Agriculture and Forestry in Bavaria
Facts and Figures 2002

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Introduction

Politicians, professionals and society at large must continuously adjust to new agropolitical challenges. Reliable information is a great help. This brochure contains selected facts and figures from the Agricultural Report 2002. They provide an insight into the current situation in agriculture and forestry, and underline their importance for Bavaria.

Safeguarding the competitiveness and sustainability of Bavaria's agricultural, forestry and food industries remains a primary objective of Bavarian agrarian policy. To effectively support farming in Bavaria, we depend on open and objective dialogue in our society. This must be based on a commitment to the environment and solidarity with family farms.

Bavaria is a major agricultural region at the heart of Europe, and our farmers produce high-quality food. They also preserve and care for the highly diverse, man-made landscapes so appreciated by our fellow citizens, by holidaymakers and by those seeking relaxation in the countryside. As the owners of woodland, farmers carry additional economic and ecological responsibility. This brochure illustrates the great diversity of farming activities and the contribution farmers make towards enriching our society.

Josef Miller
Bavarian State Minister of Agriculture and Forestry

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1. Agriculture as an economic sector

- **Gross output**
  The value of Bavaria’s gross agricultural output (excluding forestry and fisheries) in 1999 was EUR 8.15 billion. >>> Table 1

- **Value added**
  In the last two years, Bavarian agriculture and forestry has seen an increase of some 10 % in its gross value added, to a figure of EUR 4.1 billion in 2001, when Bavaria’s contribution to Germany’s gross value added was just under 18 %.

  The agribusiness sector comprises agriculture together with its up- and downstream industries. Of the EUR 129 billion which make up the gross value added of German agribusiness, farming accounts for 17 %, upstream industries for 6 % and downstream industries for 77 %.

- **Agricultural productivity**
  The number of farm holdings in Bavaria has decreased continuously over the past few decades. At the same time, there has been a huge increase in agricultural productivity. >>> Chart 2

- **Employment in agriculture and forestry**
  In 2001, 214,000 persons were gainfully employed in agriculture. This is 15,000 fewer than in 1999 and corresponds to 3.6 % of the working population.

  One out of eight jobs in Bavaria depends directly or indirectly on the agricultural sector. This means that some 12 % of the working population are employed in agriculture and forestry or in upstream or downstream segments.

- **Bavaria’s food industry**
  In 2001, the Bavarian food industry posted sales of EUR 26.0 billion. A total of 192,000 people were employed in the industry’s two segments, food manufacturing and processing, and the food trades.

  The Bavarian food manufacturing and processing segment accounts for three quarters of food-industry sales. Within Bavaria, more than half of the food industry’s workforce is employed in the food trades segment (bakers, butchers, etc.). In 2001, 96,800 employees generated annual food-trade sales of EUR 5.9 billion. >>> Table 3

- **Dairy structure**
  Dairy farming in Bavaria continued to restructure during the period under review. In 2000, the number of dairies decreased to 122, and the number of dairy companies dropped to 92. By the end of 2001, there were 89 companies managing 121 dairies.

  Bavaria encourages investments that will lead to further structural improvements in dairy farming and thus increase profits and promote competitiveness. >>> Table 4
2. Bavarian foreign trade in food and agricultural products

Since 1970, Bavaria’s agricultural and food industry has increased its exports by over 700%. Food of animal origin accounts for the major part of this increase, while exports of live animals have decreased significantly.

In 2000, agricultural exports from Bavaria (excluding trade between the Laender) totalled EUR 4.71 billion. Bavaria accounts for 18.3% of Germany’s agricultural exports (including those from the new Laender), i.e. more than any other state. The 15 EU countries remain the most important export market for agricultural goods. 82% of agricultural exports, with an approximate value of EUR 3.9 billion, go to these countries. However, trade with Central and Eastern European countries (CEP countries) is also very important. In 2000, Bavaria exported agricultural goods to the value of EUR 345 million to these countries.

Chart 6

Bavarian agricultural trade
in EUR mln.

<table>
<thead>
<tr>
<th>Year</th>
<th>Agricultural exports</th>
<th>Agricultural imports</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>1,948</td>
<td>2,235</td>
</tr>
<tr>
<td>1980</td>
<td>925</td>
<td>1,520</td>
</tr>
<tr>
<td>1990</td>
<td>523</td>
<td>827</td>
</tr>
<tr>
<td>2000</td>
<td>85</td>
<td>129</td>
</tr>
</tbody>
</table>

Chart 5

Bavarian agricultural exports since 1970 by commodity classes
in EUR mln.

<table>
<thead>
<tr>
<th>Year</th>
<th>Live animals</th>
<th>Beverages and tobacco</th>
<th>Food of animal origin</th>
<th>Food of vegetable origin</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>225</td>
<td>718</td>
<td>1,319</td>
<td>295</td>
<td>2,354</td>
</tr>
<tr>
<td>1980</td>
<td>716</td>
<td>1,948</td>
<td>2,355</td>
<td>350</td>
<td>6,061</td>
</tr>
<tr>
<td>1990</td>
<td>1,526</td>
<td>3,461</td>
<td>2,235</td>
<td>827</td>
<td>8,020</td>
</tr>
</tbody>
</table>

Slaughterhouse structure
Currently, some 2,000 small slaughterhouses and 45 medium-sized and large EU-approved slaughterhouses are registered in Bavaria.
- A dense network of slaughterhouses is the prerequisite for short transport distances.
- Available slaughtering capacities are geared to regional production volumes.
- Mixed slaughterhouse ownership promotes competition and benefits farmers.
- Most of the supraregional slaughterhouses have been able to improve their capacity utilisation, which is important if they are to be competitive on the national and international markets.
Bavarian exports of food and agricultural products by recipient countries

Bavaria’s major agricultural trading partner is Italy. This holds for both exports and imports, although exports clearly exceed imports. The highest import surplus is in agricultural trade with the Netherlands. Of Bavaria’s non-EU trading partners, Russia was the most important export market in 2000, followed by the USA, Switzerland, Poland, the Czech Republic and Japan. Altogether, Bavaria exported agricultural and food products to 175 countries during 2000. Bavaria exported agricultural and food products worth EUR 226.6 million to countries acceding to the EU. Imports from these countries amounted to EUR 345.3 million.

>> Chart 7

Bavarian exports of food and agricultural products by food groups

The major animal-origin agricultural exports were cheese (19.2 %), milk and fresh milk products (12.8 %) and meat and meat products (12.9 %). These three food groups accounted for some 45 % of total agricultural exports. Miscellaneous foodstuffs of vegetable origin, including soups, sauces, pasta and baked goods, made up 18.0 % of 2000 exports.

>> Chart 8

Agricultural imports

In 2000, Bavaria imported goods to the value of just under EUR 4.4 billion. Of these, foodstuffs of vegetable origin made up the lion’s share.

>> Chart 9
The major suppliers of imports to Bavaria in 2000 were Italy, the Netherlands and France. The share of imports from EU countries has increased from two-thirds to more than three-quarters since 1980.

**Consumer expenditure**

The share of consumer expenditure that goes on food has decreased considerably. In all households, expenditure on food and drinks (excluding canteen meals and meals out) accounted for only 15.6% of private spending. Expenditure on food and non-alcoholic drinks accounted for only 11.8% of private spending.

**Food supply in Bavaria**

Whereas food self-sufficiency has largely been achieved in the EU for the most important food groups, Bavaria is dependent on imports of pork and poultry meat, eggs, wine, fruit and vegetables. There are substantial surpluses of cheese, milk, beef and veal as well as sugar.
3. Agricultural employment in Bavaria

In 2001, 385,400 persons were employed full-time or part-time on Bavarian farm holdings. Of these, farmers and their families accounted for 84 % (323,700 persons), while the remaining 16 % (61,700 persons) were non-family farm workers.

The agricultural workforce in Bavaria has decreased by 55 % since 1975; the number of holdings has decreased by only half. The decline in labour input per 100 ha is equally pronounced and reflects a huge increase in productivity.

The average labour input is 4.7 AWU (annual work units) per 100 ha UAA (utilised agricultural area). For full-time holdings, the figure is slightly higher at 4.9, and for part-time farms slightly lower, at 4.1.

4. Structural changes in Bavarian agriculture

In 2001, there were 5,737 farm holdings with less than 2.0 ha UAA. The total number of recorded holdings (including special crops) was 146,162, with altogether 3,276,791 ha of UAA. In Bavaria, 97 % of all holdings are sole enterprises, managing 92.3 % of the UAA.

Bavarian agriculture has undergone pronounced structural changes. Since 1971, the number of holdings has more than halved.

The average UAA managed by the remaining farms has been increasing steadily. In 1990, the average holding (excluding those with < 2 ha UAA) managed 16.9 ha UAA. In 2001, the average holding (excluding those with < 2 ha UAA) managed 23.3 ha UAA.

Structural changes affected holdings in different ways, depending on the size class. In 2001, only farms of 40 ha or more UAA showed an increase in numbers.

The proportion of part-time holdings is currently 57.8 %. There have been more part-time than full-time holdings in Bavaria since 1987.

Full-time holdings

In 2001, full-time holdings accounted for 42.2 % of all farms (sole enterprises) and for 69 % of UAA. Between 1999 and 2001, the average size of full-time holdings increased by 2.4 ha, to 35.0 ha UAA.
Part-time holdings

In 2001, 57.8 % of farm holdings and 31 % of UAA in Bavaria were managed on a part-time basis.

Part-time holdings play a highly significant role in Bavaria in the conservation of cultivated (man-made) landscapes and, in particular, of ecologically valuable grassland areas.

The average size of part-time holdings increased in 2001 to 11.5 ha UAA.

Leasehold farming

In 2001, 92,435 holdings held 1,364,400 ha UAA under lease, an average of 14.8 ha of additional UAA per holding (full-time holdings: 17.7 ha UAA, part-time holdings: 6.3 ha UAA).

Acreage was increased primarily by leasing and seldom by purchasing. The proportion of land held under lease has accordingly increased, and now accounts for some 42 % of UAA. Just under 90 % of this leasehold land is leased from non-family members.

The high demand for leasehold land has driven rents to a relatively high level. At least 33 % of leasehold land costs EUR 256/ha or more, although there are marked differences between rents for arable land and for grassland. Whereas grassland can be leased for EUR 173 per ha, arable land costs EUR 259. This is EUR 86 or 50 % more than for grassland.

The number of farmland sales has remained relatively constant since 1975, at 4,000 to 6,000 sales a year (4,494 sales in 2000). This corresponds to annual sales of between 4,300 and 9,000 ha of UAA (7,240 ha in 2000)

The price of farmland is influenced not only by productivity but also by non-farming factors. There are large regional differences in Bavaria.

Chart 20

Share of leasehold land in Bavaria

<table>
<thead>
<tr>
<th>Year</th>
<th>Leasehold land as percentage UAA</th>
<th>Leasehold land per holding</th>
</tr>
</thead>
<tbody>
<tr>
<td>1971</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>1990</td>
<td>10.00</td>
<td>20,000</td>
</tr>
<tr>
<td>2001</td>
<td>11.00</td>
<td>25,000</td>
</tr>
</tbody>
</table>

Chart 21

Farmland buying prices

<table>
<thead>
<tr>
<th>Year</th>
<th>EUR/ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>32,000</td>
</tr>
<tr>
<td>1990</td>
<td>34,000</td>
</tr>
</tbody>
</table>

Chart 22

2000 prices for farmland in Bavaria’s different administrative districts

<table>
<thead>
<tr>
<th>Administrative District</th>
<th>EUR/ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Bavaria</td>
<td>26,714</td>
</tr>
<tr>
<td>Lower Bavaria</td>
<td>21,735</td>
</tr>
<tr>
<td>Upper Palatinate</td>
<td>18,549</td>
</tr>
<tr>
<td>Upper Franconia</td>
<td>18,625</td>
</tr>
<tr>
<td>Central Franconia</td>
<td>18,104</td>
</tr>
<tr>
<td>Lower Franconia</td>
<td>26,070</td>
</tr>
</tbody>
</table>

Chart 23

Aggregate agrarian funding by Bavaria, the Federal Republic and the EU in 2001 by source of funds

- Bavaria: EUR 756 million (including consultancy)
- FRG: EUR 1,329 million
- EU: EUR 953 million
Average profits of full-time holdings increased in 2000/2001 to EUR 32,411, an 18.7 % gain on the previous year.

Despite an increase in UAA since 1981/82 of approximately 18 ha per farm, the number of farm workers on farms obliged to keep accounts has remained the same. Especially during the 90s, farms showed a strong productivity rise.

Annual non-farm income of farms obliged to keep accounts rose between 1981/82 and 2000/2001 from approximately EUR 800 to approximately EUR 3,500.

Price trends within the various product groups cause profits to differ widely, depending on the type of farming. The 2000/01 boom in prices on the pig market, for instance, caused pig-farm profits to soar to double those of the average farm.

In terms of the overall income of a married couple owning a holding, the profits of part-time holdings are comparable with those of full-time holdings.

In 2000, nearly 5,000 holdings were being operated in accordance with organic farming rules. On average, the profits made by organic farms are only slightly lower than the profits of conventionally operated holdings. During the business year 2000/01, organic farms received on average EUR 19,205 in aid, which is 64.2 % of profits or 18.6 % of revenues.

In 2000/01, an average full-time holding in Bavaria received government aid to the value EUR 16,685. This included the EU’s compensatory payments and animal premiums, compensatory payments for less-favoured regions, the Man-Made Landscape Programme, investment promotion and subsidies for green diesel. On average, the aid package accounted for 12.3 % of revenues or 51.5 % of profits.

### Table 24

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Unit</th>
<th>Business year 2000/01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm size</td>
<td>ha</td>
<td>UAA</td>
</tr>
<tr>
<td>Farm labour</td>
<td>AWU/holding</td>
<td></td>
</tr>
<tr>
<td>of whom: family</td>
<td>AWU/holding</td>
<td></td>
</tr>
<tr>
<td>Disparity</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Profit</td>
<td>EUR/ha UAA</td>
<td></td>
</tr>
<tr>
<td>Profit</td>
<td>EUR/family AWU</td>
<td></td>
</tr>
<tr>
<td>Profit</td>
<td>EUR/enterprise</td>
<td></td>
</tr>
<tr>
<td>Total income</td>
<td>EUR/owner (=married couple)</td>
<td></td>
</tr>
</tbody>
</table>

### Chart 25

Growth in incomes for full-time holdings in Bavaria

EUR 1000


### Table 26

<table>
<thead>
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<tr>
<td>of whom: family</td>
<td>AWU/holding</td>
<td></td>
</tr>
<tr>
<td>Profit</td>
<td>EUR/ha UAA</td>
<td></td>
</tr>
<tr>
<td>Profit</td>
<td>EUR/family AWU</td>
<td></td>
</tr>
<tr>
<td>Profit</td>
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<td></td>
</tr>
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</tr>
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### Table 27

<table>
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<tr>
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<td></td>
</tr>
<tr>
<td>of whom: family</td>
<td>AWU/holding</td>
<td></td>
</tr>
<tr>
<td>Profit</td>
<td>EUR/ha UAA</td>
<td></td>
</tr>
<tr>
<td>Profit</td>
<td>EUR/family AWU</td>
<td></td>
</tr>
<tr>
<td>Profit</td>
<td>EUR/enterprise</td>
<td></td>
</tr>
<tr>
<td>Total income</td>
<td>EUR/owner (=married couple)</td>
<td></td>
</tr>
</tbody>
</table>

### Table 28

<table>
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<tr>
<th>Indicator</th>
<th>Unit</th>
<th>Business year 2000/01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm size</td>
<td>ha</td>
<td>UAA</td>
</tr>
<tr>
<td>Farm labour</td>
<td>AWU/holding</td>
<td></td>
</tr>
<tr>
<td>of whom: family</td>
<td>AWU/holding</td>
<td></td>
</tr>
<tr>
<td>Profit</td>
<td>EUR/ha UAA</td>
<td></td>
</tr>
<tr>
<td>Profit</td>
<td>EUR/family AWU</td>
<td></td>
</tr>
<tr>
<td>Profit</td>
<td>EUR/enterprise</td>
<td></td>
</tr>
<tr>
<td>Total income</td>
<td>EUR/owner (=married couple)</td>
<td></td>
</tr>
</tbody>
</table>

### Chart 29

Financial aid for farm holdings in 2000/2001

EUR 1000/enterprise

Market crops | Fodder crops | Livestock | Permanent crops | Mixed farming

5. Economic situation of farm holdings in Bavaria
6. Agricultural consultancy and administrative organisation

- **Organisation, tasks, personnel**
The main areas of responsibility are:
- Provision of advice on matters relating to agriculture and to home economics, including advice on structural trends and income combination
- Vocational adult education
- Vocational training and on-going education
- Schooling in agronomics
- Administrative duties relating to agriculture as well as co-operation in the implementation of regulations imposed by other authorities
- Agricultural support, including the payment of premiums and compensations as provided for by state, federal and EU law
- Applied research and the compilation of scientific research results for use in practice

These duties are shared by 47 county offices for agriculture, which also serve as training centres for initial and ongoing vocational education and provide advice on home economics, by 61 schools of agriculture, eight state institutes, the Technology and Development Centre, five teaching and research institutes, three research station administrations, the Schwaiganger state stud farm, the “Staatliche Führungsakademie” training centre for food, agriculture and forestry, and the district government departments of agriculture.

- **Use of IT in specialist schools and in agricultural support programmes**
Students at the specialist schools of agronomics learn how to use standard software (e.g. word processing and spreadsheet programs) as well as programs which are tailored specifically to the agricultural sector. Special importance is attached to the use of programs for processing farm-specific data. This helps to motivate the students and equips them well for their future work.

One of the main uses of IT in the administrative sector continues to be the processing of applications for financial support. In 2000, a total of 491,710 applications for the various forms of support available were processed electronically. Of these, 403,804 applications were for land-related support, 81,301 for animal-related support and 6,605 for investment measures.

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*As of January 1, 2003, the Bavarian Institutes for Business Economics and Agricultural Structure, for Soil Cultivation and Plant Production, for Fisheries, for Nutrition and for Agro-engineering, as well as the government research station administrations, will combine to form the Bavarian Institute for Agriculture. As of January 1, 2004, the teaching and research institutes for animal husbandry and the Schwaiganger State Stud Farm will be incorporated as well. The Bavarian Institute for Apiculture will combine with the Institute for Viniculture and Horticulture as of January 1, 2003.*

**Legal basis:**
1. "Gesetz zur Förderung der Bayerischen Landwirtschaft" of August 8, 1974 (BayRS 787-1-1)
2. "Verordnung über die Landwirtschaftsämter" of Sept. 4, 2001 (GVBl. p. 493, BayRS 7801-2-1)
7. Farm succession and professional qualification in Bavaria

In 1999, 56.5 per cent of all farm owners aged over 45 either had no successor, or continued operation of the farm was uncertain. Continued operation is uncertain in 50 per cent of the full-time farm holdings and in about 63 per cent of the part-time farm holdings, either because there is no successor or because the transfer of ownership has not been resolved.

In the case of full-time farm holdings, more than three fifths of the successors have an agricultural background, whereas with part-time farm holdings, 87 per cent of the successors have a non-agricultural training.

Professional education in agriculture

In 2001, 1,856 persons started in-company training for an agricultural profession. The most sought-after profession was that of horticulturist, followed by farmer. The administrative divisions of Upper Bavaria, Central Franconia and Swabia reported the highest trainee figures.

The number of people sitting the examination for a master craftsman’s diploma has been decreasing since 1994. Since 1975, 11,229 persons have passed the examination in farming, 4,460 persons in rural home economics, and 2,836 persons in horticulture. Another 2,577 persons have qualified as animal husbandry experts, horse husbandry specialists, fisheries specialists, foresters, hunters, wine growers, agricultural distillers, dairy experts or dairy laboratory assistants.

8. Agrarian social policy

Apart from insurance for the farming population against accidents, illness, old age and nursing care, income support and measures to cushion the social effects of agricultural restructuring are also goals of agrarian social policy.

The independent agrarian social security system is geared to the special characteristics of agricultural living and working conditions, and has, on the whole, proved its worth. Administration of the social insurance scheme for farmers is the responsibility of the Farmers’ Association and the old-age, health and nursing-care insurance funds it has set up. They are public corporations and are subject to regulatory control by the Bavarian Ministry of Labour and Social Affairs, Family Affairs and Women.
9. Plant production

■ Land distribution

Agricultural and forested areas account for 85 per cent of the overall land, and are thus a characteristic feature of Bavaria’s man-made landscape.

However, in Bavaria too, agricultural land continues to be sacrificed for other purposes.

In 2001, utilised agricultural area (UAA) in Bavaria amounted to 3.26 million ha (overall area 7,055 million ha).

>>> Chart 33

■ Integrated crop management

The aim of integrated crop management is to achieve high yields and good quality with minimum impact on the environment. To this end, versatile crop management procedures are optimally combined so as to retain and improve soil fertility. Preventive measures against weeds, diseases and pests are significant features of the integrated system.

The programme entitled “Ecologically Sound Crop Cultivation” provides close control over plant protection measures and fertilisation in integrated plant production.

>>> Chart 34

■ Green gene engineering

The aims of “green gene engineering” are:

– Environmentally compatible cultivation methods (e.g. less use of agricultural pesticides)
– Securing and increasing of yields
– Improvement in the quality of cultivated plants (e.g. increase in desired constituents)

■ Organic farming

At the end of 2000, the 3,050 agricultural holdings being officially monitored within the scope of the EC Organic Farming Regulation were cultivating 85,617 ha of UAA in accordance with organic farming principles. By the end of 2001, the number of holdings had increased to 3,386, with a cultivated UAA of 95,008 ha. The average size of the holdings is 28.1 ha UAA.

In 2001, almost 5,000 agricultural holdings in Bavaria were operating in accordance with organic farming rules.

The funds granted in 2001 to the Association of Organic Farmers in Bavaria (Landesvereinigung für den ökologischen Landbau in Bayern e.V.) for general activities totalled EUR 68,500.
10. Land use in Bavaria

The share of land in Bavaria that is used agriculturally (UAA) declined between 1977 and 1999, from 53.2 % to 46.2 %. During the same period, the proportion of the UAA given over to grassland sank from 41.8 % to 35.4 %. In 2001, total UAA amounted to 3,257,600 ha. This was 495,000 ha (13 %) less than in 1970.

Of the cereal crops, winter wheat predominates (37 %), followed by winter barley (25 %), summer barley (12 %) and grain maize (8 %).

Root crop cultivation was dominated in 2001 by sugar beet (71,557 ha), followed by potatoes (49,985 ha). Other root crops are of little significance. Whereas sugar beet cultivation decreased only slightly between 1980 and 1999, the amount of land given over to potato growing decreased by almost half.

Of the fodder crops, the most important is silage maize (286,761 ha), which accounts for 71 % of fodder crops. This is followed by clover/clover-grass (nearly 98,000 ha).

The UAA in Bavaria also includes 1,380 alpine pastures. These provided approximately 40,000 ha of summer grazing for 50,000 cattle, 3,600 sheep and just under 700 horses in 2001.

Cereals

Acreage and production

The acreage given over to the cultivation of cereals (including grain maize) increased by 64,000 ha (5.5 %) to 1,221,000 ha during the period under review. Most of the additional acreage was used for winter wheat, winter barley and grain maize.

Potatoes

In 2001, some 50,000 ha were given over to potato growing; this is the smallest acreage since statistics on potato acreages in Bavaria were first recorded. In 2000, 2.42 million tonnes of potatoes were produced, in 2001 only 1.81 million tonnes. On average, potato growers in Bavaria have 1.6 ha of land under potatoes.

Sugar beet

By successfully developing and continuously improving rhizomania-tolerant sorts of sugar beet, plant breeders have made a major contribution to the record yield of 623 dt/ha obtained in 2001.

Farmers in Bavaria reduced their sugar beet acreages by some 8 % between 1999 and 2001.
Hops
After reaching a record low in 1999, the area given over to hops growing increased again to 16,079 ha. In view of the downward trend on the hops market, the EU support granted to growers for setting aside and clearing land is to be continued until 2003, a year longer than originally planned. The aim is a further reduction in the amount of land under hops cultivation.
During the last two years, 190 holdings in Bavaria have abandoned hops cultivation altogether, pushing the remaining number down to 1,781 (from 3,704 in 1990). The average hops acreage per holding is now 9.02 ha.

Oil-producing crops
In 2001, 152,000 ha were given over to the cultivation of rape. This was 6,700 ha more than in 2000.

Fodder crops and permanent grassland
With Bavaria being a centre of livestock production, fodder crops and grassland farming provide an important economic basis. Particular importance is attached to grassland use and the cultivation of silage maize, clover and clover-grass. Altogether, some 50% of UAA in Bavaria is used to produce feed for beef and dairy herds as well as for sheep and horses.

Alpine farming and forestry
Mountain farming is essential to the preservation and sustainable use of the alpine region. Family-run farms provide the basis for long-term settlement of these areas and are a fundamental requirement for the preservation of the mountain area as a cultural landscape and a place to live, work and relax. The typical landscapes are largely a product of the work of mountain farmers and forest owners. In their own special way, they fulfill central functions for the public at large:

- Creation and preservation of the unique man-made landscape, which is so important for tourism,
- Protection of natural resources and preservation of ecological diversity. Upland management is essential to the preservation of species and biotopes,
- Prevention of soil erosion and landslides.

Table 39
Hops production in Bavaria

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of holdings</th>
<th>Area under hops in ha</th>
<th>Production in dt</th>
<th>Yield in dt/ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>3,704</td>
<td>18,648</td>
<td>257,575</td>
<td>13.8</td>
</tr>
<tr>
<td>1995</td>
<td>2,708</td>
<td>18,663</td>
<td>299,434</td>
<td>16.0</td>
</tr>
<tr>
<td>2001</td>
<td>1,781</td>
<td>16,079</td>
<td>276,260</td>
<td>17.2</td>
</tr>
</tbody>
</table>

Table 40
Oil-producing crops in Bavaria (rape and other oil-producing crops) including renewable raw materials and set-aside areas

<table>
<thead>
<tr>
<th>Year</th>
<th>Acreage in ha</th>
<th>Average yield in dt/ha</th>
<th>Production in tonnes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>147,455</td>
<td>29.8</td>
<td>439,493</td>
</tr>
<tr>
<td>1996</td>
<td>109,991</td>
<td>26.4</td>
<td>290,130</td>
</tr>
<tr>
<td>2001</td>
<td>151,919</td>
<td>32.0</td>
<td>501,808</td>
</tr>
</tbody>
</table>

Chart 41
Fodder-crop production by types of crop

- Permanent grassland 1,260,787, 1,153,557
- Fodder crops total 469,248, 405,945
  - of which:
    - Fodder beet 10,736, 1,595
    - Clover, clover-grass 103,472, 97,756
    - Lucerne 9,564, 4,294
    - Silage maize 327,886, 286,761
    - Other fodder crops (including cultivated grass) 17,590, 15,539
- Permanent grassland and fodder crops together 1,730,035, 1,559,502
Wine

Production potential

Between 1999 and 2000, the number of wineries declined by 1.8%, to 6,667. At the same time, the productive area under vines per winery continued to increase (1993: 0.77 ha; 1995: 0.80 ha; 1997: 0.84 ha; 2000: 0.94 ha).

>>> Chart 42

Production

In 2001, wine growers in Bavaria produced 500,000 hl of wine must, of which almost 95% came from the administrative district of Lower Franconia. White varieties made up nearly 91% of the total, while the 46,000 hl of red accounted for just over 9%.

>>> Chart 43

Horticulture

The last horticultural survey in Bavaria was conducted in 1994. Compared with 1982, the number of holdings cultivating horticultural products for sale declined by 25.1%, to 8,564. At the same time, however, the total area under horticultural cultivation in Bavaria increased by 2,985 ha, or 21.5%, to 16,872 ha. This meant that the average holding increased the area utilised for horticultural production from 1.2 ha to 2.0 ha. Of the holdings recorded in the 1994 survey, 5,204 or 60.8% were horticultural holdings which derived at least 50% of their revenues from horticulture, trading or services. The remaining 3,360 holdings are classified as farm holdings with horticultural production.

In 2001, the total acreage given over to vegetable growing was some 12,200 ha. The lion’s share (about 12,000 ha) was used to grow outdoor vegetables, while the rest (over 200 ha) was under glass. Altogether 1,711 ha were under asparagus cultivation (productive area: 1,333 ha).

Fruit farming

According to the last fruit-farming survey, conducted in 1997, 4,031 Bavarian fruit farms produce some 50,000 tonnes of fresh-market fruit annually on 3,624 ha of land. Fruit growing is concentrated in climatically favourable regions such as Lower Franconia (1,123 ha), and the area around the town of Lindau (780 ha). In 2001, Bavaria as a whole produced dessert fruit comprising 30,544 tonnes of apples, 5,444 tonnes of pears, 8,292 tonnes of stone fruit, 33 tonnes of walnuts and some 13,570 tonnes of strawberries. The acreage under strawberry cultivation increased between 1981 and 2001 by 500 ha, to 1,395 ha.
11. Animal products industry

Animal production is the livelihood of agriculture in Bavaria. In 2001, 111,778 farms, which corresponds to 77 per cent of all agricultural holdings, raised livestock. At present, the share of animal production in overall agricultural production amounts to 51 per cent in Bavaria. This accounts for 70 per cent of agricultural income. The most significant structural changes since the end of the war took place between 1984 and 2001. The number of cattle keepers has dropped by 53.3 per cent since 1984, and the number of dairy cow keepers has decreased by 61.1 per cent. In pig-keeping, the concentration process has been even more pronounced than in cattle keeping. In the space of seventeen years, 75.6 per cent of holdings discontinued pig keeping, and 71.1 per cent stopped keeping breeding sows.

Livestock and meat

In the last two years, the per capita meat consumption decreased by 2.9 kg, to a total of 60.7 kg per annum. The only increase was in poultry, with annual consumption rising to 10.4 kg per person. The per capita consumption of beef dropped to 8.2 kg, and that of pork to 39.8 kg per annum.

Production and marketing

In 2001, Bavarian agriculture contributed about 15.2 per cent to German meat production. In the production of beef and veal, Bavaria contributed an above-average share of about 29 per cent. The Bavarian share in German pork production amounted to about 13 per cent in 2001. The market value of Bavarian slaughter animals was approximately EUR 1.61 billion in 2001.

Cattle keeping

Cattle keeping earns 55 per cent of the agricultural income in Bavaria and is thus the most important production sector.

Whilst the number of cattle keepers and, in particular, the number of dairy cow keepers has dropped to 42 per cent and 35 per cent respectively since 1980, the stock of cattle and dairy cows has decreased only by 17 per cent and 29 per cent respectively. These figures reflect the concentration of livestock in the holdings remaining. In 2001, the average herd size was 23.2, which is an increase of 1.7 cows per keeper compared to 1999. The total number of dairy cows in 2001 was 1.40 million.

Table 44

Cattle breeders and head of cattle by size of herd

<table>
<thead>
<tr>
<th>Size of herd (from ... to ...)</th>
<th>Number of farms</th>
<th>Number of animals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–9</td>
<td>51,752 26.7 %</td>
<td>26,107 18.9 %</td>
</tr>
<tr>
<td>10–19</td>
<td>47,818 24.7 %</td>
<td>27,156 19.6 %</td>
</tr>
<tr>
<td>20–29</td>
<td>32,710 16.9 %</td>
<td>20,811 15.1 %</td>
</tr>
<tr>
<td>30–49</td>
<td>36,053 18.5 %</td>
<td>29,115 21.1 %</td>
</tr>
<tr>
<td>50–99</td>
<td>23,259 2.0 %</td>
<td>30,198 22.0 %</td>
</tr>
<tr>
<td>100–199</td>
<td>2,075 1.1 %</td>
<td>4,319 13.1 %</td>
</tr>
<tr>
<td>Bavaria</td>
<td>193,842</td>
<td>4,942,478</td>
</tr>
</tbody>
</table>

Table 45

Dairy farmers and head of dairy cows by size of herd

<table>
<thead>
<tr>
<th>Size of herd</th>
<th>Number of farms</th>
<th>Number of animals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–9</td>
<td>91,153 52.0 %</td>
<td>43,720 36.3 %</td>
</tr>
<tr>
<td>10–19</td>
<td>55,470 31.7 %</td>
<td>39,588 33.2 %</td>
</tr>
<tr>
<td>20–29</td>
<td>21,004 12.0 %</td>
<td>24,044 20.2 %</td>
</tr>
<tr>
<td>30–49</td>
<td>4,193 0.1 %</td>
<td>11,714 9.7 %</td>
</tr>
<tr>
<td>50–99</td>
<td>359 0.2 %</td>
<td>686 0.6 %</td>
</tr>
<tr>
<td>Bavaria</td>
<td>175,217</td>
<td>60,398</td>
</tr>
</tbody>
</table>
In each of the years 2000 and 2001, Bavaria contributed about 7.6 million tonnes or about 27 per cent of the milk produced in Germany. Milk and cream deliveries totalled 7.03 million tonnes in 2001. Milk accounts for 26 per cent of the gross agricultural output.

## Milk production and delivery

<table>
<thead>
<tr>
<th>Size of herd (from ... to ... head)</th>
<th>Number of farms 1980</th>
<th>Number of farms 1990</th>
<th>Number of farms 2001</th>
<th>Number of animals 1980</th>
<th>Number of animals 1990</th>
<th>Number of animals 2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–9</td>
<td>43,408</td>
<td>76.9 %</td>
<td>16,815</td>
<td>60.1 %</td>
<td>5,360</td>
<td>41.7 %</td>
</tr>
<tr>
<td>10–19</td>
<td>6,409</td>
<td>11.4 %</td>
<td>4,106</td>
<td>14.7 %</td>
<td>1,946</td>
<td>15.1 %</td>
</tr>
<tr>
<td>20–29</td>
<td>2,866</td>
<td>5.1 %</td>
<td>2,301</td>
<td>8.2 %</td>
<td>1,242</td>
<td>9.7 %</td>
</tr>
<tr>
<td>30–49</td>
<td>2,320</td>
<td>4.1 %</td>
<td>2,421</td>
<td>8.6 %</td>
<td>1,227</td>
<td>11.8 %</td>
</tr>
<tr>
<td>50–99</td>
<td>1,282</td>
<td>2.2 %</td>
<td>1,950</td>
<td>7.0 %</td>
<td>1,780</td>
<td>13.8 %</td>
</tr>
<tr>
<td>100 or more</td>
<td>158</td>
<td>0.3 %</td>
<td>294</td>
<td>1.4 %</td>
<td>1,012</td>
<td>7.8 %</td>
</tr>
</tbody>
</table>

Bavaria 56,443 27,987 12,856 474,976 443,068 423,593

## Pig keeping

In 2001, Bavarian pig keepers had a share of just under 15 per cent in the overall pig stock in Germany. In Bavaria, pig keeping was subject to an even greater concentration process than cattle keeping. Since 1980, the number of pig keepers has decreased by 79 per cent and the number of pigs by 9 per cent. The number of breeding sows has decreased by 11% since 1980, and the number of keepers has also dropped drastically (-77%).

Chart 47

In pig keeping, the so-called growth threshold is 200 fattening pigs or 50 breeding sows perkeeper.

Since 1990, the average pig herd per holding has increased from 40.2 animals to 113.1 animals. The average number of breeding sows kept per holding has increased from 15.8 to 32.9.

Fifty-seven per cent of breeding sow keepers had less than twenty breeding sows; they have 11 per cent of the breeding sow stock. More than two thirds of the breeding sows are in herds of 50 and more animals.

Table 48

<table>
<thead>
<tr>
<th>Size of herd (from ... to ... head)</th>
<th>Number of breeding sows 1980</th>
<th>Number of breeding sows 1990</th>
<th>Number of breeding sows 2001</th>
<th>Number of breeding sows by size of herd</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–9</td>
<td>43,408</td>
<td>76.9 %</td>
<td>16,815</td>
<td>60.1 %</td>
</tr>
<tr>
<td>10–19</td>
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<tr>
<td>50–99</td>
<td>1,282</td>
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<td>100 or more</td>
<td>158</td>
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<td>294</td>
<td>1.4 %</td>
</tr>
</tbody>
</table>

Bavaria 56,443 27,987 12,856 474,976 443,068 423,593

## Sheep keeping

Trends in numbers of animals are best demonstrated by comparing numbers of ewes, which have totalled some 290,000 for years. Bavaria has about 17.6 per cent of all German sheep and thus more than any other German state. The overall number of sheep in Bavaria has increased continuously since 1970, from approx. 163,800 to 472,000 animals. The average flock has increased from 24 to 57 head of sheep per keeper.
Poultry keeping

Laying hens

In poultry keeping, the number of hen keepers has dropped from 149,470 to 34,063 since 1980, and the number of hens from 7,201,687 to 4,315,524. The number of holdings with fewer than 30,000 hens has decreased continuously, and only those holdings with hen counts that fall within the maximum size category have remained more or less constant in number. Only in this hen-count category (30,000 and above) has the share of hens increased.

The level of self-sufficiency in eggs is below 51 per cent in Bavaria, compared to approx. 76 per cent in Germany as a whole.

Fattening poultry

The number of chickens has increased again slightly in the last few years. At the time of the head count conducted in May, 2001, 889 holdings kept about 3.9 million broilers. The 92 fattening farms in Bavaria with coop capacities for over 10,000 birds account for 96 per cent of the broilers. Eight per cent of German broilers and nine per cent of German turkey-hens are produced in Bavaria. Turkey-hen production had a 21 per cent share in overall poultry production in Bavaria – here the level of self-sufficiency in Bavaria is 40 per cent.

Horse keeping

Horse breeding and equestrian sports have developed into a significant economic factor in Bavaria. The number of riders in clubs is continuing to increase. In 2001, 941 clubs had 102,219 members. The number of horses kept in Bavaria is estimated at 120,000. Of these, two thirds are kept on farm holdings and use approximately 130,000 ha of UAA.

Fisheries

With altogether 126,000 ha of water, Bavaria is among those German Laender richest in water bodies.

Carp pond fish farming

In 2000 and 2001, 6,500 tonnes and 6,000 tonnes respectively of food carp or about 50 per cent of the entire German production was produced. Apart from carp, the 20,000 ha of carp ponds were also used to breed tench, pike, pike-perch and catfish.

Trout pond fish farming

The Bavarian share of the 23,000 tonnes of food trout produced in Germany annually amounts to 8,000 tonnes, or just under 34 per cent. Out of a total of 4,000 German fish farms, 3,300 (83 per cent) are located in Bavaria.

Angling fisheries

In 2000, 244,000 persons in Bavaria had a valid fishing licence; about 120,000 of these licence owners are members of the Bavarian fishing association. Every year, about 9,000 candidates take the official fishing licence examination, with 7,000 passing.

For decades, land consolidation and village renewal has helped to promote rural development. There are currently 1,700 rural development measures in progress, affecting 700,000 ha and benefiting more than a million inhabitants. The policy of village improvement and the reparation of land is helping enormously to invigorate areas lacking in infrastructure and to create uniform, healthy living and working conditions throughout Bavaria.

The instrument of village renewal is currently in operation in some 540 communes, with 1,800 villages and more than 470,000 inhabitants. In 2000 and 2001, the Directorates for Rural Development (DRD) and the Offices for Agriculture granted subsidies to the value of EUR 104 million for village improvements. Investments to the value of EUR 327 million, both in the private and the municipal sectors, were triggered directly as a result. Small and medium-sized regional craft and trade enterprises benefit most from these investments.
13. Non-food utilisation of biomass

Biomass used as an energy source

In 2000, about 3.6 per cent of Bavaria’s primary energy demand was met by biomass. This is equivalent to about 2.1 billion litres of heating oil.

Chart 51
Biomass mix in Bavaria

At the end of 2001, Bavaria had the following infrastructure for using biomass as an energy source:

Solid biomass fuels:
- Some 265 heating plants
- 1.76 million wood-burning stoves and open fireplaces

Biogenic fuels:
- Biodiesel production capacity 80,000 tonnes p.a.
- Approx. 240 public biodiesel filling stations
- 2,600 tonnes of biodiesel (including small-scale vegetable-oil CHP units)

Biogas:
- Approx. 560 biogas plants on agricultural holdings
- Approx. 250 sewage and landfill gas plants

Central Franconia, the Allgäu region and the south-eastern part of Upper Bavaria are regional centres for agricultural biogas plants.

Material utilisation

The main emphasis here during the last two years was on:
- Natural-fibre-reinforced moulded plastics
- Highly flexible polyurethane foam
- Rapeseed-oil asphalt

Cultivation trends

In 2000 and 2001, renewable raw materials were cultivated on set-aside areas of approx. 34,600 ha and 36,700 ha respectively. Oilseed crops for the production of fuel or for other technical applications accounted for 95 per cent of this acreage.

In addition, 50,000 ha of “normal land” are used every year to cultivate renewable raw materials (oilseed, potatoes, sugar beet) for non-food uses.

Funding

Funding in 2000 and 2001 totalled EUR 25.9 million. Most of the projects funded were projects concerning the use of biomass as an energy source. Thus the trend of previous years to intensify the funding of renewable energy has continued.

14. Funding of agropolitical measures

Support schemes

Allocation of responsibilities

Responsibility for agrarian policy is shared by the Bavarian state, the Federal Republic of Germany (FRG) and the European Union (EU).

The Bavarian state is primarily responsible for
- Structural agrarian policy (rural development)
- Initial training, advanced training, consultancy, specialist schooling, agricultural research
- Preservation of man-made landscapes and natural resources
- Improvement of productivity and quality
- Improvement of living and working conditions in agriculture

The Federal German Republic for
- Social and fiscal policies

The European Union for
- Market and price policies

The EU also lays down the policy framework for almost all support schemes.

State-funded support

Section 08 of the Bavarian budget shows expenditure of EUR 1,201,156,000 for the year 2002.


Aggregate agrarian policy funding by Bavaria, the FRG and the EU

The aggregate sum shown in section 08 of the Bavarian budget also includes funds partly reimbursed by the Federal Republic or the EU. Allowing for reimbursements, Bavaria’s budgetary expenditure on agrarian measures (including consultancy) is about EUR 756 million.

Chart 23 (on page 8) shows aggregate agrarian policy funding by source of funds.
15. Forestry and the timber industry

Forest area and social functions of forests

Forest area

One third of Bavaria (2.45 million ha) is covered by forests. Of this, about 54% is privately owned by some 500,000 forest owners, 31% is under state ownership, 13% under communal ownership and two% under federal ownership. In 2000/01, Bavaria’s forest area increased by 598 ha.

Chart 53

Forest ownership
(in per cent)

- State-owned 31.3%
- Communal ownership incl. public law entities 13.0%
- Federally-owned 1.5%
- Privately-owned 54.2%

Protected and protection forest

Designating woodland as protected forest and following this up with a statutory order is a particularly effective legal means of preventing deforestation, especially in densely populated and in sparsely wooded areas. By the end of 2000, town and country planning authorities had designated approximately 205,600 ha of woodland in Bavaria as protected forest, of which 184,600 ha had been declared protected by statutory order.

Under Bavarian forestry law, protection forest is defined as including all woodland in the higher reaches and in ridge zones of the Alps and other montane environments (permanent protection forest) as well as woodland which protects neighbouring tree stands from storm damage. To compensate for the difficulty of managing permanent protection forest, forest owners are entitled to a subsidy. In 2000/2001, subsidies totalling EUR 1.9 million were granted.

Protection forest restoration

In 1986, the Bavarian Forestry Administration introduced a catalogue of measures to restore the protective character of montane forest. Among these were measures to promote natural regeneration and to shield young trees by temporary avalanche protection. During 2000 and 2001, funding for the project totalled EUR six million. To guarantee the project's continued success, the control of ungulate populations by hunting remains imperative.

National parks

Established in 1970, the Bavarian Forest National Park covers roughly 24,250 ha. The natural forest dynamics are being influenced to such an extent by a bark beetle infestation that in certain areas diseased spruce is being removed in order to protect adjacent forest. In the higher reaches of the Bavarian Forest, 3,610 ha of spruce forest have died. Reforestation, however, will take place naturally. In 2000 and 2001, the Bavarian Forestry Administration invested approximately EUR 11.5 million in the National Park.

Established in 1978, the Berchtesgaden National Park covers roughly 20,800 ha. The National Park Plan was introduced in 2001. Forest maintenance measures, such as the restoration of typical natural woodland in place of spruce monoculture, is restricted to development zones. Hunting remains necessary in order to assist the regeneration of mixed forest. In 2000 and 2001, the Bavarian Forestry Administration granted the National Park funds to the value of roughly EUR 1.3 million.

Natural forest reserves

Natural forest reserves serve for the preservation and understanding of natural forest ecosystems. Forestry operations are forbidden in these reserves. A wide variety of scientific studies provides valuable information on ecologically sensitive woodland management. At the end of 2001, there were 151 natural forest reserves in Bavaria, covering a total area of 6,410 ha.

Forests in protected areas

The huge importance of forests for nature conservation and environmental protection is reflected in the extent of woodland in protected areas: forests cover roughly 2/3 of officially designated water conservation areas in Bavaria and about 50% of all nature or landscape conservation areas. Considering that the share of forests in Bavaria as a whole is 36%, protected areas have clearly above-average forest coverage. Most of the forests outside of protected areas, too, are of special importance.
for various reasons, such as protection of groundwater and surface water, prevention of soil erosion and protection against flooding. Some 63% of the 558,000 ha proposed by Bavaria for the European Natura 2000 network is woodland, of which nearly 60% is state-owned. The management of Natura 2000 sites has been entrusted to the Bavarian Forestry Administration, which presented Germany’s first management plan for a wooded FFH area in 2001.

**Forest recreation**
Especially in congested urban areas, forests are indispensable recreational areas. Among other amenities, Bavarian state-owned forest has 9,500 km of hiking trails, 2000 km of cycling trails, some 49 km of toboggan runs, 37 viewing platforms and 13 camping sites for young people. The most important recreational benefit of all, however, is offered by the forest in its natural form.

**Forest education**
Since January 1, 1998, forest education of the public has been a statutory task of the state forestry authorities. This includes not only environmental education in the forest, but also information on sustainable commercial use of forests.

Most forest education activities are organised by the forest offices, forest experience centres and forest youth camps. By participating in activities at 9000 events held in each of the years 2000 and 2001, some 240,000 people obtained first-hand knowledge about forests and forest management.

- **Forest damage, forest conservation and research**

  **Storm, snow and forest-fire damage**
In 2000/2001, significant storm and snow breakage were restricted to certain regions of Upper Bavaria (a thunderstorm in summer, 2001) and Upper Franconia (snow breakage in winter, 2000/2001). In 2001, 33 forest fires affected a total of some 21 ha.

  **Damage by insects and fungi**
The years 2000/2001 were relatively unproblematic. Thanks to favourable weather conditions and the rapid implementation of countermeasures by forest owners and forest offices, there were no large-scale outbreaks of bark beetle. In 2000, salvage logging of affected trees in Bavaria accounted for 167,000 solid m³ of timber, which is 30% less than in preceding years. Damage by the small spruce sawfly has been decreasing since 1996 except in the Tertiary hills of Lower Bavaria. However, the increased occurrence in alders of root/crown rot caused by the Phytophthora fungus is causing concern. Countermeasures based on intensive research have been initiated.

  **New types of forest damage**
All in all, the condition of the crowns of forest trees in Bavaria deteriorated during 2000 and 2001. For all tree types, mean defoliation loss increased noticeably. This was due partly to inadequate precipitation in certain areas. The Alpine region was particularly affected, with pines showing the most damage.

**Soil conservation**
After many years of high pollutant input, forest floors are increasingly losing their buffering capacity. In the medium term, this may impair the stability of the forests and the quality of the groundwater, and threaten biodiversity. For long-term environmental protection, therefore, pollution control measures are equally important and just as necessary as the continued replacement of coniferous forest by mixed woodland.

**Research & Development**
Forest-related R&D activities in Bavaria are carried out primarily by the Bavarian State Institute of Forestry, the Institute for Forest Seeding and Planting, and in the Bavarian Forest National Park. In addition, numerous projects entrusted to other organisations, such as the Weihenstephan Research Centre, the Technical University in Munich and the Weihenstephan University, are funded by the Bavarian Forestry Administration. Increased numbers of publications on research findings intensified knowledge transfer.
Organisational structure/personnel of the Bavarian Forestry Administration

Forestry organisational structure
As of January 1, 2002, the Bavarian Forestry Administration has comprised the Forestry department of the Ministry of Agriculture and Forestry, four regional offices, 134 local forest offices, 1003 ranger districts and 15 special units such as National Parks, research units or working centres.

Employees
The Bavarian Forestry Administration was staffed by about 2,100 civil servants and 680 other employees. In 2001, an average of 2,300 loggers held permanent, all-year-round jobs in state-owned forests. Just under 40 training positions were available. Dealing with the damage caused by hurricane Lothar, which caused devastation particularly in Swabia, presented an especially difficult challenge in 2000. With the help of personnel from all over Bavaria, the storm timber was recovered rapidly enough to prevent further damage, for example by bark beetle. In addition to these efforts, 140 forestry workers and 23 head rangers assisted in neighbouring Baden-Württemberg, which bore the brunt of the hurricane damage in Germany.

Initial and on-going training
The Bavarian Forestry Administration provides training for various internal careers.

The Bavarian Technical College of Forestry is the only one of its kind in Germany. In 2001, following a one-year suspension in new admissions, 24 candidates enrolled for this two-year training course.

Forestry Administration employees participated in ongoing training on an average of three working days per year in 2000 and 2001. Technical courses (especially IT) and management training sessions attracted the most participants.

Management of state-owned forest
Bavaria’s state-owned forest benefits from sustainable forest management based on natural methods. Site-adapted mixed forests are best able to meet the manifold requirements placed on wooded areas. It is able to fulfill all the commercial, protective, environmental and social functions of a forest, both now and for future generations.

Long-term silvicultural planning
In 2001, long-term forest planning including a detailed inventory was undertaken in 22 local forest offices. The inventories document that stocks of mature wood, both deciduous and coniferous, have increased.

Logging, regeneration and tending
Forestry operations in 2000 and 2001 were strongly influenced by the impact of hurricane Lothar, which ripped through the countryside at the end of 1999. 42% of the timber logged in 2000 was storm timber. Logging operations produced 4.35 million m$^3$ of timber in 2000, and 4.85 million m$^3$ in 2001. The roughly 1,700 ha of devastated forest had been restocked by the spring of 2001.

In 2000/01, altogether 3,900 ha were regenerated artifically, primarily with deciduous trees. 16,900 ha of young and 34,000 ha of pole stands were tended. To increase the timber value, 1,250 ha of trees were pruned.

The 15-year Fichtel Mountains forest regeneration project was completed in June, 2001. At a cost of roughly EUR 10 million, 1,755 ha of depleted forest were planted up with 6.8 million trees, most of them deciduous. 9,400 ha of woodland were fertilised with lime.

Economic result of the Bavarian Forestry Administration
In 1999 and 2000, the Bavarian Forestry Administration spent EUR 318 million and EUR 348 million respectively in discharging its responsibilities, EUR 15 million (1999) and EUR 29 million (2000) being devoted to public and other administrative tasks. Expenditure on services in privately-owned and communal woodland amounted to EUR 72 million in 1999 and EUR 80 million in 2000; this included grants/subsidies and other non-operating expenditure. The Bavarian Forestry Administration’s commercial activities yielded an operating profit of EUR 17 million in 1999, but, as a result of hurricane Lothar, only EUR 0.67 million in 2000.

Privately-owned and communal woodland
Bavaria’s private and communal forests are also managed in a sustainable way. The Forestry Administration offers initial and ongoing training, as well as advice and development grants, to forest owners all over Bavaria. Communal or municipal authorities can conclude a contract to transfer management activities in their forests to the local forest offices.
In 1999/2000, Bavaria supported private and communal forests with altogether EUR 36.4 million. This government funding was used, for example, to develop roughly 3,700 ha of new deciduous and mixed woodland, to afforest 850 ha of agricultural land, and to construct some 200 km of scenically non-invasive forest roads. It also included EUR 2.7 million used to support consolidated forestry operations; financial assistance was provided, for example, for the administration of forestry cooperatives and for joint investments in machinery. The results of the annual financial survey on a representative group of communal forests showed a loss of EUR 20/ha and EUR 21/ha for 1999 and 2000 respectively. One of the main reasons for this was the difficult timber market situation in the wake of hurricane Lothar.

Privately-owned woodland yielded a profit of EUR 196/ha and EUR 225/ha for 1999 and 2000 respectively.

### Timber and the timber market

According to the 1986 federal inventory, Bavaria’s forests produce roughly 21 million m³ of wood per year. Harvestable growth is approx. 18 million m³ of standing crop. Of this, some 10 to 12 m³ is currently felled each year.

In Bavaria, as elsewhere, the raw timber market was dominated in 2000 and 2001 by hurricane Lothar (26.12.1999). Altogether 4.3 million m³ of timber were blown down in Bavaria, and as much as 25 million m³ in Baden Württemberg. Timber prices plunged for Bavarian forest owners. The price for spruce timber, for example, decreased by almost 25 %, and it was not until the end of 2000 that prices began to recover. This was partly thanks to the Bavarian Forestry Ministry’s marketing strategy of putting a stop on all regular felling until the autumn and thus taking pressure off the swamped market. This measure also benefited the owners of private and communal forest. At present, the timber market appears to be stabilising.

In 2000/01, forest certification became an established marketing instrument to assure purchasers that wood and wood products originate from sustainably managed forests. By the end of 2001, more than 86,000 forest owners in Bavaria (including the Bavarian Forestry Ministry) responsible for altogether 1.73 million ha of woodland were certified according to the pan-European forest certification system (PEFC). PEFC relies on a regional approach and thus enables small forest owners, too, to acquire credible certification.

### Hunting grounds

Bavaria has 6.2 million ha of hunting grounds. 8,750 jointly managed and 2,366 privately-owned hunting grounds account for 87 % of this area. The remaining 13 % is state-owned hunting ground managed by the Bavarian Forestry Administration.

### Shooting list

<table>
<thead>
<tr>
<th>Type of game</th>
<th>1998/99</th>
<th>1999/00</th>
<th>2000/01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red deer</td>
<td>9,264</td>
<td>9,313</td>
<td>8,638</td>
</tr>
<tr>
<td>Chamois</td>
<td>4,639</td>
<td>4,165</td>
<td>3,820</td>
</tr>
<tr>
<td>Wild boar</td>
<td>22,217</td>
<td>33,666</td>
<td>27,640</td>
</tr>
<tr>
<td>Roe deer</td>
<td></td>
<td></td>
<td>825,503</td>
</tr>
<tr>
<td>Hare</td>
<td>143,790</td>
<td>133,160</td>
<td>116,928</td>
</tr>
</tbody>
</table>

During the 1999/00 and 2000/01 hunting seasons, the numbers of chamois and roe-deer shootings decreased slightly. Wild-boar shootings peaked in 1999/00 but then decreased again. Roe-deer shooting was more or less the same as in the previous three-year period. Following a sharp increase in preceding years, the number of hare kills decreased somewhat. Various research projects were conducted in 2000/01 on game endangered by depletion in numbers, such as wood grouse, black grouse, fish otters, lynx and wild cats. Habitat studies were carried out and protective measures implemented.

### Forest damage due to game

In 2000, damage caused by ungulate browsing was inventoried for the sixth time. On the basis of this inventory, which is conducted every three years in all forests of Bavaria, the forest offices monitored regeneration for every hunting community. Roughly 2 million forest plants growing in some 21,500 ha of reforestation areas were recorded. Evaluation of the data showed that although browsing damage has become noticeably less, forest regeneration is endangered in many areas unless protective measures are taken.
For information

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