Slide 1

WBiHZ

West Pomeranian University of Technology Szczecin

Dairy cattle breeding in Poland

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West Pomeranian University of Technology, Szczecin (Polish: Zachodniopomorski Uniwersytet Technologiczny w Szczecinie, ZUT) is a technical university in Szczecin, Poland. The university was established on January 1. 2009 in Szczecin, from the merger of the Agricultural University in Szczecin and the Szczecin University of Technology.

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Slide 2

The most popular dairy cattle breeds

- ▶ Polish Holstein-Friesian
  - ▶ Black-and-White
  - ▶ Red-and-White
- ▶ Simmental
- ▶ Polish Red-and-White
- ▶ Montbeliarde
- ▶ Polish Red
- ▶ Polish Black-and-White

Source: blog.rolnikon.pl

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Slide 3

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Source: wikipedia.pl

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Slide 4

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Source: bydlo.bioroznorodnosc.izoo.krakow.pl

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Source: wikipedia.pl

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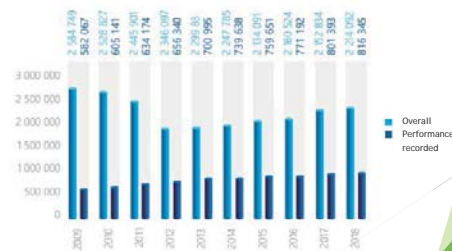

Source: bydlo.bioroznorodnosc.izoo.krakow.pl

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- ▶ No. dairy cows: 2.2 mln
- ▶ Performance recorded: 814 thous.
- ▶ 37%

Source: PFCBDF

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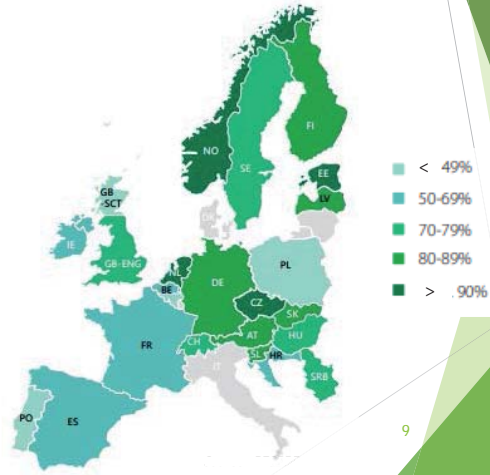- ▶ Polish Red
- ▶ Polish Black-and-White

Legend:
- < 49%
- 50-69%
- 70-79%
- 80-89%
- > 90%
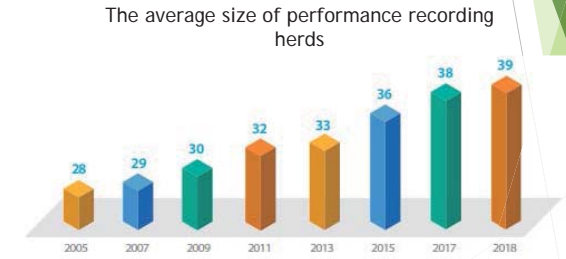
9

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The average size of performance recording herds

2005	2007	2009	2011	2013	2015	2017	2018
28	29	30	32	33	36	38	39

Source: PFCBDF

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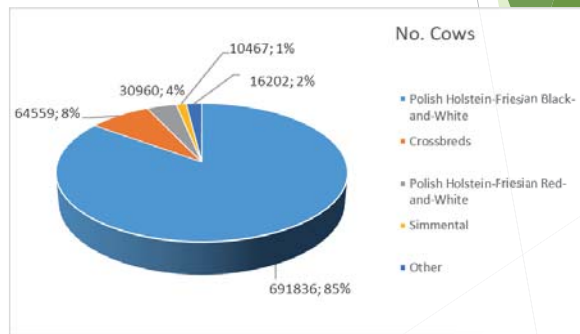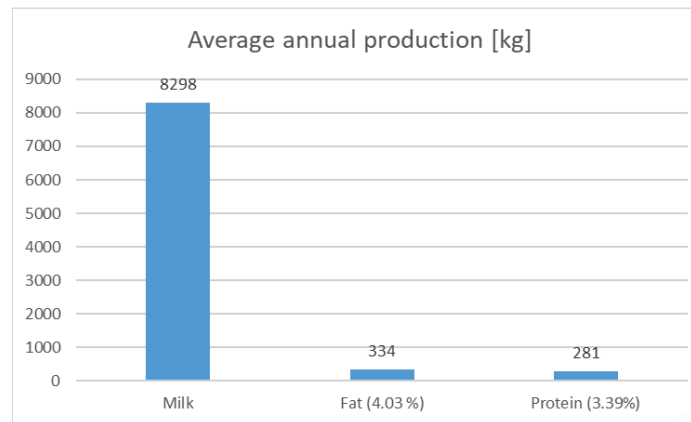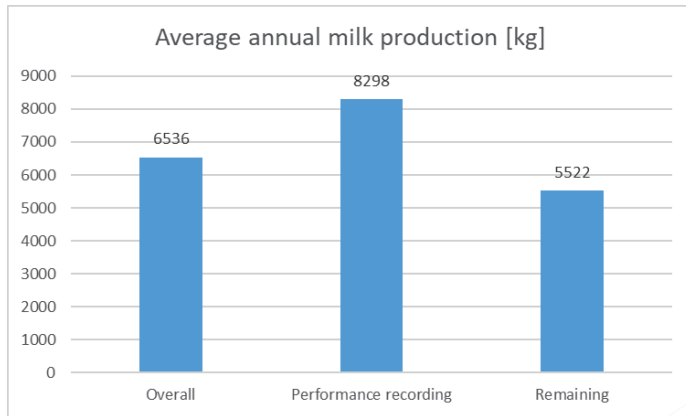- ▶ Montbeliarde
- ▶ Polish Red
- ▶ Polish Black-and-White

No. Cows
- 10467; 1%
- 16202; 2%
- 30960; 4%
- 64559; 8%
- 691836; 85%

- Polish Holstein-Friesian Black-and-White
- Crossbreds
- Polish Holstein-Friesian Red-and-White
- Simmental
- Other

Source: PFCBDF

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Annual milk production

Average annual production [kg]

Milk	Fat (4.03 %)	Protein (3.39%)
8298	334	281

Source: PFCBDF

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Annual milk production

Average annual milk production [kg]

- Overall: 6536
- Performance recording: 8298
- Remaining: 5522

Source: PFCBDF

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An increase in annual milk production

Average annual milk yield [kg]

- 2005: 6508
- 2010: 6980
- 2015: 7771
- 2018: 8298

Source: PFCBDF

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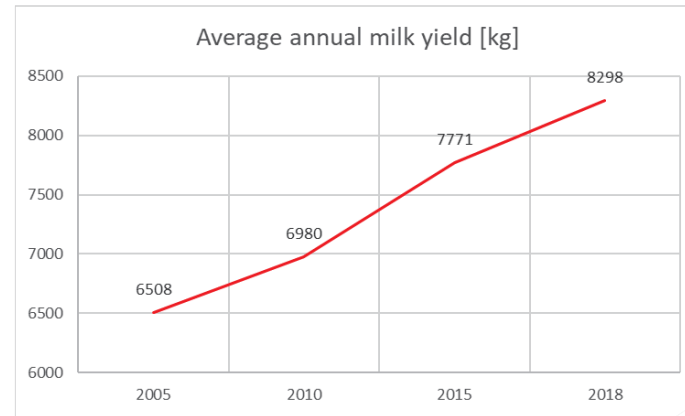
An increase in annual fat and protein production

Average fat and protein yield [kg]

- 2005: 490
- 2010: 526
- 2015: 579
- 2018: 615
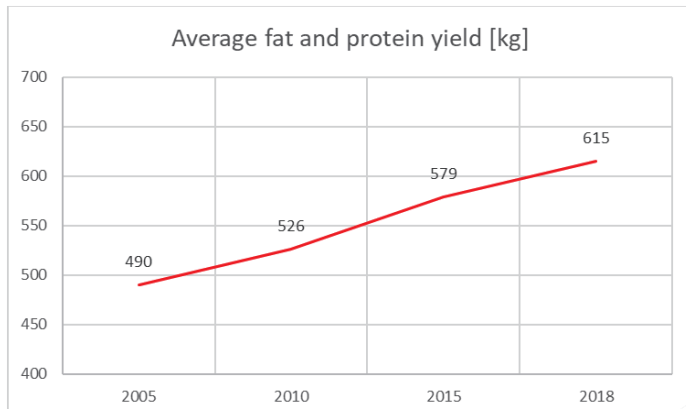
Source: PFCBDF

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The highest milk, fat and protein production

Pomeranian
West Pomeranian
Warmian-Masurian
Kuyavian-Pomeranian
Podlaskie
Lubusz
Grea[...]
Łódź
Lublin
Lower Silesian
Świętokrzyskie
Opole
Silesian
Subcarpathian
Lesser Poland

Wełnica: 1073 kg fat & protein

Wierzba: 15257 kg milk

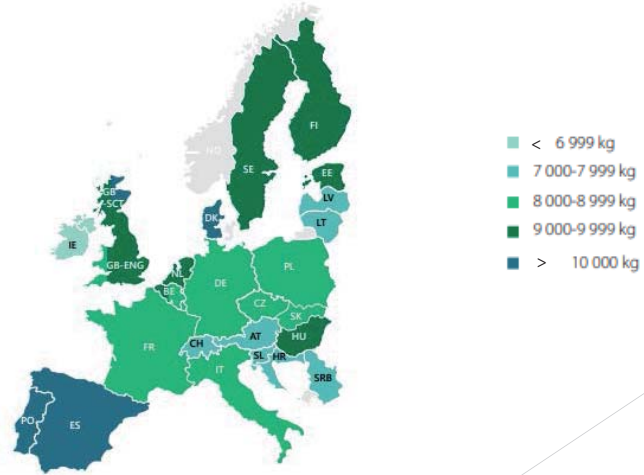*Source: PFCBDF*

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Average milk yield in Europe

Legend:
- < 6 999 kg
- 7 000-7 999 kg
- 8 000-8 999 kg
- 9 000-9 999 kg
- > 10 000 kg

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The highest milk, fat and protein yield

- ▶ Polish Holstein-Friesian Black-and-White (2nd lactation)
  - ▶ 20932 kg milk
- ▶ Polish Holstein-Friesian Black-and-White (5th lactation)
  - ▶ 1534 kg fat & protein

Selected reproductive parameters

Parameter	Optimal range [days]	Minimum [days]	Maximum [days]	Average [days]
Calving interval	390 – 410	398	442	431
Age at first calving	780 - 820	802	909	816
Calving-to-conception interval	90 - 110	112	150	147
Gestation length	263 - 297	280	288	279
Dry period	up to 60	57	85	59

Source: PFCBDF

Lifetime production and longevity

- ▶ Average life expectancy: 5.5 years
- ▶ Average productive life: 2.98 years
  - ▶ 23575 kg milk
  - ▶ 1754 kg fat & protein
  - ▶ 461 cows with more than 100 000 kg milk
  - ▶ Doris 129 cow aged 13 years: 174 970 kg milk
  - ▶ Lajka cow aged 20 years: 124 247 kg milk, 5 338 kg fat, 3 854 kg protein, 5 331 kg lactose, 14 098 dry matter

Polish selection index (production and functionality)

- PF for Polish Holstein-Friesian cattle
- PF = 0.4×SI_PROD + 0.25×SI_CONF + 0.15×SI_REP + 0.1×BV_SCC+ 0.1×BV_LONG
- SI_PROD – production subindex
- SI_CONF – body conformation subindex
- SI_REP – reproduction subindex
- BV_SCC – breeding value for the lactational somatic cell count
- BV_LONG - breeding value for longevity

Polish selection index (production and functionality)

- SI_PROD:
  - BV for fat yield [kg] + 2×BV for protein yield [kg]
- SI_CONF:
  - Udder subsubindex – 50%
  - Leg and foot subsubindex – 30%
  - Dairy strength subsubindex – 10%
  - Frame subsubindex – 10%
- SI_REP:
  - Heifer conception coefficient – 70%
  - Cow conception coefficient – 10%
  - Calving-to-first service interval – 10%
  - Calving-to-conception interval – 10%

References

- PFCBDF. 2019. Performance recording results for dairy cows. PFCBDF: Warsaw
- Litwińczuk Z., Szulc T. (Eds.) 2005. Cattle breeding and husbandry. PWRiL: Warsaw
- PFCBDF. 2019. Polish selection index. http://pfhb.pl/hodowla/zadania/polski-indeks-selekcyjny/pf-dla-rasy-polskiej-holsztynsko-fryzjskiej. Last accessed on 23.12.2019
- Statistics Poland. 2019. https://bdl.stat.gov.pl/BDL/dane/podgrup/tablica. Last accessed on 23.12.2019

Thank you for your attention.