

**“ION IONESCU DE LA BRAD”
UNIVERSITY OF AGRICULTURAL SCIENCES
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HABILITATION THESIS

**Researches on the Knowledge of Cattle’s
Productive Performances in the Pedoclimate
and Management Conditions in the N-E
Romania**

Habilitations thesis field: Animal Husbandry

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A. ABSTRACT

The habilitation thesis on “*Researches on the Knowledge of Cattle’s Productive Performances in the Pedoclimate and Management Conditions in the N-E Romania*” is structured on 5 (five) chapters presenting the most important landmarks of didactic and scientific activity. The professional performances and development plan of the career are synthetically exposed based on several quantifiable indicators and reference items in the academic and scientific research activity areas.

The habilitation thesis meets the provisions of the laws in force and the lași UASVM regarding the organization and implementation of the process of taking-out the habilitation certificate.

Upon completion of the PhD studies, by the performed activities, the author managed focus on the following practical objectives: ***knowledge of milk production performances in cattle exploited according to the pedoclimatic and management conditions in the N – E Romania; knowledge of meat production performances in cattle exploited according to the pedoclimatic and management conditions in the N – E Romania; knowledge of reproductive abilities in cattle exploited according to the pedoclimatic and management conditions in the N – E Romania, respectively the genetic preservation of cattle breeds near extinction.***

The studies performed over the last years are quite original. Acting in his capacity as a manager for three national projects and two projects of international financing, the author proved to be a trained researcher with real abilities for scientific activities.

This activity is materialized by the publishing of seven papers in important ISI journals, five ISI indexed papers with no impact factor, five ISI Proceeding papers, 127 articles/studies published in international specialty magazines or certified national magazines, indexed in international databases and 46 scientific sessions defended in different national and international conferences and sessions.

In the period between 2013 and 2015 I was the manager of a cross-border project of EURO 2,740,397.00 (11,714,318.44 LEI), of which non-reimbursable EU financing of EURO 2,359,009.80 (86.08 %), and partners co-financing of EURO 381,387.20 (13.92%).

The professional experience was improved by the participation to national or international trainings/collaborations and post-academic courses.

Chapter 1 of the habilitation thesis holds the highest percentage and presents the main research results on the knowledge of performance in milk production of cattle exploited according to the pedoclimatic and management conditions in the N – E Romania.

From the study we performed in N – E Romania, we obtained the following cattle number distribution, based on the dimension of cow holding: 88.79 % holdings of 1 cow; 9.78 % holdings of 2 cows; 1.35 % holdings of 3 cows; 0.08 % holdings of 5 or more cows.

The milk production in the North – Eastern area (Moldavia), namely Iași, Vaslui, Galați, Botoșani and Suceava Counties was the following: stripped milk – 882,834,704 liters – 88.93% of the total quantity; directly sucked milk – 109,892,822 liters – 11.07% of the total quantity; total milk production 992,727,526 liters – 100%, representing 23.73% of the national production. The Romanian Piebald Black cattle population produced an average quantity of milk of 4754.18 Kg (E.M.), the Brown cattle population produced an average quantity of milk of 3,701.10 Kg (E.M.), the Piebald Romanian cattle population produced an average quantity of milk of 3,291.65 Kg (E.M.), while the Pinzgauer cattle population produced an average quantity of milk of 2,679.92 kg in 305 days.

Milk produced in farms did not entirely correspond to the hygiene and welfare norms

Where exploitation and management conditions close to the optimal level were provided, cows from the studied breeds responded by productive performances close to the real genetic potential. Thus, we can underline average performances of over 7,000 Kg of milk or even over 9,000 Kg of milk.

Another chapter we developed within this habilitation thesis is the about knowing the performance in meat production of cattle exploited according to the N – E Romania pedoclimatic and management conditions (Ch. 2).

The meat production registered in the North-Eastern area of the country represented 50531674 Kg weight in vivo of the sacrificed animals, meaning 25.45 % of the total weight at a national level. Cattle populations of the studied autochthonous breeds had a good body development.

In half-breed, the experimental lots L_3 - Ch×BR and L_2 - L×BR had the best body development, reaching a weight in vivo of $705.50 \pm 3,631$ kg (L_3) at the age of 18 months, respectively $679.67 \pm 2,774$ kg (L_2), exceeding the maternal breed. An obvious improvement of the meat abilities was also obtained by crossing the experimented meat breeds with the cows minus

variants of the Romanian Piebald Black at the age of 18 months, half-breed L₅ - Ch×BNR reaching a weight in vivo of 609.22±2.235 kg, while the half-breed L₆ - L (BNR) a weight in vivo of 578.13±2.287 kg, weights that are superior to the maternal breeds.

The estimate of heritability of the analyzed characters in Charolaise breed exploited in the N - E Romania varied within large limits, observing an average genetic determinism for the calving easiness index, muscle development and maternal abilities. The genetic (rG), phenotypic (rp) and environment (rM) correlations between the analyzed indexes were different as sense and intensity.

Chapter 3 presents the reproduction abilities of cattle exploited in N - E Romania pedoclimatic and management conditions.

The Romanian Black Spotted breed was characterized by a superior precocity against local improved breeds, but in our studies age for the first calving was an average of 916.76 ± 6.71 days (30.5 month) with limits between 669.00 and 1491 days, the calving interval had average values for the six studied lactations, between 389 and 439 days, exceeding the optimal limit for all lactations.

The Romanian Spotted a semi-precocious breed and in our researches the age for the first calving had an average value of 955.35 days, about 31 months; the calving interval was of 397.72 and 415.00 days, with limits between 292 and 730 days and a mammary rest of 61.01 and 61.43 days.

The Brown is a semi-precocious breed of high adaptability capacity to the environment. The age of the first calving (VP) had an average value of 868.29 days (about 28 month), with limits between 716 and 1261 days. These values indicate there were situations when the cattle freshening was too early or too late, with calving at 42 months. The calving interval, just like in the case of the two analyzed breeds highly exceeded its optimal value. Mammary rest, in comparison with the other studied features, had optimal values.

In case of the *Pinzgauer* cattle, although more tardy, the first calving takes place at about 32 months. The average calving interval between the 1st and 2nd lactation is similar to the rest of the average durations between lactations, up to the 5th lactation, respectively about 376 days, then raising up to 389 days. There is an intermediary to strong connection of 44% between the age of first calving and milk production, with a regression coefficient of 0.439 with $p < 0,001$ and C.I. 95%.

Chapter 4 presents the results of researches on genetically preserved cattle breeds. The *Gray cattle* breed in Romania is registered as endangered by extinction, so it must be protected.

The milk quantity per estimated lactation was between 1,589.64 kg (1st lactation) and 2,092.92 kg for the 3rd lactation, which also represents the maximum lactation. In other researches made on this breed, the 5th lactation was the maximum, when 2,535.43 kg were obtained, then the milk production decreased. Following the 1st lactation 62.69 % of the maximum lactation was reached. Cows' height was an average of 127.28 cm, while their weight was of 542.86 kg.

The animal genetic resources management, the improvement of active breeds and use of local breeds, especially in marginal areas and traditional production systems – like those of minimum investment – shall meet the requests for food, environment and land scape protection.

The last chapter – Chapter 5 – displays the quantification of the results of the performed scientific research, as well as the professional career development and evolution plan.

As regards the development strategy for my future career, the University's strategic mission defines it.

During the final part, I presented a few bibliographic references associated to the content of this habilitation thesis.