Central Statistical Office of Poland

State Plant Health and Seed Inspection Service

Plant Protection Institute, Sośnicowice Branch

THE PLANT PROTECTION PRODUCTS USAGE STATISTICS IN POLAND
PART II
GENERAL ISSUES AND REFINING THE SYSTEM

Project Title:

PESTICIDE INDICATORS

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PRESENTATION PLAN

- **Presentation of the system for collecting data on pesticide sales in Poland.**
- **Changes in direction of pesticide sales statistics.**
- **Comparison of data on pesticide sales statistics with data on pesticide usage statistics after 4-year cycle.**
- **Major problem in monitoring pesticide usage – sample representativeness.**
- **Changes in direction of pesticide usage statistics.**
- **PLAN for usage statistics for 2007.**

SYSTEM FOR COLLECTING DATA ON PESTICIDE SALES IN POLAND

Participating Institutions: Central Statistical Office (GUS), Ministry of Agriculture and Rural Development

Data collected by GUS:

- **pesticide name**
- **formulation code as per current code list**
- **amount of formulation sold and in-stock at the end of reporting period in kg/liter**
- **formulation code according to FAO, CN and Eurostat Classification**

- **producers and importers submit data electronically in a predefined form**
- **data do not include identifying information**

SYSTEM FOR COLLECTING DATA ON PESTICIDE SALES IN POLAND (cont.)

System started according to new rules – 2002

Pesticide selection – incomplete set: e.g. **2003 – 357 pesticides**

2004 – 321 pesticides

Source of data – pesticide producers and importers

Substantive consultations with PIORiN as to the selection of pesticides

CHANGE: **since 2005 full set = 974**

number of producers and importers = 198

5 types of aggregation:

- **per chemical group of different types of pesticides – FAO, CN and Eurostat Classification**
- **per pesticide type with amount of AS**
- **per chemical groups, within types with amounts of AS– FAO, CN and Eurostat Classification**

data available at www.minrol.gov.pl

ANALYSYS OF SOURCE DATA REGARDING PESTICIDE SALES

- **Verification of correctness of data and aggregation at the level of pesticides and product categories.**
- **Calculation of active substances (A.S.) per kg., in sold pesticides, after standardization of units.**
- **Matching A.S. with appropriate product categories and chemical classes.**
- **Data aggregation per A.S. and chemical class.**
- **Calculating the mean pesticide use in kg of A.S./ha.**

PROPOSED (RECOMMENDED) DIRECTIONS OF CHANGE IN THE SYSTEM IN POLAND

SALES

- **Conversion of GUS questionnaires into electronic form.**
- **Automatization of the system = internet filing by the respondents directly into the central system.**
- **Change in software for data collection.**
- **Change in software for data processing (aggregation, publication).**
- **Communication with existing databases (in Poland and EU).**

PESTICIDES SOLD AND IN-STOCK IN POLAND IN 2005

/data from producers and importers/

PHASE IVc – Aggregation per classes – according to Eurostat Classification codes per active substance

Group	Category	Class	Code	Sales (excluding export)			In-Stock
				Total	Producers	Importers	
				in kg			
Fungicides and Bacteriocides			F0				
Fungicides and Bacteriocides	Inorganic fungicides		F1	861 596,3	732 567,3	129 029,0	251 797,7
		Copper compounds	F1.1	356 529,8	227 670,5	128 859,4	80 853,5
		Inorganic sulphur	F1.2	505 066,4	504 896,8	169,6	170 944,2
Fungicides and Bacteriocides	Fungicides based on carbamates and dithiocarbamates		F2	1 853 442,7	468 427,1	1 385 015,6	544 072,9
		Carbamate fungicides	F2.2	59 104,1	207,7	58 896,4	30 577,1
		Dithiocarbamate fungicides	F2.3	1 794 338,6	468 219,4	1 326 119,2	513 495,8
Fungicides and Bacteriocides	Fungicides based on benzimidazoles		F3	656 125,1	219 982,0	436 143,1	86 683,1
		Benzimidazole fungicides	F3.1	656 125,1	219 982,0	436 143,1	86 683,1
Fungicides and Bacteriocides	Fungicides based in imidazoles and triazoles		F4	396 079,4	12 795,1	383 284,4	58 683,8
		Conazole fungicides	F4.1	321 416,6	9 321,6	312 095,1	53 674,1
		Imidazole fungicides	F4.2	74 662,8	3 473,5	71 189,3	5 009,7
Fungicides and Bacteriocides	Fungicides based on morpholines		F5	160 766,6	4 669,8	156 096,8	11 550,5
		Morpholine fungicides	F5.1	160 766,6	4 669,8	156 096,8	11 550,5
Fungicides and Bacteriocides	Other fungicides		F6	986 652,6	140 700,8	845 951,9	241 925,7
		Aliphatic nitrogen fungicides	F6.1	67 028,3	2 015,6	65 012,7	16 888,0
		Amide fungicides	F6.2	128 684,5	7 258,4	121 426,1	49 246,0

PESTICIDES SOLD AND IN-STOCK IN POLAND IN 2005

/data from producers and importers/ (cont.)

PHASE IVc – Aggregation per classes – according to Eurostat Classification codes per active substance

Plant Growth Regulators			PGR0				
Plant Growth Regulators	Physiological Plant growth regulators		PGR1	1 355 979,0	510 669,9	845 309,1	355 144,5
		Physiological Plant growth regulators	PGR1.1	1 355 979,0	510 669,9	845 309,1	355 144,5
Plant Growth Regulators	Other plant growth regulators		PGR3	15 078,0	1 612,0	13 466,0	4 124,5
		Other plant growth regulators	PGR3.1	15 078,0	1 612,0	13 466,0	4 124,5
Plant Growth Regulators – TOTAL			PGR0	1 371 057,0	512 281,9	858 775,1	359 269,0
Other Plant Protection Products			ZR0				
Other Plant Protection Products	Mineral oils		ZR1	260 866,9	254 149,3	6 717,6	2 785,5
		Mineral oil	ZR1.1	260 866,9	254 149,3	6 717,6	2 785,5
Other Plant Protection Products	Vegetal oils		ZR2	58 053,6	58 053,6	-	184,0
		Vegetal oil	ZR2.1	58 053,6	58 053,6	-	184,0
Other Plant Protection Products	Soil sterilants (incl. Nematicides)		ZR3	84 061,6	16 080,8	67 980,8	29 625,8
		Methyl bromide	ZR3.1	53 655,0	-	53 655,0	27 440,0
		Other soil sterilants	ZR3.2	30 406,6	16 080,8	14 325,8	2 185,8
Other Plant Protection Products	Rodenticides		ZR4	12 263,0	1 241,0	11 021,9	8 831,2
		Rodenticides	ZR4.1	12 263,0	1 241,0	11 021,9	8 831,2
Other Plant Protection Products	All other plant protection products		ZR5	453 514,9	264 831,1	188 683,8	73 400,0
		Other Plant Protection Products	ZR5.2	453 514,9	264 831,1	188 683,8	73 400,0
Other Plant Protection Products – TOTAL			ZR0	868 759,9	594 355,8	274 404,1	114 826,5
TOTAL				16 039 130,6	6 116 079,8	9 923 050,8	3 249 957,9

COMPARISON OF SALES AND USAGE STATISTICS

USAGE STATISTICS

Over a four-year cycle (2002-2005) pesticide usage was studied for 21 crops or crop groups.

- **Total of 30974 surveys.**
- **Protected (treated) land area 401456 ha.**
- **Pesticide active substance use 747 646 kg.**

- **mean usage = 1,86 kg AS/ha**

SALES STATISTICS

In 2005 – 16 039 130 kg AS were sold.

Agricultural crop and orchard area ~12 530 thousand ha.

mean usage PL = 1,28 kg AS/ha

WORKING GROUP ON PESTICIDE STATISTICS

In 2006, GUS established a working group on standardizing systems of data collection regarding pesticide usage and sales, which includes representatives from the following:

- **Ministry of Agriculture and Rural Development**
- **Central Statistical Office**
- **State Plant Health and Seed Inspection Service**
- **Plant Protection Institute**

WORKING GROUP ON PESTICIDE STATISTICS (cont.)

Tasks of the Working group on standardization of data collection systems regarding pesticide usage and sales:

- **analyze and recommend changes in the proposed regulation**
- **evaluate both monitoring systems within the context of changes introduced by the new European Parliament regulation**
- **identify and coordinate efforts to be taken in order to adjust both systems to meet the EU requirements**

REQUIREMENTS FOR PESTICIDE USAGE STATISTICS

In order to meet the EU requirements, studies on pesticide usage will need to introduce new rules with regard to:

- **selecting representative sample of farms**
- **choosing crops to be surveyed**
- **adjusting cycles of data collection**
- **reporting to Eurostat**
- **data aggregation within the information system**

CHANGE IN THE WAY OF SELECTING A SAMPLE OF FARMS TO BE SURVEYED REGARDING PESTICIDE USE

- **Guidelines on acquiring and collecting statistics on pesticide usage assume that farm sample selection proceeds according to quota sampling.**

- **The proposed European Parliament and Council regulation recommends that farm sample selection is done using random sampling.**

- **Necessity to replace quota sampling with random sampling.**

GUIDELINES ON ACQUIRING AND COLLECTING STATISTICS ON PESTICIDE USAGE

The system of quota sampling relied on:

- **division of farms into farm size groups,**
- **establishing the number and size of farms within each group,**
- **setting the number of surveys.**

GUIDELINES ON ACQUIRING AND COLLECTING STATISTICS ON PESTICIDE USAGE IN POLAND

Advantages of quota sampling

- **Sample selection at the voivodship level and selecting the size according to financial and organizational capabilities of the voivodship inspectorate.**
- **Ability to collect data at all farms within the randomly selected town as long as the farms grow crops selected for surveys (less expensive studies).**
- **Collected data allow for findings regarding pesticide usage at the voivodship level, and, following aggregation, the entire country.**

GUIDELINES ON ACQUIRING AND COLLECTING STATISTICS ON PESTICIDE USAGE

Disadvantages of quota sampling

- **Farm selection is not random, despite the town where the survey is conducted, being selected randomly.**
- **Lack of ability to calculate standard error with quota sampling.**

PROPOSED EUROPEAN PARLIAMENT AND COUNCIL REGULATION ON PESTICIDE STATISTICS

Random sampling
– recommended by the European Union

Advatages:

- **Selection of samples at the central level by GUS.**
- **Ability to estimate standard error.**
- **Proper estimation of study results onto the entire country because of the random selection.**

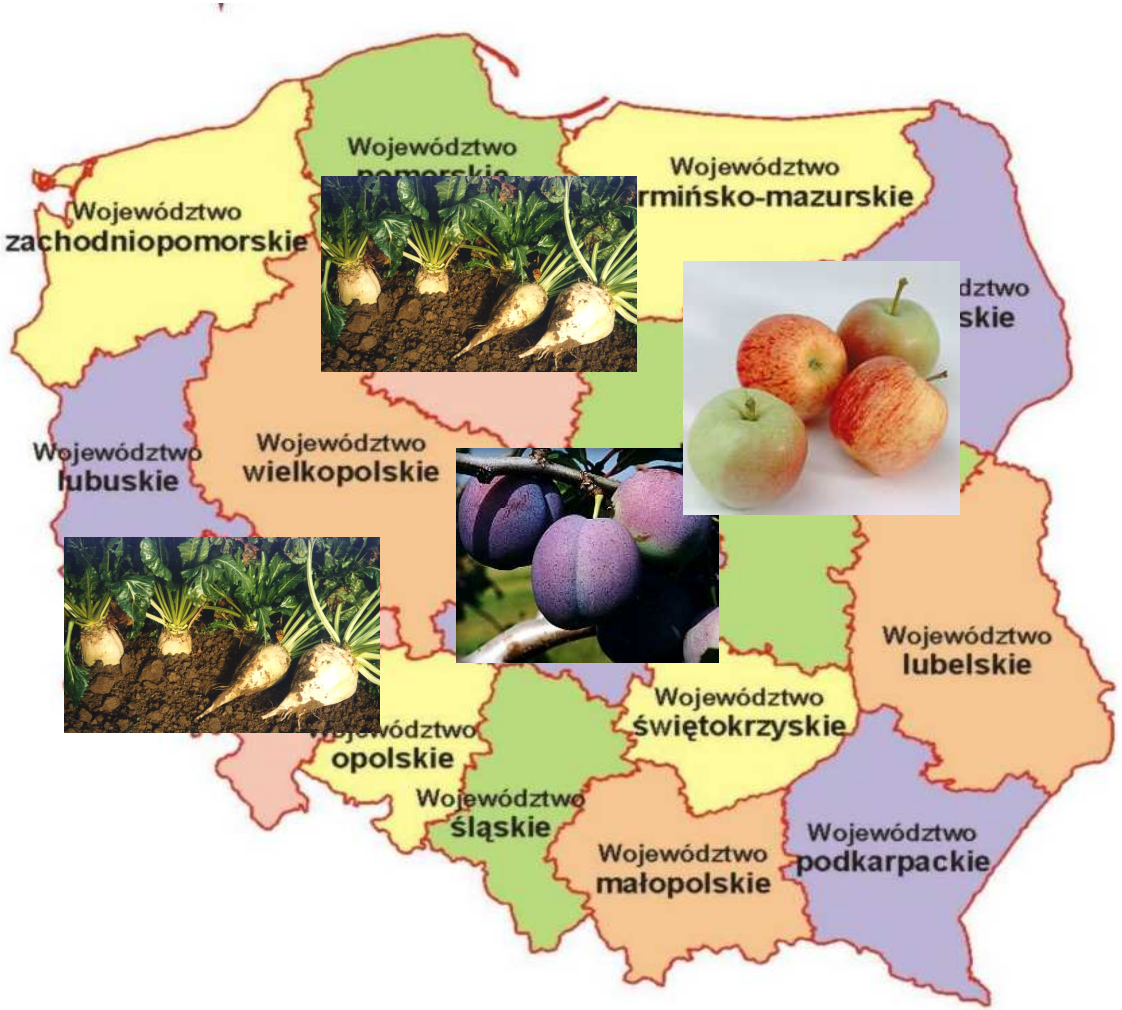
PROPOSED EUROPEAN PARLIAMENT AND COUNCIL REGULATION ON PESTICIDE STATISTICS

Random sampling

Disadvantages:

- **Concentration of sample units (large number of questionnaires) within a particular region of the country causing a possible overload of work for a voivodship inspectorate.**
- **Large dispersion of sample farms (transportation to farms).**
- **Results representative for the country, not for each voivodship.**
- **Higher cost of random sampling as opposed to quota sampling.**

RANDOM SAMPLING – UNEVEN OVERLOAD OF WORK FOR VOIVODSHIP INSPECTORATES



PROPOSED EUROPEAN PARLIAMENT AND COUNCIL REGULATION ON PESTICIDE STATISTICS

Random sampling

- **For all crops covered by monitoring the farms will be sampled by the Central Statistical Office (GUS).**
- **Farm sampling will be based on the Register of Agricultural and Forest Farms run by GUS (The Register includes information on farm total area, types of crop and crop area).**
- **Selecting farms to be surveyed will be done regardless on the type of ownership, i.e. it will include both the farms owned by legal persons and those owned by organizational units, who do not posses legal personality.**

PROPOSED (RECOMMENDED) DIRECTIONS OF CHANGE IN THE SYSTEM IN POLAND USAGE

- **Improving the sample representativeness under the current system.**
- **Changing the way and organization of data collection.**
- **Developing a comprehensive information system for data collection, processing and system management.**
- **Organizing an informational campaign directed at farmers regarding the importance of keeping the treatment data.**
- **Wider application of survey results for strategies and policies in agriculture, public health and environmental protection.**

CROPS SELECTED TO BE SURVEYED IN 2007.

- 6 crops – winter wheat, spring wheat, rye, sugar beet, apple trees, plum trees

It is estimated that the size of the random sample will not exceed 10 000 farms

- GUS will select:
- 5000 farms– growing cereal crops
- 2000 farms– growing beets
- 3000 farms– growing orchard crops

PRINCIPLES OF MONITORING PESTICIDE USAGE IN THE NEW SYSTEM

According to the assumptions, 3 cereal crops selected to be monitored in 2007 can be surveyed during the same visit at the farm, provided that the farm actually grows them (the same principle applies to orchard crops)