

TuBAvi (2017-20)
TuBAvi-2 (2021-24)

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

Ministry of agriculture, food sovereignty and forestry –
National Rural Development Programme 2014/2022 – Measure 10.2 –
Conservation, use and sustainable development of genetic resources
in agriculture



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



Breed data sheet

VALDARNESE BIANCA
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 population of Valdarnese bianca conserved at the University of Florence (UniFI).

Latest update: November 15th, 2024



Valdarnese bianca

Gallus gallus domesticus Sp.

Breed data sheet: origin and morphological, genetic, reproductive, and productive traits

Breed origin and development

Name of the breed	Vadarnese bianca
Synonyms or local names	Pollo del Valdarno
Geographic origin	Valdarno area (area surrounding river Arno), province of Florence
Geographic distribution	Tuscany, northern Lazio, Liguria
Estimated total population size	398 (Castillo et al., 2021)
Extinction risk status (FAO, 1998)	Threatened conserved
Any other specific information	Dolichomorphic, medium-sized breed

Historical origin
References to a chicken with white feathers and highly pigmented yellow legs, raised in the upper Valdarno, are lost in time. This chicken was known for its rusticity, rebelliousness to reclusion, and for its firm and tasty meat. Initially described as belonging to the white variety of the Valdarno breed, during the 1900s it first underwent crossbreeding and was then selected to eliminate the genetic components of other breeds (white Livorno in particular). Various denominations have been maintained over time (Pollo del Valdarno, Valdarno bianca, Valdarnese, Valdarnese bianca). The first references, with the denomination of "white Valdarno", date back to the beginning of the last century (1902): the Marquis Girolamo Trevisani at the Agricultural Society of Bologna cited Florentine breeders who were particularly active in launching the breed; in 1925 white Valdarno breeders were presented at the winter egg production competition in Bergamo. However, the most significant report is that relating to the participation in the Cremona Poultry Exhibition in 1953, which represented its first proper official recognition as a breed on its own. Actually, the 1950s saw a strong recovery in the rearing of this breed, thanks in particular to the establishment, in 1954, of the Valdarno Poultry Group (Montevarchi - AR), characterised by a selection center, two large hatcheries, and numerous breeding chicken coops. On March 7 th of the same year, the "Conference for the enhancement and improvement of poultry farming in the Upper Valdarno" was held in Montevarchi (Arezzo), which had national importance and also marked the beginning of a selection plan for the white Valdarno under the control of the Provincial Inspectorate of Agriculture of Arezzo and

with the subsequent contribution of the research of Professor Quilici conducted at the Poultry Experimental Station of Rovigo, starting from 1957. In a short time, the breed reached its maximum productivity and notoriety. Farmers recall that in those years in the most important markets of the Valdarno (Montevarchi, San Giovanni, Figline, Laterina, and Loro Ciuffenna) on average, 20,000-30,000 chickens of the Valdarno white breed were marketed each week under the denomination of "new chicken", with minimums in the months of January-March and maximums from September to December, for the markets of Milan, Rome, Genoa, and Florence, and compare the cost of a chicken to at least the daily salary of a worker. The prices obtained could vary in the 1950s from a minimum of 500 Lire/kg in the months of September-October to a maximum of 1200 L/kg in the months from March to May. Starting from 1963, in conjunction with the drastic reduction of sharecropping contracts and with the progressive expansion of intensive poultry farming, the decline of breeding of the white Valdarno began, aggravated by the management crisis of the Valdarno Poultry Group and by the recovery of the countryside breeding of white Livorno, favoured by the easier finding of chicks produced by specialised hatcheries in Northern Italy. The following year, after nine years of existence, the Valdarno Poultry Group ceased its activity. Nonetheless, a part of the chicken farmers in the area has continued, albeit often on a small scale, to raise this type of chicken, with the specific aim of maintaining a well-rooted tradition and with the concern of guaranteeing the survival of the breed. About ten years ago, the structure that had inherited the activity of the Rovigo Experimental Station, i.e. the Conservatory of Poultry Breeds in Danger of Extinction of the Veneto Region, once again took into consideration the risk of loss of the breed and undertook a work of multiplication starting from a hundred hatching eggs, transferred there and subjected to control. In the last year of the Conservatory's activity (2001), the last remaining breeders among those that had been entrusted to few farmers went missing, but a certain number of subjects derived from these are still present in some farms in the Valdarno.

Valdarnese bianca male and female



Experimental Animal Farms, UniFI



Experimental Animal Farms, UniFI

Bibliography

Gualtieri M, Pignattelli P, Cristalli A (2006) Pollo di razza Valdarnese bianca. In: Risorse genetiche animali autoctone della Toscana. Ed. ARSIA (Firenze)

Rearing traits

Breed type	Rustic breed with extremely lively temperament suitable for country farming typologies (it prefers grazing).
Growth speed (precocious vs tardive)	Tardive
Feathering speed (precocious vs tardive)	Tardive
Broodiness	Rare, it occurs after the second egg laying
Parental care attitude	Not good
Ease of breeding	Medium (it needs wide areas)
Male:female ratio for breeding	1:7
Tolerance or resistance to diseases and parasites	Good
Tolerance to extremes of temperature	It does not tolerate high temperatures and heat stress
Reported uses (meat, eggs)	Primary: meat Secondary: eggs

Qualitative and quantitative morphological traits in adult breeders

Discrete or qualitative traits

Feather morphology	Normal
Feather distribution	Normal
Plumage structure	Abundant and uniform plumage; in the male, longer cape feathers and tufted tail with short sickles
Plumage colours	Milky white
Colour features	Single colour, without sexual dimorphism
Chick plumage colour	Yellow
Comb type	Simple comb , upright in the male, falling to one side in the female
Comb spikes	Five to six spikes
Ear-lobe colour	Cream yellow with some red veining
Beak colour	Antique gold yellow, slightly curved
Iris colour	Red-orange
Muffs	Absent
Beard	Absent
Tuft	Absent
Skin colour	Yellow
Shank colour	Yellow
Shank feathering	Free from feathers
Skeletal variants	-
Other specific and distinct visible traits	Very long wattles (7-9 cm)

Colour pattern	Milky white plumage, tending to straw yellow on the cape and back, especially in the male.
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Quantitative traits

Parameters	Male		Female	
	Average	Min-max	Average	Min-max
Body weight (g)	3010	2910-3120	1786	1465-2375
Body length (cm)	40.50	39.00-42.00	36.07	31.00-41.00
Chest circumference (cm)	35.50	35.00-36.00	34.40	31.00-38.00
Shank length (cm)	7.00	6.00-8.00	6.97	6.00-8.00
Shank diameter (cm)	N.a.*	N.a.*	N.a.*	N.a.*
Wing span (cm)	90.00	88.00-92.00	71.93	64.00-78.00

*N.a.: Not available information

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 heterozygosity He: expected heterozygosity F _{HOM} : inbreeding coefficient

Year		N**	MAF	Ho	He	F _{HOM}
2019	Mean	24	0.283	0.321	0.322	0.127
	SD*		0.204	0.181	0.160	0.098

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

Characterisation of nucleus populations with microsatellites and mating plans

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 heterozygosity (average H-Ind) He: expected heterozygosity F: fixation index P: average kinship index
Indexes used to schedule mating plans	H-Ind P

Year		N**	Na	Ne	I	Ho	He	F	P
2020	Mean	30	5.286	3.048	1.247	0.617	0.645	0.045	0.48
	SE*		0.597	0.223	0.088	0.051	0.030	0.063	
2022	Mean	54	5.654	3.191	1.250	0.569	0.633	0.090	0.45
	SE*		0.597	0.262	0.085	0.029	0.030	0.029	0.00

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

Reproductive and productive quantitative traits

Egg-quality traits

Parameters	First oviposition cycle*		Second oviposition cycle**	
	Average	Min-max	Average	Min-max
Egg weight (g)	56.27	41.80-88.40	55.59	42.00-66.90
Shell colour	Opaque ivory			

* Total n. of measured eggs: 576; ** Total n. of measured eggs: 620

Parameters (sample measurement)	Average	Min-max
Egg weight (g)	57.03	40.42-63.00
Shell weight (g)	5.87	5.05-6.63
Albumen weight (g)	34.69	29.16-39.32
Yolk weight (g)	17.13	12.85-21.49
Egg Shape Index*	2.06	1.67-2.74

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

Body weight and growth data

Age (weeks)	Male weight (g)		Female weight (g)	
	Average	SD*	Average	SD*
0 (hatching)	**		**	
8	516.86	31.58	579.20	81.67
12	796.25	171.47	620.83	51.70
18	885.00	48.88	837.33	83.08
26	1420.37	54.63	943.75	146.83

*SD: standard deviation

**Average male and female weight at hatching: 37,17±2,67 g

Mortality

Age (weeks)	Males		Females	
	Average (%)	Min-max	Average (%)	Min-max
0-1	1	0-2	2	1-3
1-8	1	0-2	1	0-2
8-20	1	0-2	1	0-2
20-36	0		0	