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**UTILIZATION OF PESTICIDES IN AGRICULTURE AND
ESTIMATION OF COSTS FOR IMPLEMENTATION OF THE NEW
REGULATION**



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STATISTICS


POZNAN- 14 OCT 2009



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UTILIZATION OF PESTICIDES IN AGRICULTURE AND ESTIMATION OF COSTS FOR IMPLEMENTATION OF THE NEW REGULATION

- 
- A silhouette of a person in a starting crouch, positioned behind a starting block on a track, symbolizing readiness and the beginning of a process.
- **methodology**
 - **results**
 - **estimated costs**



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STATISTICAL SURVEY ON THE USE OF PESTICIDES IN AGRICULTURE

- ✦ Objectives of the statistical survey
- ✦ *implementation of statistical survey- farm level*
- ✦ *Implementation of the Eurostat methodology for pesticides use in agriculture*
- ✦ *establishing the survey indicators:*
 - ✦ Quantity of seed treated
 - ✦ Area sown with treated seeds
 - ✦ Quantity of pesticides used
 - ✦ Treated area



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STATISTICAL SURVEY ON THE USE OF PESTICIDES IN AGRICULTURE

Observation units

- ✦ agricultural holdings with judicial personality using agricultural area;
- ✦ individual agricultural holdings using agricultural area.

Data registration method

- ✦ face-to-face interview



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◆ **The sampling frame**

- ◆ The holdings using agricultural areas larger than 5 ha registered in the statistical farm register.

- ◆ **Characteristics of interest:** wheat-cultivated area .

- ◆ **Sample size: 4000** agricultural holdings
 - 1839 individual holdings
 - 2161 legal units

- ◆ **Sample allocation:** Neyman optimal allocation



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❖ **Size class, UAA:**

For the individual agricultural holdings:

- 5 – 10 ha common wheat;
- 10 – 50 ha common wheat;
- 50 – 100 ha common wheat;
- > 100 ha common wheat.

❖ 556 individual holdings having a common wheat-cultivated area larger than 100 ha of class size IV were exhaustively surveyed.




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❖ **Size class, UAA:**

For the juridical personality holdings:

- 5 – 10 ha common wheat;
- 10 – 50 ha common wheat;
- 50 – 100 ha common wheat;
- 100 – 500 ha common wheat;
- > 500 ha common wheat.

- A silhouette of a runner in a starting crouch on a track, positioned to the left of the text.
- ❖ All the juridical personality units having a common wheat-cultivated area larger than 500 ha were exhaustively surveyed



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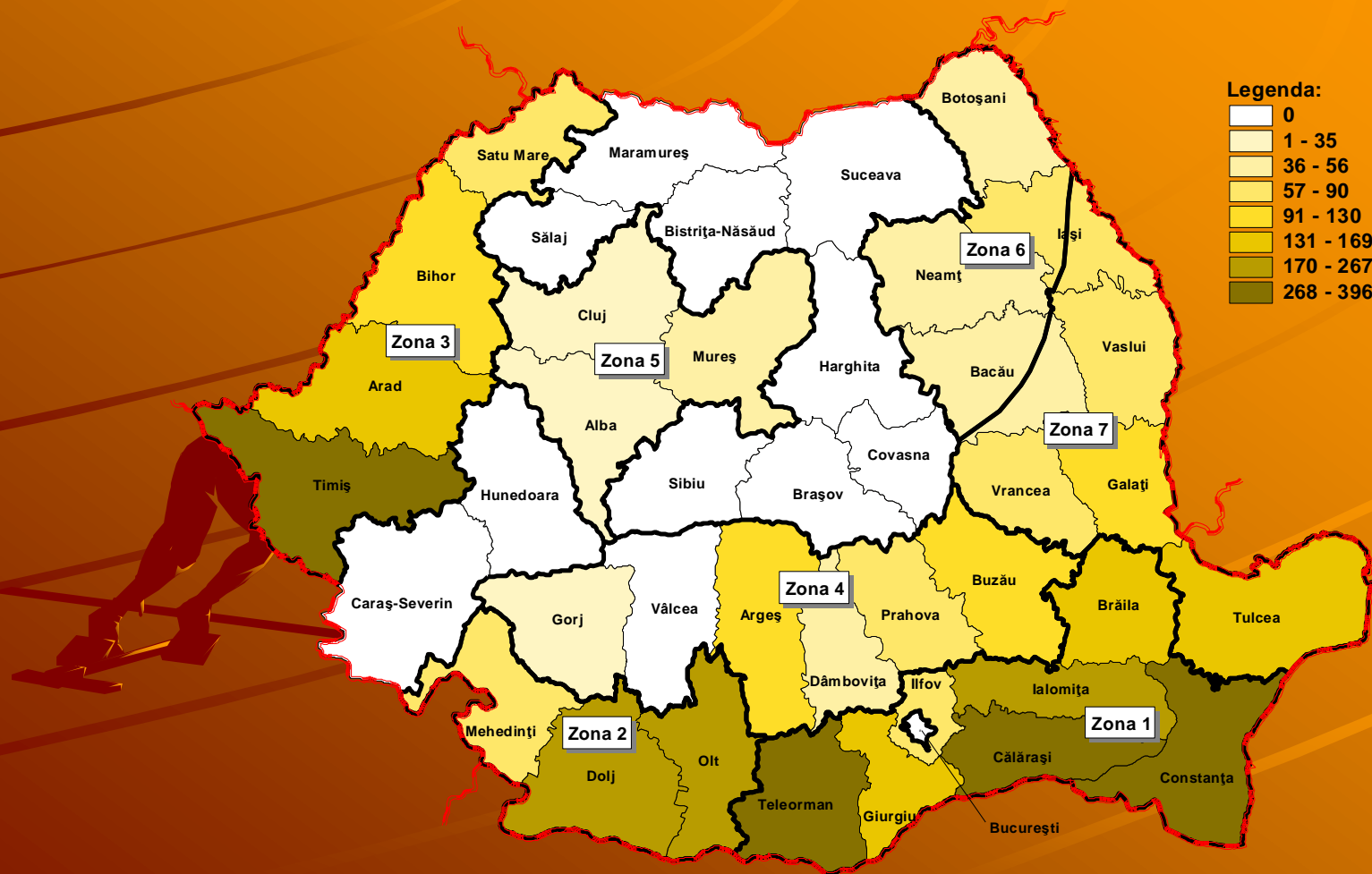
RESULTS OBTAINED

- ✦ **The surveyed holdings were distributed across the country**
- ✦ **The response rate to the interview established according to the completeness code was of 97 %.**
- ✦ **The survey sample after data collection included 3905 holdings, of which 1708 individual holdings and 2197 legal units.**
- ✦ **The largest share of 90.7% of the surveyed area was held by the legal units**
- ✦ **The individual holdings represented 43.7% of the total number of surveyed holdings, the legal units accounted for 56.3%**
- ✦ **The juridical personality units (JPUs) with wheat-cultivated area in the >500 ha stratum held the largest weight in the surveyed area of 54.0 %**



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Distribution of the surveyed holdings by county and wheat crop cultivation zone





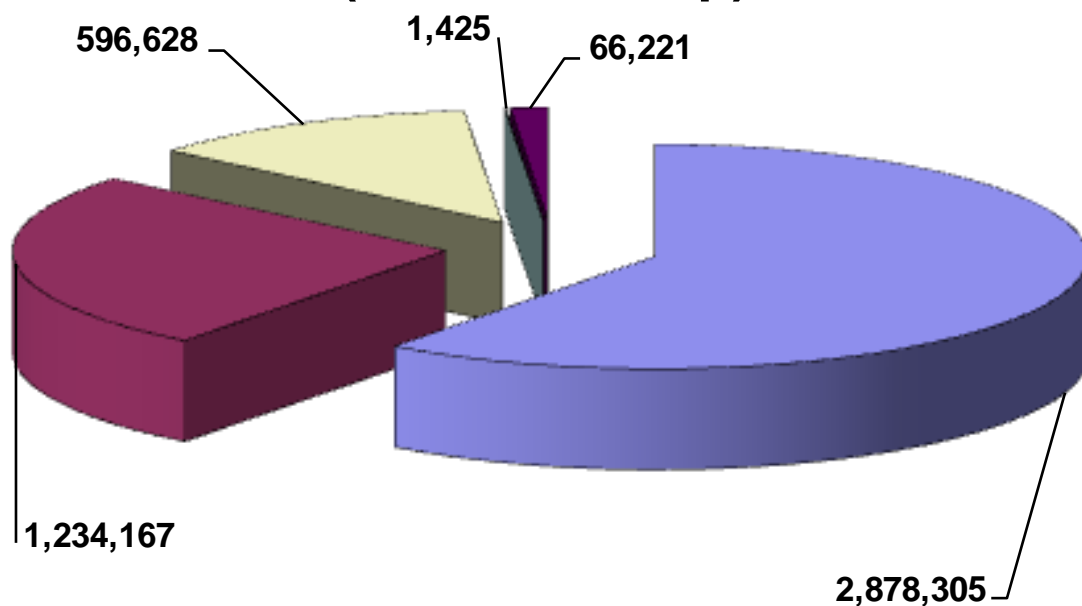
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RESULTS OBTAINED

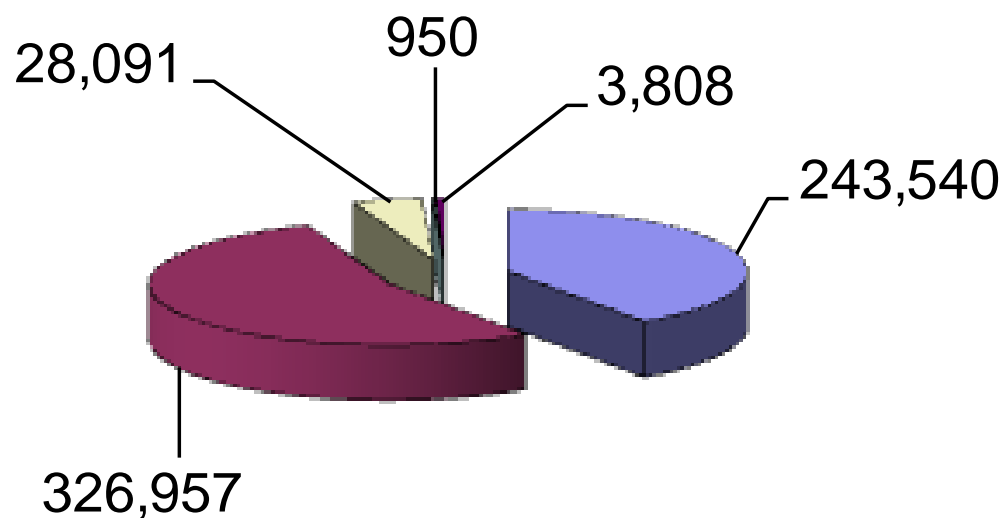
- ❖ **Total cultivated area: 2,000,000 Ha**
- ❖ **Cultivated area with treated seed: 80 % of the total**
- ❖ **Treated area: 75 % of the total**
- ❖ **Average quantity of seed utilised for sowing: 240 Kilos/Ha**
- ❖ **Quantity of plant protection products, active substance:**
 - **Together with sowing: 0,20 Kilos active substance/ Ha**
 - **Utilised during vegetation: 0,16 Kilos active substance/ Ha**

Structure of the pesticides area (ha) treated (seed and crop)



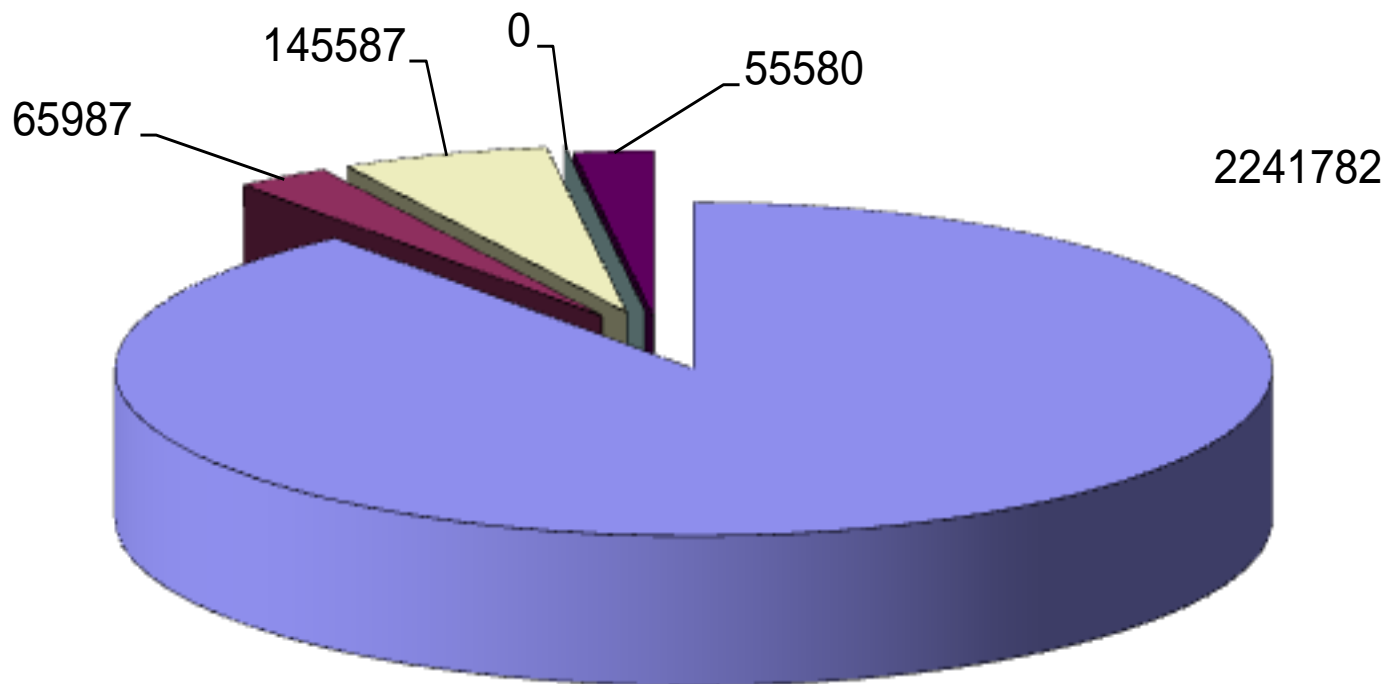
■ Fungicides
 ■ Herbicides
 ■ Insecticides
 ■ Growth regulators
 ■ Other PPPs

Pesticides quantity used (kg.s.a.) - seed and crop



■ Fungicides
 ■ Herbicides
 ■ Insecticides
 ■ Growth regulators
 ■ Other PPPs

Basic area treated (ha) - seed treatment



■ Fungicides

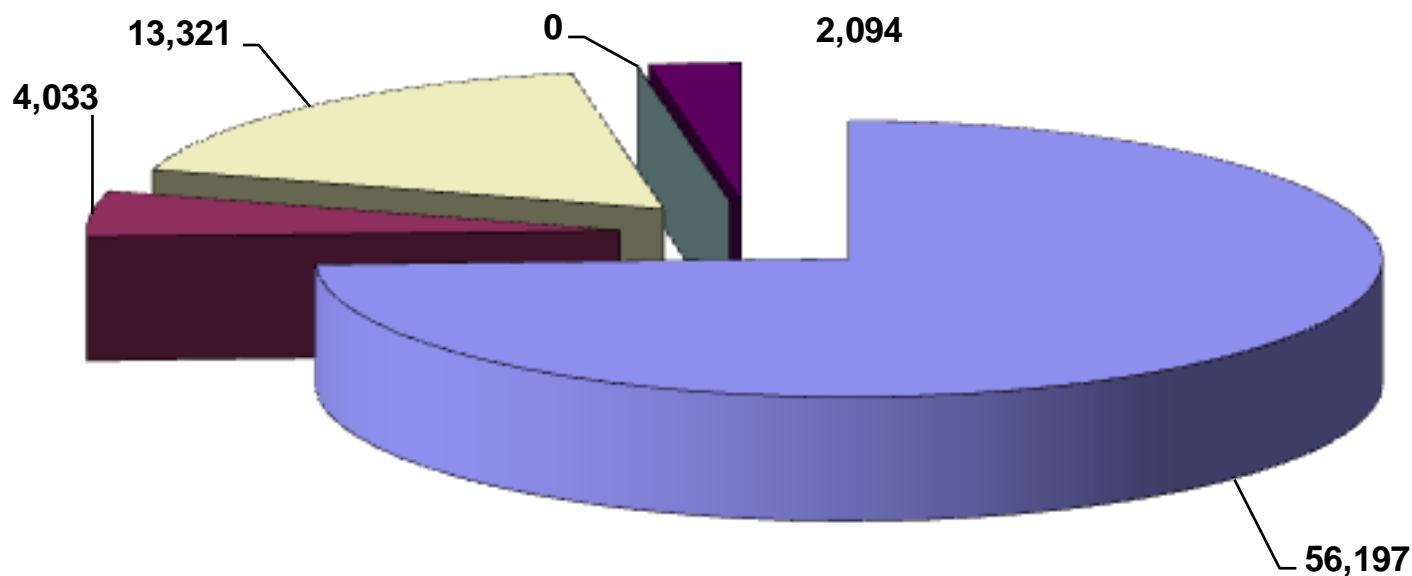
■ Herbicides

■ Insecticides

■ Growth regulators

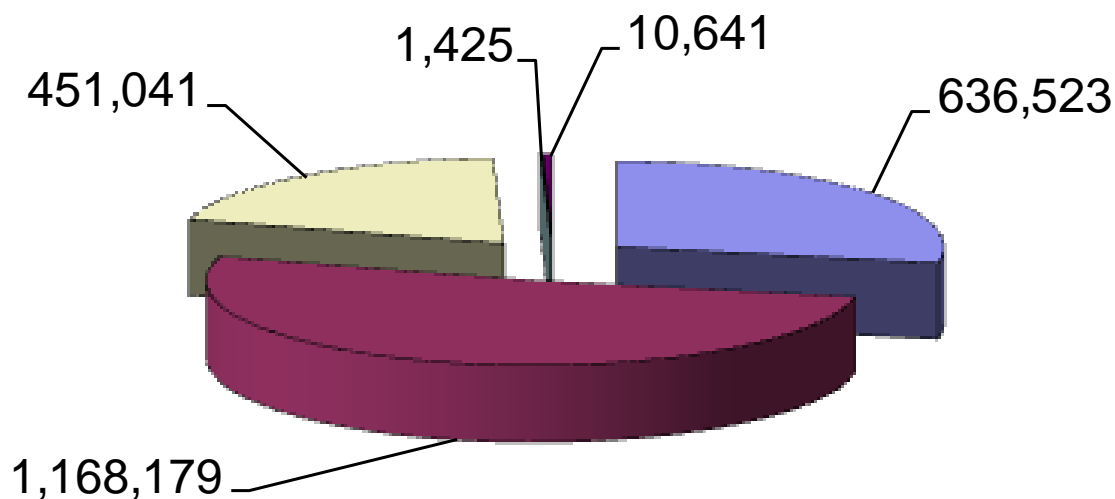
■ Other PPPs

Pesticides quantity used (kg s.a.)- seed



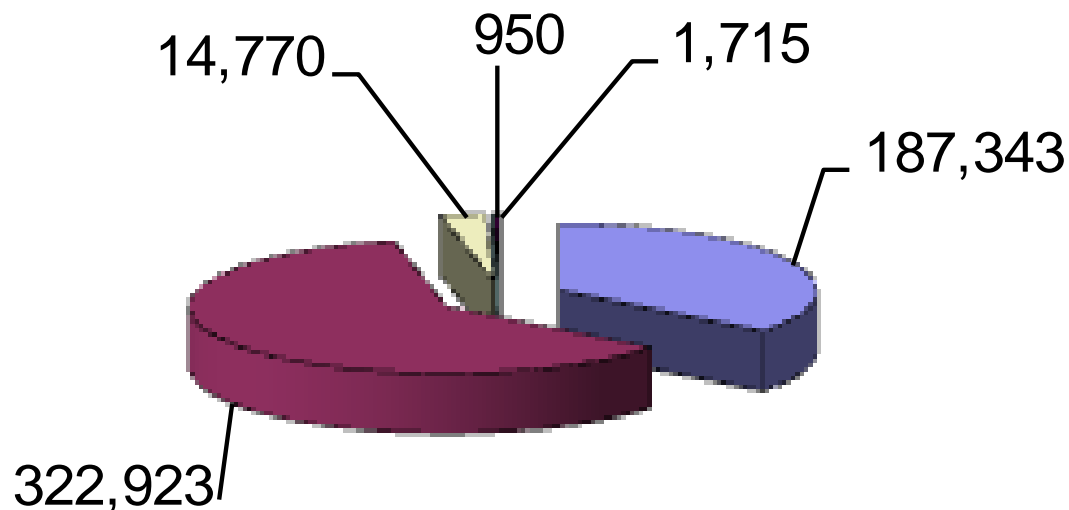
■ Fungicides
 ■ Herbicides
 ■ Insecticides
 ■ Growth regulators
 ■ Other PPPs

Pesticide area treated used for crop treatment during the vegetation period (ha)



■ Fungicides
 ■ Herbicides
 ■ Insecticides
 ■ Growth regulators
 ■ Other PPPs

Product quantity used (kg s.a) for crop treatment during the vegetation period



■ Fungicides

■ Herbicides

■ Insecticides

■ Growth regulators

■ Other PPPs



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RESULTS OBTAINED

Seeds treatment (active substance)

- ✦ **Tebuconazole: 27 %**
- ✦ **Difenoconazole: 25 %**
- ✦ **Diniconazole: 18 %**
- ✦ **Thiram: 16 %**
- ✦ **Cypermethrin: 11 %**
- ✦ **Others: 3 %**

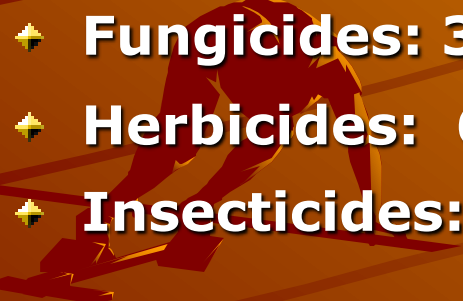


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CROP TREATMENT – UTILISED SUBSTANCE

**Total active substance: 0,16 Kilos/Ha for crop
0,04 Kilos/Ha for seeds**

- 
- ✦ **Fungicides: 36 %, of which 77 % Carbendazim**
 - ✦ **Herbicides: 61 %, of which 82 % 2,4 D**
 - ✦ **Insecticides: 3 %, of which 28 % Cypermethrin**

 - ✦ **Average number of treatments: 2,3**
 - ✦ **Dosage applied: 100 % of the recommended dosage**
 - ✦ **Average water volume applied: 250 l/Ha**



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◆ Problems

- for updating the sample base (crops rotation system)
 - ◆ *back up sample*
- for surveyors employment
 - ◆ *special training needed*
 - ◆ *non stimulating payment*
- ◆ The environment-pollution risks are small due to the small quantities used for treatment but it may occur accidentally or on approximately 30% of the area cultivated on light soils with a percolative hydric regime, if applied doses are higher than recommended dose of active substance(kg/ha);



From pilot survey to regular survey

Preparing activities:

- ◆ **Phare MB 2002 and 2005 pilot project; transition facility 2008:**
 - pesticides statistics employed on the market*
- ◆ **collaboration protocols with Ministry of Agriculture and Rural Development, the Ministry of Interns and Administrative Reform for pesticides issue**
- ◆ **Questionnaire based selection of the target population with respect to the use of pesticides on crop production, fodder, vegetables, flowers and establishment of the crop list**
- ◆ **establishing the necessary financial resources**



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From pilot survey to regular survey

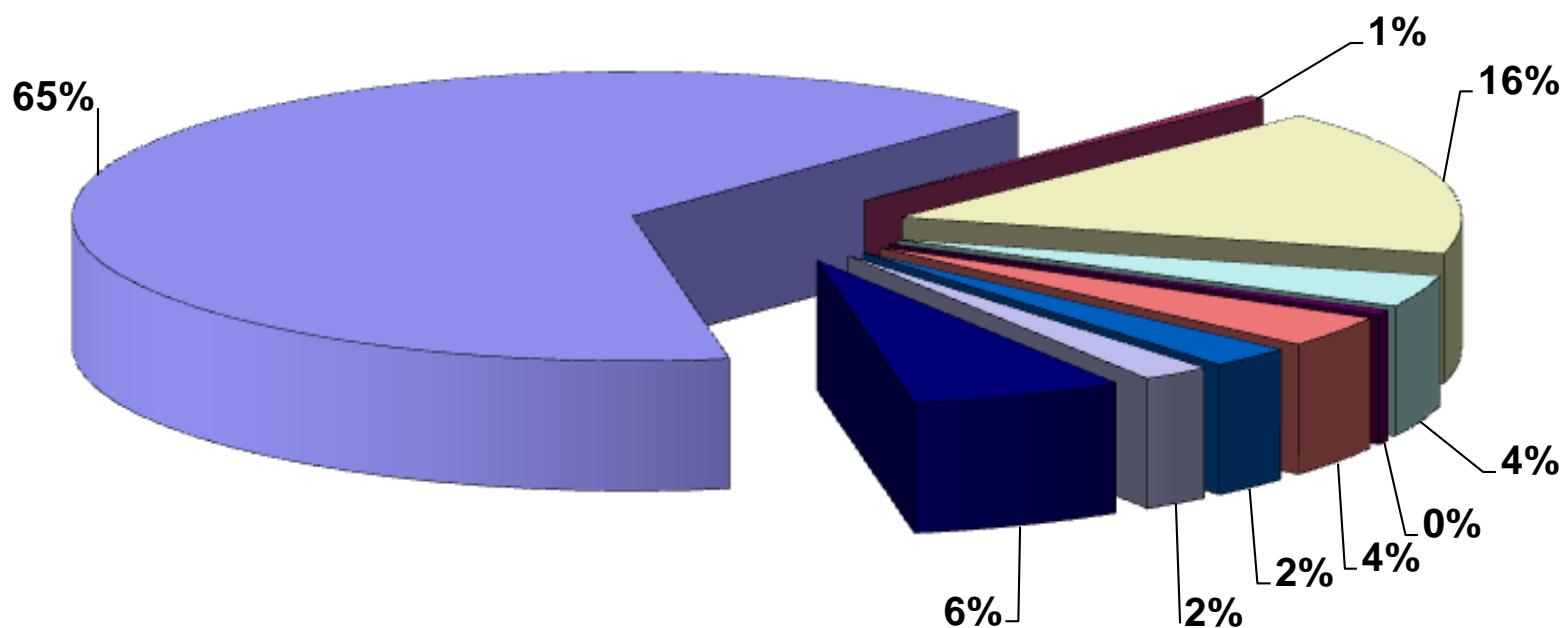
Drawing up the sample










Crop list – selection criteria

- ✦ Cultivated area
- ✦ Grains production, fruits, vegetables and fodders
- ✦ Quantity of utilised pesticides – Kilos/ Ha
- ✦ Typology and Economic size of the holding
- ✦ Number of holdings
- ✦ Crop specific (weight of crop in holding type) – fruit trees, vegetables and vine are frequently cultivated in households
- ✦ Soil and climatic conditions – water melons are cultivated on sandy soils; sugar beat is cultivated in cold zones
- ✦ Crop rotation system
- ✦ Area utilisation
- ✦ Resources

CULTIVATED AREA, CROP PERCENTAGE

Total area = 7 884 000 ha

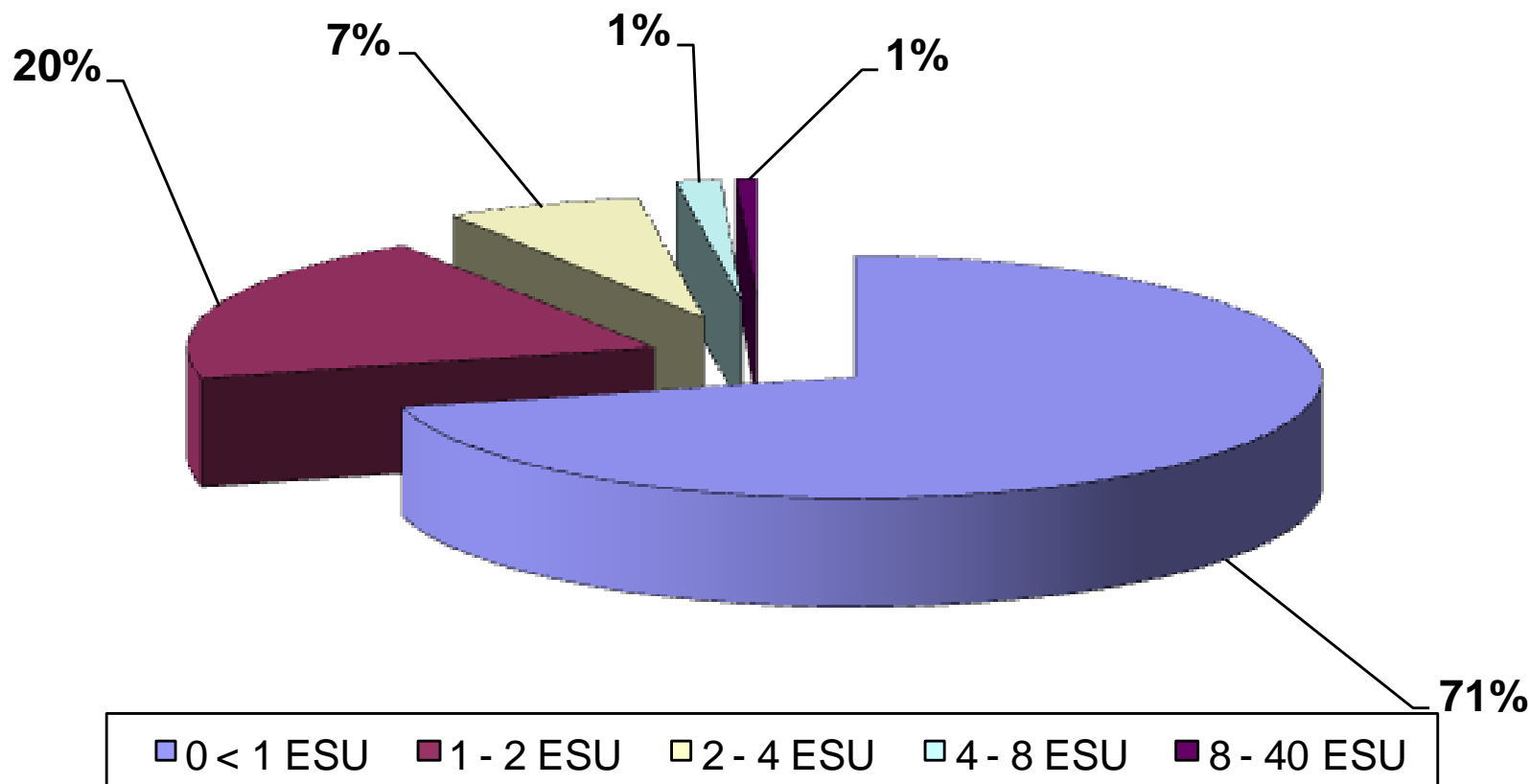


- | | | |
|---|---|--|
|  Grains |  Vegetable for seeds |  Oleaginous crops |
|  Vegetable |  Sugar beet |  Potatoes |
|  Vineyards |  Orchards |  Other crops |

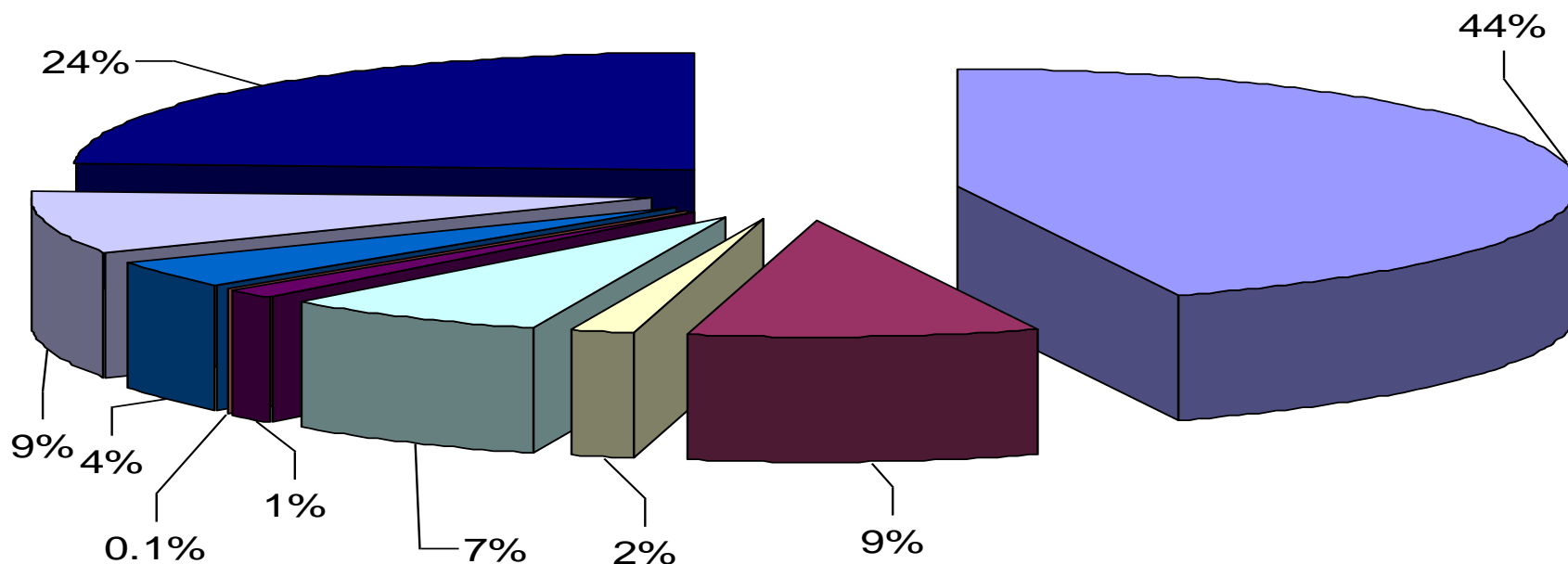
NUMBER AND ECONOMIC SIZE OF FARMS, IN 2005, AS PERCENTAGE

Total number = 4 256 162

1 ESU = 1200 Euro



PERCENTAGE OF CROPS WITHIN SAMPLE



■ Crops on arable land
■ Sugar beet
■ Melons
■ Vineyard
■ Pasture

■ Potatoes
■ Vegetables including greenhouses
■ Strawberry
■ Orchards



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From pilot survey to regular survey

❖ Costs evaluation

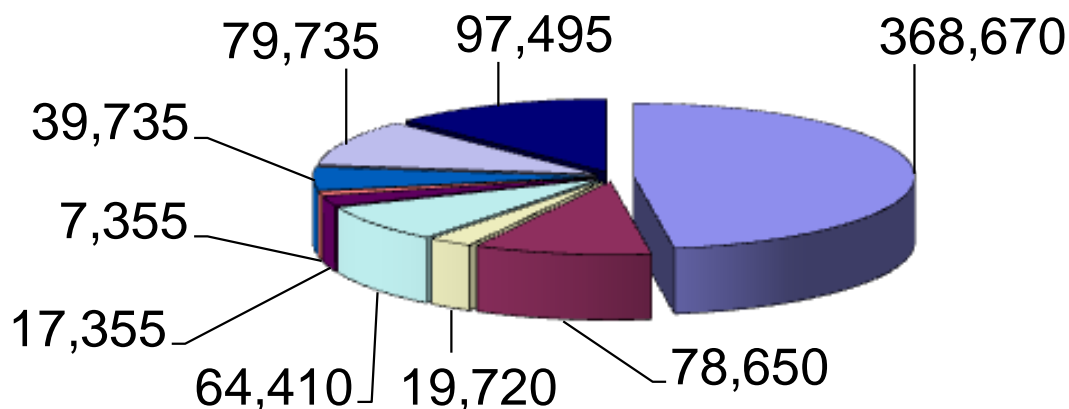
evaluation criteria:

- representativity level

national level
region level

- number of crops

Survey Use Pesticides in Agriculture - 2012: 754 000 Euro



- survey for arable land crops
- sugar beat survey
- water melons survey
- vine survey
- pastures and meadows survey

- potatoes survey
- vegetables survey
- strawberries survey
- fruit trees survey



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**THANK YOU VERY MUCH
FOR YOUR ATTENTION!**



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