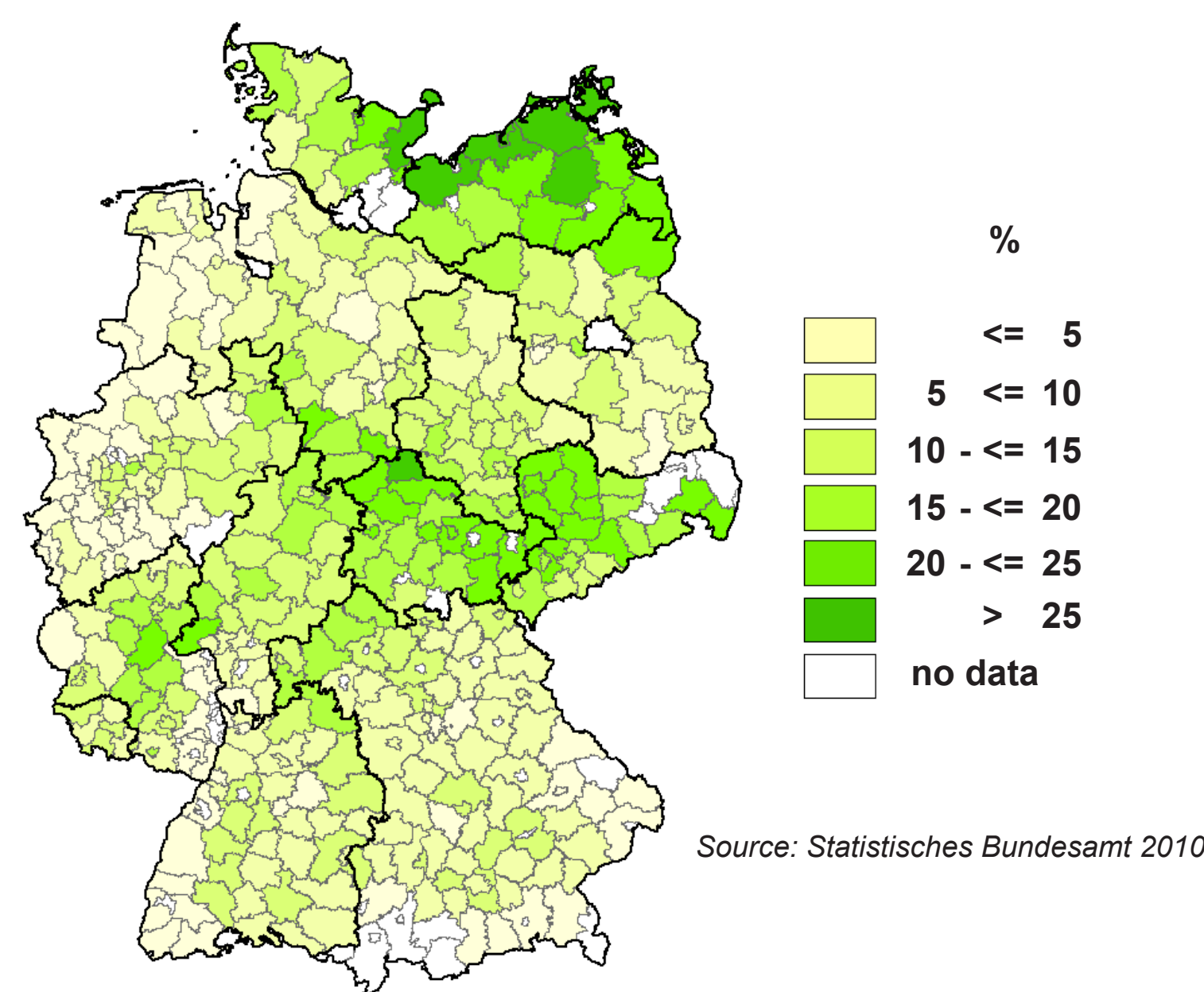
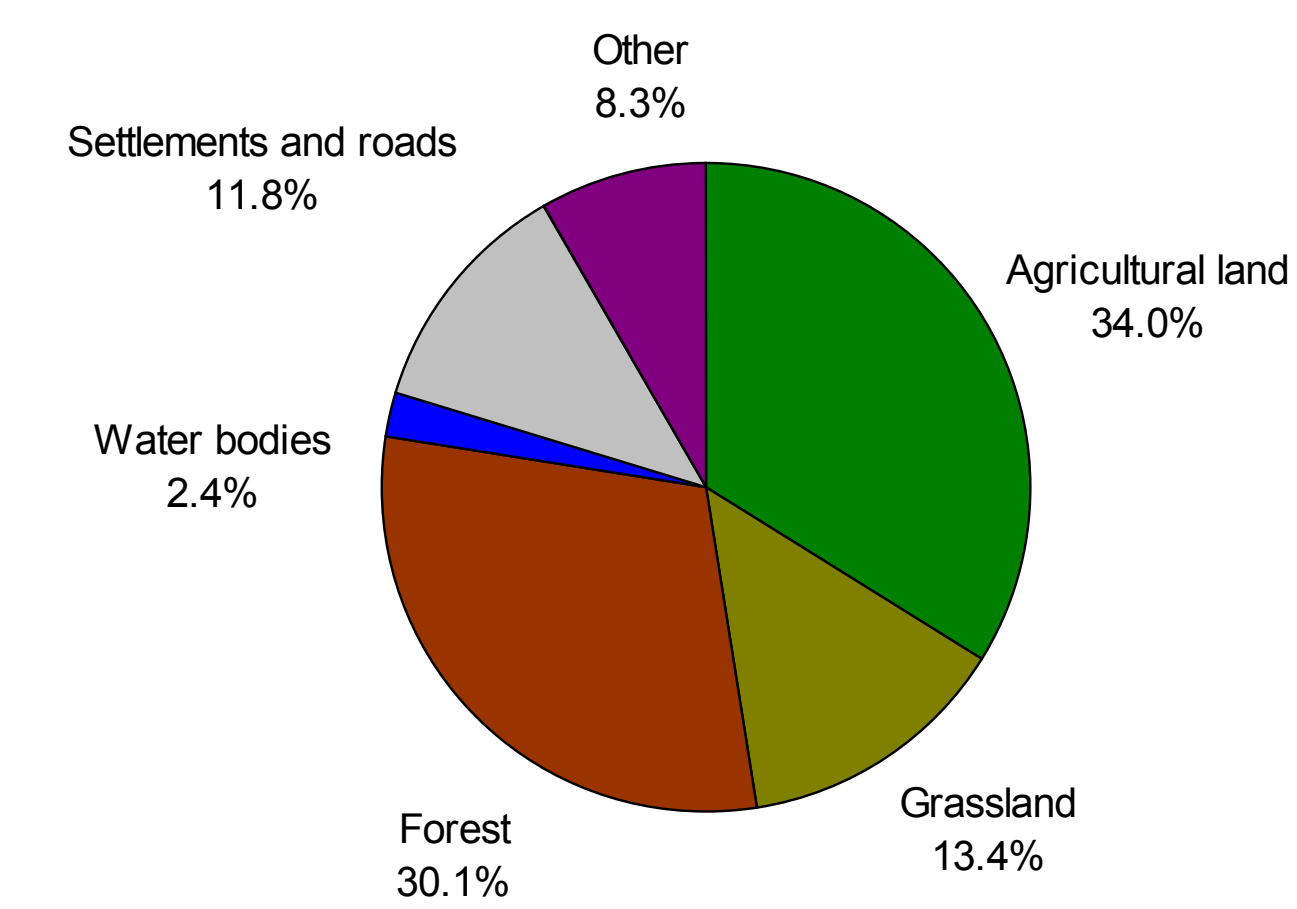


## Arable farming in Germany

Percentage share of rapeseed acreage per arable land in 2007

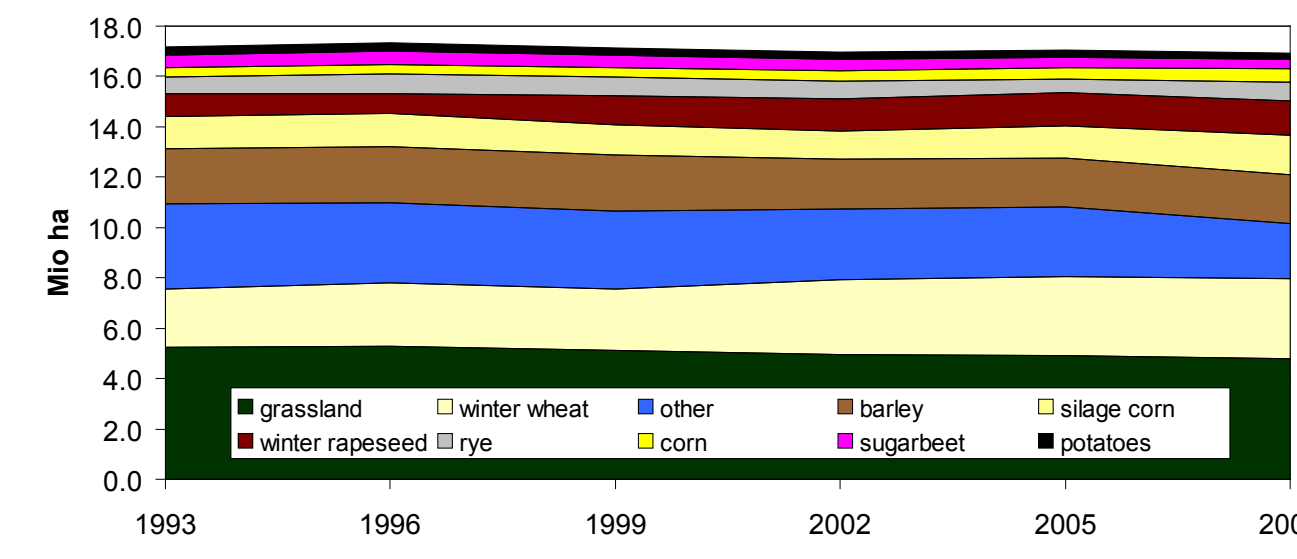


Land use in Germany 2008



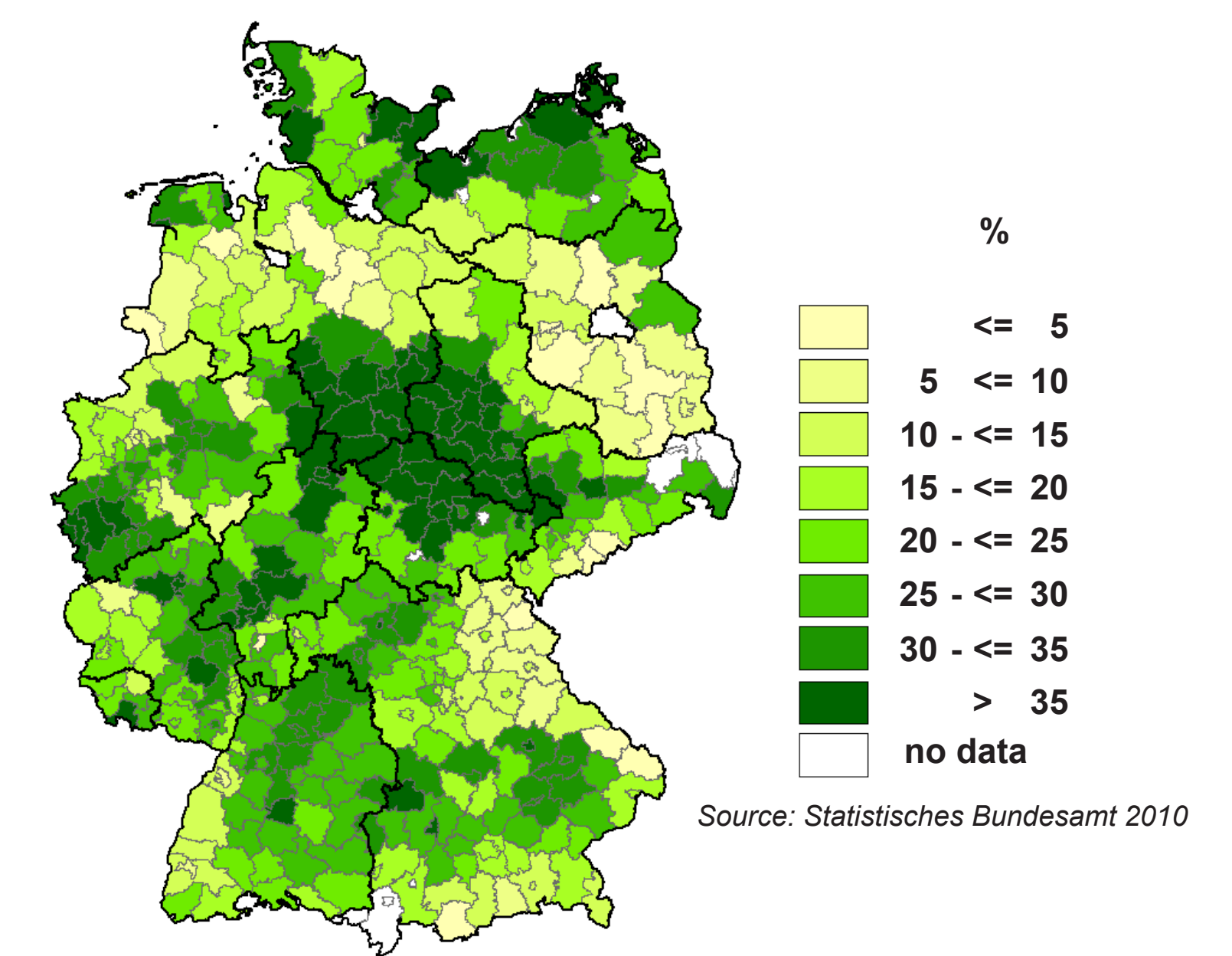
Germany is on position 62 in the world when it comes to land size. Excluding grassland, 121,370 km<sup>2</sup> of fertile land are available for agricultural production.

Agricultural land use in Germany

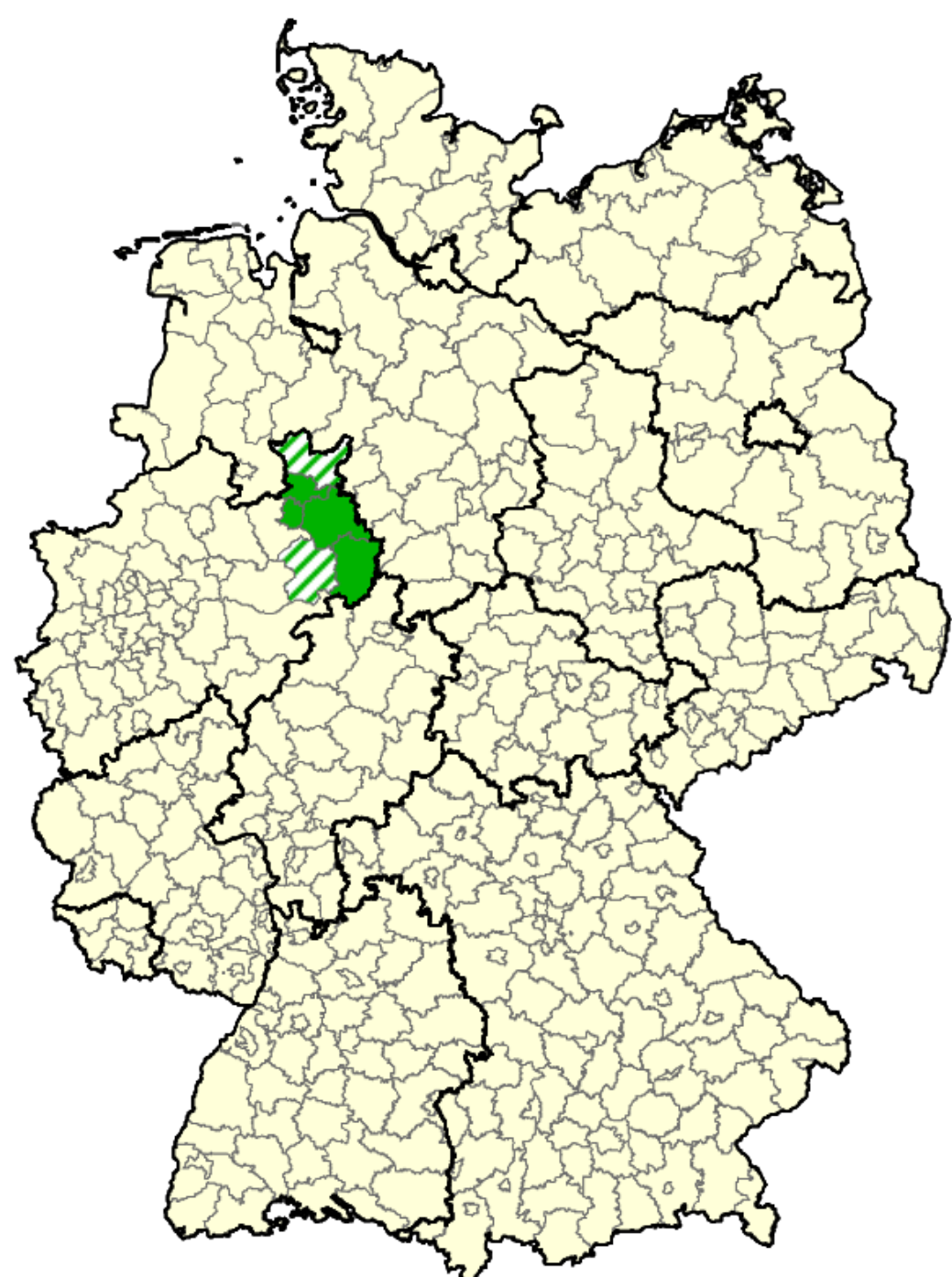


Leaving grassland aside, 8 important crops can be identified which over time cover more agricultural land in Germany. In 1993 they made up 72% while in 2008 they amounted to 82%; winter wheat is the crop with highest acreage, followed by barley and silage corn.

Percentage share of wheat acreage per arable land in 2007

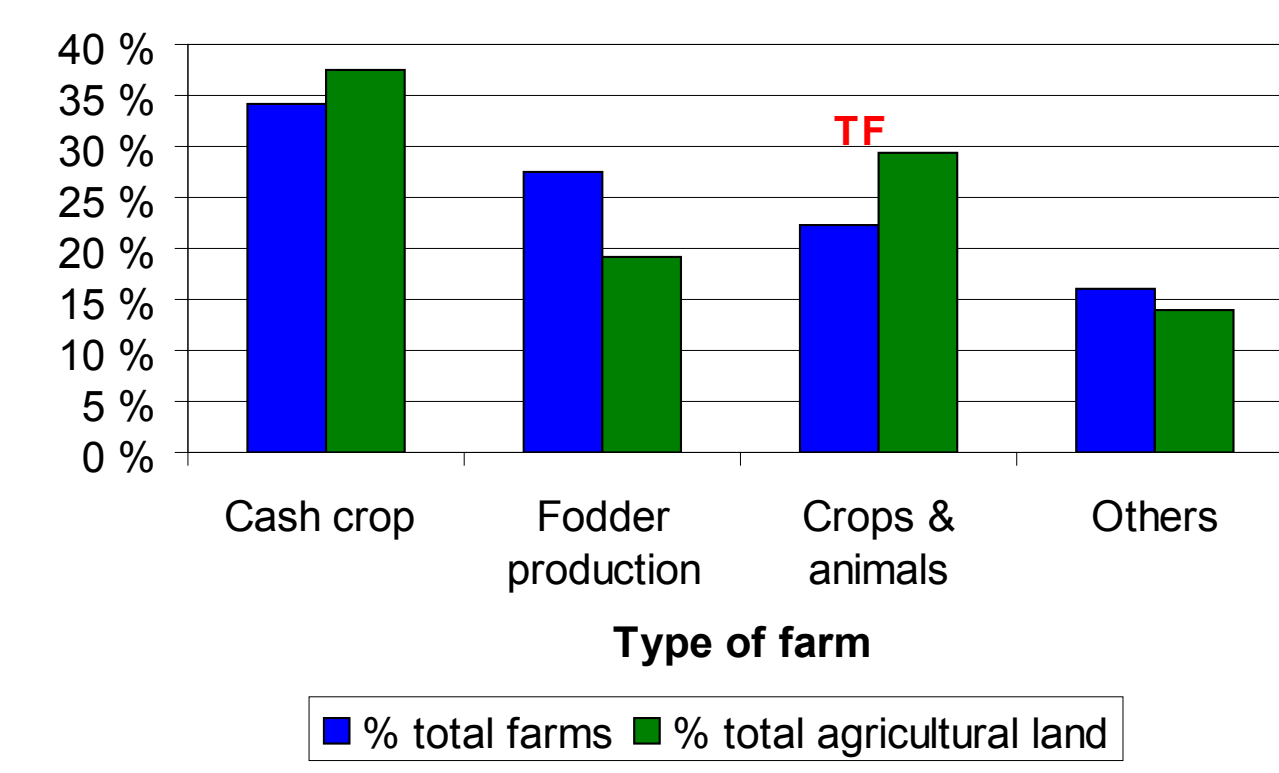


## The typical farm DE360OW in the region Ostwestfalen



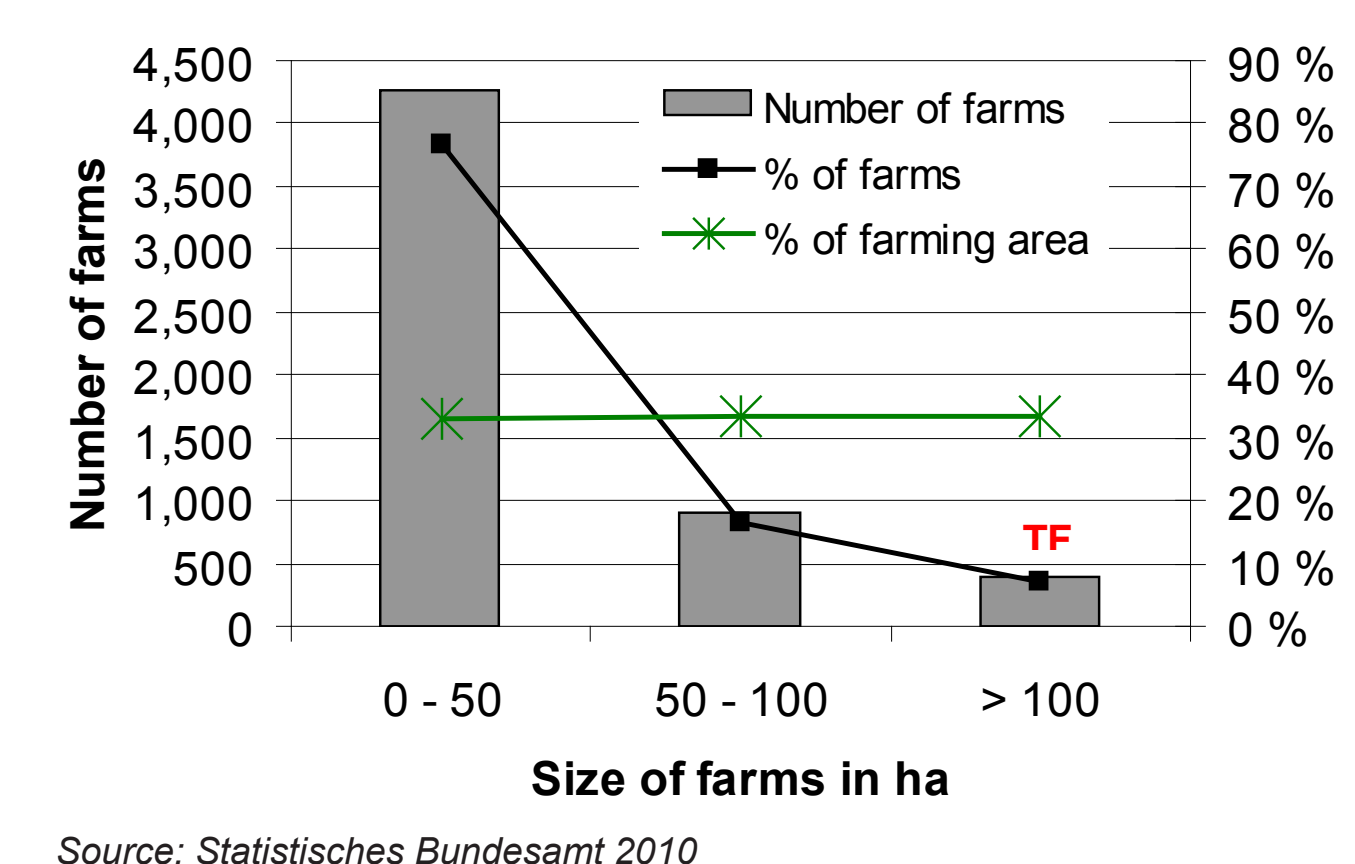
Region "Ostwestfalen" (green shaded area, see map) in northwest Germany consists of 6 counties: Herford, Bielefeld, Lippe, Höxter, Minden-Lübbecke (only to 30% since hilly) and Paderborn (only to 30% since low land close to river).

Farm classification Ostwestfalen (2007) - based on gross margin shares



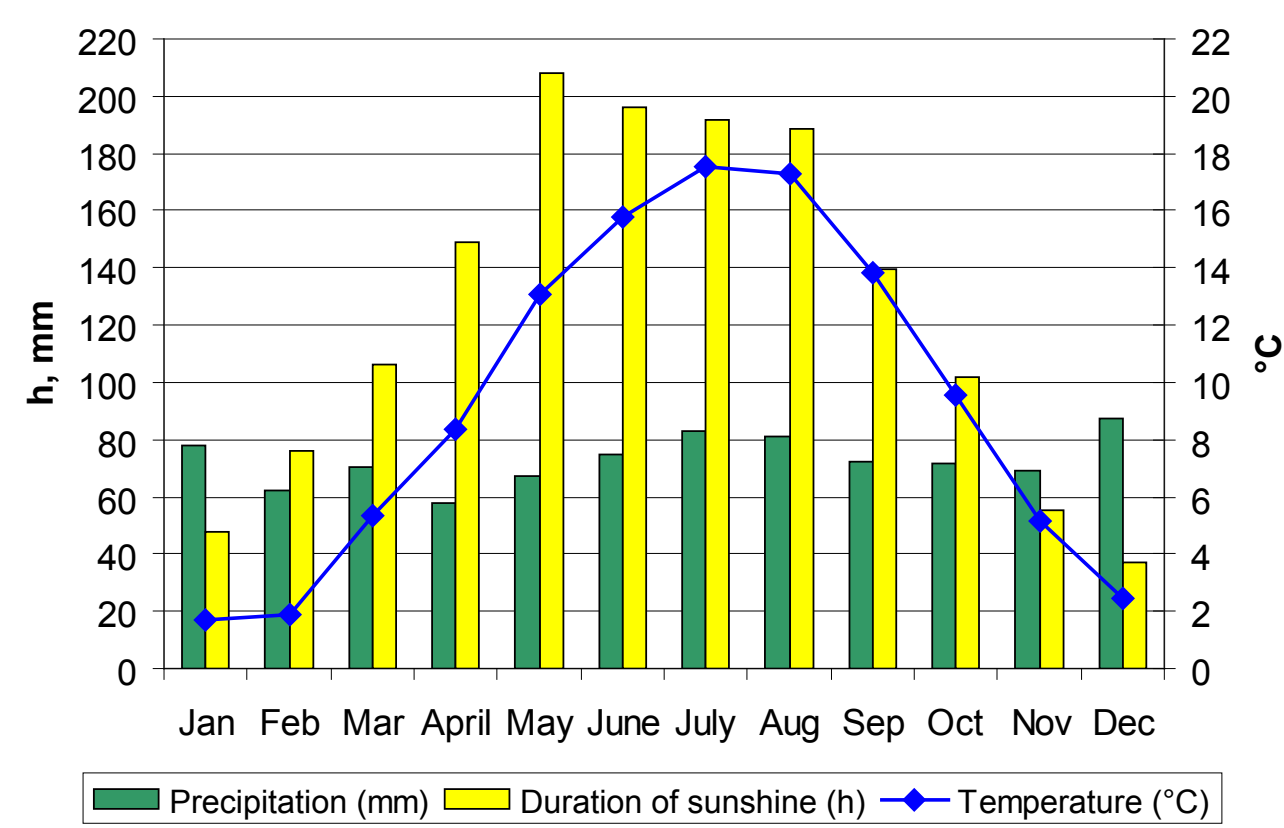
- Three major farm types can be distinguished in Ostwestfalen:
1. Specialized cash crop farms represent with 34% the largest group of farms and cultivate 37% of the agricultural land in the area.
  2. 27% of farms generate their gross margin predominantly through fodder crops used either for dairy cows or cattle.
  3. Further 30% of land is cultivated by mixed farms engaged in crop and livestock production.
  4. The remaining group of other farms is either specialized in horticulture or intensive livestock production.
- Since animal husbandry is of great importance in the region, the DE360OW farm was designed as a cash crop farm with substantial share of hog production.

Farm structure - Ostwestfalen (2007)



64% of farms in Ostwestfalen generate the majority of their household income outside agriculture. The remaining 36% of farms for which agriculture is the major income source, cultivate 70% of the land. Their average size is 59 ha per farm. The farm size structure reflects part of this picture. 77% of all farms in the region have less than 50 ha but on the other hand farm only 33% of the farming area. The larger farms of more than 100 ha make up only 7% of the farming population however work likewise on 33% of the agricultural land. One of the goals of *agri benchmark* was to establish a typical farm (TF) that can exist in the long-run given the current and future framework conditions. Therefore, a rather large farm with 360 ha agricultural land was considered.

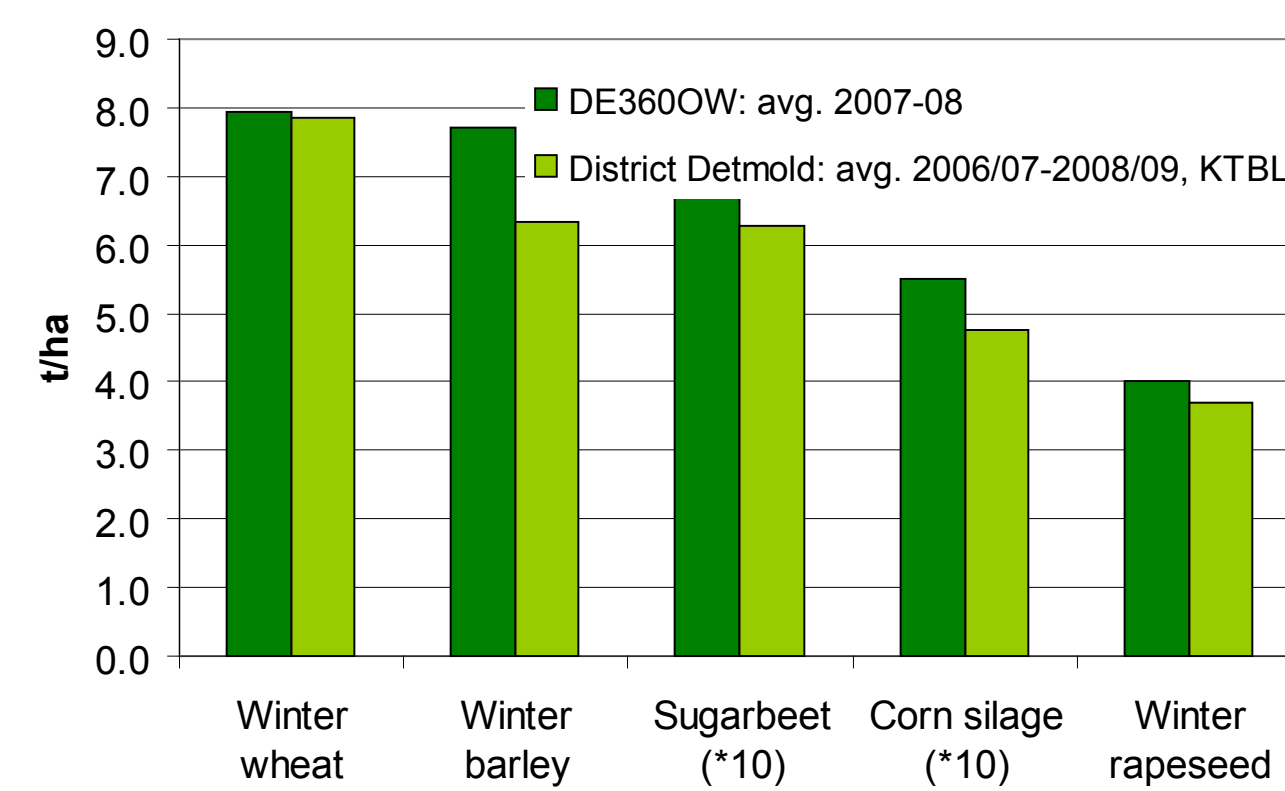
Mean climate data 1978 - 2008 Ostwestfalen



The elevation of the region ranges from river valleys (25 m) up to 800 m in hilly areas. The climate is moderate with monthly average temperatures from 1-17°C across

the year. Total rainfall during the year accounts for nearly 900 mm. Precipitation is rather evenly distributed ranging between 60 and 90 mm over the months. Duration of sunshine is highest during the summer period between May and August when sun can shine up to 200 hours during one month.

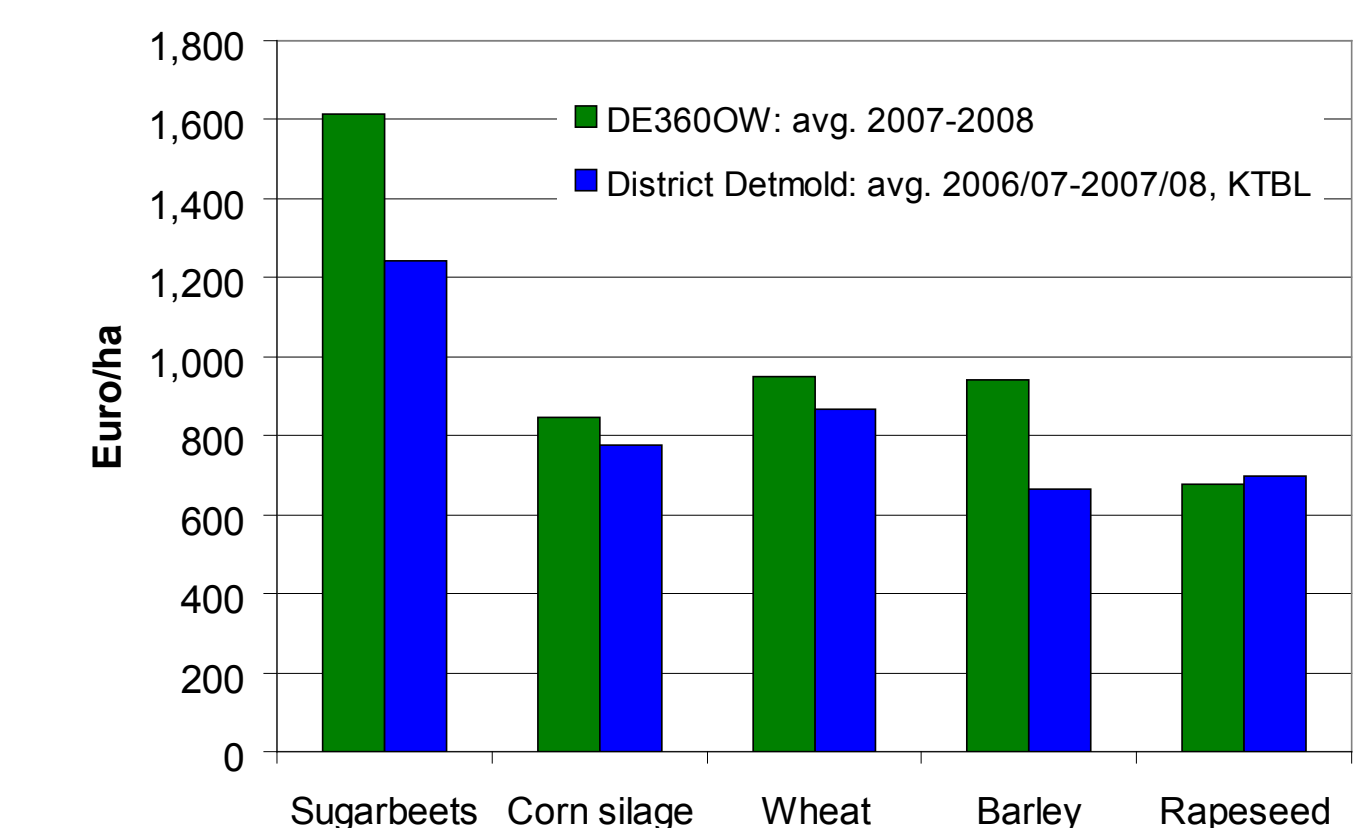
Comparison of average yields



The following graph refers to the crops grown by the typical farm. In all 5 crops, the *agri benchmark* farm obtains slightly higher yields than the regional average which is calculated across all farm types and sizes. This is understandable since the district Detmold<sup>1</sup> has a rather heterogeneous structure with many farms not specialized in cash crop farming or facing less favorable climatic/natural conditions.

<sup>1</sup> District Detmold contains the 6 counties of the *agri benchmark* region "Ostwestfalen" plus Gütersloh.

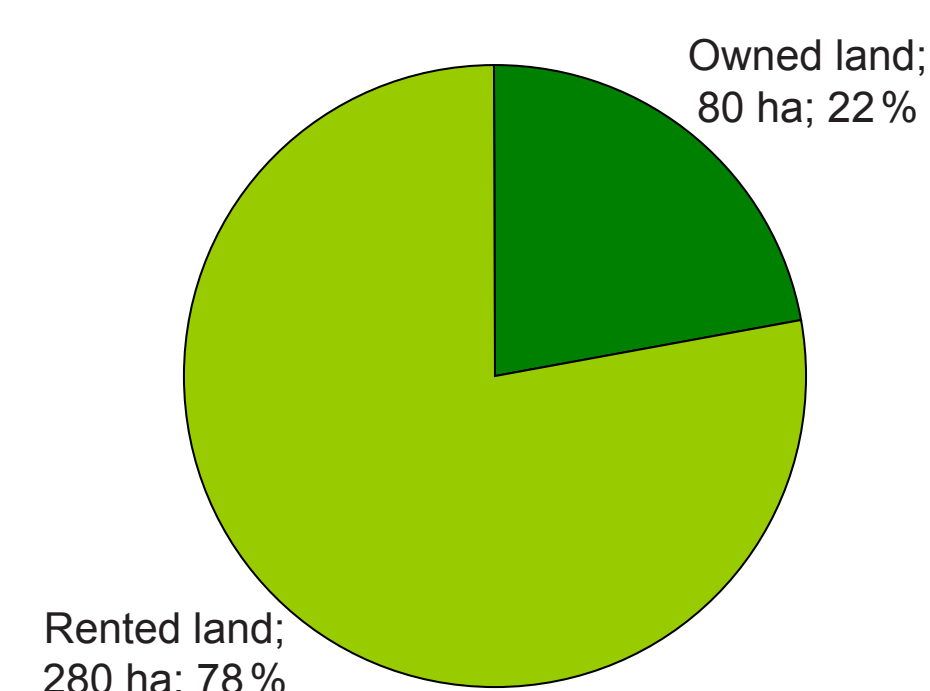
Gross margin comparison



Regarding economic terms, gross margins (revenue - direct costs) are compared. For comparison the standard gross margins made available by KTBL for the district Detmold in North Rhine-Westphalia (average of the years 2006/07-2007/08) were considered. Except rapeseed the *agri benchmark* farm has always higher gross margins, regarding sugar beets (+ 30%) and barley (+ 40%) even substantially higher. The reason behind this are higher yields (see left) as well as higher market revenues.

## Description of the typical farm

General information	
Region	Ostwestfalen, northwest Germany
Type of farm	Mainly cash crop
Other enterprise	Hog production with 890,000 Euro revenue/ year
Legal status	Family farm
Tillage system	Intensive tillage, with conventional plowing
Natural conditions	
Relief (hills, upland, plains)	Plains
Elevation (m above sea level)	120
Soil type	Sandy loam
Climate	Moderate - maritim
Main growing season	April - October
Average precipitation per year (mm)	850
Rainfall distribution	Evenly
Fieldwork days	200 - 250
Duration of sunshine or cumulative temperature	Between 40 and 200 hours per month, depending on the season

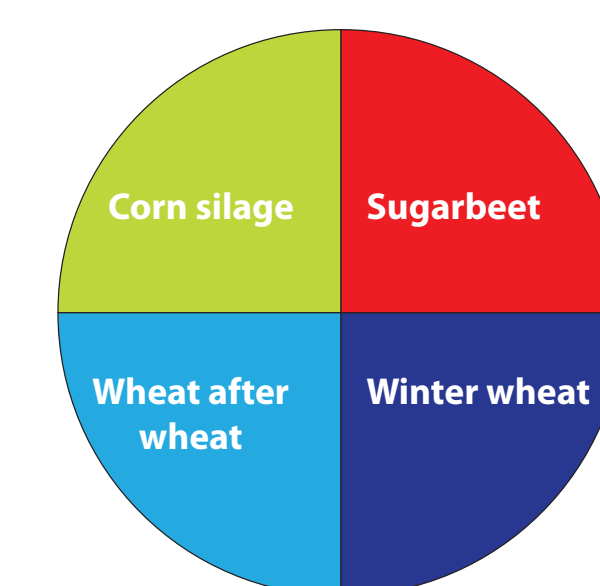


The major share (78%) of the land DE360OW cultivates is rented. Costs for rented land amount to 400 Euro/ha for old and 500 Euro/ha for new renting contracts. On average renting contracts are signed for 10 years.

	Labor input (h/year)	Labor costs (Euro/h)
Farm manager	2,000	22.5
Part-time	500	12

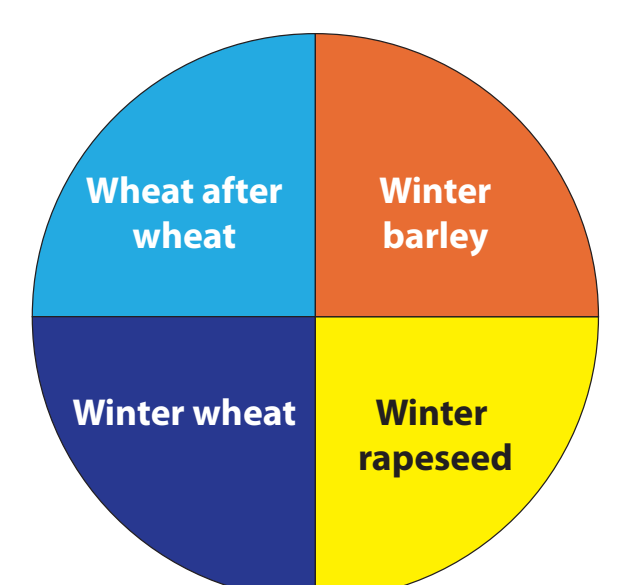
With 2,500 hours per year, performed by the farm manager and his part-time worker, the farm has on average 7 working hours available per ha. The labor costs assumed for the farm manager are 87% higher than for his employee.

First rotation DE360OW



DE360OW performs its cash crop farming in two rotations - one with sugar beets and one with rapeseeds. Besides these specific crops, winter wheat dominates in both rotations with 50%

since it is grown twice. Wheat which comes after wheat realizes a slightly lower yield. All crops are harvested by specialized contractors in order to minimize costs for harvest machinery.



Second rotation DE360OW