



## REVIEW

On the competition for "Associate professor" in the scientific specialty Sericulture, announced in the State Gazette No. 30 dated 04 Apr 2023 with candidate Chief Assist.prof. Krasimira Lyubenova Avramova, PhD  
by prof. Ivanka Zheleva Zhelyazkova, DSc, appointed according to Order No. RD-16-650/01 June 2023 by the Rector of Agricultural University – Plovdiv as member of the scientific jury

**Reviewer:** *prof. Ivanka Zheleva Zhelyazkova, DSc, Field of higher education «Agrarian sciences and veterinary medicine», professional area «Animal husbandry», scientific specialty «Beekeeping» appointed a member of the scientific jury by order No. RD-16-650/01 June 2023 by the Rector of Agricultural University.*

### 1. General data about the career and thematic development of the candidate;

The only candidate in the competition for the academic position «Associate Professor» in the scientific specialty «Sericulture», announced for the needs of the Department of «Livestock Sciences» at the Agricultural University of Plovdiv, is Chief Assist.prof. Krasimira Lyubenova Avramova, PhD. Chief Assist.prof. Avramova completed her higher education with Bachelor's professional qualification in Agronomy (field farming) in 2006 at the Agricultural University of Plovdiv, and in October 2007 Master in «Sustainable Land Management» at the same university. During the period 2008-2011, she was a full-time PhD student in Special branches (Sericulture) at the Agricultural University of Plovdiv, Faculty of Agronomy, Department of Livestock Sciences. During the PhD studies, she specialized in Sericulture (2009) at the Council of Research and Experiments in Agriculture and Sericulture Unit of Bologna. In December 2011, she successfully defended a dissertation paper on «Possibilities for year-round provision of silkworm sperm from the mulberry silkworm *Bombyx mori* L. » to obtain PhD educational and scientific degree. In October 2011, she was appointed an assistant professor at the Department of Livestock Science, and since June 2013 until now she has been a chief assistant professor at the same department.

The career development of Chief Assist.prof. Krasimira Avramova is related to her active teaching and research work. On the basis of the materials presented for the competition, I allow myself to give a high assessment of the career and thematic development of the candidate in the competition.

### 2. General description of the submitted materials.

In the competition for „Associate professor” Chief Assist.prof. Krasimira Avramova, PhD takes part with total production of 30 works, grouped as follows:

- ❖ *Scientific publications from the qualified specialty – 30 pcs., of which:*
  - *Publications relating to the PhD thesis – 4 pcs., which are not subject to review;*
  - *Published book on the topic of the dissertation paper – 1 pc.*
  - *Publications with impact factor – 3 pcs.*
  - *Publications in reviewed and referenced scientific journals – 13 pcs.;*
  - *Publications in proceedings from conferences – 10 pcs.;*

The personal involvement of Chief Assist.prof. Krasimira Avramova in the above works, which are subject to review, is illustrated by the fact that 4 are solo-authored, in 6 she is the first author, in 5 – a second one, and in the remaining 11 – a third and



following author.

❖ *Textbooks – none.*

❖ *Study manuals – 1 pc.*

*To prepare the opinion 26 pcs. are subject to review.*

In the total list of scientific works of Chief Assist.prof. Krasimira Avramova there is a book on the topic of the dissertation paper „Opportunities for year-round provision of silkworm sperm from the mulberry silkworm (*Bombyx mori* L.)”-ISBN: 978-619-7554-22-9

### **3. Main areas in the candidate's research work. Demonstrated skills or talent for leading scientific research (project leadership, attracted outside funding, etc.).**

All developed scientific problems, from the materials of the competition, are in the field of sericulture. The focus of research is on the adaptability of various hybrids of the mulberry silkworm, the use of artificial diet and the impact of heavy metal pollution on larval development.

Chief Assist.prof. Krasimira Avramova participated in 8 projects. Five of them are on Operational Programs (1 on Operational Program “Rural Areas Development” 2014-2020; 1 on Operational Program “Regions in Growth”, 2014-2020; 3 on Operational Program “Human Resource Development”). In the Project “Support for the development of PhD students in the scientific area “Agricultural Sciences” and related scientific specialties BG051PO001/07/3.3-02/49” Agricultural University - Plovdiv is the leading organization Associate Member Prof. Y. Kuzmanova, DSc.

Two of the projects in which the candidate in the competition takes part are international: “Building Key Competences and Folkhigschool Pedagogy in XXI Europe” - № 2014-1-PL01-KA200-003642; “Joint reference strategies for rural activities of reduced inputs” (AGRO\_LESS) – contract No. B3.11.02 Transborder collaboration Bulgaria – Greece.

Chief Assist.prof. Krasimira Avramova works actively with other outside organizations as well. An indicator about that is the project „Modifications in the biological features of the mulberry silkworm (*Bombyx mori* L.) under the influence of feed collected from regions with high heavy metal content in the soil”, where she participates alongside specialists from the University of Forestry – Sofia.

The participation and active work of Dr. Avramova in projects has made it possible for a part of the scientific publications presented in the competition materials to be funded by projects (project “Changes in the biological features of the mulberry silkworm (*Bombyx mori* L.) under the influence of feed collected from regions with high heavy metal content in the soils” – University of Forestry - Sofia; Contract with the Variety Testing, Approbation and Seed Control Executive Agency for testing new hybrids of the mulberry silkworm).

All this characterizes the candidate as a scientist who can successfully organize, lead and participate in the implementation of significant scientific tasks and projects.

### **4. Assessment of the candidate's pedagogical training and work. Her role for training young scientific staff.**

The teaching experience of Chief Assist.prof. Krasimira Avramova as at 31 May 2023 is 11 years and 9 months, incl. 3-year period of full-time PhD studies. From 2018/2019 to 2022/2023 academic year Dr. Avramova has had 3182 hours of direct classroom work in the form of lectures, seminars and extra-curricular classes. She delivers lectures and seminars with students in Bachelors educational and qualification degree from the majors „Plant protection”, „Agronomy-Field science”, “Zooengineering” and “Zooengineering with information technologies” and classes with students in



Master's educational and qualification degree from the majors „Animal Selection and Reproduction” and „Agribusiness”. The subjects taught by Dr. Avramova are “Rabbit breeding”, „Game breeding”, „Hunting tourism”, „Hunting tourism and hunting ranges”. Chief Assist.prof. Avramova is the author of 10 curricula. According to the provided reference, the volume of her teaching work in the last five years is higher than the specified norm.

The candidate for the competition Chief Assist.prof. Avramova is the supervisor of 23 graduates who have successfully defended their theses, of which 3 in the Bachelor's and 20 in the Master's educational and qualification degree.

Chief Assist.prof. Krasimira Avramova participated as a co-author in Handbook to seminars in Sericulture, published in 2020 (authors: D. Grekov, P. Tsenov, Kr. Avramova, Ts. Nikolova - Academic Publishing House, Agricultural University, Plovdiv, ISBN 978-954-517 -287-8).

Dr. Avramova took part in the development of 10 curricula, 4 of which are in sericulture for the students from the Master's program “Animal Selection and Reproduction” – “Fundamentals of Sericulture”, “Biotechnologies and Reproduction in Sericulture”, “Breeding Programs in Sericulture”, “Management of Genetic Resources in Sericulture”.

In general, Chief Assist.prof. Avramova has achieved very good results in the fulfillment of the criteria for teaching work, and my assessment of this indicator is high.

#### **5. Significance of the obtained results evidenced by citations, publications in renowned journals, awards; membership in international and national scientific bodies, etc.;**

Very indicative of the quality and significance of reviewed scientific works of Chief Assist.prof. Krasimira Avramova are the data about the journals in which they were published and those on their citation by other authors.

According to the point system of the Rules for Implementation of the Law on Development of the Academic Staff in the Republic of Bulgaria, the scientific works, along with their noted citations form a total of 511.07 points and are distributed as follows: group A-50; group B-168.6, group D-217.47, group E-75. These results correspond to and exceed the minimum requirements according to Rules for Implementation of the Law on Development of the Academic Staff in Agricultural University - Plovdiv. The candidate has high level of personal involvement in all conducted research.

Chief Assist.prof. Avramova is a co-author of three scientific articles published in journals with an impact factor/impact rank - **Acta Zoologica Bulgarica** (SJR (2012) – **0.235 Q4**) and **Bulgarian Journal of Agricultural Science** (SJR (2021) – **0.248 Q3**).

Total of 3 articles were written in Bulgarian, and 23 in English, and two of the articles are in Bulgarian and in English in the Journal of Mountain Agriculture on the Balkans. The stated data are indicative of the candidate's desire to seek opportunities to publish her scientific production in various scientific journals in the country and abroad, which, among other advantages (quality, prestige, etc.), gives a wider circle of specialists the opportunity to get acquainted with her achievements.

The significance of the results obtained from scientific research in which the candidate in the competition, Chief Assist.prof. Krasimira Avramova, PhD, participated, is also evident from the citations of the research both in Bulgaria and abroad. Chief Assist.prof. Avramova presents 11 citations in scientific journals and dissertation papers. There are 6 cited publications with her participation. The authors of the publications that cite Dr. Avramova's works are two from Bulgaria, and the remaining 9 are from abroad.

Dr. Avramova's participation in scientific forums is convincing - a total of 15, incl. 4



held in the country and 11 – in other countries. Of the total number of participations in scientific forums, 9 reports are oral, and 6 are presented on a poster. This activity defines her as a popular and established young scientist nationally and internationally.

**6. Significance of the contributions for the science and practice. Grounded answer to the question how well outlined is the candidate's image in the research work;**

The enclosed reference about the scientific contributions in the works of the Chief Assist.prof. Krasimira Avramova, PhD, really reflects her achievements in the areas she works in. However, they are not well systematized. This makes it difficult to highlight the most important moments in them. To prepare the review regarding the contributions, I was helped by the additionally presented Habilitation Extended Reference for Scientific Contributions. In my judgment, the main contributions could be grouped and summarized as follows:

### **I. ORIGINAL CONTRIBUTIONS**

1. For the first time in Bulgaria original data have been obtained about the content of 1-deoxynojirimycin in the mulberry leaf and the effect of variety and the effect of the vegetation stage have been established (Habilitation reference - C1).

**C1- AVRAMOVA, TZENOV, P.K., & GREKOV, D. (2022). A case study On The Content Of 1-Deoxynojirimycin In Some Mulberry Varieties (Morus Alba) Cultivated In Bulgaria. Agricultural Sciences, Vol.14, Issue 35, pp.12-17**

2. The genetic variability of various mulberry silkworm strains has been established and suitable markers for studying and differentiation of new silkworm strains have been defined (Habilitation reference - C2; C4; D20; D21).

**C2- STAYKOVA T., E. IVANOVA, D. GREKOV, KR. AVRAMOVA 2012, – Genetic Variability in Silkworm (Bombyx mori L.) Strains with Different Origin ACTA ZOOLOGICA BULGARICA, suppl.4, 87-92**

**C4- STAYKOVA T., EVGENIYA IVANOVA, PANOMIR TZENOV, YOLANDA VASILEVA, DIANA ARKOVA-PANTALEEVA, DIMITAR GREKOV, KRASIMIRA AVRAMOVA, 2015- Genetic Analysis of Isoenzyme Polymorphism in Silkworm (Bombyx mori L.) (Lepidoptera: Bombycidae) Strains and Phylogenetic Relationships- ACTA ZOOLOGICA BULGARICA, suppl.67 (1),**

**D20- STAYKOVA T., PANOMIR TZENOV, YOLANDA VASILEVA, DIANA ARKOVA-PANTALEEVA, DIMITAR GREKOV, KRASIMIRA AVRAMOVA – Phylogenetic differentiation of silkworm ( Bombyx mori L.) strains with different origin raised in Bulgaria 5-th BACSA International Conference "Sericulture for multi products – new prospects for development", Seriprodev, Buchurest, Romania, 11-th – 15-th April, 2011, pp.102-108**

**D21-STAYKOVA T., PANOMIR TZENOV, YOLANDA VASILEVA, DIANA ARKOVA – PANTALEEVA, DIMITAR GREKOV, KRASIMIRA AVRAMOVA - Passport data of six Bulgarian strains of silkworm Bombyx mori L. on the base of population genetic parameters. – 6th BACSA International Conference, "Building Value Chains in Sericulture" "Biserica" 2013, p.245-251**

3. Original data on the use of artificial diet during the summer for silkworm rearing have been obtained, the appropriate seasons and age for application of artificial diet have been defined (Habilitation reference - C6)

**C6- AVRAMOVA K., PANOMIR TZENOV, DIMITAR GREKOV, 2020, Silkworms (Bombyx mori L.) Rearing Using Artificial Diet During the Summer, Scientific Papers. Series D, Animal Sciences, vol. LXIII, No. 1, pp. 19-25.**

### **II. METHODOLOGICAL CONTRIBUTIONS**

1. Introducing the indices "Clarc of Energy Distribution" and "Clarc of Protein Transformation" in sericulture and methods of their calculation have been proposed (Habilitation reference – D12)

**D12- PENKOV D., AVRAMOVA K. 2021 "Introducing Of The Indices 'Clarc Of Energy Distribution' And 'Clarc Of Protein Transformation' In Silkworm Production And Methods Of Their Calculation" to Journal of**



### III. SCIENTIFIC CONTRIBUTIONS

1. The effect of the insecticides Actara and Confidor on the mulberry silkworm has been established (Habilitation reference - C3).

**C3 – AVRAMOVA K., DIMITAR GREKOV, RUMYANA IVANOVA, HRISTO HRISTEV** 2012- Some typical symptoms of mulberry silkworm poisoning with the neonicotinoid insecticides CONFIDOR and ACTARA,. *SCIENTIFIC PAPERS-SERIES D-ANIMAL SCIENCE*, Volume: 55, Pages: 107-108.

2. Biological indices of larvae after feeding with polluted mulberry leaves have been traced and significant differences in the results between the experimental and the control groups have been found (Habilitation reference - C5, D22, D25)

**C5 – NIKOLOVA TSV., KR. AVRAMOVA, D. GREKOV, KR. MALINOVA**, 2015 – Effect of lead and zinc on the reproductive features of the mulberry silkworm (*BOMBYX MORI* L.). *Scientific works – Agricultural University – Plovdiv*, LIX, 2, pp. 249-254

**D22- AVRAMOVA K., DIMITAR GREKOV, KRASIMIRA MALINOVA, TSVETELINA NIKOLOVA** 2013- Effect of the heavy metals Co, Pb, and Cu on the basic biological characteristic of mulberry silkworm – 6<sup>th</sup> BACSA International Conference, "Building Value Chains in Sericulture" "Biserica", p. 313 – 316

**D25- NIKOLOVA TSVETELINA, KRASIMIRA AVRAMOVA, DIMITAR GREKOV** 2017- Effect of some heavy metals on the major characteristics of silkworm *Bombyx mori* L. – 8<sup>th</sup> BACSA International Conference "Climate changes and chemicals – the new sericulture challenges" "CLISERI", pp. 47-51

3. By means of studies related to the effect of abiotic factors and the application of a provocative mode of silkworm rearing the scope of adaptivity of some newly created strains and hybrids of the mulberry silkworm have been established (Habilitation reference - C7; C8; C9; C10).

**C7 – TZENOV, P., AVRAMOVA, K., GREKOV, D., & VASILEVA, Y.** 2022. Creation of new silkworm *Bombyx mori* L. Hybrids with increased unfavorable rearing conditions tolerance by crossing sex limited for egg color and larval markings breeds. *Bulgarian Journal of Animal Husbandry*, 59(2), 17-22 (Bg).

**C8 - TZENOV, P., AVRAMOVA K., & GREKOV, D.** 2021. Study on the Productivity and Tolerance to Unfavourable Rearing Conditions of Some Introduced in Bulgaria Indian Silkworm Breeds. In *Journal of Mountain Agriculture on the Balkans* (Vol. 24, Issue 6, pp. 144–153).

**C9 - TZENOV, P., AVRAMOVA K., & GREKOV, D.** 2021. Productivity and Tolerance to Unfavorable Rearing Conditions of Some New Bulgarian and Bulgarian-Indian Races and Hybrids of the Silkworm *Bombyx mori* L. In *Journal of Mountain Agriculture on the Balkans* (Vol. 24, Issue 5, pp. 123–137).

**C10 - TZENOV, P., AVRAMOVA K. & GREKOV, D.** 2022. Study on the possibilities for creation of new silkworm, *Bombyx mori* L. hybrids with high tolerance towards unfavorable larval rearing conditions by crossing sex-limited for larval markings with hardy silkworm breeds. *Bulg. J. Agric. Sci.*, 28 (Supplement 1), 97–100 ISSN:0514-7441

4. The effect of artificial diet on the main biological and technological characters of some Bulgarian silkworm (*Bombyx mori* L.) hybrids have been established – Habilitation reference - D14; D11.

**D11 – AVRAMOVA K., PANOMIR TZENOV, DIMITAR GREKOV**, 2020. Study of technological characters of silkworms (*Bombyx mori* L.) on artificial diet, *Scientific Papers. Series D, Animal Sciences*, vol. LXIII, No. 2, pp. 13-19

**D14 – AVRAMOVA K., DIMITAR GREKOV** 2013. Effect of artificial diet on the main biological and technological characters of some Bulgarian mulberry silkworm (*Bombyx mori* L.) hybrids – *Agrarian sciences*, No. 14, p. 259 - 262

5. The dynamics of the biological and technological parameters of various mulberry silkworm strains and hybrids have been described and the most suitable strains and hybrids to be reared in Bulgaria have been identified (Habilitation reference - D15; D16; D17; D18; D23).

**D15 – AVRAMOVA, K.** 2022. Study on New F1 Silkworm Hybrids with regards to the Values of Some Quantitative characters Influencing Silk Production. *Bulgarian Journal of Animal Husbandry*, 59(6), 41-45 (Bg).

**D16 – AVRAMOVA, K.** 2022. Productive features of New F1 Silkworm Hybrids *Bombyx mori* L. *Bulgarian Journal of Animal Husbandry*, 59(5), 39-43 (Bg).



**D17 – P. TZENOV, Y. VASILEVA, D. GREKOV, K. AVRAMOVA, 2019.** Study on some Bulgarian pure lines, parents of F1 commercial hybrids performance - 9<sup>th</sup> BACSA International Conference "Sericulture preservation and revival – problems and prospects"- "SERIVAL", pp.97-102

**D18 - GREKOV D, KRASIMIRA AVRAMOVA, NADIA KIROVSKA 2006–** Dynamics of the major biological parameters in some lines of the silkworm (*Bombyx mori* L.) from Japanese type -110 Jubilee of Sericulture experiment station, Vratza, Bulgaria, 25-th – 29-th September, pp. 293-300

**D23 - PANAYOTOV M., P. TZENOV, D. GREKOV, Y. VASILEVA, D. PANTALEEVA, K. AVRAMOVA 2015.** Testing and Evaluation of New Bulgarian Silkworm, *Bombyx mori* L. Non Sex-Limited and Sex-Limited Commercial F1 Hybrids – 7<sup>th</sup> BACSA International Conference , "Organic Sericulture – Now and the Future" "Orgaseri", pp 116-125

#### IV. APPLIED CONTRIBUTIONS

1. The state and problems of sericulture in Europe, Caucasus and Central Asia countries has been analysed (Habilitation reference – D26).

**D26 - MARIA ICHIM, PANOMIR TZENOV, DIMITAR GREKOV, KRASIMIRA AVRAMOVA 2019–** Mulberry Plantation Establishment methods, Suitable for Europe, Caucasus and Central Asia – 9<sup>th</sup> BACSA International Conference "Sericulture preservation and revival – problems and prospects"- "SERIVAL", pp. 68-80

2. The state and problems of mulberry plantations available in Bulgaria have been analysed, recommendations have been given about their protection and more efficient use (Habilitation reference – D19)

**D19 – GREKOV D., KRASIMIRA AVRAMOVA 2008.** Sericulture – past, present and future – Science under conditions of globalization, 25 years Union of Scientists in Bulgaria, Kardzhali branch, scientific works vol. 3, part 2, 1-2 October, p. 63-67

3. Productivity and tolerance to adverse conditions of rearing some new Bulgarian and Bulgarian-Indian silkworm strains and hybrids have been analysed and recommendations given about their practical use – (habilitation reference - D16)

**D16 – AVRAMOVA, K. 2022.** Productive features of New F1 Silkworm Hybrids *Bombyx mori* L. Bulgarian Journal of Animal Husbandry, 59(5), 39-43 (Bg).

4. Significant differences in the content of macro- and micro-elements in the mulberry leaf have been found, as a result of which data have been obtained for the use of a certain new mulberry variety, which can be grown on weaker and nutrient-poor soils and will allow their full use - (Habilitation reference - D13)

**D-13 AVRAMOVA, KRASIMIRA.** Comparative study of a new variety of mulberry of the species *Morus alba* L., 2020, Agricultural Sciences, 27, p. 111-117

#### 7. Critical notes and recommendations

The scientific developments of Chief Assist.prof. Avramova have been reviewed and accepted for publication by the relevant journals, which is why I have no fundamental remarks.

I have a recommendation to the candidate to pay attention to some omissions observed in the submitted materials, such as: lack of the year of publication of the Handbook for seminars; scientific from applied contributions and original from affirmative contributions have not been differentiated.

The identified weaknesses are not decisive for the quality of the entire scientific production presented under this competition. Their purpose is to draw the attention of the candidate, to keep them in mind in their future scientific work.

I would like to recommend to the Chief Assist.prof. Krasimira Avramova, PhD, in her future research work, to work in closer contact with the Sericulture specialists at the Faculty of Agriculture at Trakia University, especially since they have common research topics, such as the application of artificial diets in silkworm nutrition.



### 8. Personal impressions and opinion of the reviewer

I have no personal impressions from Chief Assist.prof. Krasimira Avramova since I do not know her well (only 2-3 meetings). My main impressions are from the materials submitted by her in relation to the competition for the academic position "Associate professor". On the basis of these materials I prepared the review.

The candidate's teaching and research work is in accordance with the studies at the Bachelor's and Master's educational and qualification degrees. For the period 2018-2023, she has conducted a total of 3182 hours of lectures, seminars and extracurricular activities. She is the supervisor of 23 graduates who have successfully defended their theses, of which 3 in the Bachelor's educational and qualification degree and 20 in the Master's educational and qualification degree, which is an indicator of active work with students.

From the submitted presented individual reference on compliance with the minimum national requirements, it can be seen that according to the point system of the Rules for implementation of the Law on development of the academic staff in the Republic of Bulgaria, the scientific works, along with their noted citations, form a total of 511.07 points. These results correspond to and exceed the minimum requirements included in the Rules for implementation of the Law on development of the academic staff of the Agricultural University - Plovdiv. The predominance of publications in a team is an indicator of the candidate's successful work in a team, which is why she is a desired co-author.

### CONCLUSION

Based on the analysis of the candidate's pedagogical, scientific and scientific-applied work, I do believe that Chief Assist.prof. Krasimira Lyubenova Avramova, PhD, complies with the requirements of the Law on development of the academic staff in the Republic of Bulgaria, the Rules for implementation of the Law on development of the academic staff in the Republic of Bulgaria and the Rules of the Agricultural University for its implementation. The basis for this is provided by the results from the in-depth and analytical review of the materials submitted for the competition. It is evident from the materials that Dr. Avramova has acquired knowledge based on which she has experience in experimenting, analysing and applying the obtained scientific results. The overall assessment of the materials submitted for the competition shows full coverage of the scientometric criteria for the academic position "Associate professor" at the Agricultural University, Plovdiv.

All this gives me reason to **POSITIVELY** evaluate her overall activity.

I would like to take the opportunity to propose to the honorable Scientific jury to also vote positively, and the Faculty Board of the Faculty of Agronomy at the Agricultural University - Plovdiv to elect **Chief Assist.prof. Krasimira Lyubenova Avramova, PhD**, for "**Associate professor**" in the scientific specialty **Sericulture**.

Date: 21.07. 2023

Stara Zagora

REVIEWER:.....

(prof. Ivanka Zhelyazkova, DSc)