

Crop production statistics – Methodology

I. Basic determination of the sector

Crop production statistics provides basic information on utilised agricultural area and on crop production for holdings that utilise agricultural land and are registered in the Farm Register.

The Farm Register is administered by the Czech Statistical Office on the basis of § 19a of the Law No 89/1995 Coll., on the State Statistical Service. The criteria for involvement of a holding in the Register are stated by the Decree of the Czech Statistical Office No 126/2001 Coll. and are as follows:

- a) utilised agricultural area of 1 hectare and more;
- b) at least 1 500 m² of grown specialty crops (vineyards, hop gardens, intensive orchards, flowers or ornamental woody plants, vegetables, aromatic plants, medicinal plants, seeds, nurseries etc.);
- c) at least 300 m² of greenhouses and/or hotbeds;
- d) farming of livestock from 1 head of cattle, or 2 head of pigs, or 4 head of sheep, or goats, or 50 head of poultry, or 100 head of rabbits, or 100 head of fur animals, or
- e) freshwater fish farming on water bodies, irrespective of their size.

The crop production statistics involves agricultural activities classified according to the statistical classification of economic activities (CZ-NACE) under groups 01.1 Growing of non-perennial crops, 01.2 Growing of perennial crops, 01.3 Plant propagation, and 01.5 Mixed farming.

The agricultural holding (statistical unit) means a single unit, both technically and economically, that has a single management and that undertakes agricultural activities, either as its primary or secondary activity. Statistical units are legal as well as natural persons.

The crop production statistics geographically covers the entire territory of the Czech Republic; its outputs are broken down by region (NUTS 3 level) or coherence region (NUTS 2 level) according to the common classification of territorial units for statistics CZ-NUTS).

II. Data source

1. Statistical surveys

1.1. Questionnaire on areas under crops (Osev 3-01)

Indicators surveyed:

- Areas under crops (as at 31 May)
- Utilised agricultural area, agricultural land use types (as at 31 May)

1.2. Yearly questionnaire on harvest of crops (Zem 6-01)

Indicators surveyed:

- Harvest of crops (for a harvest year)
- Harvested areas of crops (as at 31 December)
- Number of fruit trees and bushes (as at 31 December)
- Areas under winter crops (crops to be harvested in the following year; as at 30 November)
- Fertiliser consumption (for a marketing year)

1.3. Estimates harvests of crops – June (Zem V6), as at 10 June

Estimated harvest of crops – July (Zem V7), as at 15 July

Estimated harvest of crops – August (Zem V8), as at 15 August

Estimated harvest of crops – September (Zem V9), as at 30 September

Indicator surveyed:

- Estimated per hectare yields of crops

Harvest year: the calendar year of the harvest (Y)

Marketing year: the period from 1 July of the year preceding the harvest year (Y-1) to 30 June of the harvest year (Y).

Specimens of questionnaires are available at <http://apl.czso.cz/pll/vykazy/pdf1>

The content and purpose of statistical surveys, the range of reporting units, the method of statistical surveys, the periodicity and deadlines for the data provision are specified in the Decree on the Program of Statistical Surveys for the relevant calendar year.

2. Administrative data sources, data taken from other sources

2.1. Integrated Administration and Control System (IACS)

2.1.1 Land Parcel Information System (LPIS)

Indicators taken:

- agricultural land use types (main area)

2.1.2 Single application – Declaration of Crops, Declaration of All Agricultural Land (from 2023 onwards)

Indicators taken (as at 10 June):

- areas of crops
- agricultural land use types (main area)

2.2. Vineyard Register

Indicators taken:

- areas of vineyards (as at 31 May)
- wine production – Declaration of Production (as at 31 December)

2.3. Register of hop gardens:

Indicators taken:

- areas of hop gardens (as at 31 May)

2.4. Register of orchards (from 2023 onwards)

Indicators taken:

- areas of orchards by species (as at 30 September)
- number of fruit trees and bushes (as at 30 September)

3. Derived indicators:

Observed data and data taken from administrative data sources are used for calculation of the following derived indicators:

- Per hectare yield of crops
- Yield of fruits per one tree or bush
- Estimated harvest of crops
- Fertiliser consumption per one hectare of utilised agricultural area

III. Statistical population and sample selection, methods of imputations and estimation

The statistical population is the same for all statistical surveys in crop production. The Farm Register, which is continuously updated until the date of creation of the statistical population, is the basis for sampling of responding units. The statistical population involves holdings registered in the Farm Register that utilise agricultural land or undertake economic activities classified under groups 01.1, 01.2, 01.3, or 01.5 according to the CZ-NACE.

Osev 3-01 - change of statistical survey method

Until 2022, the survey Osev 3-01 was carried out as a sample survey. From 2023 onwards, administrative data from the Single Application (Declaration of Crops, Declaration of All Agricultural Land) are used. Units from the population that are not included in this administrative source are surveyed using a statistical questionnaire.

Zem V6, Zem V7, Zem V8, Zem V9, and Zem 6-01

Surveys Zem V6, Zem V7, Zem V8, Zem V9, and Zem 6-01 conducted as sample surveys with stratified sampling. The samples are set from the population on the basis of affiliation of each unit to a defined stratum.

Criteria for involvement of each unit to particular stratum:

- size category, by area of utilised agricultural area, arable land or area of specialty crops;
- agricultural production region, by location of the holding;
- region, by location of the holding.

Certain sampling rate based on the size category is assigned to each stratum. The units with the sampling rate under 100% are generated from the population using random number generation without replacement.

During the data processing, weighting is used for estimation of the non-surveyed part of the population. Values obtained in the strata with the sampling rate under 100% are weighted using coefficients according to the percentage of selected units.

In the statistical survey Zem 6-01, the values for responding units that did not provide their data (non-response) are replaced by average values in each stratum.

IV. Key indicators published

Four-digit codes of statistical indicators used in the Statistical Meta-information System (SMS) of the CZSO are given in brackets after the indicators' names.

Area under crops (5900): Arable land area sown or planted with main crops in spring of the harvest year, or with winter crops in autumn of the preceding year, or with multiannual crops in preceding years. Areas of pre-crops, catch crops, and succeeding crops are not included. Includes also nurseries until 2022, from 2023 onwards are nurseries recorded separately. Includes also areas sown outside arable land until 2016.

Area under winter crops (5900): Arable land area sown with winter crops intended for the harvest in the following year as at 30 November.

Harvested area of crops (5909): Utilised agricultural area intended for a harvest.

- Maize, early potatoes, caraway (from 2023 onwards): the area harvested in the reference year.
- Vegetables (from 2018 onwards): the harvested area corresponds to the sum of areas sown or planted repeatedly and harvested in the reference year. It includes also areas under high accessible cover (glasshouses, plastic houses).
- Hops, vines, and orchards by species: the production area intended for harvest in the reference year (production area). Young, not yet bearing plantations are excluded.
- Permanent grassland: the harvested and/or grazed area.

Harvest of crops (5906): Harvested production of crops intended for market or for direct consumption. The harvest is given in standard purity. The harvest humidity of cereals for grain, pulses and protein crops for grain, oil seed crops, and arable fodder crops is shown in the Table 1.

Table 1: Crop production humidity

Crop / aggregate of crops	Humidity degree (%)
Cereals for grain	14
Pulses and protein crops for grain	14
Oil seed crops (except soya)	9
Soya	14
Arable fodder crops	15
Green and silage maize	65
Cereals harvested green (excl. maize)	83
Clover, lucerne, legume-grass mixtures	15
Leguminous plants harvested green and their mixtures (except legume-grass mixtures)	83
Other fodder crops on arable land	83

Per hectare yield of the crop harvest (5908): It is calculated as the crop harvest divided by the harvested area or the area under the particular crop.

- maize, early potatoes, caraway (from 2023 onwards), vegetables (from 2018 onwards), hops, vines, and permanent grasslands: the per hectare yield is calculated using the harvested area.
- All other crops: the per hectare yield is calculated using the area under the particular crop.

Number of fruit trees/bushes (6494): the number of planted fruit trees or bushes. Includes viable fruit trees or bushes of all age categories including young not yet bearing ones.

Yield per one tree/bush (6868): It is calculated as the fruit harvest divided by the number of trees or bushes.

Per hectare yield estimate for a crop (6493): estimated crop harvest in tonnes per one hectare of the area under the particular crops.

Crop harvest estimate (6896): it is calculated using the surveyed per hectare yield estimate and the area under the particular crop.

Utilised agricultural area (5937): includes arable land, permanent grasslands, vineyards, hop gardens, orchards, gardens (until 2022), and other permanent crops (from 2016 onwards).

Arable land (5919): Utilised arable land, on which crops for production purposes are planted in a regular sequence, or areas of arable land available for crop production but set aside (fallow land). Areas

under glass or high accessible cover (glasshouses, plastic houses) are included as well. Includes also nurseries until 2022, from 2023 onwards are nurseries recorded separately.

Fallow land (5921): Arable land set aside, not used for crop production during the reference year. Includes arable land with no vegetation, naturally seeded, with a crop sown, or covered with grasses and other herbaceous fodder crops.

Hop gardens (5923): Utilised agricultural area planted with hops, equipped with a support device for growing hops. The associated handling space is included.

Vineyards (5929): Utilised agricultural area continuously planted with vines, equipped with a support device for growing vines. The associated handling space is included.

Orchards (5940): Utilised agricultural area regularly and continuously planted with fruit trees or bushes. The associated handling space is included. Meadow orchards, rootstock and propagation stands, isolated fruit trees, and areas with line planting along roads (alleys, tree lines) are excluded. Includes plantations with a minimal density 100 fruit trees or 800 fruit bushes per 1 hectare from 2018 onwards.

Nurseries: Utilised agricultural area with young plants or woody plants grown for later replanting. Includes vine and rootstock nurseries, fruit and berry nurseries, nurseries of ornamental plants and woody plants, commercial forest nurseries (excluding nurseries on forest land for own use), tree and shrub nurseries for replanting in gardens, parks, roadsides and riparian areas (e.g. hedge plants, rose bushes and other ornamental shrubs, ornamental conifers). Include hop nurseries from 2023 onwards.

Permanent grasslands (5931): Utilised agricultural area with natural or artificial grasslands or pastures, not included in crop rotation for a period of 5 years or more.

Permanent crops n.e.c.: Utilised agricultural area planted with other permanent crops, e.g. meadow orchards (from 2018 onwards), Christmas trees grown out of forest land, areas for planting truffles. They include also areas of short rotation coppices from 2016 to 2022. **Meadow orchards** are areas evenly planted with fruit trees of half stem or tall trunk standard with a minimum density of 50 viable individuals per hectare with herbaceous cover in between. They do not comply with the definition of orchards. Their primary purpose is not fruit production but the preservation of varietal diversity, cultural heritage, and rural landscape character.

Consumption of mineral fertilisers in a marketing year: Includes the consumption of fertilisers reported by the units in the sample (without estimation for the non-surveyed part of the population).

The marketing year is the period from 1 July of the year preceding the harvest year to 30 June of the harvest year.

Consumption of mineral fertilisers (6532): The amount of mineral fertilisers consumed on the utilised agricultural area. It is given in tonnes of nutrients. Involves consumption of nitrogen (N), phosphorus pentoxide (P_2O_5) and potassium oxide (K_2O). It is given in tonnes of net nutrients.

Consumption of calcareous fertilisers (6510): The amount of calcareous fertilisers consumed on the utilised agricultural area. It is given in tonnes.

Consumption of livestock manure (6513): The amount of livestock manure consumed on the utilised agricultural area. Includes the consumption of farmyard manure, slurry, liquid manure, and other types of livestock manure. It does not include by-products or main products from cultivation of crops, as collectable after-harvest remnants of plants, straw, beet greens or crops for green manure. It is given in tonnes.

Consumption of organic fertilisers (6518): The amount of organic fertilisers consumed on the utilised agricultural area. It is given in tonnes.

Consumption of organo-mineral fertilisers (6519): The amount of organo-mineral fertilisers consumed on the utilised agricultural area. It is given in tonnes.

Fertiliser consumption per one hectare of utilised agricultural area: it is calculated as the fertilised consumption divided by the fertilised utilised agricultural area. The fertilised utilised agricultural area

includes utilised agricultural area of those units from the sample, which have reported any fertiliser consumption.

Annexes include:

- Items of the nomenclatures of the Statistical Meta-information System of the CZSO used in crop production statistics.
- Translator (mapping) between the items of the code list of crops of the Ministry of Agriculture for items of the questionnaire Osev 3-01.

V. Retroactive corrections, revisions, improvements of the estimates

Retroactive corrections and revisions are usually not conducted in the crop production statistics.

Procedures of improvements of the estimates

Improvements of the estimated areas under winter crops as at 30 November of the year preceding the harvest year (Y-1) surveyed in the statistical survey Zem 6-01 are improved using **areas under crops** as at 30 May of the harvest year (Y), which are surveyed in the statistical survey Osev 3-01.

The first estimate of crop harvests surveyed in June of the harvest year surveyed in the statistical survey Zem V6 are being improved during July, August, and September using statistical surveys Zem V7, Zem V8, and Zem V9. Final results of the crop harvest in the harvest year are surveyed in the statistical survey Zem 6-01.

VI. Comparability

6.1 Comparability over time

The data are comparable from 2002 onwards taking into account the following methodological changes.

Methodological changes:

The statistical survey Osev 3-01 was carried out as a sample survey until 2022, administrative data sources (Single Application: Declaration of Crops, Declaration of All Agricultural Land) are used from 2023 onwards. Any discrepancies may be caused by methodological changes.

Changes in the structure of surveyed crops in the crop production statistics from 2023 onwards:

Crops on arable land – new items:

- Durum wheat
- Buckwheat
- Cereal mixtures for grain (replacing two items surveyed until 2022: Winter cereal mixtures for grain and Spring cereal mixtures for grain)
- Vetches
- Winter rape seed
- Spring rape seed
- Medicinal, aromatic and culinary plants (replacing two items surveyed until 2022: Medicinal plants and Culinary plants)
- Watermelons
- Gourds and pumpkins

- Asparagus
- Other root and bulb vegetables
- Other brassicas
- Other fruit vegetables
- Other fresh pulses
- Other leafy and stalked vegetables
- Harvest and harvested area under glasshouses and plastic houses (high accessible cover): cucumbers, tomatoes, peppers, lettuces, and strawberries

Crops outside arable land – new items:

- Champignons
- Other cultivated mushrooms

Fruit species – new items:

- Plum trees (replacing two items surveyed until 2022: *Prunus domestica* trees and *Prunus insititia* trees)
- Blackcurrant bushes
- Redcurrant and whitecurrant bushes
- Blueberries
- Other pome fruit trees
- Other stone fruit trees
- Other berry trees and bushes (including gooseberries bushes, which were surveyed separately until 2022)
- Other nut trees and bushes

Agricultural land use types:

- Nurseries: a separated agricultural land use type from 2023 onwards, included in arable land until 2023.
- Gardens: not surveyed from 2023 onwards, included in utilised agricultural area until 2022.

Methodological comments:

Areas under crops:

- include nurseries until 2022
- include sown areas outside arable land until 2016.

Winter common wheat, spring common wheat: include durum wheat until 2022

Cereal mixtures for grain: replace two items surveyed until 2022: spring cereal mixtures for grain and winter cereal mixtures for grain.

Other cereals for grain: include buckwheat until 2022 while it is reported separately from 2023 onwards.

Field peas for grain: include fodder pea from 2017 onwards.

Other pulses and protein crops for grain:

- include vetches for grain until 2022 while they are reported separately from 2023 onwards.
- include sweet lupins until 2008 while they are reported separately from 2009 onwards.
- include broad and field beans until 2005 and in the period 2009-2017 while they are reported separately in the period 2006-2008 and from 2018 onwards.

Potatoes (excl. early and seed ones): include seed potatoes until 2005 while they are reported separately from 2006 onwards.

Medicinal, aromatic and culinary plants replace two items surveyed until 2022: Medicinal plants and Culinary plants.

Energy crops n.e.c.: include short rotation coppices until 2015.

Other industrial crops:

- include fibre flax from 2011 onwards while it was reported separately until 2010.
- include energy crops n.e.c. and hemp until 2010 while they are reported separately from 2011 onwards.

Arable fodder crops: not divided to annual fodder crops and perennial fodder crops from 2023 onwards.

Harvest of arable fodder crops:

- given in determined humidity from 2017 onwards (see Table 1).
- given in hay (dry) or green (fresh) until 2016; see Table 2.
- the sum item Arable fodder crops is not comparable in the time series until 2016 and from 2017 onwards without a preceding recalculation.

-

Table 2: Harvest of arable fodder crops until 2016 and crop harvest humidity from 2017 onwards

Crop / aggregate of crops	Until 2016	Humidity degree (%) from 2017 onwards
Arable fodder crops	In hay (dry)	15
Annual fodder crops (until 2022)	Green (fresh)	65
Green and silage maize		65
Other annual fodder crops		83
Perennial fodder crops (until 2022)	In hay (dry)	15

Clover: includes only red clover until 2022 but all clover species from 2023 onwards.

Legume-grass mixtures (item Other perennial fodder crops until 2022):

- do not include annual leguminous plants harvested green until 2022.
- include temporary grasses and grazings until 2010.

Leguminous plants harvested green and their mixtures (item Annual leguminous plants harvested green until 2022): include annual leguminous plants until 2022.

Other fodder crops on arable land (item Other annual fodder crops until 2022): include cereals harvested green (excluding green maize) and annual leguminous plants harvested green until 2010.

Fresh vegetables: the area under crops is reported until 2017 while both area under crops and harvested area is reported from 2018 onwards.

Cauliflower and broccoli: excluding broccoli until 2010.

Lettuces: include only head lettuce until 2016 while all types of lettuces are included from 2017 onwards.

Other vegetables:

- include gourds and pumpkins, watermelons, asparagus, other root and bulb vegetables, other brassicas, other fruit vegetables, other fresh pulses, and other leafy and stalked vegetables until 2022 while they are reported separately from 2023 onwards.
- include peppers, spinach, and beetroot until 2017 while they are reported separately from 2018 onwards.

- include broccoli, radishes, leeks, and lettuces until 2010. From 2011 onwards, broccoli is reported together with cauliflower; radishes, leeks, and lettuces are reported separately.

Flowers and ornamental plants: include nurseries for ornamental plants until 2010.

Crops for seeds and seedlings: excluding areas of arable fodder crops for seed until 2013.

Other crops (incl. experimental crops):

- Includes also areas of multiannual crops grown on arable land with no production in the reference year, e.g. caraway, until 2022.
- Includes Christmas trees grown on arable land until 2015.

Nurseries:

- recorded as a separate agricultural land use type from 2023 onwards.
- included in arable land until 2022.
- include nurseries for ornamental plants from 2011 onwards.

Other permanent crops: surveyed from 2016 onwards.

- excluding short rotation coppices from 2023 onwards.
- include meadow orchards from 2018 onwards.
- include also Christmas trees grown out of forest land from 2016 onwards.
- include short rotation coppices in the period 2016-2022.

Fruit trees and bushes (total):

- include blueberries, other pome fruit trees, other stone fruit trees, other berry trees and bushes, and other nut trees and bushes from 2023 onwards.
- include raspberries from 2018 onwards.

Plum trees: replaced two items – *Prunus domestica* trees and *Prunus insititia* trees – surveyed until 2022.

Gooseberry bushes: included in other berry trees and bushes from 2023 onwards.

6.2 Comparability with other outputs

The outputs of the crop production statistics are comparable with the Integrated Farm Survey (IFS) in indicators of areas under crops and utilised agricultural area (agricultural land use types) taking into account the threshold values for including of responding units to IFS.

6.3 International comparability

The data on crop production statistics are comparable at the international level.

Differences in the data disseminated in the Eurostat database and the data disseminated by the CZSO using the national methodology:

Hops, hop gardens:

- Eurostat: hops is included in industrial crops (arable land).
- CZSO: hop gardens are a separate agricultural land use type.

Nurseries:

- Eurostat: nurseries are a separate agricultural land use type.
- CZSO: nurseries are included in arable land until 2022; from 2023 onwards they are, in accordance with the Eurostat methodology, reported as a separate agricultural land use type.

Methodological notes:

Come crops and/or their aggregates are handled differently from the Eurostat methodology. This concerns mostly crops having insignificant area and production. These differences have no impact on data comparability among EU Member States.

Winter common wheat, spring common wheat: include durum wheat until 2022. From 2023 onwards, these items are in accordance with the Eurostat methodology and **Durum wheat** is reported separately.

Grain maize: excluding corn-cob-mix (CCM).

Other cereals n.e.c.: include sorghum.

Winter rape seed and turnip rape seed: including spring rape and excluding turnip rape until 2022. From 2023 onwards, this item is in accordance with the Eurostat methodology and **Spring rape seed** is reported separately.

Other oil seed crops n.e.c.: include turnip rape seed until 2022. From 2023 onwards, this item is in accordance with the Eurostat methodology and turnip rape seed is included in item Winter rape seed.

Other industrial crops n.e.c.: include fibre flax.

Green maize: include corn-cob-mix (CCM).

Other root, tuber and bulb vegetables n.e.c.: include only Hamburg parsley until 2022. From 2023 onwards, this item is in accordance with the Eurostat methodology.

Other brassicas n.e.c.: include only kohlrabi until 2022. From 2023 onwards, this item is in accordance with the Eurostat methodology.

Other vegetables n.e.c.: include gourds and pumpkins, watermelons, asparagus, other root, tuber and bulb vegetables, other brassicas, other leafy vegetables, other fresh pulses, and other vegetables cultivated for fruit until 2022. From 2023 onwards, this item is in accordance with the Eurostat methodology.

Peaches: include nectarines.

Other berries n.e.c.: include only gooseberries until 2022. From 2023 onwards, this item is in accordance with the Eurostat methodology.

VII. Seasonal adjustment

No seasonal adjustment is carried out in crop production statistics.

VIII. Data dissemination

Public database: <https://vdb.czso.cz/vdbvo2/faces/en/index.jsf?page=statistiky#katalog=30840>

Publications: <https://www.czso.cz/csu/czso/agriculture-publications>

- Areas under Crops Survey – as at 31 May
- Harvest Estimates - Operative Report - as at 10 June
- Harvest Estimates - Operative Report - as at 15 July
- Harvest Estimates - Operative Report - as at 15 August
- Harvest Estimates - Operative Report - as at 30 September
- Final Harvest Figures

News Releases: <https://www.czso.cz/csu/czso/agriculture>

- Harvest Estimates – June
- Harvest Estimates – July
- Harvest Estimates - September

Time series: https://www.czso.cz/csu/czso/zem_ts

Open data: <https://www.czso.cz/csu/czso/local-open-data-catalog-lkod>

The publication dates are listed in the Catalogue of products:
<https://www.czso.cz/csu/czso/catalogue-of-products>

Eurostat database: <http://ec.europa.eu/eurostat/web/agriculture/data/database>

IX. Additional methodological information and external links

Quality report:
https://ec.europa.eu/eurostat/cache/metadata/en/apro_cp_esms.htm

Legislation:
Regulation (EC) No 543 of 18 June 2009 concerning crop statistics: <https://eur-lex.europa.eu/eli/reg/2009/543/oj>

Commission Delegated Regulation (EU) 2015/1557: http://data.europa.eu/eli/reg_del/2015/1557/oj

Regulation (EU) 2022/2379 of the European Parliament and of the Council of 23 November 2022 on statistics on agricultural input and output, amending Commission Regulation (EC) No 617/2008 and repealing Regulations (EC) No 1165/2008, (EC) No 543/2009 and (EC) No 1185/2009 of the European Parliament and of the Council and Council Directive 96/16/EC (**in force from 1 January 2025**):
<https://eur-lex.europa.eu/legal-content/CS/TXT/?uri=CELEX:32022R2379>

Contact person: Dagmar Lhotská, phone: (+420) 274052291, e-mail: dagmar.lhotska@czso.cz