3 Sampling and grossing-up methodology

3.1 Population and sample

The population for Farm Structure Survey 2016 is based on the Farm Register (47 416 active agricultural holdings); it was developed using threshold values (see Definition of the agricultural holding).

Out of these active units 26 735 units were involved in the sample. These units cover 99.13% of the utilised agricultural area and 98.70% of the Livestock units (LSU) in total.

The sample was defined as stratified random sample from the population based on affiliation of each unit to defined grossing-up group (stratum). Certain sampling rates for all the units in the group (stratum) within the population were assigned to each stratum. Units with sampling rate under 100% were generated from the population using random number generator without replication. Random number generator program SAS Enterprise Guide 4.2 was used for this purpose.

3.2 Stratification and grossing-up

Reporting units were sorted into strata on the basis of combination of three variables:

- size category,
- affiliation with a region according to farm's headquarters or natural person's permanent residence,
- affiliation with an agricultural production area.

Each code of stratum consists of six-digit chain XXYYZZ, where:

- XX reaches value 11 to 15 or 99 and depends on size of the holding as concerns UAA and/or LSU:
    - 11 (sample percentage 8%): 0.00–9.99 ha of UAA or 0–1.99 LSU
    - 12 (sample percentage 11%): 10.00–24.99 ha of UAA or 2–4.99 LSU
    - 13 (sample percentage 17%): 25.00–49.99 ha of UAA or 5–9.99 LSU
    - 14 (sample percentage 21%): 50.00–119.99 ha of UAA or 10–19.99 LSU
    - 15 (sample percentage 27%): 120.00–199.99 ha of UAA or 20–49.99 LSU
    - 99 (sample percentage 100%): - 200.00 ha and more of UAA
        50 LSU and more
        40 heads of poultry and more
        20 heads of sheep and more
        5 heads of goats and more
        1.50 ha of vineyards and more
        2.00 ha of orchard and more
        15.00 ha of hop-gardens and more
        1.10 ha of vegetables and more
        0.30 ha of flowers and more
        0.30 ha of strawberries and more

For this classification to particular size categories reaching any minimum value in category "99" was more important for a concerned unit than its utilised agricultural area or livestock units.

- YY represents abbreviated code of region (NUTS3) and reaches one of the following values: 11, 21, 31, 32, 41, 42, 51, 52, 53, 61, 62, 71, 72, and 81.
- ZZ indicates affiliation of a unit to agricultural production area:
    - Maize area and its subareas 11, 12, 13,
    - Sugar beet area and its subareas 21, 22, 23,
    - Potato area and its subareas 31, 32,

o   *Potato-oats area and its subareas 33,*

o   *Mountainous area and its subareas 41, 42.*

Due to insufficient total area in subareas 11, 12, and 13, the units belonging to subareas 12 and 13 were attached to subarea 11. Similarly, subarea code 42 was replaced by code 41. Therefore only codes 11, 21, 22, 23, 31, 32, 33 and 41 were allowed.

Number of grossing-up strata constructed using this way results in 521 combinations, although the theoretical maximum of combinations is 672 (6 x 14 x 2). This classification was employed only in sample generating (keeping the proportionality among regions) and in final aggregation by region. Only XXZZ code, i.e. maximum 48 grossing-up strata, was used in final grossing-up to the population level.

Weights for particular strata were calculated according to formula:

$W_h = \frac{N_h}{n_h}$; *where:*

W_h *weighting coefficient for stratum h;*

N_h *number of units in the population generated from Farm Register in stratum h;*

n_h *number of units in a sample in stratum h.*

The output of the grossing-up procedure is an aggregated dataset derived from the dataset whose records consist of aggregates for particular grossing-up groups.

Note: During calculation of relative standard errors 30 units showing extreme values were identified; their weighting factor had to be changed to 1 and these units were moved to stratum of 100%.

3.3 Output tables

Published tables contain summarized grossed-up results for the population (the whole agricultural sector in the Czech Republic) and for agricultural holdings having together at least 98% of utilised agricultural area or at least 98% of livestock units.

The results were calculated using non-rounded values (with 6 decimal places). Therefore summary totals in the tables not always equal to the sum of their sub-items which are published in a rounded form.

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Calculations in the tables are based on non-rounded figures (incl. totals).

SYMBOLS USED IN THE TABLES

-       *no cases registered*

.   *data unavailable or unreliable*

x   *not applicable*

0   *less than half the final digit shown and greater than real zero*

i. d.   *individual data*