CONSERVATION OF BIODIVERSITY IN ITALIAN POULTRY BREEDS:
deepening and monitoring
TuBAvI-2

TUTELA BIODIVERSITÀ AVICOLA ITALIANA

Breed data sheet

PADOVANA

Gallus gallus domesticus Sp.

Origin and morphological, genetic, reproductive, and productive traits

FONDO EUROPEO AGRICOLO PER LO SVILUPPO RURALE: l'Europa investe nelle zone rurali

MINISTERO DELL'AGRICOLTURA DELLA SOVRANITÀ ALIMENTARE E DELLE FORESTE

The presented data were registered in the nucleus populations
of Silver laced, Chamois, and Golden laced Padovana breed
conserved at the “Sasse Rami” Experimental Farm, in Ceregnano (Rovigo).
The data are presented by breed and, for some traits, by colour.

Latest update: June 11th, 2024

Padovana

Gallus gallus domesticus Sp.

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Breed origin and development

Name of the breed	Padovana
Synonyms or local names	Padovana dal gran ciuffo
Geographic origin	Veneto (Padua), but with northern-Europe origin
Geographic distribution	Veneto
Estimated total population size	1180 (Castillo et al., 2021)
Extinction risk status (FAO, 1998)	Not at risk
Any other specific information	Tufted breed, fancy breed

Historical origin
This breed is described and drawn by Ulisse Aldovrandi (1600) in his work *Ornithologiae*. Other essays from 1500s mention the presence, in Padua surroundings, of a popular and productive chicken breed. The origin of this breed is uncertain, it probably arrived to Italy from Poland in 1300, perhaps by the noble Giovanni Dondi Dell'Orologio, from Padoua, an eminent doctor and astronomer, who was fascinated by the beauty and elegance of those chickens, at the time considered as luxury birds. However, the origin is intertwined not only with the Polish chicken, but also with other European tufted breeds, such as the Dutch and the Houdan. Several publications on poultry production from the XIX and XX centuries described the Padovana breed, giving many details about its characteristics. Throughout the XX century the population size gradually decreased, as this breed was reared only by few amateur farmers. Historically, these chickens were reared outdoors, on pasture, and fed maize. The Padovana breed persisted over time not only for the beauty of the birds, but also for the quality of the meat, including capon, which inspired many historical cooking recipes, of both popular and noble tradition. The breed is suitable for the valorisation of typical productions of the Veneto region. It is included in the National Plan on Biodiversity in Agriculture, and in the Atlas of Traditional Agri-food Products of the Veneto region (*Atlante dei Prodotti Agroalimentari Tradizionali del Veneto*). It is a Slow Food presidium and its reference organisation is the *Pro Avibus Nostris* association.

Qualitative and quantitative morphological traits in adult breeders

Discrete or qualitative traits

Feather morphology	Normal
Feather distribution	Normal, with a tuft on the top of the head, on the cranial hernia, and a well developed beard
Plumage structure	Adherent, with rounded feathers; abundant down; abundant hackle feathers
Plumage colours	Silver laced, White, Blue laced, Chamois (Buff laced), Golden laced, Ermin, Fawn, Pearl grey, Lemon laced, Black, Cuckoo, Tricolour (Tollbunt) As the breed has also ornamental purposes, a constant selection is performed to obtain birds with varied colours (e.g. Black mottled, Golden with blue lacing, ...) and dilutions (Silver with "ghost" lacing, Dark brown silver, ...)
Colour features	Single colour or bi-colour depending on the plumage colour, with sexual dimorphism
Chick plumage colour	**Silver laced:** dark grey, streaked with white **Chamois:** yellow down **Golden laced:** brown, streaked with yellow
Comb type	Absent, replaced by a tuft with long feathers
Comb points	-
Ear-lobe colour	Very small, covered by tuft and beard; pure white to blueish white, sometimes streaked with red
Beak colour	Whiteish grey to blue/grey to black depending on the plumage colour
Iris colour	Brown; orange-red in the White and the Cuckoo
Muffs	Present, covering the face
Beard	Present, very pronounced, covering the throat
Tuft	Present, full and wide. In the **male** it is large, round, with long, narrow and pointed feathers, falling back, on the nape; it does not cover the eyes. In the **female** it is round, full, cascading over the eyes.
Skin colour	White
Shank colour	Slate blue in various intensities depending on the plumage colour
Shank feathering	Free from feathers
Skeletal variants	Prominent nostrils
Other specific and distinct visible traits	Cranial hernia, evident in the chick, then covered by the tuft; ear-tufts

Colour pattern (most widely recognized colours are described)
Silver laced: white ground with black lacing; in the **male**, front of the neck, breast, and legs, belly and upper part of the back, with every feather white in the middle with a black edging with green sheen, as narrow as possible. In the tuft, cape and saddle the feathers have a

central part silver white and a black edging in the final half; the rachis is white down to the basis. Feathers of the beard black with centre more or less white. Wing coverts silver white with slight black marking in the shape of an arrow point. Primaries and secondaries white, outer barbs with black edging, inner barbs with black traces. Main wing coverts white with black edging with green sheen. Tail as pure white as possible, especially in the sickles, with black edging on every feather. Black traces tolerated at the basis of the tail feathers. Lesser sickles close to the saddle marked with the same pattern. In the **female**, every feather silver white in the middle, with narrow black edging with green sheen. Tuft white with regular black edging. In tuft and cape a very thin white edging on the feathers is tolerated. Black beard with centre of the feathers more or less white. Dark grey down. Beak blue grey. Shanks blue grey.

White: overall pure white plumage, brighter in the male. White down. Beak blue grey or flesh coloured. Shanks blue grey or flesh coloured.

Blue laced: overall pigeon blue plumage, every feather with a black/blue edging. In the **male**, cape, back, wing coverts and saddle fade into black/blue. In the **female**, cape dark blue. Down dark grey. Beak blue grey. Shanks blue grey.

Chamois (buff laced): buff ground with white lacing; the pattern of the marking is the same as in Silver laced. The colour of the edging is cream white. Instead of silver white the colour is chamois in leather tone. In the male, colour of cape and saddle is a more intense chamois; tuft and wing coverts are even darker. Beard cream white verging on white, with the center of the feather more or less chamois. Down cream. Beak blue grey. Shanks blue grey.

Golden laced: golden-bay ground with black lacing; the pattern of the marking is the same as in Silver laced. The colour of the edging is dark golden ochre, that is darker in tuft, cape and saddle of the male. Beak blue grey. Shanks blue grey.

Pearl grey: overall uniform light soft grey, rachis included. In the male, cape and saddle feathers a little darker are admitted. Down light grey. Beak blue grey. Shanks blue gray.

Black: overall intense black plumage, with strong bright green sheen in the male. Down black. Beak blue grey to black. Shanks blue grey to black.

Cuckoo: ground colour black marked with a light blue regular barring that is slightly arched and not too precise. Rachis regularly barred like the feather. Down regularly barred like the remainder of the plumage. Beak whiteish grey; flesh colour admitted. Shanks whiteish grey with grey veiling.

Quantitative traits

Parameters	Male		Female	
	Average	Min-max	Average	Min-max
Body weight (g)	2575	2500 -3050	1890	1360-2080
Body length (cm)	43	41-46	36	34-39
Chest circumference (cm)	35	30-37	31	29-36
Shank length (cm)	10	10-11	9	7-10
Shank diameter (cm)	5	4-5	4	3-4
Wing span (cm)	51	46-54	42	35-47

Genetic traits

Characterisation of the breed with Single Nucleotide Polymorphisms (SNPs)

Molecular marker	Affymetrix Axiom 600K Chicken Genotyping Array
Laboratory that performed the analyses	Department of Agronomy, Food, Natural Resources, Animals and Environment (DAFNAE) University of Padua
Analysed parameters	MAF: minor allelic frequency Ho: observed heterozygosis He: expected heterozygosis F_{HOM}: inbreeding coefficient

Silver laced						
Year		N**	MAF	Ho	He	F_{HOM}
2019	Mean	24	0.241	0.151	0.146	0.588
	SD*		0.331	0.198	0.185	0.098
Chamois						
Year		N**	MAF	Ho	He	F_{HOM}
2019	Mean	24	0.238	0.169	0.179	0.538
	SD*		0.303	0.191	0.193	0.095
Golden laced						
Year		N**	MAF	Ho	He	F_{HOM}
2019	Mean	24	0.247	0.219	0.232	0.404
	SD*		0.264	0.194	0.187	0.081

*SD: standard deviation; **N: number of samples

Characterisation of nucleus populations with microsatellites

Molecular marker	Microsatellites (26 markers)
Laboratory that performed the analyses	Laboratory of Animal Molecular Genetics Department of Veterinary Science (DSV) University of Turin
Analysed parameters	Ne: effective number of alleles Na: observed number of alleles I: Shannon diversity index H-Ind: individual variability index Ho: observed heterozygosis (average H-Ind) He: expected heterozygosis F: fixation index P: average kinship index

Year		N**	Na	Ne	I	Ho	He	F	P
2020	Mean	21	3.500	2.591	0.914	0.388	0.492	0.189	0.56
	SE*		0.478	0.383	0.149	0.065	0.074	0.060	

*SE: standard error; **N: number of samples

Rearing traits

Breed type	Suitable for the traditional rearing system
Growth speed (precocious *vs* tardive)	Tardive
Feathering speed (precocious *vs* tardive)	Precocious
Broodiness	No
Parental care attitude	Yes
Ease of breeding	Yes
Male:female ratio for breeding	1:8-10
Tolerance or resistance to diseases and parasites	No
Tolerance to extremes of temperature	No
Reported uses (meat, eggs)	Primary: eggs Secondary: meat

Reproductive and productive quantitative traits

Oviposition, brooding and incubation data

Age at sexual maturity of hens (weeks)	23-27
Length of first oviposition cycle (weeks)	N.a.**
Annual egg production per hen (min-max)*	180-220
Average clutch size (min-max)	N.a.**
Clutch interval (days)	N.a.**
Incubation length (days)	21

*As measured during the first year of age, min-max of family line
**N.a.: Not available information

Egg-quality traits

Parameters	First oviposition cycle	
	Average	Min-max
Egg weight (g)	57.7	50-60
Shell colour	White	

Parameters (sample measurement)	Average	Min-max
Egg weight (g)	54.6	50.6-58.1
Shell weight (g)	5.05	4.69-5.51
Albumen weight (g)	31.3	28.5-33.2
Yolk weight (g)	18.2	15.8-20.3
Egg Shape Index*	0.76	0.75-0.81

* Egg Shape Index (ESI) = short diameter/long diameter x 100

Reproductive traits

Incubation parameters	First oviposition cycle	
	Average	Min-max*
Fertility (% incubated eggs)	94	90-97
Hatchability (% fertile eggs)	86	77-88
Hatchability (% incubated eggs)	81	69-85

*Per family line

Padovana male and female

Silver laced

"Sasse Rami" Experimental Farm
(Veneto Agricoltura)

"Sasse Rami" Experimental Farm
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Chamois

"Sasse Rami" Experimental Farm
(Veneto Agricoltura)

"Sasse Rami" Experimental Farm
(Veneto Agricoltura)

Golden laced

"Sasse Rami" Experimental Farm
(Veneto Agricoltura)

"Sasse Rami" Experimental Farm
(Veneto Agricoltura)

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Collective projects within the poultry sector funded with the support of the **European Agricultural Fund for Rural Development** (EAFRD)

https://ec.europa.eu/agriculture/rural-development-2014-2020_en

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