Poultry production and actual poultry health situation in Croatia

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Farm poultry production in Croatia in numbers

**Capacities**

- 951 farms with >500 birds
- in 2013/2014 only 52.9% (503) farms are active

<table>
<thead>
<tr>
<th>Size of the farm</th>
<th>Layers</th>
<th>Chicken breeders</th>
<th>Broilers</th>
<th>Turkey breeders</th>
<th>Fattening turkeys</th>
<th>Duck breeders</th>
<th>Fattening ducks</th>
<th>Goose breeders</th>
<th>Fattening geese</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;500-2500</td>
<td>53</td>
<td>8</td>
<td>23</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>7</td>
<td>2</td>
<td>7</td>
<td>102</td>
</tr>
<tr>
<td>2501-5000</td>
<td>29</td>
<td>5</td>
<td>24</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>62</td>
</tr>
<tr>
<td>5001-7500</td>
<td>13</td>
<td>2</td>
<td>35</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>57</td>
</tr>
<tr>
<td>7501-10000</td>
<td>11</td>
<td>3</td>
<td>36</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>51</td>
</tr>
<tr>
<td>&gt; 10001</td>
<td>35</td>
<td>4</td>
<td>185</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>231</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>102</strong></td>
<td><strong>62</strong></td>
<td><strong>57</strong></td>
<td><strong>51</strong></td>
<td><strong>231</strong></td>
<td><strong>503</strong></td>
<td><strong>231</strong></td>
<td><strong>231</strong></td>
<td><strong>231</strong></td>
<td><strong>503</strong></td>
</tr>
</tbody>
</table>
Poultry production in Croatia in numbers

Production (average 2009-2013):
- Number of poultry – 9,853,600
- Meat production – 107,800 tons
- Egg production – 680,400,000

Consumption per capita (average 2007-2011):
- Poultry meat – 18,36 kg
- Eggs – 151
## General vaccination program for layer/breeders

<table>
<thead>
<tr>
<th>Age</th>
<th>Disease</th>
<th>Disease Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hatchery</td>
<td>MD (bivalent)</td>
<td>Marek’s disease</td>
</tr>
<tr>
<td>Hatchery / 1. day</td>
<td>IB (H120 live)</td>
<td>Infectious bronchitis</td>
</tr>
<tr>
<td>5. day</td>
<td>SE (live vaccine)</td>
<td>S. enteritidis</td>
</tr>
<tr>
<td>14. day* MDA timing</td>
<td>ND (LaSota live)</td>
<td>Newcastle disease</td>
</tr>
<tr>
<td>23. day* MDA timing</td>
<td>IBD (live intermediary type)</td>
<td>Infectious bursal disease</td>
</tr>
<tr>
<td>26. day</td>
<td>IBD (live intermediary type)</td>
<td>Infectious bursal disease</td>
</tr>
<tr>
<td>20. day</td>
<td>IB (4-91 live)</td>
<td>Infectious bronchitis</td>
</tr>
<tr>
<td>6-7 weeks</td>
<td>SE (live)</td>
<td>S. enteritidis</td>
</tr>
<tr>
<td>8 weeks</td>
<td>ND (LaSota live)</td>
<td>Newcastle disease</td>
</tr>
<tr>
<td>10. weeks</td>
<td>POX (live) + AE (strain)</td>
<td>Avian pox + Avian encephalomyelitis</td>
</tr>
<tr>
<td>12 weeks</td>
<td>IB (H120 or 4-91 live)</td>
<td>Infectious bronchitis</td>
</tr>
<tr>
<td>16-18 weeks</td>
<td>ND + IB + EDS + IBD (breeders only) – inactivated</td>
<td>Newcastle disease + Infectious bronchitis + Egg drop syndrome + Infectious bursal disease</td>
</tr>
<tr>
<td></td>
<td>SE + ST – inactivated</td>
<td>S. enteritidis + S. typhimurium</td>
</tr>
</tbody>
</table>

**IB** vaccinated in production every 8 weeks *(H120 and 4-91 alternate)*

Some layer farms vaccinate IBD with recombinant HVT vaccine in hatchery
General vaccination program for broilers

All flocks vaccinated against **Newcastle disease**

Most of the flock vaccinated against **Infectious Bronchitis** in hatchery/1.day

All flocks vaccinated against **Infectious Bursal Disease** – once or twice, mostly with intermediary type vaccine intermediary plus, including immune complex vaccines, recently in use
Newcastle disease in Croatia in brief

• Until 1992 it occurred regularly – \textit{exclusively genotype V}

• In 1994 the last recorded outbreak in Croatia

• Vaccination is mandatory for \textbf{all} poultry
\textit{La Sota} live vaccine mandatory for backyard and free range

• Regular post-vaccinal immunity assessment according to the National Program for control of Newcastle disease
\textit{(hemagglutination inhibition test - HI)}
Avian influenza in Croatia in brief

Regular serological monitoring of poultry (H5 and H7 subtypes)

2005-2013 extensive active monitoring of wild birds (>4000 birds/year)

2014/2015 only passive monitoring of wild birds
Avian influenza in Croatia in brief

- Avian influenza never reported in poultry (any type)

- H5N1 HPAI detected in wild birds October 2005 - March 2006

Different colors denote different genetic strains
Infectious bronchitis in Croatia

The most important infection in farm poultry in Croatia

Three major genotypes detected:

   *Mortality in broilers 15-20%, egg drop up to 17%*

2. **Italy02** – 2010-2013

3. **QX** – December 2012-present
   *major peak with multiple outbreaks in summer 2013*
Simplified phylogenetic tree of recent IBV isolates in Croatia
Infectious bursal disease in Croatia

Incursion of very virulent strains in December 1995

Entirely replaced classical strains

Mortality:  
- broilers up to 10% (sometimes 20%)  
- layers 60% (up to 100%)

Major peak with multiple outbreaks in 1998-1999  
In 2008 second peak and still continues to cause outbreaks in farms

Typical seasonal character - starts in spring and wane in autumn  
This is in relation with backyard flocks (young birds)
Simplified phylogenetic tree of early IBD isolates in Croatia
Other viral diseases with low incidence in poultry in Croatia

**Aviadenoviruses of A, D and E type**
- sporadically detected in heavy hybrids with suspicious to Inclusion Body Hepatitis

**Fowl pox**
- only in backyard poultry, usually in early autumn

**Infectious laringotracheitis**
- sporadically in fancy chickens- related to exhibitions and shows

**Marek's disease**
- very low incidence; single outbreak also recorded in fattening turkeys (early 2013)

**Reovirus arthritis and related conditions**
- Low incidence, related to poor management and/or type of equipment

**Chicken anemia**
- Significant outbreaks in summer 2015, related to progeny from single broiler breeder flock

**Duck plague**
- Single outbreak in imported fancy ducks in March 2014
Bacterial infections in poultry in Croatia

**Salmonella** *(monitoring by culturing)*

<table>
<thead>
<tr>
<th>Years</th>
<th>Samples tested</th>
<th>Samples positive</th>
<th>Total</th>
<th>Broilers</th>
<th>Layers</th>
<th>Br. breeders</th>
<th>Turkeys</th>
<th>Ducks</th>
<th>Geese</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>10,049</td>
<td>165 (1.64%)</td>
<td>108</td>
<td>24</td>
<td>14</td>
<td>12</td>
<td>7</td>
<td>7</td>
<td>-</td>
</tr>
<tr>
<td>1-6. 2015</td>
<td>6,579</td>
<td>88 (1.34%)</td>
<td>56</td>
<td>23</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

Culturing of carcass organs *(diagnostic purposes)*

- mainly *E. coli*, sporadically *Clostridium*
- and a single case of *Erysipelothrix rhusiopathiae* in layers (2014)
Mycoplasmas

Broiler breeders serologically tested for *M. gallisepticum*, sometimes for *M. synoviae* - all negative so far

Turkeys serologically tested for *M. gallisepticum*, *M. synoviae* and *M. meleagridis* - all negative so far

Sporadic detection (PCR) of *M. gallisepticum* in broilers and backyard poultry
Necropsy findings in poultry in Croatia

Conditions caused by inadequate nutrition and breeding technology in 40% of all carcases

Predominant findings by poultry category:

Layers – **fatty liver syndrome** and **cannibalism**

Broilers – **ascites** and **sudden death syndrome**

Turkeys – **metabolic non-infectious cardiovascular diseases**, **malabsorption syndrome** and **poul enteritis mortality syndrome** (PEMS)
Thank you for your attention.