of Basle and near Strassburg and Karlsruhe already, the overcrowding of industrial zones.
In the Sundgau south-west of Mulhouse is a distribution of farming used land, greenland and forest, in a mosaic pattern. Similar situation can be seen north-east of Karlsruhe, in the region of Kraichgau, in a rift between Black-Forest and the Odenwald forest, or north-west of Strassburg, where the Zaberner sink reaches far into west, pushing back the Vosges.
In the area of the topographic escarpment outlier along the Black-Forest and the Vosges, also around the Kaiserstuhl area, special culstures, mainly wine yards are shaping the landscape.
Same situation in the farest north of the area at the eastern boundary of the Pfalz forest in the area of the Pfalz wine road. In the area of the border mountains, the use of land is changing again, the forest as well as the greenland areas are dominating. The Black-Forest is different from the remaining middle-mountains of this area because of the high portion of coniferous forest .
In the Vosges is the portion of broad leaves forest higher, and in the Jurassic because of the total different geological soil, (Limestone) the portion of greenland is very high.
Farming and special cultivations in the intramontane basin of the jurassic has a higher portion of the area. In general is the area pattern of the land use in the middle mountain area shaped by the landform configuration. i.e. by the altitude and the position of the deeply cutted valley zones, differentiated.
The Rhine level country typical landscape use is extended, in narrow strips far into the rock-mass.



Ideal fertile soil.

Soils of Basel Region

Soil is fundamental for the existence of agriculture and by extension for the feeding of society. It provides plants with nutrients for growth, water and a medium to fix their roots into. The value of soil as a resource is often developed by people over generations and degradation of soils means not only loss of production but also wastage of a large amount of human labour. River valleys, among them the valley of the Rhine contain some of the best agricultural land in Europe. Other areas include the glacial deposits of the plains of the north of Europe and the soils of the Mediterranean suitable to the production of wine. In some places soils which lacked the relevant properties have been made suitable for agriculture by extensive management, such as the polders of Holland, historical fertilization in Ireland or terracing in mountainous regions.

There is a lot of soil suitable for agriculture in the Basel region, but its exploitation is limited by the topography (in hilly areas it is better to leave soil under forest to prevent erosion), by temperature (in Schwarzwald it is much colder than in the Rhine valley) and by other agricultural factors.

The soils of Basel region are suitable for growing grain and feed, wide variety of vegetables, fruit and grapes. Where the soil cannot be used directly for crop growth it is exploited as pasture or for forestery.

Fertile Phaeozem Soil in the Rhine valley

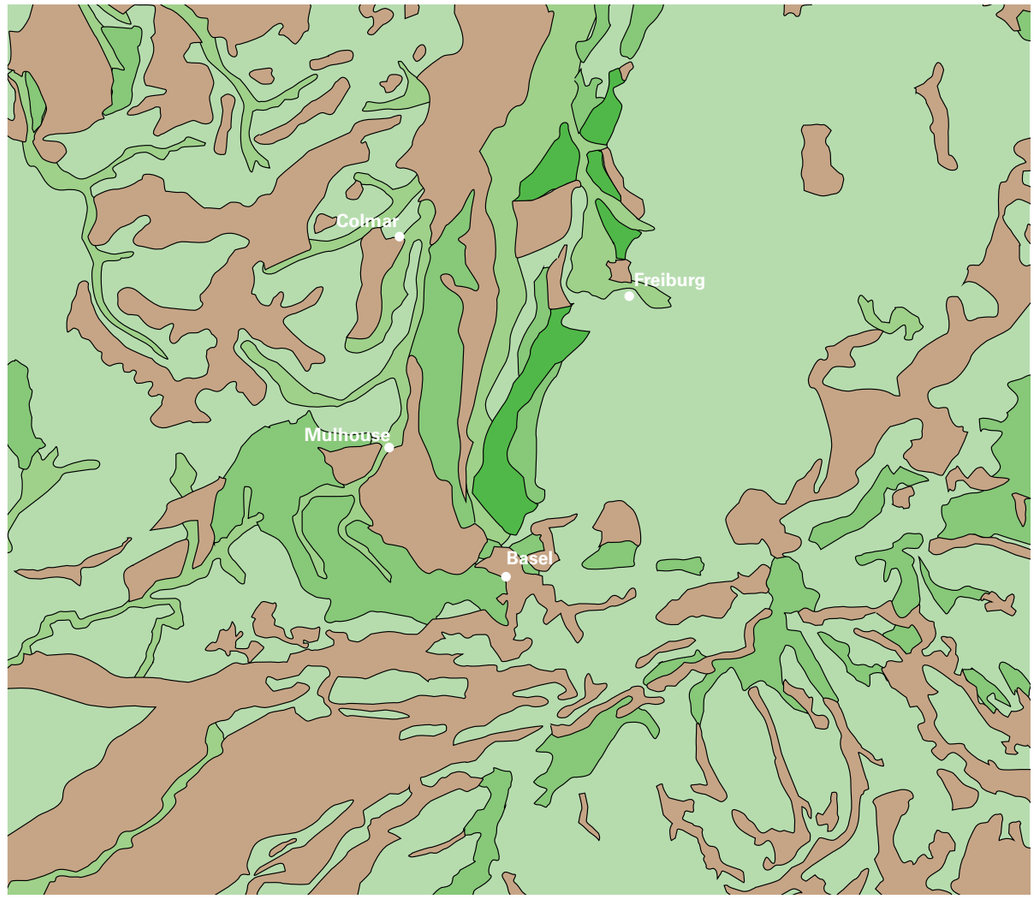
Organic substance

Organic substance builds up around 7% of the soil. To a large part this consists of humus, roots of plants and microorganisms. Organic substance is the main factor in defining the fertility of soil.
Humus is the part of the organic substance of soils which has a plant or animal origin. It represents decomposed or partly decomposed bodies of plants and animals, droppings, manure, leaves, etc. It is essential for plant growth since soil nitrogen - an element vital for plant growth - is found to 95% in the form of organic compounds and soil phosphorus to 30-60% in organic compounds.
Microorganisms of the soil, such as fungi, algae, bacteria, worms and small animals are essential for the health of the soil. When the balance is right the organisms of the soil are capable of suppressing plant illnesses of soil origin.
Finally, the organic matter is essential for maintaining good structure of the soil, optimal air and water content.
Seeing the holistic importance of organic matter for the health and productivity of the soil, many experts, governments and farmers today no longer think that exclusive use of mineral fertiliser leads to sustainable soil exploitation. Additionally, methods which replace the full complex of organic matter have to be used including "green" fertilisation (use of plants for nitrogen fixation and replacement of humus) and use of manure.

What makes soil fertile?

Fertile soils are those soils which contain a lot of substances which plants use for their nutrition (nitrogen, phosphorus, potassium). These are often found in organic matter (humus) which also improves soil structure and water retention qualities. Fertile soils also contain other minerals which play a part in plant nutrition (boron, chlorine, cobalt, copper, iron, manganese, magnesium, molybdenum, sulphur, zinc. Soil must have an appropriate level of water retention for the cultures grown and an appropriate acidity between 6.0 and 7.5. Microorganisms also form an important part of the soil lifecycle and support the growth of plants. In some soils, e.g. clays the micro-structure of the soil affects the way it is able to retain nutrients and make them available for the use of the plants. In this way, it is also important for soil fertility which minerals it has been formed from and by which kind of process.

There is widespread concern over the impact of soil exploitation on the soil quality. Use of fertilizers and pesticides can have a dramatic impact on soil biodiversity and there is ongoing research into the heavy metal and other types of pollution and related questions of using waste products as fertilizer.



Types of Agricultural Soils in the Region

Phaeozem
deep dark soils rich in organic matter and calcium carbonate; highly productive especially for cereal crops; make excellent farmland for production of wheat, barley and vegetables; erosion is a big threat, also used for cattle rearing and fattening

Cambisol
common in the region and generally in europe and are used intensively for agricultural production; are among the most productive soils, but cambisols on steep slopes and in highlands are best kept under forests

Fluvisols
young soil in river floodplain, lake and marine deposits; fertility depends on the nature of the sediments left behind by flooding; normally fertility of these soils is naturally good, with water management necessary

Luvisols
soils with high accumulation of clay in the subsoil and high saturation at the base; generally occur on well drained landscapes; fertile and suitable for many agricultural uses, in the temperate zone small grains, sugar beet and fodder, on the slopes for orchards and grazing;

not suitable for agricultural production or only suitable with a lot of management

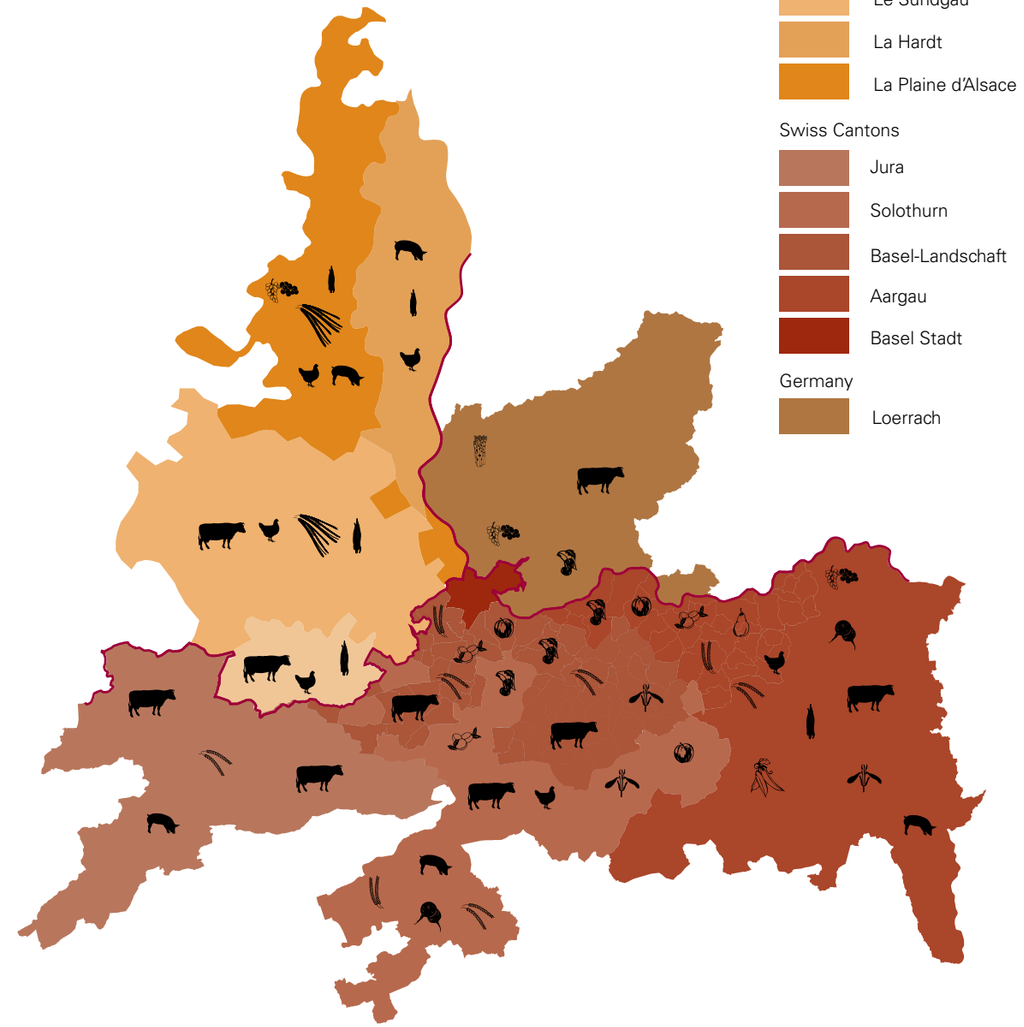
AGRICULTURAL PRODUCTS

Due to the wide variety of terraines, microclimate and soils the region produces a wide variety of grain, vegetable, fruit and animal products. In the immediate region of Basel cow rearing for production of meat and milk is dominant. The fertile plane of the Rhine valley produces grain, especially maize. The hills of Loerrach and Jure are used for animal rearing. The canton of Aargau and its strong agricultural sector yield a wide range of products.

Main Agricultural Products

Three countries of the region contain a range of environments that are differently suited to agricultural production. In addition to that, different traditions and administrative aspects mean that the variety and amount of agricultural production differs. In Switzerland the main local products are milk and beef / veal as well as fruits, especially cherry and plum. On the german side the picture is similar, but vegetable growth plays an important part there with asparagus being the famous product of the Rhine valey. In France this region is heavily concentrated on growing maize and, further afield, grapewine. Wine is produced on suitable terrains in all three countries with the largest areas being Kaiserstuhl in Germany and les Collines Sous-Vosgiennes in France.

Sources: Chambre d'Agriculture Haut Rhin,
Federal Office of Statistics, Cantonal offices of Statistics,
Agricultural Information Service LID



Grains:
- barley
- maize
- feed grains
- bread grains

Fruits:
- apple
- cherry
- plum
- grapewine

Animals:
- cows - milk and meat
- poultry
- pigs

Other:
- rapeseed
- soybean
- asparagus
- vegetables

Animal Products

Cows for Milk and Meat

The rearing of cows and calves is a very important part of Swiss agriculture. Switzerland is self-sufficient in milk production and largely self-sufficient in beef and veal, although 27% of the feeding material is importet. Cheese is an important export product. There is a strong tendency for many cows to be kept for milk rather than meat. This is changing as many farms change over from milk to milk-fed veal production, which is more profitable.

Cows are held in a stable or in a field or a combination of the two. A Cow is inseminated, artificially or naturally and is pregnant for 9 months. If she is already giving milk, the milking stops around 7 1/2 months. After about 8 days since birth the milk is fit for human consumption and starts being milked for sale. On some farms the calves also get part of it, in some not. Natura Beef produces feed their calves exclusively on milk directly from the mother-cow. 2 1/2 months after the birth a cow is inseminated again.

Feed of the cow falls into two categories: “raw” feed and “energy” feed. The former includes grass, hay and silo products, the latter includes maize and other kinds of grain.

It is considered to be better for the health of the cows to be fed mostly on “raw” feed, which is the tendency in Switzerland.

The main breeds in Switzerland are Swiss brown, Holstein and Red Holstein for milk and Brownvieh for milk and meat. We have also come across holdings of Angus breed for meat and Highland Cattle for meat and as hobby animals.

A cow produces 20-35 litres of milk in one day. What it eats to manage that varies: in the summer a swiss cow might eat as much as 100 kg of grass, in the winter and for cows which always live in a stable the nourishment consists of a mixture of hay and grains. Male calves are only rarely kept for breeding purposes. They are mostly fed and slaughtered either at 200 kg weight for veal or at 500-600 kg for beef. It takes about one year to reach that weight. One slaughtered cow cinsists of about 60% meat (300-360 kg). Alongside that cows provide us with leather, glue, gelatine, soap and washing products. If we consider that Swiss about 13 kg of veal and beef per person per year on average. This means that theoretically slaughtering of one cow provides meat for 25 people for one year. And one cow in on eyear provides milk for 100 people. and it would supply them in this manner for 14 years, while producing a calf approximately once a year.

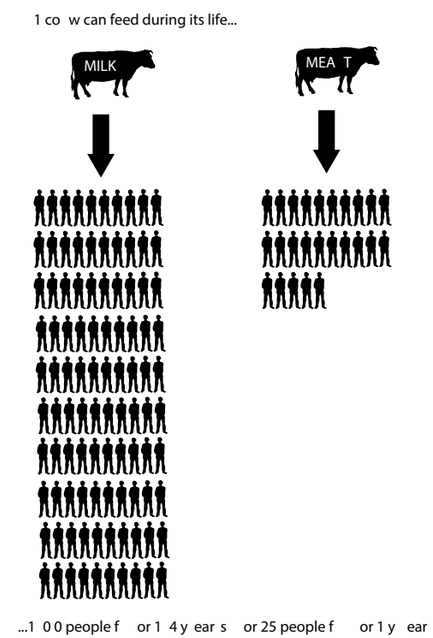
Swiss Brown milk cow - 650 kg, 144 cm, USA

Red Holstein milk cow - 750 kg, 149 cm, USA

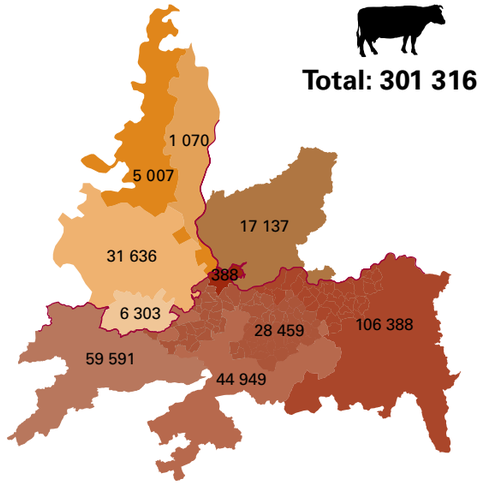
Holstein milk cow - 700 kg, 149 cm, USA

Braunvieh meat and milk cow - 650 kg, 140 cm, CH

Scottisch Angus cows - a fine meat breed



Life expectancy and production of one cow



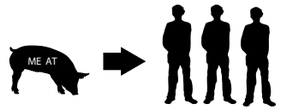
Cow holdings - total, male and female, meat and milk
if we consider the region as a whole there is approx.
one cow between every ten people

Pig Rearing

Pork consistently retains its place as one of the most favoured meats in europe, in Switzerland an average person consumes 25 kg of pork a year in the form of processed and directly sold meat.
The region of Basel is not a pig-rearing area in that the numbers of pigs are relatively small. For comparison in Swiss canton Luzern there were 423 185 pigs in year 2010, while the population was 377 610.
Pigs eat readily a variety of foods. Historically they were fed with wastes of agriculture, food production and left over food. Since 2011 there is a new regulation that prohibits feeding of food wastes to pigs aside from bread, potato and the wastes of the milk and beer industry. In addition to this pigs eat grain and drink a lot of water, especially in the heat.

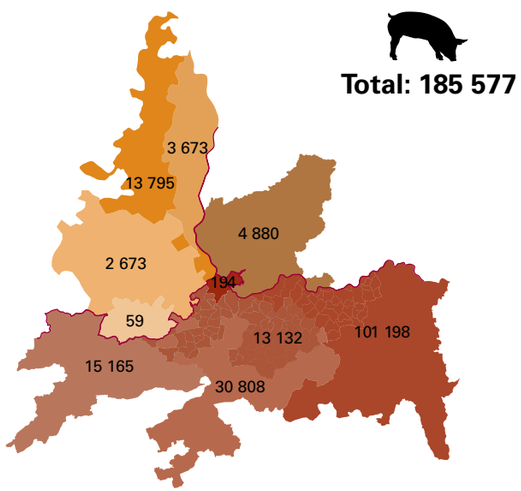
Modern pigsty

Organic pigs in Basel city



3 people' s 1 y ear consumptio n

A pig's menu: old bread, potato waste, whey and yeast



Pig holdings

Freerange pig farm

Chicken Farming

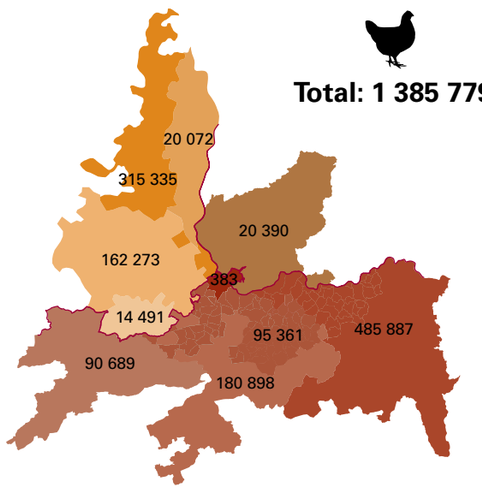
An average Swiss consumes about 180 eggs and 10 kg of chicken meat in one year in addition to all the eggs which are eaten "hidden" inside pasta, baked goods and other products. Switzerland is less than 50% self-sufficient in eggs although the consumers here show a strong preference for buying swiss eggs. The consumption of chicken meat is growing since it is poor in fat and corresponds to people's desire for healthy food. Eggs are a very valuable nutritional product due to the high content of vitamins, proteins and fatty acids.
The conditions of keeping chickens and hens have been a subject of criticism for some time. In Switzerland the industrial "battery" farming is banned in favour of more humane practices. Organic holdings are amoung the most chicken-friendly with at least 5 m sq of meadow per hen. Farming method makes a difference to how quickly the chickens grow: organic chickens must be at least 63 days old before being slaughtered, while their industrial counterparts are ready for the table after 35-42 days. The taste, texture adn cooking time of the meat are affected. Industrial-scale systems also require interventions in the form of drugs and other chemicals to make sure that the chicken is safe to eat.

Automatised egg collection

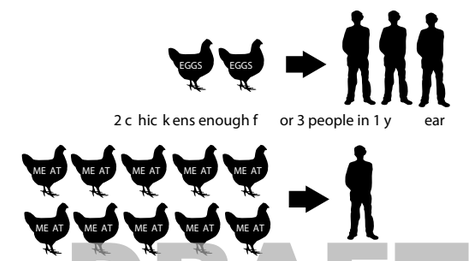
Battery chicken farming - banned in Switzerland

Feed consumption of one chicken

Organic Chicken Rearing Basel City



Chicken holdings - total, eggs and meat



Consumtion of eggs and chicken meat per year

Plant Products

Grain Production

Amoung the most important grain cultures are wheat, barley, oats, rye and maize. Their products are used directly for human consumption, to feed animals and manufacture processed foods. France and Germany are amoung the biggest producers of grains in the world.

Wheat is an annual plant which is sawn either in September (winter wheat) or in the spring (summer wheat). The yields of wheat vary and in Switzerland this is on average 5 tonnes per hectare, while in France and Germany 7 or 7.5 t/ha can be reached. This can be increased up to 10 t/ha but it would mean high input of technology which is generally seen to be a risk.

Wheat is used for production of bread, pasta, cakes, bisquits and other baked goods and as animal feed. It is the second most caloritic of agricultural grains, closely following maize. Hard varieties of wheat are most suitable for making of bread and pasta. However the region of Basel produces mostly soft varieties which are better for pastries, breakfast cereals or starch manufacture.

Barley is used much less for human consumption and more for animal feed, directly while still green, through silage, hay, and in the form of grain which needs to be cracked or partially cooked to be digestable. The main demand in the food industry is for malt - sprouted and dried barley - for brewing of beer, distilling of whiskey and flavouring of drinks and baked goods.

Oats are an old-fashioned crop in comparison to wheat, barley and maize, but are still widely grown for human and animal nutrition, especially for hourses, and as winter greenfield. Its relatively low yields make it a less popular crop, but its image as a healthy food means that the demand for oats exists.

Rye unlike many plants grows well on acidic soils and thrives in areas with cold winters and warm dry summers. It is often grown as winter crop for animal feed. It is frost and drought resistant and grows readily in the mountains. Rye is important for human diet because it is free of gluten and is a good protein source. It is used for manufacture of American whisky and adhesives, strawboards and paper.

Wheat (LID) - for bread, pastry, pasta and feed

Barley - for beer and feed (green and grain)

Oats - for health food, porridge and feed

Rye - for bread, health foods and feed

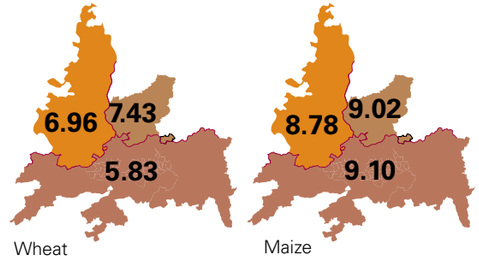
Corn Field

Maize

In the region of Basel, which we consider here, maize, or, colloquially, corn, is an important culture. It is planted mainly in the French part of the region with the total of 53.5 thousand hectares, which corresponds to the annual production of approximately 470 thousand tonnes a year. In Switzerland and Germany maize is less important, being grown mostly for forage and silage, which is reflect in the fact that not all regions identify separately the areas used for growing maize in their statistics. This may also hint at the difference in agricultural methods applied. The difference is probably due to the climate since maize requires high temperatures for the grain to ripen fully and is less suited to cool hilly regions.

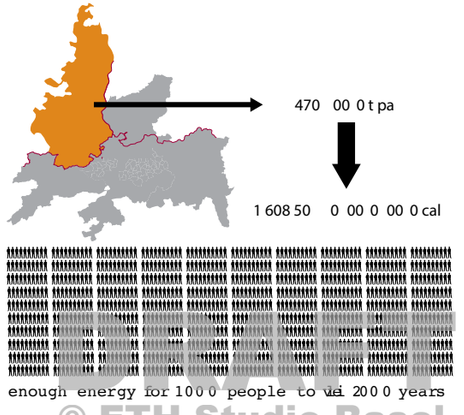
Corn is the most caloritic of agricultural grains with a variety of applications not only for human (as vegetable, grain, oil, glucose syrup, sugar) and animal consumption (60%), but also in ceramics, drugs, paints, paper goods, textiles and biofuels.

Maize has been subject of manipulation for some time. In the 1920s very successful work was done to create hybrid maize and attempts are being made to genetically modify maize to improve protein content to include lysine protein and to improve the crop as a source of oil.



Wheat Maize

Comparison of average yields 2000-2009 t/ha (FAOSTAT)



Blossoming cherry tree

Sweet cherries

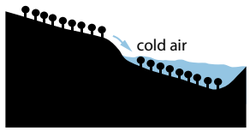
Golden Delicious apples

Fruits

The most important fruits in the region are cherry (sweet and sour), plum (damson, mirabelle), apple and pear, with most production being located in Switzerland and Germany, with just a few orchards in the French part of the region. Fruit production here has however been shrinking for some time under economic pressures.

Fruit growing is very dependent on microclimate. Elements of topography and man-made structures determine the exact conditions in relation to frost, to which fruits are very sensitive. In hilly regions it is more advantageous to plant fruit trees higher up the slopes, because cold air gets accumulated in the valley and temperatures stay low there (Kaeltesee phenomenon).

How many fruit trees in the region.



Plums

Williams pears

Winter grapes in Binzen, Germany

Special Culture: Wine

Wine stands alone in the world of agricultural practices for several reasons. First, it is often grown, processed and distributed by the same people, which preserves a direct relationship between producer and consumer that is often lacking in other branches of agricultural production. Secondly, it does not lend itself easily to the classifications of normal agricultural methods because wine is subject to strict regulations imposed within its own field. These are highly local and vary between cultures and regions. For example in the production of Barolo in Italy one is not allowed to use any thynthetic substances. On the other hand in Germany use of herbicides, pesticide and mineral fertiliser is allowed, but the substances and the dosage are exactly prescribed. Use of pheromone for insect control is even subsidised. For this reason in Germany the movement for organic and biodynamic wine is present, but it is also becoming popular in other countries. The difference is not just in applied substances but in philosophy of production. Basel is located at the centre of several wine production regions, the main ones being located on the German and French sides of the Rhine valey with a few vineyards in Switzerland.

Vineyards in Binzen

Vegetables

Vegetables are a very large category of agricultural plants, which includes all plants which are used for human nutrition that do not classify as grain or fruit and that are eated raw or prepared without removal of significant components. This includes plants in which we eat roots, leaves, bulbs, flowers, shoots, sprouts, seeds, fruits and mushrooms. An average person in central europe consumes about 90 kg of vegetable a year. Nutritionists advise that 140 kg a year is desirable.

Vegetables are produced in the region of Basel in open fields and in greenhouses. Some, like cucumbers must be grown in greenhouses since they need high temperatures from the moment of being planted (e.g. 22 degrees C in February-March) so it is not possible to grow them outside in this region and production requires a lot of energy.

Vegetables consist of 80-95% of water so they require a lot of watering up to 400-700 l/m sq during the growth period. Vegetables must never be planted in the shadow and best grow in areas which have few cloudy days. The most suitable area in the region for planting of vegetable is located directly to the north and north-north-west of basel around Binzen.

Vegetable growing demands a lot of work, especially on a seasonal basis and because of that it is not uncommon for foreigners to come to the region to work on the farms.

The most famous vegetable product of the region is Asparagus, being planted in the German part. It is a perranial leafy plant of which the shoots are eaten. It reaches its maximal productivity in 4-5th year and are cleared away and re-planted after 7-10 years. It contains little energy, but a lot of mineral substances which are good for the human body. It is seen as beneficial for the functioning of the kidneys. Asparagus yield constitutes 4-5 t / ha

Another important vegetable product is salad, which forms an important part of human diet due to the vitamin and fibre content. Different types of salad have different yields 4-6 t/ha. Continuous planting of salads on the same land intensifies spread of desease, so salad must be planted in rotation.

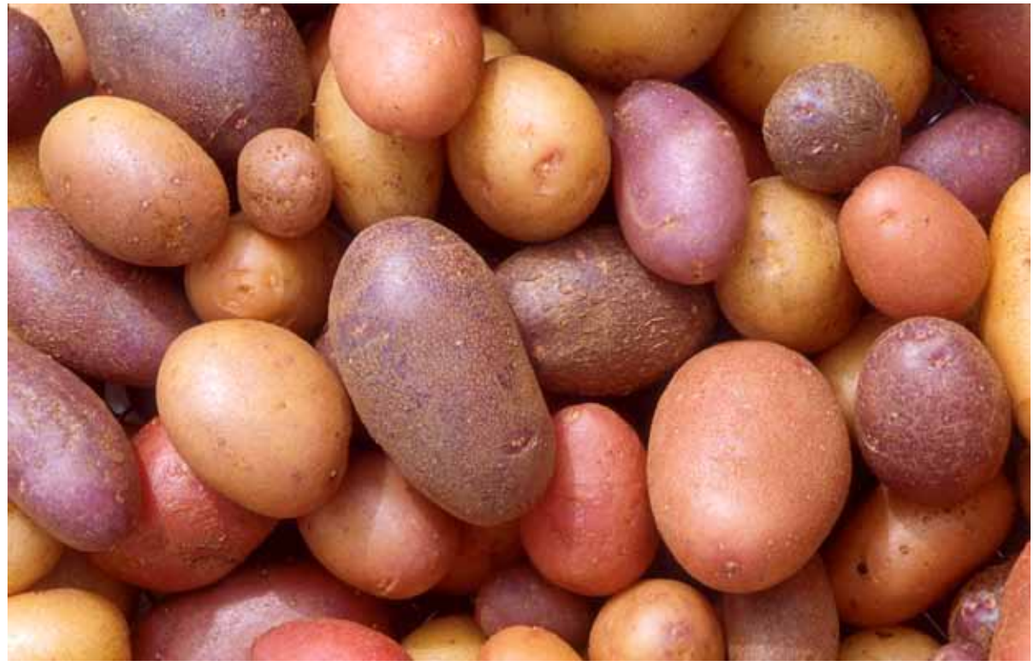
Finally, one of the most planted vegetables in the world is tomato due to its many uses in cooking, sauces and preserves. The valued properties of tomato are its taste, low energy value and vitamin and mineral content. In the climate of Basel region it is not possible to grow tomatoes outside. They must be grown in a greenhouse and therefore a re energy-intensive. Different varieties can produce different yields from 15 to 60 kg from square metre.

Asparagus

Salad grown in a greenhouse

Cherry tomatoes - self grown!

Tomato plant



There is a great variety of potato breeds although only few are planted today

Roots and Tubers

This is a category of vegetables which carries a particular importance for human nutrition. It includes those plants of which we eat the root e.g. potato, carrot, beet, cellery, radish and topinambur.

Potato has been a staple crop in Europe since the 18th century and other roots were important too due to the fact that they store well and can be preserved for the winter. It used to be planted widely in the region but its' share has decreased significantly over the past 50 years. This is due to shrinking consumption and availability of other staple foods. Today's average Swiss eats 45 kg potato a year while 1 hectare of land can produce up to 40 tonnes of the vegetable.

Carrots on the other hand do not loose in popularity and are valued for their high Vitamin A and carotin content. It is a perfect vegetable for growing in the whole of Basel region since it grows best at relatively cool temperatures (daily average between 16 and 18 degrees). Carrots yield up to 20-30 t/ha.

Another important crop is sugar beet, which is the only plant which can be grown in temperate climate for sugar extraction and which has grown in popularity in recent years due to effective mechanisation of its production.

Market carrots

PROCESSES

The impact of agricultural activities on landscape is closely tied with the method of agriculture. While being one of the oldes human activities, it remains today complex and disputed. Voices on one side say that it is not possible to feed the planet without industrial agriculture with its endless corn fields and large scale cattle feeding operations. Others call to protect the environment and ensure variety of plants and animals, preserving the mix characteristic of cultural landscapes.

Conventional Agriculture is characterised by monoculture, as in here in corn-growing of Haut Rhin

Methods of Agriculture

“Conventional“ Agriculture

“Conventional” agriculture is an umbrella term which is sumewhat difficult to define, since its boundaries are outlined by negatives: it is everything that is not organic, ecological, integrated,etc. The word “industrial” is a little more specific in that it hints at agriculture that is conducted at large scale establishments. However, farms do not have to be large to apply this method. It mostly refers to agriculture that takes yield and profit as the highest priority with little regard for environmental or social effects. This is associated strongly with monoculture - the same crop being planted on the same piece of land every year and with extensive application of technology from tailored seeds, to pesticides, herbicides and growth hormones. In Europe this way of farming has been attracting criticism and extensive regulation has been introduced for its negative side effects. Its supporters say, that if everyone would want to eat the way we eat, there is simply no other way to feed the planet.

Example of integration - cows eat grass and fertilise the land

IP - Integrated Production

The idea of integrated production goes back to the 1960s when the concept of integrated plant protection started to be developed, at first in fruit orchards. IP can be seen as a “bridge” between the methods of industrial agriculture and those of organic farming. The idea is to make maximum use of possibilities for action given to us by nature and apply additional means to the minimum and in such a way that ensures long-term sustainability. In some respects IP is also an answer to the concerns that high specialisation of modern agriculture leaves is exposed to high risks.
Basic principles of integrated production include promotion of biodiversity and planting of a variety of spieces and kinds. IP agriculture has to support the functioning of the agrarecosystem and health of the plants and animals through the choice of sorts suited to the location, crop rotation, preservation of soil structure and fertility, etc. Integrated farm fulfills a range of functions in a rich, varied environment. Production of food is only one of these functions, the others include taking care of the landscape, of soil and animals and occupation and education of people.

Soils in conventional agriculture (Haeni et. al)

Soil on an integrated or organic farm (Haeni et al)

Organic Farmer (EC) - the opponents of the method dub it as “old-fashioned”

Organic Farming

Organic farming is a growing trend in agriculture which arose out of concerns that food produced with the help of mineral fertilisers, chemical plant protection and hormonal growth control may be harmful for the health of consumers, have adverse effects on the environment and are energy-intensive.
Organic agriculture is technically defined as “ecological production management system that promotes and enhances biodiversity, biological cycles and soil biological activity. It is based on minimal use of off-farm inputs and on management practices that restore, maintain or enhance ecological harmony” (USDA). A broader understanding of what organic agriculture is about includes the ideas of human development in the rural areas and “agri-culture’. Organic farming promote s, among others, the idea of reducing reliance on technology and capital and of puttng the development possibilities into the hands of the farmer relying more on his/her knowledge, skill and experience. Organic farming is regulated by a certification system which defines exactly what susbstances are allowed, which practices are permissible and which conditions should be created for plants and animals.

The question of whether this type of agriculture can deal with the challanges of growing world food demand is controversial and comparisons between two systems are being made in the course of scientific reasearch. The yields of organic agriculture are assumed to be lower than those of conventional production which implies that it requires more land to produce the same amount of calories. The point being made by the organic movement on the other hand questions what happens to those calories: unbalanced diets and high consumption of meat and competition from the biofuel industry put in question whether we are using our agricultural resources wisely. Additionally, one must consider reliance on technology and fossil power and reduction in diversity, which are widely seen as risks. The tone of the discussion has to be also seen critically in the light of the fact that the agro-chemical sector represents which supplies the “off-farm inputs” represents a strong commercial interest.
The range of opinions and complexity of this topic makes it very difficult to reach a conclusion on it, especially from a commonner’s perspective. All that we know for sure is that the trend is growing and avoer 10% of agricultural land in Swiss and German parts of Basel region are farmed organically.

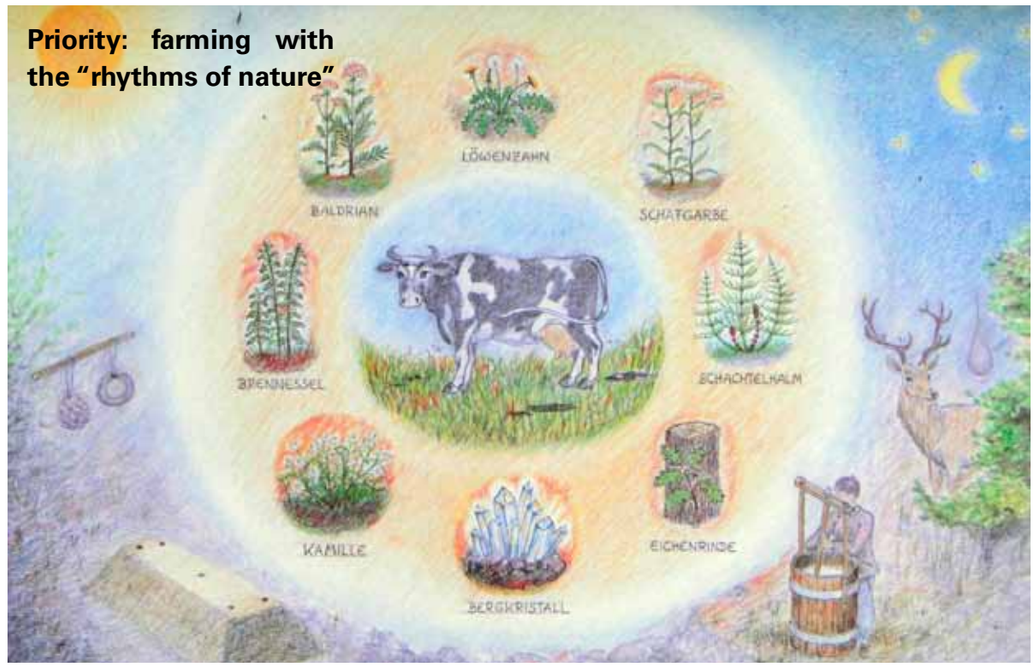
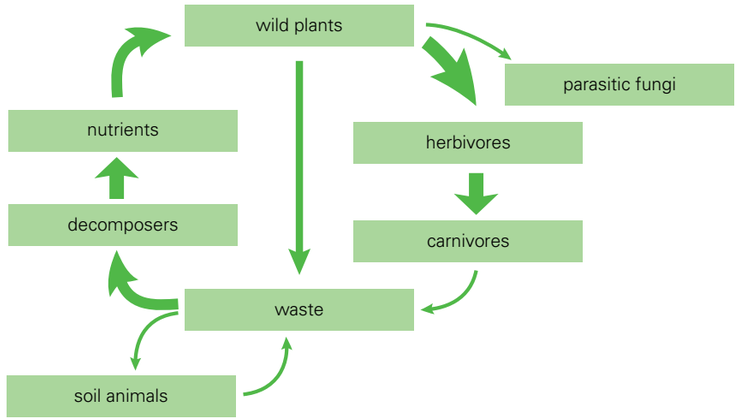


Illustration of bio-dynamic principles on the farm in Binzen

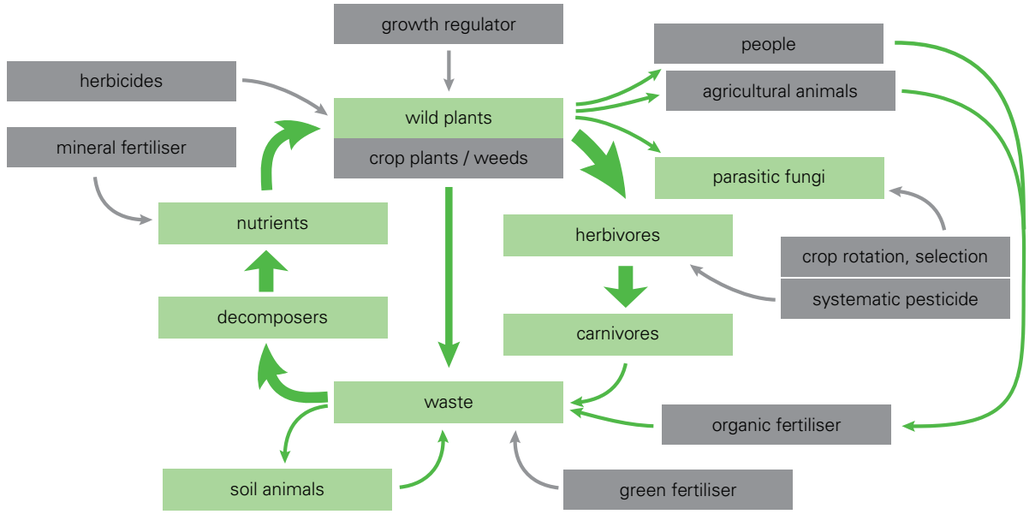
Bio-dynamic Farming and Demeter

Bio-dynamic agriculture was the first stage in the development of organic farming and in its present form is based on the oganic principles. Demeter label which certifies bio-dynamic products is the oldes organic label in Europe starting in 1928. The movement began with the lectures of Rudolf Steiner who in 1924 spoke about “Spiritual Foundations for the Renewal of Agriculture” in Koberwitz. He developed proposals for agricultural practice as part of the believes of the anthroposophical movement and these found immediate resonance with a group of farmers within the movement. By 1930 the were 1000 bio-dynamic farms in existance.
Like organic, bio-dynamic farming is preoccupied with holistic approach to plants, animals and soils and rejects use of synthetic substances in favour of manure and green fertiliser. In addition, bio-dynamic farmers apply special preparations made of herbs and natural mineral substances to soil and fields, plant an saw in accordance with an astronomical events as based on the ideas of Maria Thun and work on integrating animals with other farm cycles. Farms are cetified by the Demeter foundation and are controlled on yearly basis.

Sign indicating Demeter certification



Natural Ecosystem



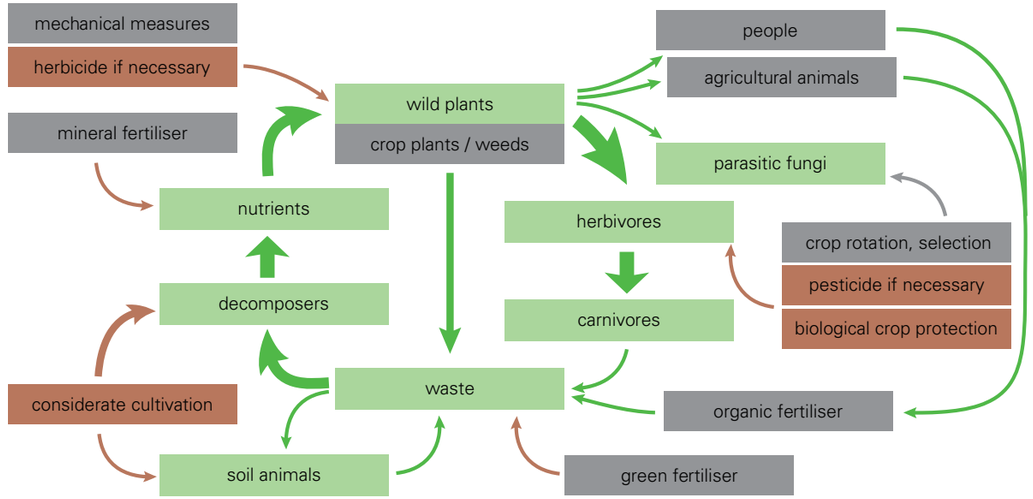
Conventional Crop Agriculture

elements of natural ecosystem

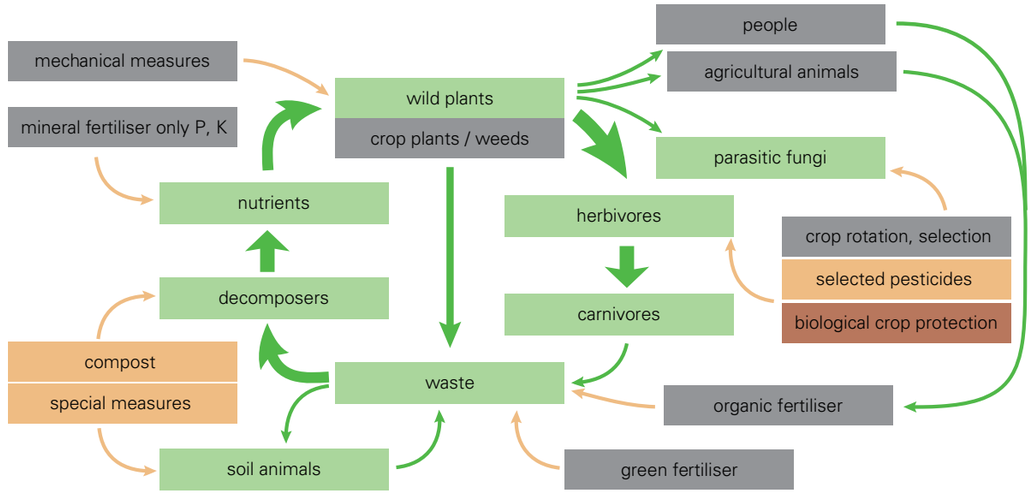
conventional additional elements

integrated additional elements

organic additional elements



Integrated Agriculture (crops and animals)



Organic Agriculture

Community garden Landhof in Basel

Urban Agriculture

Urban agriculture is a fashionable trend which is more associated with cities like London or New York, but it is also represented in Basel by a strong group of activists who carry out a number of projects. This local union for urban agriculture dedicates itself to the aim of growing plants for the local people by local people aiming for the three elements of sustainability - economical, ecological and social. Inspiration of teh movement comes from such ideas as zero-miles food and self-sufficiency in food supply. Bringing people into more direct relationship with their environment is a more subtle element of the scheme. Urban agriculture tends to emply organic or bio-dynamic methods.

What urban agriculture has to contribute to production is not entirely clear. Agricultural self-sufficiency schemes ofthe wartime years come to mind, such as the "Dig for Victory" campagne in England or the "Cultivation Battle" in Switzerland. Another example of urban agriculture being employed in times of need is Havana.

The proposal to use all open spaces in teh city for production of food might not be appealing to everyone - the city needs recreational spaces. Urban agriculture might however be able to show a way to make open spaces in the city both enjoyable and productive.

"Cultivation Battle" poster 1940

Lanxmeer Community in the Netherlands - a district designed according to principles of permaculture

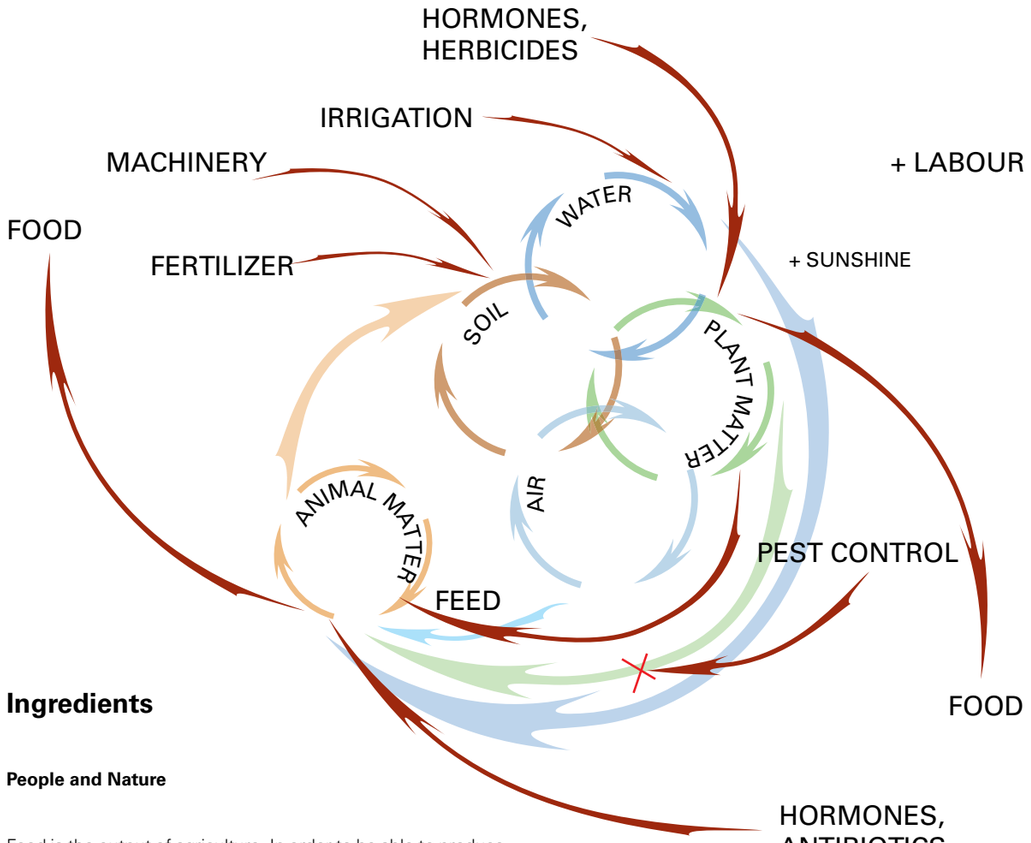
Permaculture

This movement was started in 1970s with David Holmgren and Bill Mollison who initially developed an idea for an agricultural system inspired by the ecosystem of a sub-tropical forest and its productivity. They observed that in the forest different varieties of plants and animals co-existed and provided for the needs of each other achieving an optimal balance and creating a closed system in terms of water, energy, etc. They started creating permaculture gardens designed to imitate such systems.

Later the idea of permaculture was developed further to integrate human systems with natural systems. First, guidelines for permacultural building and settlement design were developed and later the ideas about social balance and comprehensive land management were introduced.

Today permaculture is a complex way of thought that firmly persues the idea that it is possible for humans to live "in harmony" with nature. It tries to broaden the dabate about environment by pointing out that the issue is closely linked, in a complex way, with the structure of human settlements and society.

Greenhouses in Lanxmeer



Ingredients

People and Nature

Food is the output of agriculture. In order to be able to produce it, a number ovf inputs have to be put in, which like ingredients in a meal come together to provide for our table. The difference between cooking in agriculture is that ingredients of the latter form their own systems and interract with each other in complex ways, regulated by human intervention.
in agriculture the location is key. Combination of such “natural” factors as soil, temperature, exposure, precipitation, wind, and also “artificial” ones such as the knowledge and experience of the farmer, availibility of their time, labour, marketing and storage possibilities access to other resources and history mean that the farmer chooses one culture over another. The “terroir” of agriculture is not just the landscape but also the people. In a similar way plant and animal growth in agriculture is a process that has a “natural” basis, and which “works” as far as the needs of natural systems are concerned. Humans intervene in these processes to alter them and bring them to meet the needs of their system - the society - with a number of techniques ranging from simple to very complex.

Farming in teh Basel Region

Soil, Water and Climate

On the most basic level every plant needs soil, water, sunshine and air to grow. Plants use the energy of sunlicht to convert atmospheric carbon into organic compounds in the process of photosynthesis. The region of Basel is positioned very well in regard to the natural conditions of agriculture: the climate is temperate without very hot or very cold periods, there is plenty of water and the soils are relatively good.
Still, just the natural conditions would not allow to grow all of the plants that people here consume in their diets. Tropical and sub-tropical fruits such as oranges or kiwi do not grow there and others do not produce qualitatively good crop e.g. tomatoes. It is only possible to grow these plants here with great investments of labour and energy.
In the case of other crops natural resources are not sufficient to sustain their growth year after year. If a farmer would plant crops on the same piece of land without fertilisation or crop rotation the yield would decrease until it is no longer worthwhile to plant on it.
Thus, the conditions of soil, water and climate by themselves are not enough to meet the demands of people, making extra inputs necessary e.g. fertiliser and plant protection.

Seeds

Seeds are a subject of a science in their own right. Modern methods of production and storage of seeds are complex. Using the right seeds is essential to making agriculture worthwhile, and this means that today's seeds are not simply collected by the farmer from his crop to be used again next year. Instead modern seeds are produced in carefully controlled conditions to preserve the genetic material of plant varieties designed to achieve particular properties such as ability to grow on saline soils, desease resistance, etc. If a farmer chooses to plant one of the special varieties fo a plant it is considered to be in his interest to maintain genetic purity of the seed material. For this purpose he or she should only use approved seeds specifically in the conditions they were intended for. Hybrid plants are developed on the basis of mixing genetic material to achieve desirable properties, which are however mostly only effective for few generations. To maintain the quality of the stock seeds must be purchased from the breeder and cannot be saved on the farm. This causes great economic dependancy of the farmers and is one of the negative effects of concentration of resources in the hands of a few large agro-businesses.

Sunflower seeds, Ai Wei Wei, Tate Modern 2011

Fertilizer

The elements of nitrogen, phosphorus and potassium are essential for plant growth. These do not stay in the soil constantly, but are affected by the use of the soil and can be washed out by rainfall. These and other elements need replacement inteh form of fertiliser, which can be organic or mineral. Organic fetilisers are manure, green manure (composted plants) or planting of plants with nitrogen-fixation abilities such as peas. Planting crops on the land over winter is also a practice which supports soil fertility since nutrients are wahsed out less from fields which are covered with crop than those which are empty.

Mineral fertiliser is produced by the chemical industry. The processes for fertiliser manufacture were invented in the second half of 19th - early 20th century (Gilchrist-Thomas, Haber-Bosch and Odda processes). Todays fertilisers are much more sophisticated but their production is still considered to be energy-intensive.

The biggest problm with the use of fertiliser of any tipe is nutrient leaching and the ensuing pollution, especially of nitrogen in the water supply. For this reason in Europe application is regulated

Fertilisation in Process

Plant Protection

Since beginning of agriculture farmers had to fight competition from unwanted plants and animals to preserve their harvest. Pests (insects, mice, etc.) eat parts of plants, seeds or fruit thus limiting the plant's ability to build up desired product or spoiling it directly. Deseases (fungi, bacteria, viruses) also affect plants in direct or indirect way by either spoiling hte crop or limiting production ability. Unwanted plants compete with wanted plants for nutrients and sunlight.

Before the development of the chemical industry plant protection was carried out by mechanical methods or with the use of plant infusions and mineral stuffs found directly in nature. Today it is carried out by biological or chemical means and sometimes mechanically. Biological plant protection consists of introduction of measures which naturally control unwanted effects e.g. animals that eat pests or plnting methods that prevent spreading of weeds. Chemical methods employ synthetic substances which kill unwanted organisms or stop them from reproducing. Historically, pesticides, herbicides and other chemicals had adverse effect on the environment causing pollution and death of harmless insects and animals. The discussion of these effects today is controversial like the development of genetic modification - the latest technology in plant protection.

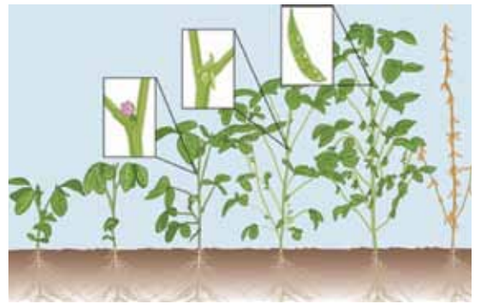
Spraying equipment

Growth Regulation

In order to optimise the growing phases of plants farmers can apply growth regulators which stimulate or slow down the growth of particular parts of the plant. Naturally, regulation occurs when plants produce hormones in very small concentrations inside the cells. Modern chemical industry allows to synthesise some of these hormones and other substances which regulate plant growth artificially. Applications allow to promote or slow down growth of some plant organs over others and manipulate the process to suit the desired results.

These substances can be dangerous and must be used in very small doses strictly in accordance with instructions. When applied incorectly they can harm or even kill the plants. Their effects are of course not always limited to the agricultural plant and unwanted side-effects on other plants can occur.

In perranial cultures such as fruit trees it is possible to regulate growth by mechanical methods e.g. trimming of branches to produce more off-shoots. The effects of these actions are normally seen in teh following year and the method is less suitable for annual crops which are grown in large numbers.



Growth stages of soy (Latham)

"Poor" meadows are grasslands with low nutritional content; they strengthen biodiversity because they encourage return of for treatened animals and plants; they are an important part of the ecological "balance-out" (http://www.naturerleben.net/)

Agricultural Policy

Hardly any economic sector so often occupies the limelight of politics as agriculture. There is no other economic sector with its own Federal Office. A separate Agricultural Act and various ministerial orders regulate Swiss agriculture, and it is no accident that the agricultural sector, of all sectors, is so strongly regulated.

In 1951, the Agricultural Act was enacted. The Act, largely influenced by the experiences made during the Second World War, was aimed at ensuring a thriving farming community and productive agricultural sector in order to guarantee continues supply of food to the population, even in times of crisis.

Agriculture, controlled by the state with its fix prices and guaranteed delivery, soon led to overproduction and high costs resulting from surplus utilisation. In the nineties, things changed fundamentally. Subsidies were replaced by direct payments, subject to certain requirements. Guaranteed delivery and fix prices gradually disappeared. Today, supply and demand determine the price. Farmers only receive financial support from the state if they meet the stringent conditions with regard to ecology and livestock raising. Thus, they are no longer simple producers of foodstuffs but bear a major responsibility for the maintenance of natural resources and cultivated areas. Modern agriculture will be heavily influenced by multi-functionality.

Agricultural policy remains a topic on the agenda of politicians. Increasing globalisation and the EU market are further impending challenges Swiss agriculture must face.

Day of open doors at a farm allows people to experience agriculture directly. The farmer's time is paid by the canton. These events strengthen the dialogue between the city and the countriside. (http://www.landwirtschaft.ch/)

Ecology in Agriculture

Awareness of the environment has generally increased during the last couple of years, and has not failed to have an effect on agriculture. Farmers continuously face new demands requiring a more ecological approach to agriculture. This demand puts the farmers in a quandary: consumers ask for cheap foodstuffs, yet they require products to be produced in an ecological and animal-friendly manner. Furthermore, the taxpayer demands that state money ear-marked for agriculture be reserved to those farmers who produce as environmentally-friendly as possible. However, ecological production is not necessarily economically competitive. Therefore, a price has to be paid. Farmers seek to find a balance between economic viability and ecology.
Today, ecology is a material component of the primary and continuing education of farmers. The general rule is to produce with less dependence upon chemical fertilisers, pesticides or concentrated feed, and thus reverting to an extensive agriculture. Switzerland was one of the pioneers in the field of environmentally-friendly production methods in agriculture and remains a leading example for other countries.

Agricultural Policy in the European Union

The Common Agricultural Policy is a system of European Union agricultural subsidies and programmes. It represents 48% of the EU's budget, €49.8 billion in 2006.

The Common Agricultural Policy combines a direct subsidy payment for crops and land which may be cultivated with price support mechanisms, including guaranteed minimum prices, import tariffs and quotas on certain goods from outside the EU. Reforms of the system are currently underway reducing import controls and transferring subsidy to land stewardship rather than specific crop production.

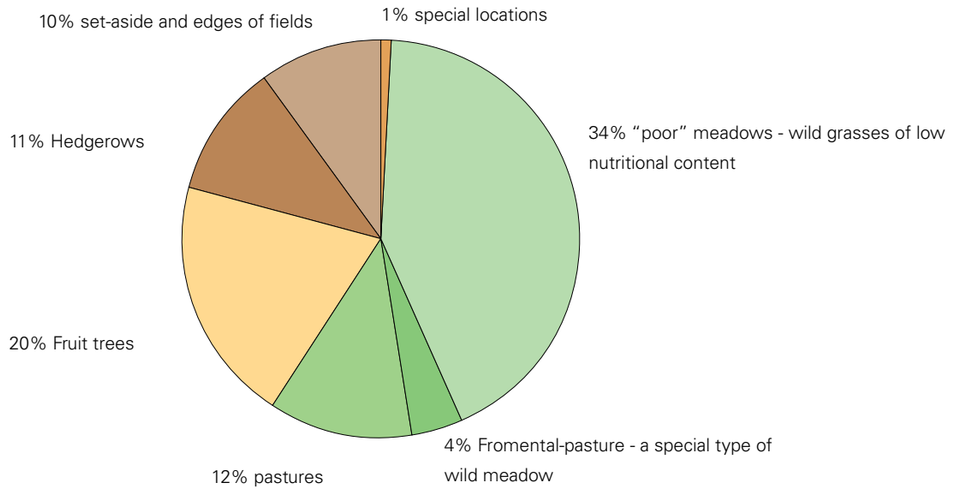
Statistics of production in cantons Basel-Landschaft and Basel-Stadt
(Cantonal Office of Statistics)

Agricultural establishments with contributions in particularly ecological activities (besondere ökologische Leistungen) 2009

Ecological activity	number of establishments	Size in relevant units	Contributions in Fr.
intensively used meadows	768	1 464 ha	1 742 587
derelict flower meadows	109	96 ha	268 309
less-intensively used meadows	345	418 ha	125 454
standard fruit trees	841	124 234 Bäume	1 863 499
organic farming	124	2 747 ha	767 697
controlled free range husbandry	602	15 128 Tiere	2 830 100
animal-friendly stable systems	407	10 870 Tiere	1 163 775

Statistics of production in cantons Basel-Stadt und Basel-Land
Source: Agricultural centre Ebenrain; Annual Report 2010

Ecological Balance-Out
Some activities are considered to be beneficial for the environment as part of "ecological balance-out". For these activities the farmers are paid by the state. Payments for "ecological balance-out" add up to 4.4 milions FR.



Proportions of different activities paid for under the "Ecological Balance-Out" scheme

Legal ordnance on direct payments in agriculture
Source: Swiss Federal Offices

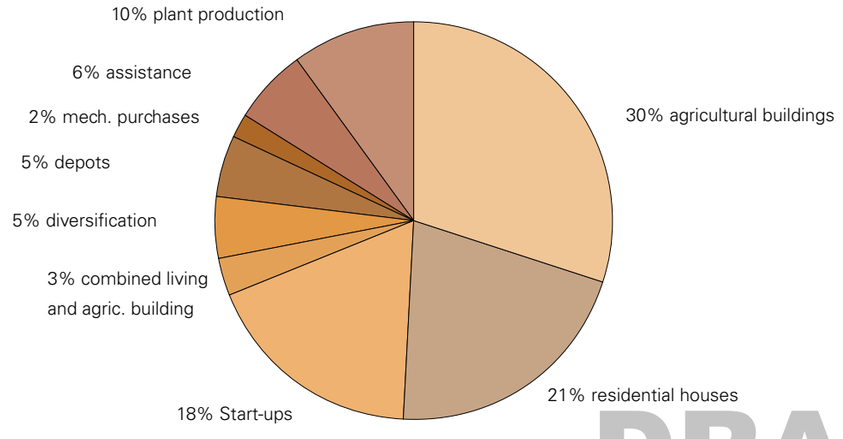
Legal ordnance on direct payments in agriculture
(direct payment ordnance)
7 December 1998 (updated 1st July 2011)

Paragraph 2 Contributions for slopes in grapevine cultivation
Art. 38
Contribution Level 1
Contribution for slopes per year and hectare:

a.	for areas with 30–50% slope	1500 Franken
b.	for areas with over 50% slope	3000 Franken
c.	for terraced areas with 30% slope and steeper	5000 Franken

Statistiken zu Leistungen des Kanton Basel-Landschaft für Basel-Stadt und Basel-Land
Source: Landwirtschaftliches Zentrum Ebenrain; Jahresbericht 2010

Approved Credits for Agricultural Measures 2010
Total Fr. 6 858 000.–



CASE STUDIES

We have chosen six agricultural establishments to look at as case studies and to observe different products and agricultural methods of the region. Interviews with the farmers were conducted and production processes documented by the means of films and photographs. The amount of land and labour needed for different types of production was especially interesting to investigate.

Intensive Pig Rearing and Waste Recycling

Humbel facility; Erlenweg 5; 5608 Stetten AG

Humbel facility for food waste processing does not posess any of the attributes which we associate with traditional image of farming. It is a site of large industrial sheds and silos which accept lorry deliveries of 100 tonnes of food waste every day. The farmer himself comes across as more of a buisiness type. His enterprise has its origins in pig farming when he decided to process food wastes to prepare hot "soup" for the feeding of his animals and those of other farmers in the vicinity. Now large scale feeding of waste to pigs is prohibited with the exception of bread, potato, whey and yeast and Humbel produces biogas and biodiesel instead. The gas is burned in his own generator to make electricity for selling to Zurich, biodiesel as fuel for cars. and compost for fertilisation.

Humbel does posess 75 ha of land but this does not contribute directly to feeding of the pigs. Instead they are fed with a mixture of waaste products which is prepared and delivered automatically by the computer. The pigs are isolated from humans during their 100 days at the farm. After the end of that period they reach age of 6 months and weight of 100 kg and are sold to the pig trade company run by the farmer's brother who delivers tehm for slaughter to different slaughterhouses. Humbel's yearly pork production satisfies needs of 13 500 people.

Feeding pigs with a mixture of wastes is a recognised method, but several risks are pointed out such as high salt content, lack of fibre and high proportion of saturated fatty acids.

Area

1 ha

75 ha for growing grains and carrots

Workers

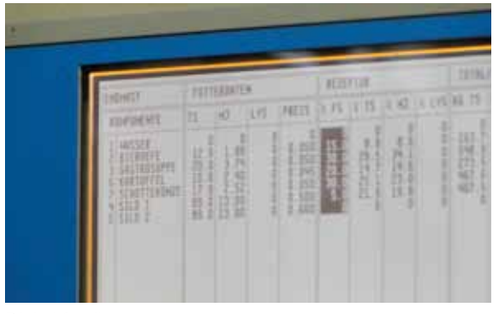
1 worker on the farm

(20 in biogas production)

Farm Humbel

Pigsty interior

Pigsty



Digital feeding

Otto Humbel

Recycling facility

Waste bread

Feed preparation

Local Wine Production

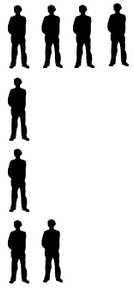
Vineyard Krebs; Birkenweg 48; D-79589 Binzen

Vineyard Krebs is a family-run buisiness with a long history. This is a relatively small vineyard for the region with the total production 50 000 litres wine per year and 300 litres of spirits (different kinds of schnapps). That corresponds to the yearly consumption of wine of 1300 people and of spirits of 75 people (on the basis of Swiss statistic). The products are sold directly or through an internet shop. Standard categories of agriculture (conventional, organic, etc) do not always apply in the case of vineyards since wine growing and making is heavily regulated. The regulations change from country to country. In some places wine is organic by definition since growers are not allowed to use chemical substances or even irrigation systems. In others, like in Germany use of some substances is allowed but it is specified in detail which they are and in what dose and when they should be applied. Use of some technologies is even subsidised such as use of pheromone against pests. (a substance that makes the insects unable to distinguish between males and females and therefore incapable of reproducing). Location is key factor in wine production ad vineyard Krebs is one of many which populate the Rhine valley due to favoourable conditions of soil, climate and topography.

Area

4 ha grow themselves
plus another 3 ha by delivery

Workers



family business, parents, grandparents,

one son just finished vine-maker apprenticeship

1 permanent full time,

2 seasonal

Vineyard Krebs

Grapewine

Processing facilities

Old barrels

Degustation room

Barrel label

Hans and Margrit Krebs (http://www.weinkrebs.de/familie)

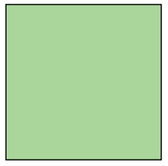
Hans and Brunhilde Krebs (http://www.weinkrebs.de/familie)

Demeter - worth the money?

Farm Berg, Niederfeld 1, D-79589 Binzen

Berg in Binzen is a bio-dynamic farm with Demeter certification. Its main activity is vergetable and grain growing although the farm is now extending its activities into the keeping of chicken, duck and rabbit. The farm was one of the first in Germany to introduce vegetable box delivery service. The consumers sign up to an “abo” where they pay a fixed price to be delivered a box of fresh seasonal vergetables every week. The general content of the box can be selected (“fitness” or “salads”) but what comes exactly depends on seasonal availability. It is also possible for families to come and pluck vegetable and berries themselves for a small fee. Around 450 families are supplied from the farm which corresponds to approx. 1500 people. The establishment attracts a lot of publicity, not in the least because of the farmer’s participation in a popular German TV programme as advisor on gardening. Demeter is the most expensive of the organic labels and it claims to deliver not only a special quality but also phylosophy of production which respects nature. This was not always apparent during the visit to the farm. The animals had limited access to the outdoors and did not look comparatively to be in the best condition. Gartnerei Berg attracts criticism from the local agricultural movements that it has become too big to follow through its phylosophy.

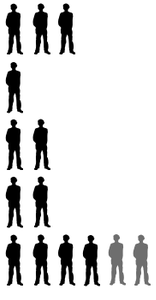
Area



23 ha total area

2.5 ha feedgrains
15 kinds of vegetables in the field
0.5 ha greenhouse
3.5 ha under “green fertilisers”
1.5 ha compost on edges of fields

Workers



3 family,

1 permanent full time,

2 apprentices,

2 permanent part-time,

4-6 seasonal

Farm Berg

Preparation of leek

Demeter certification advertisement

Lettuce in the greenhouse

Chemical containers

Chickens

Rabbit

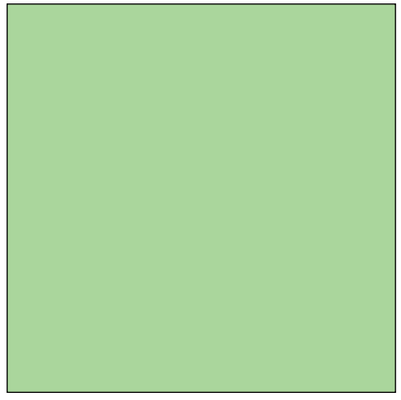
Chicken hut

Happy Cows

Cows from Kapp; Im Hummel; D-79540 Lörrach

Cows from Kapp is a very small farming establishment which is more of a hobby than a food production enterprise. The farmer - who mostly works alone - used to be a butcher in the past and now works as exhibition stand builder. On a part-time basis he takes care of some grassland for the city of Loerrach to prevent the pasture from overgrowing. To achieve this Heinz Kapp cuts hay and sells it to the other farmers and keeps 16 cows of scottish cattle breed. This activity started as a hobby and now his flock is at 16, with 1-2 being killed in one year and meat being sold directly. The cows are kept outside in the field all teh time and are allowed to follow the 'natural' the natural pattern of behaviour - eat, sleep and form relationships as they wish. Their "feeding footprint amounts to 70 ha and the meat produced in such way sutisfies the demand of 25-50 people. Kapp has also developed a new method of slaugheter for free range animals and campaigned for it being accepted into the legal framework of German agriculture. It is now possible to stun free-range animals directly in the field before transposrting them to the slaughterhause for processing. This avoids the necessity of live transport which is dangerous for the animal and the handlers and is seen to have negative effect on the quality of the meat.

Area



150 ha of fields around Loerrach to prevent them from overgrowing, 70 ha of these uses for his cows which are outside all the time.

Workers

1 part-time

Meadow with a view of Lörrach (http://www.rinderzucht-kapp.de/)

Cow with a calf (http://www.rinderzucht-kapp.de/fotos/)

Farmer Heinz Kapp, he keeps cows for about 10 years.

"It is a natural community"

Cows eating hay

Fine Scottish Highland Cattle

Mobile butchery (http://www.rinderzucht-kapp.de/fotos/)

Mobile butchery (http://www.rinderzucht-kapp.de/fotos/)

A Farm in the City

Spittelmatt farm ; Spittelmattweg 31 ; CH-4125 Riehen

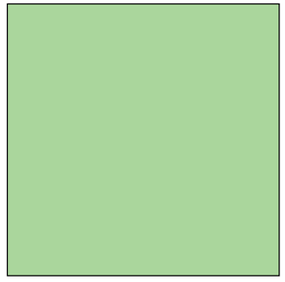
Spittelmatt farm is located on the edge of the city of Basel in what would already be considered the village of Riehen. Its land is directly adjacent to residential areas and forms part of a water-protection area. The facility for water purification Lange Erlen is directly next door and this was one of the factors why this farm became organic in teh 1980s, although initially the changeover was voluntary. The location places demands on the animals and the farmer. For example the approx. 50 Angus cows and calves can only be kept in the field during the summer, application of ferliser is strictly regulated and chemical substances are prohibited.

The farm is run by two brothers, one trained and worked as airplane mechanic before taking over the buisiness which has been in the family for 100 years.

Approx. 25 cows are slaughtered every year which corresponds to production of 9 000 kg of organic natura beef (meat from calves grown on the milk of the mother). This covers approximately the yearly beef and veal consumption of 625 people.

The feeds of the cows consists of grass and locally grown grain, with some additional grain that is bought from elsewhere. Meat and eggs are sold directly.

Area



70 ha

Workers

full time,
family, brothers

Farm Spittelmatt

Cows are fed hay and grain

The bull

Farmer's vegetable garden

There are also a few pigs

Organic chickens

Meat packing facilities

Product of the farm

Urban agriculture

Community garden Landhof; Riehenstrasse 90; CH-4058 Basel Schweiz

Community garden Landhof is found inside a yard of a block of multy-storey houses in the centre of Basel. It exists since May 2011 and in the short period of its operation has attracted attetion of over 200 people who helped out at some point and built up a group of about 30 regular participants. The garden is run by two volunteers - young students of biology and agriculture. It is completely open to the public and people can come and help out or just enjoy the environment whenever they want. The products are given away in return for a voluntary donation of the amount seen fit by the person taking the vegetables - the main product. Interestingly most people give more than the products are actually worth. It is hard to estimate the efficiency of this method of agriculture but the organisers think that it is on the par with normal organic farming. Social aspect of the project is also very important. For many people this was is a way to learn about plants and growing them, a way to relax and put one's mind off a day's work in the office or to spend active time outside with family and kids and meet others. It is hard to estimate its role in food production but the garden certainly encourages people come out and interract actively with their natural, urban and social environment.

Area

1168 m sq

Workers

2 volunteers

Community garden Landhof

Boxed flowerbeds

Volunteers who run the garden

Vegetable garden

Beehives

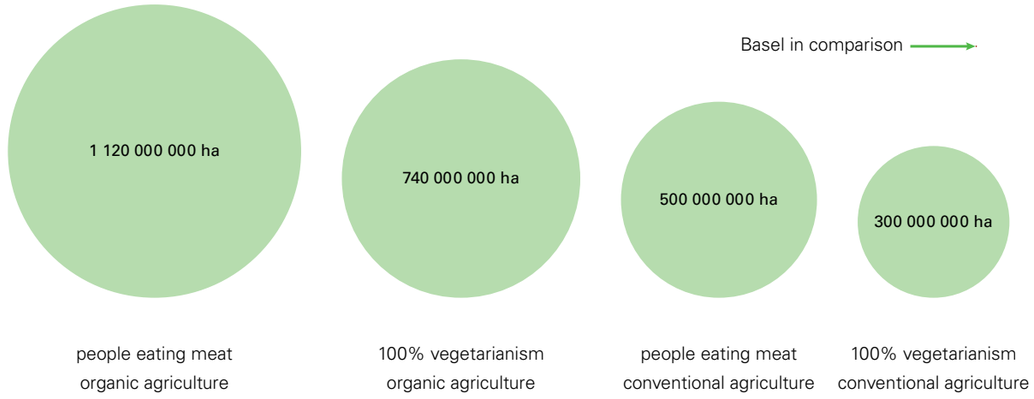
Landhof bees

Sandpit for children

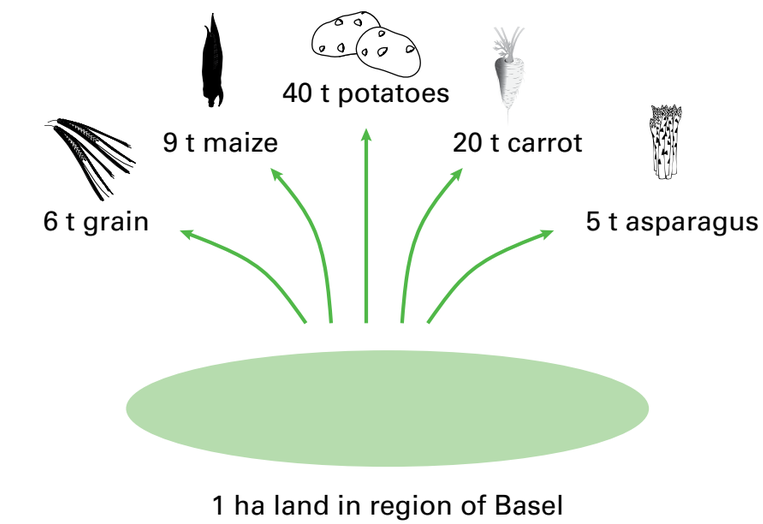
Memebers come to the garden to enjoy the sun

CONCLUSION

We have found out that the regin of Basel offers 0.13 ha agricultural land per person (pasture & crops). The research conducted by the organisation "Landshare" suggests that todays' diet demans around 0.3 ha per person. This suggests that Basel region contributes less than a half of the food of its population. Despite that we feel that it is important to preserve local agriculture for economical, social and cultural reasons and in the view of rising energy prices.
The region produces a variety of foods despite consistent climatic conditions. Although the exploitation of the productive soils is limited by topography, the given conditions are favourable for agricultre.
Populatin of the region is concentrated in urban areas and many people do not have possibilities for contact with agriculture. Many do not know how plants are grown and where their food comes from.
This lends interesting potential to the idea of urban farming, even if it is not clear to what extent it might contribute to food production. Even if it is not profitable economically, it could make a significant social contribution, especially in the decentralised remote parts of the agglomeration, where there are ample areas for gardens and little activity that contributes to community-building. As the next stage of work we would like to define places in the agglomeration with low levels of urbanity, where urban agriculture could generate added social and ecological value.



Land necessary to feed population of the region (2 mio)



Examples of products which a farmer might choose to plant