Changing of role of native genetic resources in modern Ukrainian pig production

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Ukraine
Dynamics of pigs in Ukraine, thousand units
(January 1)

- including households
Structure of pigs in Ukraine

1990 пік
(19 392 т thousands of head)

- Industrial enterprises: 72%
- Farms: 28%

2001 пік
(9 203,6 thousands of head)

- Industrial enterprises: 63%
- Farms: 37%

2013 пік
(7 576,7 thousands of head)

- Industrial enterprises: 53%
- Farms: 47%
Piglets per sow per year

- 2005: 13.48
- 2010: 15.3
- 2011: 15.09
- 2012: 18.05
feed conversion

Average daily gain of pigs, grams

<table>
<thead>
<tr>
<th>Year</th>
<th>Feed Conversion</th>
<th>Average Daily Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>7.92</td>
<td>229</td>
</tr>
<tr>
<td>2010</td>
<td>5.71</td>
<td>117</td>
</tr>
<tr>
<td>2011</td>
<td>5.15</td>
<td>120</td>
</tr>
<tr>
<td>2012</td>
<td>5.19</td>
<td>281</td>
</tr>
</tbody>
</table>
Number of breeding farms in 2013

- Large white: 110; 58.51%
- Large white (English selection): 1; 0.52%
- Large black: 2; 1.06%
- Duroc: 3; 1.60%
- Landrace: 34; 18.09%
- Mirgorodska: 2; 1.06%
- Poltava meat: 8; 4.26%
- Wales pig: 2; 1.06%
- Ukrainian steppe white: 4; 2.13%
- Ukrainian meat: 9; 4.79%
- Ukrainian spotted steppe: 1; 0.53%
- Pietrain: 3; 1.60%
- Red white belt: 9; 4.79%
- Ukrainian steppe white: 4; 2.13%
- Polish red belt: 9; 4.79%
- Ukrainian spotted steppe: 1; 0.53%
- Pietrain: 3; 1.60%
The mirgorod breed was developed from local pied short-eared pigs which were crossed with breeds Berkshire and Tamworth at the beginning of the 20th century. The breed was approbated in 1940. The modern of this breed are a meat-and-fat type. They are strong body build, robust and well adapted to pastures. Also there are data about crossing some lines with Landrace and Pietrain.
The Ukrainian Steppe White breed

This is the first domestic pig breed which was created by an academician M. F. Ivanov during the period of 1926 – 1934 years. The crossbreeding of local pigs with boars of the Large White breed. The meat-and-fat type of pigs is well adapted to pasturing.

The Critical- maintained Breed
There were only 334 sows of the Ukrainian Steppe White in 2012.
The Ukrainian Spotted Steppe breed was created during the period of 1938–1961 years in the experimental farm "Askania-Nova". The black spotted piglets which were born from sows of the Ukrainian Steppe White breed and after that they were selected for the strong constitution and high energy of growth for breeding. At the beginning of this process it has been put three lines of boars. At the first stage it was applied the close inbreeding. In 1940 – 1950 years 2 lines were formed by crossing new breed with Berkshire and Mangalitsa boars. In 1970-1985 years 2 lines of meat type were formed by crossing new breed with boars of Landrace and Duroc.
The Poltava Meat breed of pigs has been created on the basis of crossing five breeds: Mirgorod, Large White, Landras, Pietrain and Wessex Saddleback, with next selection. The breed was created during the period of 1963—1993 years.
Ukrainian meat breed

Ukrainian meat breed created based on proven in 1978 Poltava meat type pigs and hybrids of various combinations of Large White, Mirgorod, Landras, Pietrain, Wales pig, Wessex Saddleback and Ukrainian Steppe White breed
The Red White Belted breed was approbated in 2004. It was created by crossbreeding 4 breeds: the Large White, Landras, Duroc and Hampshire.

They are animals of meat production.
Map placement of local genetic resources in pig on the beginning 2013
## Average performance numbers of animals of local breeds for the years 2002-2010

<table>
<thead>
<tr>
<th>Breed</th>
<th>Age, reaching 100 kg live weight for growing replacement pigs, days</th>
<th>Backfat thickness, mm</th>
<th>Number of piglets per sow per farrow, heads</th>
<th>Weight of nest at weaning, kg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>Cv</td>
<td>M</td>
<td>Cv</td>
</tr>
<tr>
<td>Mirgorodska</td>
<td>212.08</td>
<td>7.1</td>
<td>30.29</td>
<td>9.3</td>
</tr>
<tr>
<td>Ukrainian steppe white</td>
<td>200.41**  *</td>
<td>7.4</td>
<td>28.13***</td>
<td>5.4</td>
</tr>
<tr>
<td>Ukrainian steppe pockmarked</td>
<td>213.44</td>
<td>1.1</td>
<td>30.33</td>
<td>7.2</td>
</tr>
<tr>
<td>Poltava meat</td>
<td>207.22</td>
<td>7.3</td>
<td>25.89***</td>
<td>11.0</td>
</tr>
<tr>
<td>Ukrainian meat</td>
<td>203.15**</td>
<td>9.6</td>
<td>25.37***</td>
<td>12.0</td>
</tr>
<tr>
<td>Red white belt</td>
<td>200.41**</td>
<td>7.4</td>
<td>28.13***</td>
<td>5.4</td>
</tr>
</tbody>
</table>

*- P≤0.05; ** - P≤0.01; *** P≤0.001
Number of purebred pigs in Ukraine at the beginning of 2013

- Large white: 254,458, 59.55%
- Landrace: 129,258, 30.25%
- Landrace (English selection): 11,807, 2.95%
- Large black: 10,741, 0.25%
- Duroc: 2,982, 0.07%
- Welsh pig: 686, 0.02%
- Ukrainian steppe white: 2,813, 0.07%
- Ukrainian meat red white belt: 10,720, 0.26%
- Ukrainian meat red white belt (English selection): 1,801, 0.04%
- Ukrainian spotted steppe: 109, 0.03%
- Pietrain: 2,019, 0.05%
- Poltava meat: 11,283, 0.03%
Dynamics of the farm native breeds

Number of farms

Year:
- 2006
- 2007
- 2008
- 2009
- 2010
- 2011

Breeds:
- Mirgorodska
- Ukrainian steppe white
- Ukrainian steppe pockmarked
- Poltava meat
- Ukrainian meat
- Red white belt
Dynamics of purebred pigs local breeds for years 2006-2011

<table>
<thead>
<tr>
<th>Breed</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mirgorodska</td>
<td>3725</td>
<td>5878</td>
<td>5347</td>
<td>6280</td>
<td>5210</td>
<td>3837</td>
</tr>
<tr>
<td>Ukrainian steppe white</td>
<td>10899</td>
<td>6584</td>
<td>5095</td>
<td>4023</td>
<td>6029</td>
<td>1119</td>
</tr>
<tr>
<td>Ukrainian steppe pockmarked</td>
<td>220</td>
<td>147</td>
<td>101</td>
<td>107</td>
<td>90</td>
<td>84</td>
</tr>
<tr>
<td>Poltava meat</td>
<td>18578</td>
<td>14214</td>
<td>13087</td>
<td>16962</td>
<td>14733</td>
<td>4955</td>
</tr>
<tr>
<td>Ukrainian meat</td>
<td>29713</td>
<td>22900</td>
<td>19305</td>
<td>20902</td>
<td>17563</td>
<td>14049</td>
</tr>
<tr>
<td>Red white belt</td>
<td>9121</td>
<td>10013</td>
<td>10110</td>
<td>10415</td>
<td>9531</td>
<td>7404</td>
</tr>
</tbody>
</table>
Dynamics of sows local breeds for years 2006-2011

- Mirgorodska
- Ukrainian steppe white
- Ukrainian steppe pockmarked
- Poltava meat
- Ukrainian meat
- Red white belt

<table>
<thead>
<tr>
<th>Year</th>
<th>Mirgorodska</th>
<th>Ukrainian steppe white</th>
<th>Ukrainian steppe pockmarked</th>
<th>Poltava meat</th>
<th>Ukrainian meat</th>
<th>Red white belt</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>578</td>
<td>1382</td>
<td>37</td>
<td>1621</td>
<td>2283</td>
<td>969</td>
</tr>
<tr>
<td>2007</td>
<td>549</td>
<td>859</td>
<td>40</td>
<td>1492</td>
<td>2134</td>
<td>908</td>
</tr>
<tr>
<td>2008</td>
<td>483</td>
<td>857</td>
<td>41</td>
<td>1509</td>
<td>1888</td>
<td>930</td>
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<tr>
<td>2009</td>
<td>543</td>
<td>764</td>
<td>48</td>
<td>1488</td>
<td>1688</td>
<td>868</td>
</tr>
<tr>
<td>2010</td>
<td>519</td>
<td>642</td>
<td>50</td>
<td>1144</td>
<td>1237</td>
<td>728</td>
</tr>
<tr>
<td>2011</td>
<td>383</td>
<td>334</td>
<td>26</td>
<td>469</td>
<td>1263</td>
<td>568</td>
</tr>
</tbody>
</table>
Dynamics of local pig breeds and imported purebred pigs

<table>
<thead>
<tr>
<th>Year</th>
<th>Imported pure-bred pigs, heads</th>
<th>Pure-bred pigs local breeds, heads</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>1452</td>
<td>635282</td>
</tr>
<tr>
<td>2009</td>
<td>11776</td>
<td>666537</td>
</tr>
<tr>
<td>2010</td>
<td>6326</td>
<td>621429</td>
</tr>
<tr>
<td>2011</td>
<td>12514</td>
<td>437772</td>
</tr>
</tbody>
</table>
Import purebred pigs in 2008

- France: 791; 55%
- Denmark: 210; 14%
- Ireland: 435; 30%
- Czech Republic: 16; 1%
Import purebred pigs in 2012

- Czech Republic: 1019 (5%)
- UK: 922 (5%)
- Hungary: 1320 (6%)
- Germany: 1316 (6%)
- Latvia: 1437 (7%)
- Lithuania: 310 (2%)
- Poland: 180 (1%)
- France: 324 (2%)
- Denmark (not labeled): 64%
- Canada: 380 (2%)
Conclusion

1. Analysis of the situation in Ukraine shows that in the near future is the threat of extinction of some native breeds under the influence of the mass import of foreign pig’s breeds.

2. Need the programs for the conservation of the gene pool of pigs breeds in system of description of small and disappearing objects: breed certification, establishing genetic criteria of pure breed, detection and timely elimination of crossbred animals.

3. Determine the actual economic value of the native breeds and should develop of national programs on preservation of pig breeds that fall under the funding "green box" and environmental programs.

4. Increase product variety and profitability of pig production on basis of local breeds with using direct subsidies and promotion of specialized national products - certification systems for agricultural products such as PDO (proprietary designations of origin - Protected Designation of Origin) and PGI (proprietary geographic designation Protected Geographical Indication), as well as the development of specific commercial brands.
Thank you for your attention