

REVIEW

Regarding: Competition for "Associate Professor" in the field of higher education 6. Agricultural Sciences and Veterinary Medicine, professional field 6.2. Plant Protection (Herbology, physiological and phytopathological mechanisms in plant protection), promulgated in the State Gazette No. 63/01.08.2025. with candidate: Senior Assistant Professor Dr. Maria Zhivkova Kaschieva from Shumen University "Bishop Konstantin Preslavski", Faculty of Natural Sciences, Department of Plant Protection, Botany and Zoology

Reviewer: Prof. Dr. Iliya Ivanov Uchkunov, part-time lecturer at the Departments of Plant Protection, Botany and Zoology at the "Shumeni University" Bishop Konstantin Preslavski" and the Department of Plant Breeding at the Technical University of Varna

1. REGULATORY REQUIREMENTS AND COMPETITION DOCUMENTATION

By order of the Rector of Shumen University "Bishop Konstantin Preslavski", I have been appointed as a member of the scientific jury for conducting a procedure for a competition for "Associate Professor" in the field of higher education. 6. Agricultural Sciences and Veterinary Medicine, professional field 6.2. Plant Protection (Herbology, physiological and phytopathological mechanisms in plant protection), promulgated in the State Gazette No. 63/01.08.2025.

The set of materials presented by Senior Assistant Professor Dr. Maria Kaschieva in electronic form in accordance with Art. 67 of the REGULATIONS FOR THE DEVELOPMENT OF THE ACADEMIC STAFF AT THE SHUMEN UNIVERSITY "BISHOP KONSTANTIN PRES LAVSKI", ZRASRB and PPZRASRB. According to the requirements for fulfilling the minimum national requirements under Art. 2b, para. 2 and 3 of ZRASRB, the candidate for acquiring the academic position of "Associate Professor" must present: "minimum number of points on the indicators for occupying the academic position of "Associate Professor".

The report on compliance with the minimum national requirements shows that Senior Assistant Professor Dr. Maria Kaschieva has fulfilled them, the total number of points collected is 480.4, according to the report on compliance with the minimum national requirements under Art. 2b, para. 2 and 3 of the Law on the Protection of the Rights of Persons with Disabilities is as follows:

In group "A", the candidate collects 50 points after defending a dissertation on the topic: "Enrichment of the fodder beet gene pool through the application of in vitro techniques and morphological and cytological characterization of the resulting plants", scientific specialty 04.01.05. "Selection and Seed Production of Cultivated Plants" and acquired the educational and scientific degree "Doctor".

In group "B", for indicator 3. a Habilitation thesis is presented - a monograph with the title "Inventory of weed diversity in arable areas located in the Protected Area BG0002051 "Kaliakra Complex"" ISBN 978-619-201-884-9, University Publishing House "Bishop Konstantin Preslavski", 2025, 122 pages.

In group "G" for indicator 5. a monograph is presented, which is not presented as a main habilitation work, with the title: "Saffron crocus (*Crocus sativus* L.) from the field to the spice" ISBN: 978-619-201-879-5 University Publishing House "Bishop Konstantin Preslavski", 2025, 154 pp.

In group "D" for indicator 7 - Articles and reports published in scientific publications, referenced and indexed in world-renowned databases with scientific information, 7 scientific publications are also presented.

In group "D" for indicator 8 - Articles and reports published in non-refereed journals with scientific review or published in edited collective volumes, 12 scientific publications are presented. For some of the publications in this group, separate authorship protocols are also provided.

The total number of points in group "D" for indicators 5, 7 and 8 is 230.4 points.

In group "D" for indicator 13. Citations or reviews in scientific publications, referenced and indexed in world-renowned databases with scientific information or in monographs and collective volumes are presented 4 citations in journals indexed in the global databases Web of Science and/or Scopus, for which the necessary evidence has been presented.

In group "D" under indicator 15. Citations or reviews in non-refereed journals with scientific review, 8 citations are presented, for which the necessary evidence is presented.

The total number of points in group "D" for indicators 13 and 15 is a total of 100 points.

2. GENERAL CHARACTERISTICS OF THE CANDIDATE IN THE COMPETITION

Chief Asst. Dr. Maria Zhivkova Kaschieva was born on 03.04.1978 in the city of Shumen. In 2000 she completed her higher education at Shumen University "Bishop Konstantin Preslavski" in the "Master" degree with a specialty "Agrochemistry with Farming and Agribusiness" and additional qualification as a teacher of agriculture. In 2002 she was enrolled as a full-time doctoral student within the Agricultural Academy at the Agricultural Institute in the city of Shumen in the scientific direction 04.01.05. "Selection and seed production of cultivated plants" with the topic of the dissertation "Enrichment of the gene pool of fodder beet through the application of in vitro techniques and morphological and cytological characterization of the obtained plants". On 07.03.2006. he successfully defended his dissertation and received from the Higher Attestation Commission a diploma for the ONS "Doctor" with number 30490/from 22.05.2006.

Since 2011, after successfully passing a competition, Dr. Maria Kaschieva has been appointed as a Chief Assistant Professor at the Shumen University "Bishop Konstantin Preslavski" as a Chief Assistant Professor in the Department of Plant Protection, Botany and Zoology, at the Faculty of Natural Sciences. As a senior assistant, he teaches "Plant Physiology" to students in the Bachelor's degree program in "Ecology and Environmental Protection", "Pedagogy of Teaching in Biology and Chemistry", "Pedagogy of Teaching Geography and Biology" and "Pedagogy of Teaching Natural Sciences" and "Plant Protection", and for students in the Bachelor of Science in Plant Protection, leads lecture courses in "Agrochemistry", "Herbology" and "Breeding and Seed Production", for students in the Master's Degree Program, a mandatory lecture course in "Herbology" is conducted.

In 2022, Dr. Kaschieva completed her second master's degree at the Bishop Konstantin Preslavski University of Shumen, majoring in "Ecology and Environmental Protection", in the master's program "Management and Protection of Ecosystems". Within the framework of her work at the "Bishop Constantine Preslavski" University, Dr. Maria Kaschieva gained international experience during her specialization in Romania at the University of Craiova, Faculty of Agriculture within the framework of project BG05M2OP001-2.016-0022 n Bulgaria”, NatuResEdu Funding program: Operational Program “Science and Education for Smart Growth”, co-financed by the European Union through the European Structural and Investment Funds, as well as during its ERASMUS + training. Through additional courses, he also obtains additional qualifications in the field of Geographic Information

Systems, ISO standardization, acquires additional language competence, has good computer literacy, and is fluent in French, Turkish and English. good level, since 2023. is a member of the Academic Council of Shumen University "Bishop Konstantin Preslavski" in the mandate of Prof. Dr. Natalia Vitanova.

The scientific research activity of Senior Assistant Professor Dr. Maria Kaschieva is integral and is in the field of plant protection (herbology and phytopathology) and plant physiology. Her total scientific work experience is 14 years. She is the author and co-author of 2 monographs and more than 30 scientific publications, most of them published in scientific journals indexed in global databases Web of Science and/or Scopus, according to the website of the University of Applied Sciences "Ep. K. Preslavski". In connection with the competition for the academic position of "Associate Professor", 20 were presented number, 7 of them in world databases. Dr. Kaschieva has participated in more than 5 scientific projects funded by the Budget subsidy of Shumen University "Bishop Konstantin Preslavski".

3. CHARACTERISTICS OF THE CANDIDATE'S SCIENTIFIC AND SCIENTIFIC-APPLIED ACTIVITIES

In her scientific research and publication activities, Senior Assoc. Prof. Dr. Maria Kaschieva successfully applies an interdisciplinary approach. Senior Assoc. Prof. Dr. Maria Kaschieva skillfully combines purely biological with plant protection and plant breeding techniques. She applies propagation methods typical of agricultural practice to wild plant species, and studies plants with allelopathic potential for their use in plant protection as biological herbicides (*Origanum vulgare* ssp. *vulgare* and *Adonis vernalis*), uses extracts of poplar (*Populus* ssp.) and thyme (*Thymus* ssp.) in connection with the use of biologically active substances in the fight against the phytopathogenic fungus *Alternaria alternata* f. ssp. *stevae*, in stevia. This type of research reflect some of the current trends in plant protection. In parallel with the study of plant extracts, part of the scientific research includes studying the action of new chemical compounds (Brom oxy-phosphol and its influence on the phytopathogenic bacterium *Erwinia amylovora*), which could find application in the conventional fight against plant diseases. It could also be said that some of the research is of a fundamental nature. He is working on the identification of the seed mycoflora on the seeds of sorghum and sorghum-Sudan hybrids, such as entifies 7 species of phytopathogenic

fungi (*Alternaria alternate*, *Alternaria solani*, *Aspergillus* ssp., *Mucor* ssp., *Helminthosporium turcicum*, *Fusarium monilifor*, *Peronosclespora sorghum*), which in turn leads to the correct selection of disinfectant agents. From the point of view of working with selection materials and physiologically active substances in in vitro conditions, there are again studies related to the antibacterial activity of the AgNO₃ compound, which links the study to the preservation of the health of fodder beet plant breeding materials under sterile conditions.

In his interdisciplinary monographic work "Inventory of weed diversity in arable areas located in the Protected Area BG0002051 "Kaliakra Complex"" he successfully answers questions concerning the relationship between weed diversity and sustainable agriculture. In The same monographic work emphasizes the importance of knowing weeds and protected plant species in order to be able to take adequate measures to protect plants in cultivated areas and to protect protected plant species. In its In her second monographic work "Saffron Crocus (*Crocus sativus* L.) from the field to the spice", Dr. Kaschieva examines *Crocus sativus* L. as a plant that has its place on the map of agricultural crops in Bulgaria. The monograph itself is a significant contribution to the development of scientific and practical knowledge about the culture *Crocus sativus* L. in Bulgaria. The publication systematizes current information on the biology, agronomy, plant protection, yield, quality indicators and market application of the spice saffron and presents a balanced combination of scientific analysis and practical The book is a valuable resource for both researchers in the field of plant breeding and for agricultural producers, entrepreneurs and culinary experts who develop and apply saffron as a high-value crop with national potential. The book raises questions related to technology of cultivation and the missing information in Bulgaria related to the plant protection of this profitable crop. This practically paves the way for new research related to the herbological, phytopathological and entomological aspects of saffron production in our country.

4. CONTRIBUTIONS IN THE CANDIDATE'S SCIENTIFIC WORK

4.1 CONTRIBUTIONS OF PRACTICAL SIGNIFICANCE

1. The first-of-its-kind comprehensive scientific and practical guide to saffron production in Bulgaria has been created, which examines various

aspects of saffron production: plant protection, technological, commercial and cultural aspects, and the guide has been highly appreciated by the Association of saffron producers in Bulgaria, for which an opinion has also been presented.

2. It has been established that the most widespread on the surface of sorghum seeds and sorghum-Sudan hybrids is the phytopathogenic fungus *Alternaria alternata* (Fr.) Keissl., which corresponds to the possibility of correctly selecting a suitable agent for seed disinfection before sowing.

3. 7 species of phytopathogenic fungi (*Alternaria alternate*, *Alternaria solani*, *Aspergillus* ssp., *Mucor* ssp., *Helminthosporium turcicum*, *Fusarium moniliforme*, *Peronosclerospora sorghum*) belonging to 6 genera were identified, which represent the seed mycoflora of sorghum. The combination of pathogens in seeds damages the sprouts and deteriorates the quality of the seeds, which again corresponds to the possibility of correctly choosing a suitable agent for seed disinfection before sowing.

4. The disease "curl", caused by the phytopathogen of *Taphrina deformans* var. *armeniaca*, has been detected in apricot plantations in the region of the city of Shumen. This disease is of little economic importance for apricot, but there is a risk of expanding its distribution area.

5. from fodder beet. Implementation of an in vitro method for obtaining haploid plants from fodder beet (*Beta vulgaris* L. var. *crassa*) has been implemented in practice.

6. Effective nutrient media for organogenesis from passaged calli of unfertilized seed buds of different genotypes of fodder beet have been developed.

7. Silver nitrate added to the nutrient medium for in vitro rooting of fodder beet increases the rooting rate of plants. Optimization of the nutrient medium for rooting of fodder beet was achieved by using 1, 2, 3 and 4 mg/l AgNO_3 . The use of more High concentrations of AgNO_3 are only necessary in the presence of more persistent bacterial contamination of the environment.

8. An interdisciplinary approach has been successfully applied and methods typical of agricultural practice have been integrated in the ecological restoration of disturbed natural habitats.

9. Oregano water infusion reduced root length of *C. sativus* L. and *T. aestivum* L., inhibited cell division and induced chromosomal changes in *Allium cepa*. These results demonstrate the potential of these infusions as a

source of active biological substances that could be used in agriculture, and oregano - as a plant with potential for herbicidal action.

10. *Origanum vulgare* ssp. *vulgare* and *Adonis vernalis* have antibacterial properties. The aqueous infusions of *Origanum vulgare* ssp. *Vulgare* also have antibacterial activity, and the aqueous infusions of *Adonis vernalis* exhibit a stronger inhibitory effect compared to the tested oregano. Aqueous infusions of both plant species have potential for use in the fight against bacterial phytopathogens and in biological plant protection, which was developed in another study on which Dr. Kaschieva worked.

11. Plant extracts in a 1:1 ratio of poplar (*Populus* ssp.) and thyme (*Thymus* ssp.) inhibit the growth of the mycelium and the germination of the spores of the phytopathogenic fungus *Alternaria alternata* f. ssp. *stevae*, in stevia, and an application of these extracts could be found in the organic production of stevia.

12. Allelopathic activity of aqueous extracts from wild plants *Origanum vulgare* ssp. *vulgare* has been established. This characteristic of wild oregano can be further studied as a possibility for use in experimental weed control programs.

13. The antibacterial activity of Br-oxph against the phytopathogenic bacterium *Erwinia amylovora* has been studied for the first time. The compound Brom oxyphosphol (Br-oxph) possesses bactericidal activity, which allows it to be tested in the fight against various important diseases caused by phytopathogenic bacteria.

14. Precipitation and temperature sums are major factors for biomass accumulation in Sudan grass and sorghum x Sudan grass hybrids. There is a significant correlation between shoot intensity and biomass accumulation. The number of developed shoots is highly dependent on agroclimatic conditions.

THEORETICAL CONTRIBUTIONS

1. An inventory of weeds in cultivated areas within the Protected Area BG0000573 "Kaliakra Complex" has been prepared. The list of weeds is not final and shows species heterogeneity in the weed communities. The heterogeneous weed composition is a sign of high ecological value of the cultivated areas, since heterogeneous weed communities are less competitive with cultivated plants.

2. During the inventory of weeds in the cultivated areas, protected plant species with high conservation value were identified as weeds, such as

Aromatic Matthiola (*Matthiola odoratissima* (M.Bieb.) R.Br.), Thin-stemmed Wormwood (*Artemisia lerchiana* Weber, syn. *Artemisia fragrans* Willd.) and Dobrudzhan oats (*Avena eriantha* Durieu). These plant species develop very well in cultivated areas (flowering, seed formation and pods are observed), which indicates the presence of adaptation mechanisms of the plants to the conditions in the cultivated areas.

3. The study of weed composition is an important part of weed control in arable land, and the soil weed seed bank provides an idea of the weed seed (*Artemisia fragrans* Willd.) and Dobrudzhanski oat (*Avena eriantha* Durieu). These plant species develop very well in the cultivated areas (flowering, seed formation and pod formation are observed), which indicates the presence of adaptation mechanisms of the plants to the conditions in the cultivated areas. diversity in soil. Thanks to the study of the weed composition, a real assessment is obtained as to whether one or another production system should be used (e.g. organic production or no till technologies).

5. CRITICAL NOTES AND QUESTIONS

To the materials for the announced competition for "Associate Professor" in the field of higher education 6. Agricultural Sciences and Veterinary Medicine, Professional direction 6.2. Plant protection (Herbology, physiological and phytopathological mechanisms in plant protection), which were provided to me, I have the following critical notes:

- 1) Teamwork is one of the candidate's strengths, but this does not exclude more opportunities for independent publications of the results obtained.
- 2) Increasing the share of publications in which the candidate participates as the first author.

I have no questions for the candidate for the academic position of "Associate Professor".

I am familiar with the scientific and publication activities of Senior Assistant Professor Dr. Maria Kaschieva and I believe that the publications related to her participation in the competition for "Associate Professor" in the field of higher education 6. Agricultural Sciences and Veterinary Medicine, professional field 6.2. Plant Protection (Herbology, physiological and phytopathological mechanisms in plant protection), promulgated in the State Gazette No. 63/01.08.2025, are in line with the purpose of the competition, they reflect the hard work, knowledge and motivation for scientific research work of Dr. Kaschieva.

6. CONCLUSION

Excellent awareness, the use of appropriate methodologies, inclusive interdisciplinary research and in-depth interpretation and analysis of the results obtained have allowed Senior Assistant Professor Dr. Maria Kaschieva to register important contributions - original, scientific and scientifically applied.

After careful and thorough familiarization with the materials provided to me in connection with Article 67 of the PRAS of the Shumen University "Bishop Konstantin Preslavski", and in connection with the requirements of the ZRASRB, PPZRASRB and Regulations for the development of the academic staff at the Shumen University "Bishop Konstantin Preslavski" I give my positive assessment and believe that the author meets the requirements for obtaining the academic position "Associate Professor" in the field of higher education 6. Agricultural Sciences and Veterinary Medicine, Professional Field 6.2. Plant Protection (Herbology, Physiological and Phytopathological Mechanisms in Plant Protection).

This gives me reason to propose to the Honorable members of the scientific jury to elect Senior Assistant Professor Dr. Maria Zhivkova Kaschieva for the academic position "Associate Professor" in the field of higher education 6. Agricultural Sciences and veterinary medicine, professional field 6.2. Plant protection (Herbology, physiological and phytopathological mechanisms in plant protection).

10.12.2025 Prof. Dr. Iliya Uchkunov

