REVIEW

Upon the materials for participation in the contest for the academic position of "Associate Professor" in the field of higher education 6. Agricultural Sciences and Veterinary Medicine, professional affiliation 6.3. Animal Husbandry, scientific specialty "Special Branches (Bees and Silkworms)", in the discipline "Beekeeping", announced by the University of Forestry in State Gazette issue 102/8.12.2023, procedure code AGR-As-1123-120.

Participation Candidate:

1. Ch. Assistant Dr. Tsvetelina Alipieva Nikolova

Reviewer: Svilen Bogdanov Lazarov, Associate Professor of professional affiliation 6.3. "Animal Husbandry", scientific specialty "Special Branches (Bees)" from Trakia University, Stara Zagora

1. Brief biographical data about the candidate:

Ch. Assistant Tsvetelina Alipieva Nikolova PhD was born on January 22, 1978. She studied at the University of Forestry in Sofia from 1996 to 2005, where she graduated with a Master's degree in Agronomy. In 2017, she defended her doctoral dissertation titled "Changes in Biological Characteristics of the Blackberry Butterfly under the Influence of Feeds Collected from Areas with High Heavy Metal Content in Soil" at the same university and obtained the educational and scientific degree of "PhD" in the scientific specialty "Special Branches" (Silkworms), professional field 6.3 "Animal Husbandry."

From November 13, 2008, to October 2, 2019, she worked as an Assistant in the Department of Perennial Crops and Horticulture at the Faculty of Agronomy of the University of Forestry. At present, she works as an Ch. Assistant PhD, in the Department of Plant Protection. Her teaching activities cover the field of "Special Branches" (bees and silkworms) for students in the Bachelor's and Master's degree programs in Agronomy and Plant Protection. She delivers lectures and practical study on the following disciplines: Beekeeping, Silkworm Breeding, Pollination of Honey Plants, Honey Plants and Bee Pasture, and Soil Health. She conducts practical study on the disciplines: Basics of Animal Husbandry and Private Animal Husbandry.

She is a member of committees for accreditation, educational activities, quality of education, public relations, correction of technical errors, and updating of educational plans in the professional field of "Plant breading". The candidate is directly involved in the educational and administrative work of the university where she works, demonstrating organizational skills, competencies, creativity, and responsibility. From the documents submitted for the contest, it is evident that she possesses competencies in computer programs such as Microsoft Office (Word, Excel, Power Point), Adobe Photoshop, photocopying, etc.

2. Compliance of the candidate's submitted documents and materials with those required according to the Regulations for development of the academic staff at UF:

The documents submitted by Ch. Assistant Tsvetelina Alipieva Nikolova PhD demonstrate that the procedure for announcing the contest has been followed. The materials presented are in accordance with the requirements of Article 60 of the Law on Higher Education in the Republic of Bulgaria and the Regulation for its implementation. The documents also comply with the Regulation for the development of the academic staff at the University of Forestry.

The evaluation of compliance with the indicators presented in the reference, with the minimum national requirements for the academic position of "Associate Professor," shows:

Indicator A - The defended doctoral dissertation, providing the required 50 points in the minimum requirements.

Indicator B 3 - The submitted habilitation thesis - monograph, providing 100 points.

Indicator G7 - The presented 14 articles and reports in the group, published in scientific journals, referenced and indexed in globally renowned databases with scientific information, after reducing the number of co-authors, provide 292.5 points.

Indicator G8 - The presented 5 articles and reports in the group, published in non-refereed journals with scientific review or published in edited collective volumes, after reducing the number of co-authors, provide 15.8 points.

In total for group G - G7 + G8, meeting the minimum requirements of 200 points, 308.3 points are achieved.

Indicator D - In the group of citations or reviews in scientific journals, referenced and indexed in globally renowned databases with scientific information, or in monographs and collective volumes, 2 scientific publications with 2 citations each are presented. For this indicator, meeting the minimum requirements of 50 points, 60 points are achieved.

In total for all required indicators (A, B, G, and D) with minimum requirements of 400 points according to the Regulation for the Academic Staff at the University of Forestry, the candidate has achieved 458.3 points.

Additionally, for indicator E, the candidate presents 180 points.

The total number of points presented by the candidate in Appendix 8 of the Regulation for the Academic Staff at the University of Forestry is 714.1 points.

3. Evaluation of the candidate's educational and teaching activities

Ch. Assistant Tsvetelina Nikolova PhD has conducted lectures and practical study in the Bachelor's degree program, both regular and part-time, in the disciplines of "Beekeeping" and "Silkworm Breeding," as well as practical study in "Fundamentals of Animal Husbandry" and "Private Animal Husbandry." In the Master's degree program, she has taught lectures on the discipline of "Pollination of Agricultural Crops" and lectures and

exercises in the disciplines of "Honey Plants and Bee Pasture" and "Soil Health." The total number of conducted classes for both Bachelor's and Master's degree programs is **630 hours**, according to the presented curriculum for the candidate's workload for the academic year 2021/2022 in the documents for participation in the contest.

The candidate has developed 6 educational programs in the Master's degree program: a program on the discipline of "Pollination" for the specialties of "Crop Breeding and Seed Production" and "Perennial Crops and Horticulture," as well as a program on the discipline of "Pollination of Agricultural Crops" for the specialties of "Vegetable Production," "Perennial Crops," "Field Crops," and "Regenerative Agriculture."

The candidate is a member of several committees related to educational work and other activities at the University of Forestry - "Accreditation Committee," "Committee on Educational Activities and Quality of Education," "Public Relations Committee," and "Committee for Correction of Technical Errors and Updating of Curriculum" for Bachelor's and Master's degree programs in professional fields 6.1. Crop Production and 6.2. Plant Protection.

In the documents submitted for the contest, the candidate provides an official note indicating that she has been a supervisor for 9 diploma theses in the Bachelor's degree program.

Ch. Assistant Tsvetelina Nikolova PhD is the sole author of the "Beekeeping Guide" with ISBN 978-954-332-196-4, totaling 77 pages in paper format. She is a co-author of the published "Silkworm Breeding Exercise Guide" with ISBN 978-954-517-287-8, presented in paper format with a volume of 85 pages. Both guides are used in student education at the University of Forestry.

4. Evaluation of the candidate's scientific, applied scientific and publication activities

4.1. Participation in scientific, scientific-applied and educational projects

Ch. Assistant Tsvetelina Nikolova PhD has participated in the following 8 national and 1 international scientific and educational projects:

Project BG05M2OP001-2.002-0001 "Student Internships - Phase 1 and Phase 2," Funding organization: Operational Program "Science and Education for Intelligent Growth," co-financed by the European Structural and Innovation Funds. Period: 2014-2020. Participation: academic advisor.

Project on the topic: "Comparative study of technologies for growing vegetables and herbs in urban conditions." Leader: Assoc. Prof. Dr. Milena Yordanova; Period: 2022-2023, ongoing; Participation: team member.

Project on the topic: "Study of ecological and agrotechnical aspects for growing agricultural products in an intensified urban environment." Leader: Assoc. Prof. Dr. Elena Tsvetkova, Funding organization: University of Forestry. Period: 2019-2020. Participation: team member.

Project on the topic: "Study of the influence of biochar on soil fertility and the development of agricultural crops." Leader: Assoc. Prof. Dr. Vera Petrova. Funding organization: University of Forestry. Period: 2017-2018. Participation: team member.

Project on the topic: "Comparative study of different types of compost to determine composting phases, compost quality, and application methods." Leader: Prof. Dr. Maya Nustorova. Funding organization: University of Forestry. Period: 2016-2017. Participation: team member.

Project on the topic: "Changes in biological indicators in the Silkworm (Bombyx mori L.) under the influence of feeds collected from areas with high heavy metal content in soil." Leader: Assoc. Prof. Dr. Krasimira Malinova, Funding organization: University of Forestry. Period: 2013-2015. Participation: team member.

Participation in the national scientific project BG05M2OP001-2.009-0034 "Support for the development of scientific capacity at the University of Forestry," under procedure BG05M2OP001-2.009 "Support for the development of doctoral students, post-doctoral students, specialists, and young scientists - phase 1." Participation: team member.

Project BG05M2OP001-2.016-0022 "Modernization of higher education in sustainable use of natural resources in Bulgaria" (NatuResEdu).

In addition to national projects, the candidate has also participated in one international educational project on the topic:
"Enhancing practical skills of horticulture specialists to better address the demands of European Green Deal Initiative" (Hort4EUGreen), No. 2020-1-RO01-KA203-080398, funded by the Erasmus+ Program.

4.2. Characteristics of published scientific results

The total number of scientific publications submitted for participation in the competition is 23, of which one dissertation, a monograph, a manual for beekeeping exercises, a manual for beekeeping, and 19 scientific publications. According to various indicators, they are divided into the following groups:

By Importance:

- One monograph is presented, available in both hard copy and electronic format, with volumes of 144 and 146 pages respectively. The topic of the monograph is "Honey Plants and Bee Pasture" (ISBN: 978-619-7703-33-7). It provides information about honey-bearing vegetation in Bulgaria from the perspective of its significance for beekeeping. The morphological and biological characteristics of honey plants, as well as the secretion of nectar and pollen and the factors affecting them, are discussed. The issue of the impact of climate change on honey plants is also addressed.
- The candidate has a total of 19 publications in scientific journals, including: In refereed and indexed publications in globally renowned databases with scientific information, the candidate has 14 publications printed in

prestigious journals. The publications in non-refereed journals with scientific review and edited collective works amount to 5.

Other publications:
In the attached list of publications, the applicant applies:

* 2 pcs. scientific and applied publications (brochures).

* Book 1 issue on "Mulberry: Genetic Improvement in Context of Climate Change". The candidate has written a book chapter "Chapter 12 - Impact of Climate Change on the Sustainable Growth of Morus alba" It is presented in paper format. The volume of the book is 247 pages.

Publication Place:
The articles published in foreign journals amount to 7, while the publications in national journals total 7 as well. There are 5 publications in proceedings of international scientific forums. The monograph was published in Bulgaria. Participations with papers in scientific conferences and symposiums include 7 in international and 4 in national forums.

Languages of publication: Bulgarian - 5; Foreign languages - 14.

Number of co-authors: sole authorships - 8; with one co-author - 4; with two co-authors - 4; with three or more co-authors - 3.

The published research results are grouped in the following areas:
1. State and issues of Bulgarian and World Apiculture in recent years - G 7.1, G 7.2, G 8.4.
2. Characteristics of the honey productivity of some honey-bearing plants - B3, G 7.3, G 7.12, G 8.3.
3. Influence of certain climatic factors on the morphological and biological characteristics of honey-bearing plants and the quality of their nectar and pollen secretion - G 7.4, G 7.5, G 7.6, G 7.13.
4. Development of bee colonies when raised in different hive systems and bee pasture - G 7.7, G 7.14.
5. Analysis of bee products obtained in urban environments - G 8.1.
6. Effect of adding plant extracts from Oregano (Origanum vulgare L.) and Tribulus (Tribulus terrestris L.) to the artificial food of the Silkworm (Bombyx mori L.) - G 7.8, G 7.9, G 7.10.
7. Influence of certain heavy metals on the development and productivity of the Silkworm (Bombyx mori L.) - G 7.11, G 8.2, G 8.5.

4.3. Reflection of the candidate's scientific activity in the literature (citates)
The candidate has established **4 citations for 2 of his articles**, which are published in scientific journals referenced and indexed in globally renowned databases with scientific information.

4.4. Contributions to the candidate's works

A total of 21 contributions have been formulated, out of which 15 are of original nature, 3 are confirmatory, and 3 are scientifically-applied in nature. Overall, I accept and evaluate the candidate's contributions.

1. **Original Contributions**
    - A monograph has been presented with strictly methodical, fundamental, and applied contributions, which includes generalized information about melliferous vegetation with a view to successful planning and organization of beekeeping activities in accordance with seasonal dynamics and creating conditions for continuous and diverse bee pasture (B 3.1).
    - The morphological and biological characteristics, nectar and pollen secretion, sugar content, honey productivity, and the impact of climatic changes on melliferous plants have been investigated (B 3.1).
    - An assessment of melliferous resources in the area of Vrajdebna - Sofia has been carried out (B 3.1).
    - The impact of biochar on the melliferous potential of species *Cucurbita pepo var. Giromontia, Vicia Faba*, and *Phacelia Tanacetifolia* Benth has been studied (B 3.1).
    - When determining the honey productivity of cherry varieties in the region of Kyustendil, it is proven that in young plantations, the sugar content in nectar is higher (G 7.3).
    - It has been established that trees grafted on M 9 rootstock have lower sugar content in nectar compared to those grafted on MM 106. In older apple trees, an increase in the sugar content of nectar is observed (G 7.4).
    - It has been proven that saffron is a good plant as a food source and honey in the area around Sofia (G 7.6).
    - In the conditions of Ihtiman and Koynare, it has been proven that melliferous vegetation around the apiaries is sufficient for the development of bee colonies throughout the beekeeping season (G 7.7).
    - The possibility of developing bee colonies in the experimental apiary at EEFF "Petrohan" village Buzhia has been established by studying the development and productivity of bee colonies and environmental factors (G 8.3).
    - The possibility of beekeeping development in urban areas has been studied by evaluating the melliferous potential of species from the Fabaceae family (B 3.1) and genus Tilia (G 7.12).
    - Bee colonies raised in the Langstroth hive system have been proven to have the highest annual egg-laying activity for the three beekeeping seasons compared to the Dadant Blatt hives with 12 frames, Dadant Blatt hives with 10 frames, Roger Delon (RD), and Farrar (G.14).
    - Bee colonies of the honey bee (*Apis melifera L.*) have a high degree of hygienic behavior, cleaning 50% of the dead larvae within 6 hours (G 8.4).
    - It has been proven that climatic factors (temperature and humidity) are favorable for the cultivation of bilberries in the Sofia Valley for bilberry leaf production (G.13).

- The positive effect of artificial food with added extract from Origanum vulgare L. on Bombyx mori L. hybrid I1xVB1xH2xHB2 has been confirmed by exhibiting better growth and development (G 7.8).
- It has been proven that the high content of heavy metals lead and zinc in the feed leads to decreased cocoon weight, shell weight, length, and weight of silk thread of the silkworm hybrids Super 1 × Hesa 2, Baksa 1 × Svila 2, and of the breed Kom 1 (G 8.2). It has been found that the high content of heavy metals suppresses vitality, the larval period is prolonged, and the yield of cocoons decreases (G 8.5).

2. Confirmatory Contributions

- The leading factors for Empty Hive Syndrome have been traced, and the development of the issue both domestically and abroad has been analyzed (G 7.1).
- Saffron bulbs with sizes up to 30 mm led to a greater number of flowers per m^2 and a higher overall yield of daughter bulbs (G 7.5; G 7.6).
- New studies have confirmed that silkworms and butterflies of *Bombyx mori L.* accept artificial food with added extract of *Tribulus terrestris L.* well, influencing growth rate and cocooning (G 7.9). The active substances in the plant even in minimal quantities have a positive effect on the larvae's bodies (G 7.10). The presence of heavy metals significantly affects the length and weight of the cocoon and less so the length and the silk ratio (G 7.11).

3. Contributions of a scientific and applied nature

- The state, trends, and prospects of beekeeping in our country and in the European Union during the period 2012–2021 have been investigated. An increase in the total number of bee colonies, honey production, and professional apiaries has been observed (G 7.2).
- It has been established that urban conditions are suitable for the development of bee colonies, their strength, and honey productivity (G 8.1).
- It has been proven that the conditions in the area of Sofia are favorable for the cultivation of safflower as a melliferous crop (G 7.5; G 7.6).

4. Evaluation of the candidate's personal contribution

The personal contribution of Dr. Tsvetelina Nikolova is clearly outlined in both her individual publications and those where she is the first author. I appreciate her role in publications where she is listed second or lower, and I believe her participation is equally valuable, as she contributes to a significant number of research studies.

5. Critical notes and recommendations

1. The contributions in the reference could be presented more generally, taking into account the directions of the scientific works and the nature of the objectives and results therein.

Recommendation

My recommendation to Ch. assistant Tsvetelina Nikolova PhD is to continue her publication activity at a high pace in journals with IF and SJR and in refereed and indexed scientific publications, which will bring her greater citations and recognition of an outstanding scientist in the scientific field in which she works.

6. **Personal impressions**

My personal impressions of the candidate are that they have broad interests in various aspects of the scientific field in which they publish their articles. Their publications stand out for their depth and thoroughness in addressing scientific problems, offering precise analyses of the information obtained from experiments. I believe that Dr. Tsvetelina Nikolova possesses the necessary qualities and professionalism both in working with students and in participating in committees, executing scientific projects, collaborating with scientific teams, and so on.

I am convinced that in the future Dr. Tsvetelina Nikolova will continue to work in science with the same persistence, ambition and energy.

7. **Conclusion**

The documents and materials presented by Ch. Assistant Tsvetelina Alipieva Nikolova PhD meet the requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria (LDASRB), its implementing regulations, and the Regulations for the Development of Academic Staff at the University of Forestry - Sofia.

The minimum national requirements for the scientific and teaching activities of the candidate have been fulfilled in the competition for the academic position of "Associate Professor" in the field of higher education 6. Agricultural Sciences and Veterinary Medicine, PN 6.3. Animal Husbandry, scientific specialty "Special Branches (bees and silkworms)", for the discipline "Beekeeping", announced by the University of Forestry in the State Gazette issue 102/8.12.2023.

I give a positive assessment of the overall academic activity (teaching and research) of ch. Assistant Dr. Tsvetelina Alipieva Nikolova

In relation to everything set out in the Review,

I SUGGEST the candidate CH. ASSISTANT TSVETELINA ALIPIEVA NIKOLOVA PhD to acquire the academic position "ASSOCIATE PROFESSOR" in the discipline "Beekeeping" from professional affiliation 6.3. Animal husbandry.

Reviewer Signature:..

The review was submitted on: 11/4/2024.