

Genetic analysis of individual breeds of poultry used in breeding programs in Slovakia

Modul no. 4: Precision Livestock Farming

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AUTHOCHTONOUS POULTRY BREEDS

ISAGREED

- ✚ the current economic situation causes an interest in specialized poultry lines in advanced countries in the world, focusing on egg-laying or meat-based performance,
- ✚ due to the very intense breeding, many genes are lost and they may be missing in future,
- ✚ therefore, the reasons for keeping poultry genetic resources are the same as for all species of farm animals.



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AUTHOCHTONOUS POULTRY BREEDS

- ✦ at present, with the growing demand for poultry products from extensive systems, it is important to raise native poultry breeds suitable for free-range and organic farming because of their good adaptation to the local conditions,
- ✦ native poultry breeds play an important social role and have a positive impact on maintaining rural society and traditional form of agriculture as well as gratify local traditions,
- ✦ they represent a gene source for future breeding strategies and research,
- ✦ an alternative native breeds in poultry production system have an important advantage of biodiversity and sustainable agricultural production.



AUTHOCHTHONOUS POULTRY BREEDS

ISAGREED

- ✚ chicken breeds (Oravka, Bantam Oravka),
- ✚ goose breeds (Slovak Goose, Suchovska Goose).



ORAVKA

- ✦ dual-purpose poultry breed with good egg production, growth ability and adaptability on alternative outdoor,
- ✦ the goal was to develop a breed suitable for harsh climatic conditions of northern Slovakia which can be kept in free range,
- ✦ hard rectangular frame, comb is rosette, legs are medium length without feather with yellow color with red tinted strip (lampas), feather is rich with solid structure.



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PERFORMANCE OF ORAVKA

- + body weight: cock 2.8-3.3 kg, hen 2-2.-2.7 kg,
- + laying: 180-200 eggs,
- + egg weight: 58 g,
- + brownish eggshell.



YELLOW-BROWNISH ORAVKA

- ✚ the oldest and most common color variety of Oravka,
- ✚ created by combinatorial crossing of regional breeds with breeds of Rhode Island Red, Wyandotte White and New Hampshire,
- ✚ recognised in year 1990.



WHITE ORAVKA

- created by crossing of Yellow-brownish Oravka with Plymouth Rock White,
- recognised in year 2008.



BLACK ORAVKA

- ✚ created by crossing of White Oravka with breeds of Dresdner Black, Plymouth Rock Black and Barnevelder Black,
- ✚ recognised in year 2017.



CRELE ORAVKA

- + a combination of rusty partridge colorations with sparrowhawk pattern,
- + created by crossing of Yellow-brownish Oravka, White Oravka and Crele Bielefelder,
- + recognised in year 2022.



BARRED ORAVKA

- ✚ created by crossing of White Oravka with Barred American Rock,
- ✚ recognised in year 2022.



CURRENT STATUS OF ORAVKA

- ✚ Slovak University of Agriculture in Nitra:
 - *ex situ* conservation flock of Yellow-brownish Oravka,
 - monitoring of population size of Oravka in Slovakia,
 - performance (ejaculate quality, hatching, growth ability, egg production, egg quality, carcass parameters, meat quality),
 - creation of the system and method of authentication for reliably distinguish between the Oravka and other chicken breeds by analyse chicken feathers (use 7 microsatellite markers recommended by FAO) - DAPC analysis.



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CURRENT STATUS OF ORAVKA

ISAGREED

- ✚ National Agriculture and Food Centre –Research Institute for Animal Production (NAFC–RIAP) Nitra:
 - *ex situ* conservation flock of Yellow brownish Oravka,
 - performance (hatching, growth ability, egg production, egg quality)
 - isolation, culture and cryopreservation of blastodermal and primordial germ cells in Oravka chickens,
 - the quality of blastodermal and primordial germ cells, before and after cryopreservation is evaluated by fluorescent microscopy, flow cytometry and transmission electron microscopy,
 - cryopreserve roosters semen of Oravka breed and assess their quality by methods mentioned above, semen samples of individual roosters are stored in the gene bank at NAFC–RIAP Nitra.



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CURRENT STATUS OF ORAVKA

ISAGREED

✚ Slovak Association of Breeders:

- creation of new color variants of Oravka in reproductive flocks with individual laying and pedigree hatching,
- exterior judging of Oravka at poultry exhibitions and recognizing of reproductive flocks,
- monitoring of laying (collective, individual) of Oravka hens in reproductive flocks.



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BANTAM ORAVKA

- ✚ bantam form of large breed,
- ✚ Bantam Oravka should follow the large fowl standard in all respects, however, the feathering color is more intense compared with large Oravka,
- ✚ dual-purpose poultry breed with good egg production, growth ability and adaptability on alternative outdoor.



PERFORMANCE OF BANTAM ORAVKA

- + body weight: cock 1.0-1.3 kg, hen 0.9-1.1 kg,
- + laying: 140 eggs,
- + egg weight: 40 g,
- + brownish eggshell.



YELLOW-BROWNISH BANTAM ORAVKA



- ✚ breed was developed in the 1980s as the result of crossbreeding of large Oravka with Bantam Sumavian and Bantam Dresdner,
- ✚ recognised in year 1990.

WHITE BANTAM ORAVKA

- created by crossing of Yellow-brownish Bantam Oravka, White Bantam Dresdner and White Bantam Plymouth Rock,
- recognised in year 2017.



CRELE BANTAM ORAVKA

ISAGREED

- ✦ a combination of rusty partridge colorations with sparrowhawk pattern,
- ✦ created by crossing of Yellow-brownish Bantam Oravka and Crele Bantam Bielefelder,
- ✦ recognised in year 2017.



CURRENT STATUS OF BANTAM ORAVKA

- ▼  Slovak University of Agriculture in Nitra:
 - performance (egg production, egg quality).

ISAGREED



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CURRENT STATUS OF BANTAM ORAVKA

ISAGREED

✚ Slovak Association of Breeders:

- creation of new color variants of Bantam Oravka in reproductive flocks with individual laying and pedigree hatching,
- exterior judging of Bantam Oravka at poultry exhibitions and recognizing of reproductive flocks,
- monitoring of laying (collective, individual) of Bantam Oravka in reproductive flocks.



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SLOVAK GOOSE

ISAGREED

- ✦ established in 1940s on the basis of regional breeds from South-Eastern part of Slovakia (from Nitra and Levice areas) by crossing with goose breed from Germany and Hungary,
- ✦ the aim of breeding was to create a medium weight triple purpose (meat, liver, feather) goose suitable for corn areas, a strong,
- ✦ resistant goose with a good pasturing ability and with preserved clucking instinct,
- ✦ first standard of the Slovak goose was published by Malík (1966),



SLOVAK GOOSE

ISAGREED

- ✦ middle-heavy breed of goose noble appearance and firm constitution. It uses very good pasture and has preserved quiltiness,
- ✦ feather is pure white, made of medium quality feathers, the volume fraction of the punch exceeds the volume of the cover feather,
- ✦ hardy, good for grazing. It has a preserved quandary instinct that is itself hatch and inferred by the young,
- ✦ good disposition for cooking and creating delicious livers.



PERFORMANCE OF SLOVAK GOOSE

ISAGREED

- + body weight : gender 6.8-8.0 kg, goose 5.7-7.0 kg,
- + laying: 12 and more eggs,
- + egg weight: 140 g,
- + white eggshell.



SUCHOVSKA GOOSE

ISAGREED

- + established at the end of the 1980s in the village Suchá nad Parnou from the population of local yellow coloured domestic goose by cross-breeding with French (Toulouse, Landes) and German (Pomeranian, Steinbacher) breeds of geese,
- + medium-heavy triple purpose geese, preservation of clucking instinct,
- + created to breed goose of bigger body frame, firm constitution and of compact and solid body,
- + recognized in year 1995.



SUCHOVSKA GOOSE

ISAGREED

- ✚ bigger and hard body frame, the body is long, compact, muscled, firm, almost horizontally held, body width is equal to its height,
- ✚ saddling and pasture type,
- ✚ feather is smoother, with more dust, color is yellow-wild,
- ✚ female is similarly colored as a male with a larger amount of gray admixture, overall appears darker.



PERFORMANCE OF SUCHOVSKA GOOSE

ISAGREED

- + body weight: gender 6.5-7.5 kg, goose 5.5-6.5 kg,
- + laying : 12-16 eggs,
- + egg weight: 140 g,
- + white eggshell.



CURRENT STATUS OF SLOVAK AND SUCHOVSKA GOOSE

ISAGREED

- ✚ Slovak University of Agriculture in Nitra:
 - monitoring of population size of Slovak and Suchovska goose in Slovakia,
 - performance (hatching, growth ability, carcass parameters, meat quality).
 - histological and histochemical evaluation of geese muscle tissue,
 - characterization of the genetic diversity and structure of both native Slovak goose breeds based on six microsatellite loci analysis.



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CURRENT STATUS OF SLOVAK AND SUCHOVSKA GOOSE



- ✚ National Agriculture and Food Centre –Research Institute for Animal Production (NAFC–RIAP) Nitra:
 - cryopreserve gander semen of Slovak and Suchovska Goose breeds,
 - semen samples of individual ganders are stored in the gene bank at NPPC–RIAP Nitra.

ISAGREED



CURRENT STATUS OF SLOVAK AND SUCHOVSKA GOOSE

- ✚ Slovak Association of Breeders:
 - exterior judging of Slovak and Suchovska Goose at poultry exhibitions and recognizing of reproductive flocks.

ISAGREED



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FUTURE BREEDING GOALS

- ✚ focusing on the improvement of exterior characteristics of native chickens and goose breeds,
- ✚ the small number of recognized flocks puts increased pressure on poultry judges when judging poultry at shows and recognizing of reproductive flocks,
- ✚ cooperation with the Slovak Association of Breeders with SUA in Nitra and NAFC–RIAP Nitra for increasing performance of Oravka (ejaculate quality, egg production, egg quality, growth ability, meat quality),
- ✚ a high risk for the reproduction of Slovak Goose is a tendency of gander, male goose, to be monogamic and the mutual refusal, which exist in both sexes.





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