Poland’s Agricultural Transformation
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Polish Market
of Agricultural Machinery

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Plan of presentation

Poland, Polish ...

Poland - general information

Polish agriculture - general view

Mechanization in different scale including ...

... agricultural vehicles and machinery

... animal husbandry mechanization
Poland – general information

Total area of 312,700 km²
(9th in Europe)

16 Number of voivodeships (provinces)
2478 Number of gminas (districts)
Polish Agriculture

Pigs per 100 ha of Agricultural Land and share of basic cereals and potatoes in total of sown area in 2008

Animal production by voivodships in 2008

Milk

Share in domestic production

Average annual quantity of milk per cow

Cattle per 100 ha of Agricultural Land and share of Grass-Land in Agricultural Land in 2008

Animals for slaughter in terms of meat

Cattle per 100 ha of Agricultural Land in heads

Share in domestic production

Production per 1 ha of Agricultural Land

Share of Grass-Land in Agricultural Land

Percentages
Structure of the crop

- Cereal: 7939 thou. ha in 2002, 7187 thou. ha in 2010
- Potatoes: 803 thou. ha in 2002, 7 thou. ha in 2010
- Sugar beet: 387 thou. ha in 2002, 3 thou. ha in 2010
- Rape: 439 thou. ha in 2002, 9 thou. ha in 2010
- Field vegetables: 171 thou. ha in 2002, 139 thou. ha in 2010
- Other: 1109 thou. ha in 2002, 16 thou. ha in 2010

Total: 10,764 thou. ha in 2002, 10,565 thou. ha in 2010
The changes in the structure of farms in Poland

<table>
<thead>
<tr>
<th>Size of farmers</th>
<th>Number of farmers [thous. pcs.]</th>
<th>1996</th>
<th>2002</th>
<th>2010</th>
<th>2020 (prediction)</th>
<th>2030 (prediction)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1 ha</td>
<td></td>
<td>1020</td>
<td>977</td>
<td>715</td>
<td>1100</td>
<td>1020</td>
</tr>
<tr>
<td>1-5 ha</td>
<td></td>
<td>1130</td>
<td>1146</td>
<td>863</td>
<td>220</td>
<td>150</td>
</tr>
<tr>
<td>5-10 ha</td>
<td></td>
<td>521</td>
<td>427</td>
<td>352</td>
<td>180</td>
<td>130</td>
</tr>
<tr>
<td>10-20 ha</td>
<td></td>
<td>307</td>
<td>267</td>
<td>224</td>
<td>170</td>
<td>120</td>
</tr>
<tr>
<td>20-50 ha</td>
<td></td>
<td>76</td>
<td>96</td>
<td>97</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Total 1-50 ha</td>
<td></td>
<td>2034</td>
<td>1936</td>
<td>1536</td>
<td>670</td>
<td>500</td>
</tr>
<tr>
<td>50-200 ha</td>
<td></td>
<td>8.2</td>
<td>16</td>
<td>23</td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td>&gt;200 ha</td>
<td></td>
<td>4.5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Total &gt;1 ha</td>
<td></td>
<td>2047</td>
<td>1956</td>
<td>1563</td>
<td>700</td>
<td>530</td>
</tr>
</tbody>
</table>
Polish participation in the EU as a major aspect of change machines on the market after 1989

RDP - RURAL DEVELOPMENT PROGRAMME
SOP - Sectoral Operational Programme
SAPARD - Special Accession Programme for Agriculture and Rural Development
Groups of machines

- Agricultural machinery: 913
- Gardening and horticulture: 117
- Processing after harvest: 153
- Protect and care: 36
- Dairy industry: 57
- Forest industry: 49
- Handling: 70
- Service: 89
- Irrigation, greenhouses: 256
- Livestock buildings: 237
- Livestock equipment: 217
- Electric fences: 195
- Fertilizers and pesticides: 90
- Auxiliary equipment: 64
- Packages: 41
- Auxiliary equipment for animals: 52
- Renewable energy: 13
- Preparations and equipment for health: 108
- Information, services: 0
Harvesting machines

- Mowers: 31
- Tedders and rakes: 21
- Silage trailers: 9
- Wrappers: 16
- Presses: 21
- Combine-harvesters: 23
- Headers: 1
- Forage harvester: 13
Mechanization in different scale ...

... agricultural vehicles and machinery
### Base ... tractors and ... selected machines within the years 1996-2010 [thou. pcs.]

<table>
<thead>
<tr>
<th>Specification</th>
<th>1996</th>
<th>2002</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tractors</td>
<td>1 303</td>
<td>1 339</td>
<td>1 471</td>
</tr>
<tr>
<td>Combine harvesters</td>
<td>97</td>
<td>123</td>
<td>152</td>
</tr>
<tr>
<td>Sugar beet harvesters</td>
<td>27</td>
<td>32</td>
<td>28</td>
</tr>
<tr>
<td>Potato harvesters</td>
<td>77</td>
<td>81</td>
<td>80</td>
</tr>
<tr>
<td>Forage harvesters</td>
<td>13</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>Field sprayers</td>
<td>372</td>
<td>472</td>
<td>496</td>
</tr>
<tr>
<td>Orchard sprayers</td>
<td>36</td>
<td>45</td>
<td>52</td>
</tr>
</tbody>
</table>

Why? ... Area and yields of potatoes
Changes in equipment of agriculture with tractors and selected farm machines (state in 1996 = 100)

The number of tractors per 100 farmers
Percentage structure of tractors in 2010 according to their power

Source: Central Statistical Office, 2011

Registration of tractors in 2010 by brand [pcs.]

Registration of tractors in 2009 and 2010 by brand [pcs.]
Western and domestic brands
Dynamics of domestic production, import, export and supply of agricultural tractors in Poland (state in 2003 = 100)

Source: Central Statistical Office, 2011; Eurostat
Percentage share of brand-new and second-hand’s agricultural tractors in the structure of import in PL.

Source: Central Statistical Office, 2011; Eurostat
Production dynamics of selected farm mechanization means; year 2005 = 100

Source: Central Statistical Office, 2011; Eurostat
Share of home production in supply of the tractors and machines for fodder preparation in 2009

Source: Central Statistical Office, 2011
Farm tractors and … application

Farm works range criterion:

- Tractors for basic field works
- Universal tractors
- Tractors for inter-row cultivation
- Tractors for orchard-horticultural use
Universal farm tractors ...

... the most widespread group of solutions used in the farms including possibility to work at:

- field production
- animal production
- farm transport
Functional vehicles ... ... used in the farms

Tools carrier
Functional vehicles ... 
... used in the farms

Load-transport sets (units)

Typical turn: with use of two wheels

Turn with use of four wheels

With use of the function „crab move“
Mechanization in different *(macro)* scale … example concerning spraying machine

**harvesting of maize for silage**

maize harvester

maize harvester+transport mean
Mechanization in different scale … examples concerning forage production

self-loading wagons

harvest of green fodder for silage

round baler + wrapper independently

together
Mechanization in different (mini) scale examples concerning forage production

- Mini round baler
- Mini wrapper for mini bales
  - Mini wrapper driven by electric motor
  - Mini wrapper driven by combustion engine
  - The mini wrapper connected with mini tractor
Machinery for processing of the material

- Grain cleaners: 15
- Feed mixers: 17
- Mixer: 16
- Applicators for silage: 5
- Selectors for silage: 6
- Silage cutter: 11
- Screw and belt conveyors: 16
- Grain conveyors: 15
- For the production of feed: 6
- Briquetting, pelleters: 9
Machinery and equipment for the dairy industry

- Milk filters: 5
- Milking liners: 5
- Equipment for the reception of milk: 8
- Insecticidal lamps: 4
- Heater milk: 2
- Milk coolers: 18
- Transport systems of milk: 3
- Milking machines: 12
Livestock buildings equipment

- Reheating bed positions
- Ventilation ducts
- Troughs
- Lamps insecticides
- Sleeping mattresses
- Disinfectant mats
- Conveyors to feed
- Floor grate
- Drinking troughs, automatic feeders
- Gutters and drainage
- Concrete silos
- Heating systems
- Systems skylights
- Ventilation systems
- Constraints, barriers, pens and fencing elements
- Stable equipment
- Manure scrapers
Animal husbandry mechanization *including*: 

- cows feeding and providing for water
- manure removing
- cows milking
- creation of proper conditions for rest of cows
- creation of proper environmental conditions (in the barn)
Housing and ... systems of cows keeping

- Tied-up system

- Loose-housing system
Feeding of cows ... including PMR

Systems at feeding alley

Feeding stations – examples

Distribution of roughage – transporters

Head-lock system

Neck-rail system

Railing system
Storage of hay ...

Storage of silage in ... bales and their transport
Manure / slurry collection and ... different type of barns

Manure removing

Slurry removing
AMS on the market … examples

Astronaut / Lely
Merlin / Fullwood
VMS / DeLaval

Galaxy / Insentec
T!tan / Westfalia Surge
Modern calf barn

Modern calf barn – individual pens
Modern barn – pen for group of calves
Top list of 25 companies in Poland

- John Deere
- Class
- New Holland
- Fendt
- Case
- Amazone
- Kuhn
- MF Massey Ferguson
- Kverneland
- Deutz-Fahr
- Väderstad
- Horsh
- Lemken
- Renault
- Zetor
- Belarus, Minsk Tractors
- Krone
- Ford
- McCormick
- Grimme
- Fiat
- Pöttinger
- Rosselsmash
- JCB
- Unia Grudziądz
- Valtra
- Volgograd Tractors
- Rabe
- Same
Producers in Poland

- Unia Group Grudziądz
- Akpil PPUH
- Krukowiak
- Bury Agricultural Machinery
- JAR-MET
- BOMET
- Moskit
- BIN
- ROLMET
- SAMASZ
- POL-MOT WARFAMA
- ŁUKOMET
- MEPROZET
- WEREMCZUK

- CNH Poland Ltd.
- SIPMA SA
- Lublin Agricultural Machine Factory
- URSUS
- Kongskilde
- INVENTOR Joński John & Maria
- METALTECH Ltd.
- PRONAR Ltd.
- MESKO-ROL Ltd.
- ZAMET R. & M. Zabielscy
- Agromasz
- Staltech
- Agro
Global Manufacturers

- Case New Holland
- John Deere
- Claas
- Deutz-Fahr
- Laverda
- Fendt
- Massey Ferguson
- Pöttinger
- Kuhn
- Kverneland
- Lemken
- Challenger
- Kongskilde
- Hürlimann
- Goldini
- Valpadana
- Kioti
- Kubota
- Same Deutz-Fahr
- Iseki
- Valtra
- M.B. Unimog
- JCB
- Landini
- McCormick
- Belarus
- Linder
- Ant. Carraro
- Zetor
- Reform
- Steyr
- Lamborghini
- LS
- Shibaura
Distribution dealerships in Poland - 2

Kverneland (Vicon), 44
Lely, 26
McHale, 9
Pottinger, 21
Distribution dealerships in Poland - 3

Kuhn, 40
Claas, 22
Fella, 2
Massey Ferguson, 2
Polish farmer’s structural crisis

Average size of farms in 2008, by voivodeship

Production potential of individual farms [%] by voivodeship (link to Polish average = 100)

Małopolska wedge

The relationship of actual production of crop plants expressed in cereal units (2003-2005) to realistically realizable in the voivodeship [%]

Employment in agriculture [people/100 ha] by voivodeship
Pricing policy of agricultural machines

• Price of agricultural and forestry machines in Poland, in euro terms, are generally lower than in the "old" EU, but the dynamics of cost growth in Poland is higher, which causes progressive lowering of the differences.

• Relationship of agricultural machines prices to the agricultural products prices in Poland and in the "old" EU change generally to the detriment of farmers.
The amount of direct payments in relation to the level of agricultural income

- Italy: 24
- Spain: 31.4
- The Netherlands: 32.2
- Belgium: 34.4
- Greece: 36.2
- Poland: 45.4
- Malta: 49.3
- Lithuania: 53
- EU-25: 61.2
- Portugal: 73.1
- Estonia: 75
- Latvia: 77.1
- Slovenia: 78.3
- Austria: 79.4
- Cyprus: 89.2
- Ireland: 94.9
- France: 99
- Germany: 99.2
- Luxembourg: 99.5
- UK: 125.7
- Hungary: 148.8
- Denmark: 190.3
- Finland: 222.7
- Czech Republic: 256.9
- Sweden: 280
Cost of production factors - land

- Ireland
- The Netherlands
- Belgium
- Denmark
- Germany - the western lands
- UK
- Germany - total
- Spain
- Finland
- Greece
- Germany - East
- France
- Latvia
- Poland-private
- Poland-Ministry
- Czech Republic
- Hungary
- Romania
- Bulgaria
- Slovakia
- Lithuania
- Estonia

EUR/ha
The most important ... prices of agricultural products

• The level of prices of agricultural products: the most important feature underlying mood and investments,

• Profitability of production: in Central and Eastern Europe.

• Financing investment: in Russia

• Restrictive regulations related to animal husbandry: United Kingdom
Conclusions

• The offer of machines for Polish agriculture is sufficient, but there is no adviser and independent testing and comparison of acting machines, and there is no cooperation between farmers and scientists.

• The offer machines in Poland is very big. But there is a great difference in price between the groups of machines. The machines are more modern, but also more expensive. Farmers worries about overpayment. They also need the protection from poor quality of machine.

• Farmers buy expensive, usually western machine, and later they have the problems with expensive maintenance. It happens that some farmers buy and operate the machine in team, but the better way is to use the services of other farmers or specialized companies.
Conclusions

- New requirements and directives create further development of existing concepts.
- The important role played by the environment and the purchasing power of farmers.
- The market for agricultural machinery in Poland has developed considerably after our accession to the EU. The reasons lie in the increasing inflow of EU funds for Polish agriculture and the ongoing process of merger and restructuring of the Polish agricultural enterprises.
- Because of the increased demand, not only benefiting from foreign producers, but also the Polish agricultural machinery industry. With the participation of foreign partners also made a significant investment of modernization.
- Despite the international crisis, in Poland is expected to increase in sales of agricultural machinery.
Thank you for your attention