COMPARATIVE STUDY ON TECHNOLOGICAL PARAMETERS OF CRUDE COCOONS FROM 4 BREEDS/LINES OF *BOMBYX MORI* SILKWORM

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INTRODUCTION:

The cocoons are made of natural silk with a superior microstructure and ecological capabilities (Zhou *et al*. 2020). Silk production is highly correlated with cocoon characteristics. Several factors are involved in obtaining adequate cocoon quality and production. Thereby, silkworm larvae need an optimized bed spicing from brushing to spinning in addition to other factors like feeding, hygiene, and environment to achieve full larval development, good survival, and appropriate cocoon production (Morimoto, 2022).

AIMS:

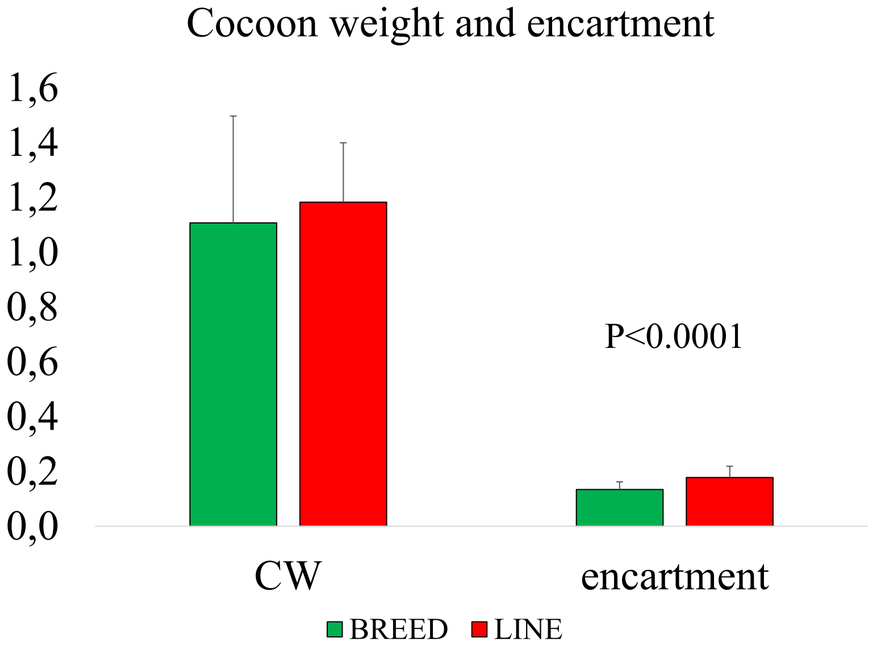
Assessment of technological characteristics of the crude cocoon of 4 monovoltine *Bombyx mori* silkworms' breeds/ lines.

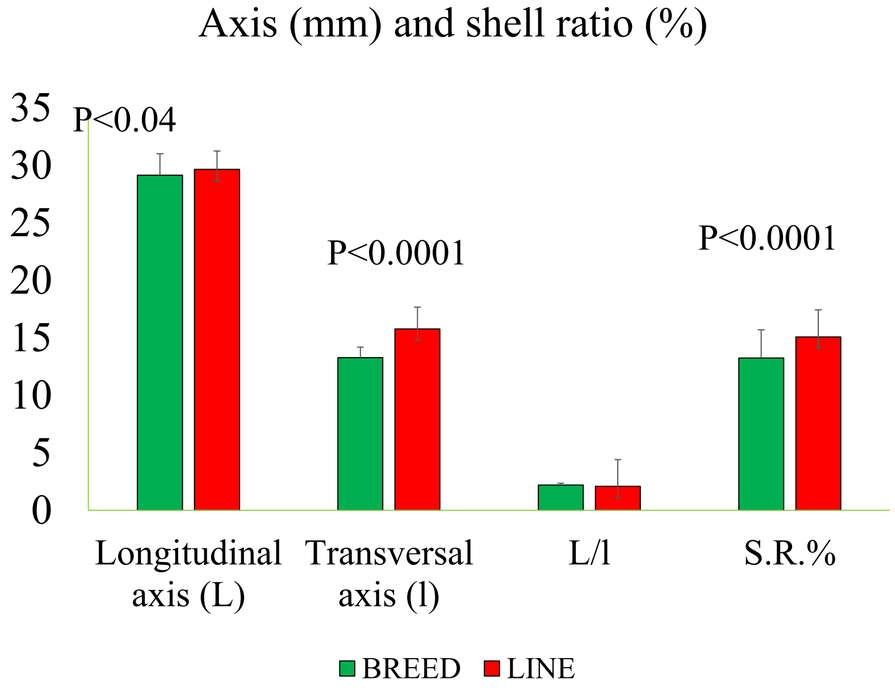
MATERIALS AND METHODS:

On a total of 150 cocoons samples, the crude cocoon weight (CW), length of longitudinal (L) and transversal axis (l) and their ratio (L/l), silk encartment and shell ratio were determined from two silkworm breeds (RG90 and GCB) and two lines (AO33 and Line Z) reared utilizing a rare technique of about 10% on the shelves (76 x 95 cm size), 3 replication each one.

RESULTS

1. Breed vs. Lines

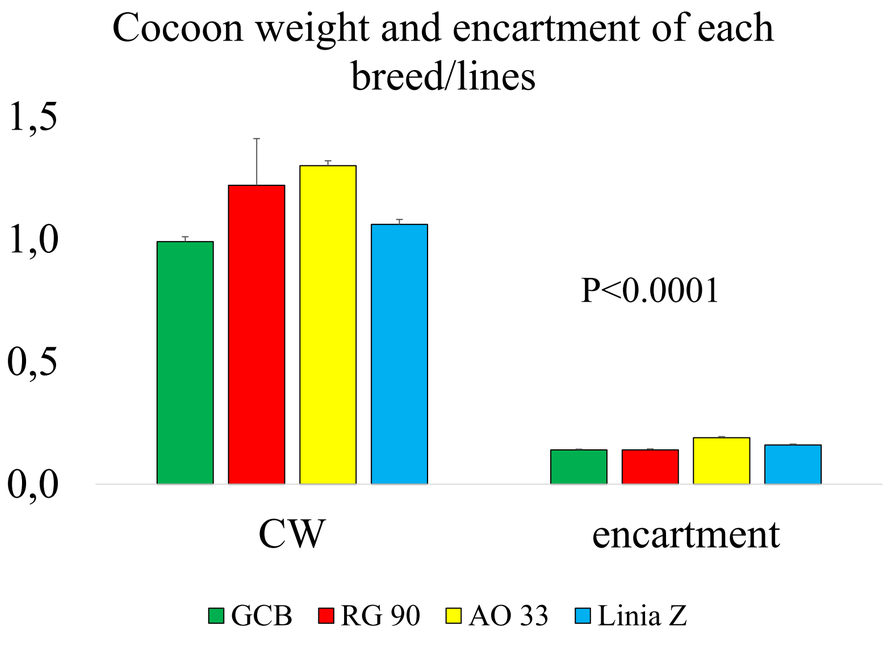


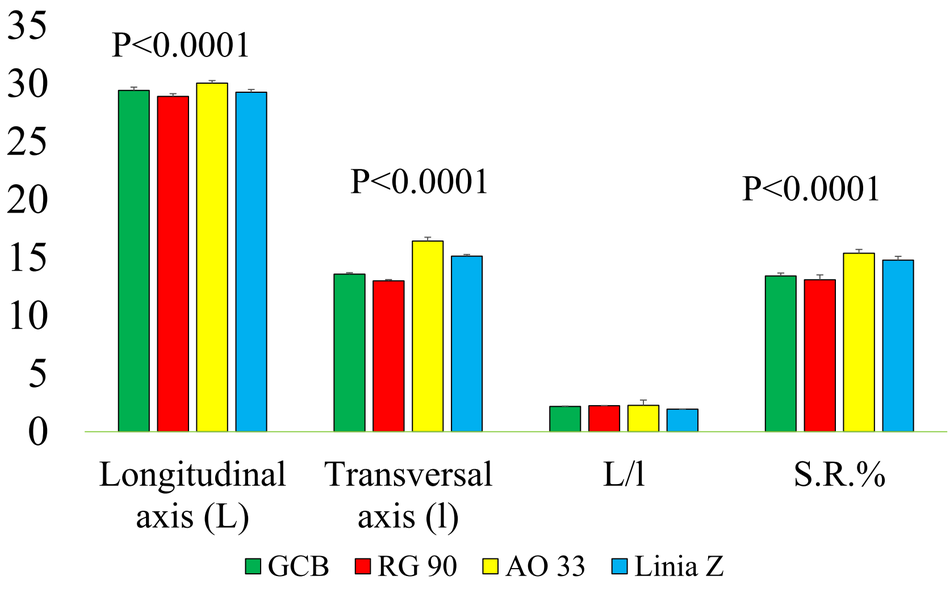


The L axis was >1.18 times (P<0.0001), l axis >1.01 times (P=0.04), encartment >1.32 times (P<0.0001) and SR >1.14 times (P<0.0001) in line vs breeds.

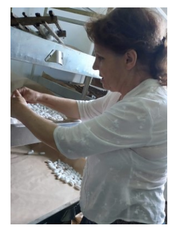
Line AO33 recorded the higher CW (1.30 g), L axis 30.04 mm, l axis (16.42 mm), and their ratio 2.26, with an encartment of 0.19 g and SR 15.38%.

2. Average value of breeds and lines





The lower CW and encartment were noticed for breed GCB (0.99 g and 0.13 g, respectively). LSD test showed differences between the AO33 line and GCB for CW, while encartment was different between AO33>Line Z>GCB>RG90 (P<0.0001), GCB>Line Z (P<0.0001) and Line Z>RG90.



CONCLUSION:

This study highlights the AO33 line's superior quality and its higher value for technological parameters when compared other breeds.

ACKNOWLEDGMENT:

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COMPARISON OF PERFORMANCE AND COCOON TRAITS OF CERTAIN ROMANIAN SILKWORM *B. MORI*

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Introduction

Silkworm production efficiency is essential to the sericulture industry and a high-quality cocoon of *B. mori* serves as the farms' economic tools (Samami et al., 2019; Chen et al., 2022).

There are knowledge gaps about the performance and cocoon characteristics of several breeds/ lines of silkworms currently raised in Romania, and a screening of these become a necessity.

Aims: Evaluation of the larval development and raw cocoon parameters of certain silkworm *B. mori* monovoltine indigene breeds (B75, J90, AC29) and lines (AO/T, SK2/F, C108/T) maintained at gene pool of Research Station for Sericulture Băneasa, Romania.

Materials and Methods

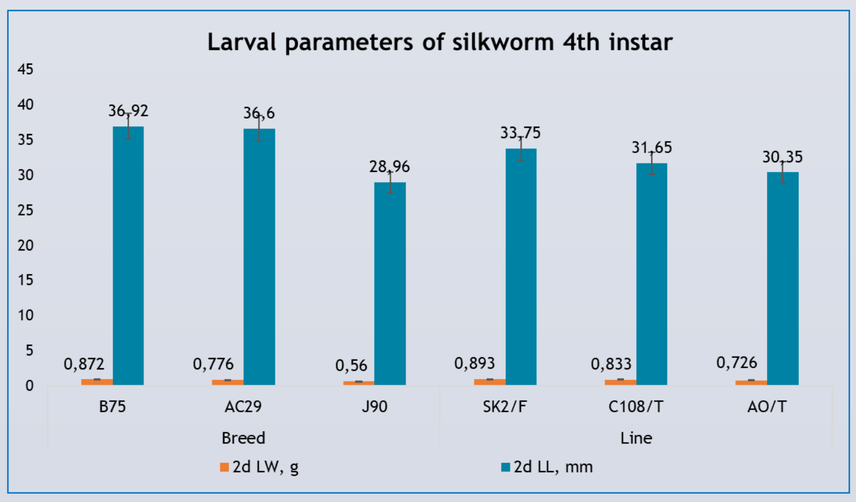
The trial was conducted during the spring-summer season in silkworm-rearing rooms under standard conditions and facilities.

Silkworm larvae (250 larvae/group, 5 replicate/group) were fed ad *libidum* with mulberry leaves until spinning.

Measurements included:

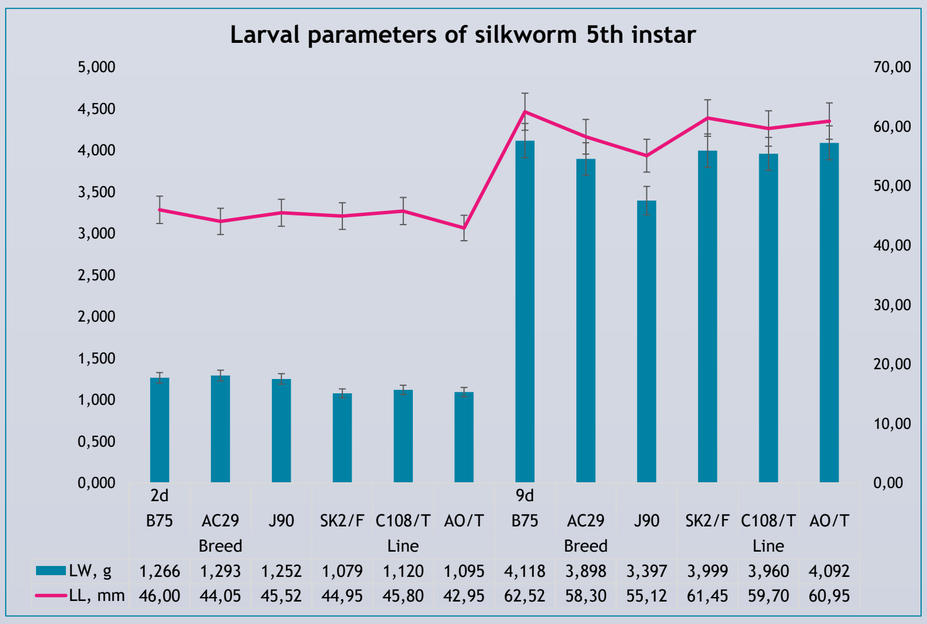
- larval stage [weight (LW) and length (LL) in 4th and 5th instars;
- n=25 larvae/group];
- pupa stage [cocoon weight (CW), shell weight (SW), and pupae weight (PW); n=50 (cocoon/group];
- shell/weight (S/W) cocoon ratio was calculated;
- for cocoon traits, the sex effect was also evaluated.

Results and Discussion

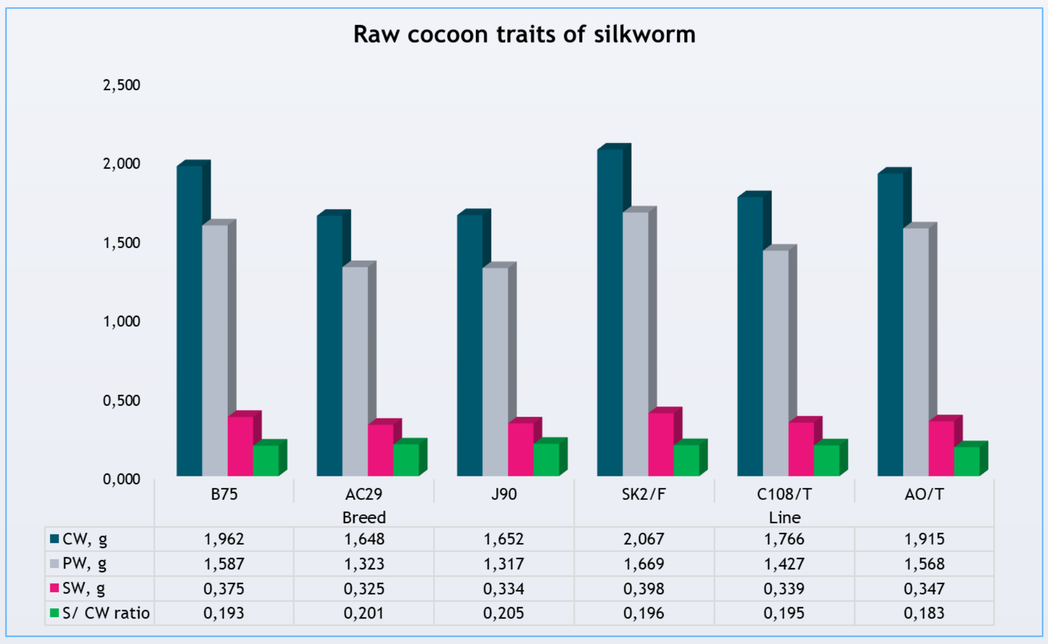


In the 4th instar, higher larval development was achieved by breed B75 and line SK2/F ($p<0.0001$).

In the 5th instar, higher differences in larval growth were noticed between 2 and 9 days for breeds and lines (3 to 3.6-fold for LW and 1.3 to 1.36-fold for LL).

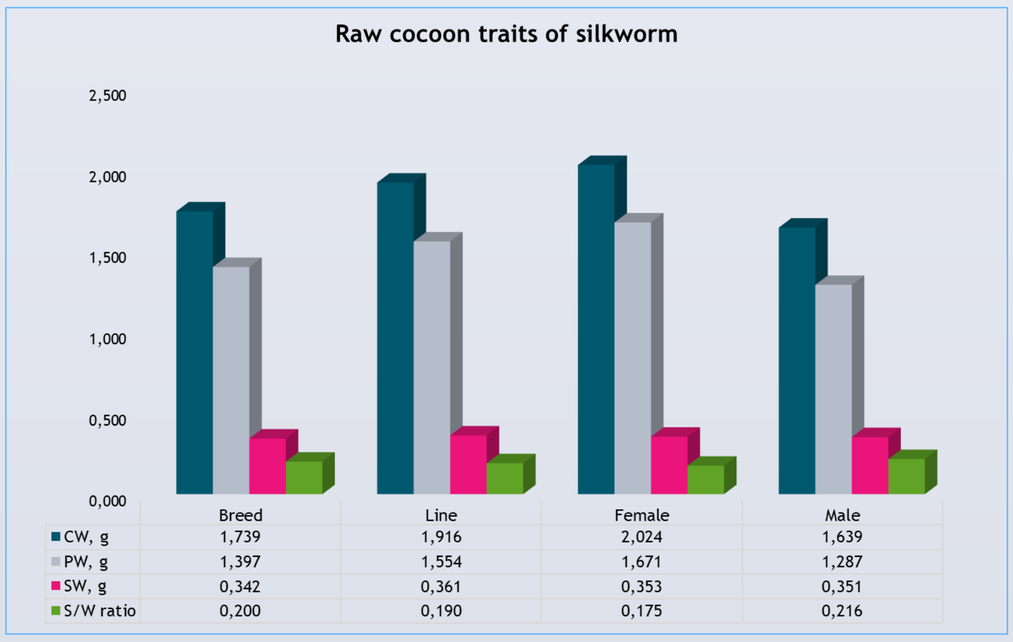


At the end of the 5th instar, the B75 breed had higher LW, and LL means than AC29>J90, while from lines, similar values were obtained by SK2/F=AO/T>C108/T ($p<0.0001$).



Raw cocoon traits were influenced ($p<0.0001$) as follows:

- for CW and SW the higher values for breeds were obtained by B75>J90=AC29 and for lines SK2/F>AO/T>C108/T,
- for PW the trend was B75>AC29=J90 and SK2/F>AO/T>C108/T,
- for S/W ratio the values were J90=AC29>B75 and SK2/F=C108/T>AO/T.



Lines had superior cocoon traits than breeds. Females had higher CW, PW, lower S/W cocoon ratio ($p<0.0001$), and similar SW compared to males.

Significant positive correlations were found between 5th instar final performance variables and raw cocoon traits, except the S/W ratio negatively correlated with CW.

Conclusion

This study reveals that better larval development was achieved by breed B75 and lines SK2/F and AO/T. However, line SK2/F, followed by breed B75, had the highest cocoon traits. As expected, females had superior cocoon traits that males, except for S/W ratio. All measurements were within the range allowed by breeds or lines under normal growth conditions.

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THE INTERACTION BETWEEN HF-EMF RADIATIONS AND BEES' BEHAVIOR - A LITERATURE ANALYSIS OF THE IMPACT ON THEIR HEALTH AND ECOSYSTEM

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INTRODUCTION:

Bees, as key pollinators in the terrestrial ecosystem, play an essential role in maintaining biodiversity and ensuring sustainable food production. Electromagnetic radiation generated by current technology (mobile phones, 4G/5G wireless antennas) can affect the behaviour and health of bees (consequences on the ecosystem-food chain).

AIMS:

The aim of the paper was to highlight the importance and relevance of the impact of non-ionizing electromagnetic radiation on bees, monitoring which becomes essential to understand the potential threats to their health and the ecosystem as a whole.

MATERIALS AND METHODS:

To explore the impact of electromagnetic radiation on bees, we took into account publications accessible in scientific databases published between 2007-2023. Data were collected from more than 100 publications and finally 83 studies were considered.

RESULTS:

The study authors highlighted the effect on bees exposed to non-ionizing electromagnetic radiation (changes in flight behavior, orientation and inability to identify the food source), highlighting the relationship between exposure to electromagnetic radiation and the decline of bee populations (*Collony Colapse Disorder*).

CONCLUSIONS AND FUTURE DIRECTIONS:

Studying the influence of non-ionizing radiation on bees has wider implications for ecology and the environment, as bees play a crucial role in pollination and maintaining ecosystems. The interaction between bees and electromagnetic radiation is a complex and multifactorial issue, with many variables (radiation intensity, frequency and duration of exposure, types of radiation, etc.) that may explain the diversity of conclusions in the available studies. Therefore, studies are needed in Romania to better understand the connection between non-ionizing electromagnetic radiation and bees.

Acknowledgement: This work was supported by the financial support of ADER 2.1.8/2023.

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THE IMPORTANCE OF LABORATORY DIAGNOSIS IN THE PREVENTION AND CONTROL OF SILKWORM DISEASES

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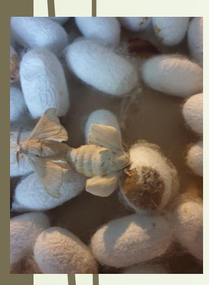

INTRODUCTION:

The silkworm is susceptible to numerous diseases, and there is currently no breed with total disease resistance.


AIMS:

The aim of the paper was to highlight the importance and relevance of the proactive approach of microscopic laboratory techniques for prevention and control of major silkworm diseases thus contributing to the improvement of silkworm health and to augmentation of the sericulture production.

MATERIALS AND METHODS:

The examinations were carried out by direct microscopy and laboratory diagnostic methods for specific diseases (bacterial, parasitic, mycotic and viral) according to the methodology of the OIE (Manual, 2016) and from Insect Pathology (Steinhaus, 1967), adapted to the conditions of the Laboratory of Genetics, Breeding and Pathology of Silkworms of S.C.S. Băneasa Bucharest.

RESULTS:

Direct microscopic and bacterioscopic examinations were carried out to exclude the risk of the presence of pathogens in future generations selected for the conservation of the genetic background. The samples collected from the 84 breeds under conservation were subjected to direct microscopy and bacterioscopy on two developmental stages of silkworms - egg and larval stage (L3). The results of the laboratory examinations required the elimination of inappropriate biological material from the reproduction, a fact that allowed obtaining disease-free reproductive material, of the best quality.

CONCLUSIONS AND FUTURE DIRECTIONS:

In the present research paper, we demonstrated the importance of the proactive approach of microscopic laboratory techniques for prevention and control of major silkworm diseases in order to select breeds, lines and hybrids of silkworms with resistance to diseases owned by S.C.S. Băneasa Bucharest.

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