National Rural Development Programme 2014-2022 Measure 10.2 – Biodiversity

Project: TuBAvI-2 (2021-2024) REPORT ON THE ACTIVITIES PERFORMED DURING THE SECOND YEAR

UniFI

The present report describes the activities performed from May 1st, 2022 to April 30, 2023. The activities are described by Action, according to the original programme.

Action 1 - Phenotypical characterisation of autochtonous breeds and species

Phenotypic characterization of chickens of the Mugellese, Valdarnese Bianca and Valdarno breeds

The breeders of the Mugellese, Valdarnese Bianca and Valdarno breeds were bred at the Experimental Farms of the Department of Agricultural, Food, Environmental and Forestry Sciences and Technologies (University of Florence). The breeders, divided into 3 families by breed and livery, were raised on the ground, in separate boxes on permanent litter. All subjects were bred in compliance with the guidelines of poultry farming and the regulations in force on animal welfare.

Characterization of the breeds:

- Morphological characterization, according to the FAO guidelines, 2012 for updating and validating what was collected during the TuBAvI 1 Project for the Mugellese (Mannelli et al., 2023; Figure 1.1) and Valdarnese bianca breeds and first characterization of the Valdarno breed (the data is being processed);
- Weight gains (for the Mugellese breed shown in Figure 1.2, Mannelli et al., 2023) and feed consumption and calculation of the feed conversion index (for the Mugellese breed shown in Figure 1.3, Mannelli et al., 2023; for the other breeds the data is being processed) for the growing animals of the 3 breeds protected by the PA UniFI and the evaluation of food consumption with reference to the production of eggs in the families formed for the purposes of the project;
- Daily egg production (for the Mugellese breed reported in Figure 1.4, Mannelli et al., 2023; for the Valdarnese bianca breed reported in Figure 1.5)

The data reported in the figures relating to the Mugellese breed and published in Mannelli et al., 2023 are being validated through further data collections.

Phenotypic characterization of chickens of the Mugellese and Valdarnese breeds

During 2022, a selection program was set up for the progeny belonging to the nucleuses at UniFI for the Mugellese and Valdarnese breeds, also involving breeders in the Tuscan territory for the enhancement of the breeds and to set up joint mating plans.

Phenotypic characterization of chickens of the Valdarno breed

The subjects of the Valdarno breed at the UniFI experimental farms showed serious problems of consanguinity and susceptibility to thermal stress and in contracting diseases. Therefore, while awaiting the mating plans of the Project, the most resistant subjects were chosen, showing the best phenotypes for the subsequent matings, and 2 families were established with 1 male and 3 females each. To date, the progeny of these two families is in the growth phase and is being monitored for phenotypic characterization.

Action 2 - Genetic characterization of breeds and species bred in Italy also through the use of genomic information

The subjects of the Mugellese breed were sampled (as per the project timetable) for genetic characterization for the purpose of mating plans. Feathers were collected from a total of 50 subjects belonging to UniFI and 5 other farmers in the area.

Action 7 – Evaluation and identification of genetic resistance characteristics of animals of zootechnical interest to diseases

In this action, the PA UniFI, in collaboration with the PA UniPI, began the evaluation of the resilience and resistance to pathologies and environmental stresses of the Mugellese, Valdarnese bianca, Livorno and Bianca di Saluzzo breeds in terms of animal welfare and resistance to pathogens, using the response of the intestinal microbiota to environmental stimuli as an information marker.

The subjects belonging to these breeds were bred in free-range and fed with the same feed (Monge) at our UniFI headquarters and at the UniPI headquarters, according to the same scheme. At the end of the test, the caecal feces of each test subject were taken from both sites. DNA was extracted from the collected samples and sent to the IGA company for sequencing. We are in the process of processing data received from IGA.

Action 8 - Collection of biological material and germplasm

Germplasm collection in the Semen Cryobank of Italian Poultry Breeds

The activity carried out involved the implementation of the SOPs of the Italian Poultry Breed Semen Cryobank for the storage of germplasm of different donors of different breeds in the Gallus gallus species. In particular, in Table 8.1 shows the number of donors and sperm doses stored in the cryobank during the first year.

FIGURES and TABLES



Figure 1.1 - Regression curve for the morphological traits of the Mugellese breed (Mannelli et al., 2023)

Figure 1.2 - Weight gains of the Mugellese breed (Mannelli et al., 2023)





Figure 1.3 - Feed conversion rates of the Mugellese breed (Mannelli et al., 2023)

Figure 1.4 - Mugellese breed deposition curve (Mannelli et al., 2023)





Figure 1.5 - Laying curves of the Valdarnese bianca breed

|--|

Razza	n° riproduttori	n° dosi totali
Mugellese	5	8
Valdamese bianca	1	4