Experiences with implementation of a dual purpose cattle conservation programmes in Poland

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1. Introduction: cattle population in Poland

2. The breeds included in the conservation programmes (history from the beginning of XX century)

3. The conservation programmes of Red and White and Black and White: aims, scopes and achievements

4. Institutional arrangements in implementation of conservation programmes

5. Future challenges
Some facts....

- Poland is a typical lowland country
- 58.9% of land is used for agriculture

- The total number of dairy cows in Poland in 2010 reached 2,528,827 heads
- Dairy cows makes up 96% of the total cow population

- 23.93% of dairy cows are under performance recording
Some facts...

Ownership structure:
• 84% of the cattle is kept by individual farmers,
• 8% of cows is owned by private companies
• 8% is found in the public and co-operative sectors

• 90% of all farms are small (<5ha) or medium size (5-15ha)
• The most common is semi-intensive production system
• Extensive system is used in harsh environmental conditions
The breed structure in recorded population of dairy cattle in 2010

Source: Polish Federation of Cattle Breeders and Dairy Farmers 2010
History of Polish cattle breeds

- **1919-1939**: The increase of Polish Red population
- **1939-1945**: II WW decrease of the whole cattle population
- **1960’**: PR -18% of cattle population; rest PRW and PBW; Crossbreeding of RP with Red European cattle
- **1970’**: Drastical decrease connected with regional limits for PR
- **1974**: Beginning of holstenisation
- **80’-90’**: Breeders’ initiatives to protect local cattle
Development of beef cattle breeding programme

1994
1999
2004
2007
2008

Herdbook for PHF

?
Holstenisation a great success????!!!!

Two sides of the coin
Is there a need to keep dual purpose cattle in Poland?

Commercial production:
• majority of cattle belong to Polish Holstein (very advanced backcrossed population)

Subsistence and small farmers:
• Black and white and Red and White cattle with substantial but unknown contribution of HF
• not included in performance recording scheme or herd books
Is there a need to keep dual purpose cattle in Poland?

• Majority of dairy cows are kept in small herds, in semi-intensive husbandry conditions

• Extensive production is used in harsh environment and also on small subsistence farms.

• No tradition of beef cattle breeding, no single native beef breed
• Relatively small population of imported beef breeds (Limousine, Charolaise, Simmental)

• Cattle producers carry out both dairy and beef production.
• The majority of beef production is based on fattening calves from dairy herds.
• 25% of dairy cows are inseminated with beef bulls’ semen
The aims of conservation programmes for Polish Red&White and Polish Black&White

- Restitution of dual purpose utilisation
- Decreasing of share of HF genes in respective populations
- Preservation of typical traits characteristic for these old Polish cattle breeds
- Maintaining within breed genetic diversity
Characteristic traits of PRW and PBW cattle

• Good protein composition

• Beneficial profile of unsaturated fatty acids due to production system (grazing)

• Milk of Polish Red & White cattle very efficient for cheese production

• Very good fattening and slaughter traits, especially in Polish Red & White cattle
Characteristic traits of PRW and PBW cattle

- Very good adaptation to harsh environmental conditions
- Modest feed requirements
- High disease resistance, very good health and longevity
- Good fertility and easy calving
- High robustness and good maternal ability
Maximum allowed contribution of HF in pedigrees of Polish Red & White and Polish Black & White cattle

<table>
<thead>
<tr>
<th>Year</th>
<th>HF genes (%)</th>
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<tr>
<td>2007-2009*</td>
<td>50</td>
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<tr>
<td>2010-2012</td>
<td>37.5</td>
</tr>
<tr>
<td>2013-</td>
<td>25</td>
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* plus cows selection based on phenotype only
Organisation of conservation programmes in Poland

MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT

NATIONAL RESEARCH INSTITUTE OF ANIMAL PRODUCTION
Cattle conservation programme Coordinator

ADVISORY BOARD

WORKING GROUP on CATTLE GENETIC RESOURCES

POLISH FEDERATION OF CATTLE BREEDERS AND DAIRY FARMERS
Herd books for PR, PRW, PBW
UNIVERSITY IN LUBLIN
Herd book for BG

BREEDERS
Prevention measures in case of disease outbreaks

NATIONAL RESEARCH INSTITUTE OF ANIMAL PRODUCTION
Cattle conservation programme Coordinator

Local veterinary service:
obligatory transmission of information on localisation of herds participating in the conservation programmes
Results
Implementation of conservation programmes: Number of herds

- Polish Red
- Whitebacks
- Polish Red and White
- Polish Black and White
Implementation of conservation programmes:
Number of cows

- Polish Red
- Whitebacks
- Polish Red and White
- Polish Black and White
Conservation programmes: Breed distribution (2010)

- Polish Red: 27%
- White-backed: 3%
- Polish Red and White: 42%
- Polish Black and White: 28%
The number of cows and herds participating in the conservation programmes

<table>
<thead>
<tr>
<th>Year</th>
<th>Polish Red</th>
<th>White-backed</th>
<th>Polish Red&amp;White</th>
<th>Polish Black&amp;White</th>
<th>Total</th>
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<tbody>
<tr>
<td></td>
<td>cows</td>
<td>herds</td>
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<td>herds</td>
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<td>16</td>
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<td>2000</td>
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<td>2001</td>
<td>300</td>
<td>37</td>
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<td>2002</td>
<td>370</td>
<td>53</td>
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<td>2003</td>
<td>427</td>
<td>58</td>
<td></td>
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<tr>
<td>2004</td>
<td>468</td>
<td>64</td>
<td>33</td>
<td>2</td>
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<tr>
<td>2005</td>
<td>735</td>
<td>105</td>
<td>75</td>
<td>10</td>
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<tr>
<td>2006</td>
<td>1013</td>
<td>134</td>
<td>110</td>
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<td>1257</td>
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<td>1787</td>
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<td>2011</td>
<td>2253</td>
<td>290</td>
<td>291</td>
<td>38</td>
<td>2943</td>
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The age structure of PRW population

<table>
<thead>
<tr>
<th>Birth year</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
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<tr>
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<td>39,9</td>
<td>31,9</td>
<td>23</td>
<td>19,1</td>
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<tr>
<td>2001-2005</td>
<td>59,2</td>
<td>57</td>
<td>52</td>
<td>51,0</td>
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<tr>
<td>2006-2009</td>
<td>0,9</td>
<td>11,1</td>
<td>25</td>
<td>29,9</td>
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EVERY POPULATION IS DIFFERENT ...
Conservation Programme for Polish Red & White and Black & White Cattle

• Great interest of farmers

• About 80% of cows with no pedigree

• Selection of cows to be included in conservation programme based on the phenotype

• It is more difficult to obtain aims in PR&W than in PB&W
A way forward

• Inbreeding analysis and preparation of mating plan for all breeds (the database and software are already developed)

• Development of a system for collecting and storing biological material

• Promotion of ecological farms and ecological initiatives

• Promotion of native breeds as a symbol of natural landscape
Future challenges

• Establishment of breeders’ associations for Polish Red & White and Polish Black & White

• Undertaking initiatives to develop a high value products from native breeds
  (there is a positive trend in consumption of organic products; origin and quality of products become more and more important for consumers)
Thank you for your attention 😊