



OPINION

regarding the competition for "associate professor" in the scientific specialty "Plant protection" (entomology), announced in SG no. 97 of 21.11.2023 with candidate Dima Mateeva Markova by Prof. Dr. Veselin Alexandrov Arnaudov, Shumen University "Bishop Konstantin Preslavski", appointed according to Order No. RD 16-47/22.01.2024 of the Rector of the Agricultural University – Plovdiv, as a member of the scientific jury

1. Brief introduction of the candidate

Dr. Dima Mateeva Markova was born on 24.04.1982. in the city of Plovdiv. In 2004, she graduated from Agricultural University - Plovdiv, majoring in "Plant Protection", and in 2005 acquired the Master's degree. In 2006, after winning a competition, she was appointed as a research assistant at the Institute of Vegetable Crops (IZK) - "Maritsa", Plovdiv, Department "Technologies in Vegetable Production". In 2015, the candidate obtained the ESD "Doctor" after defending a dissertation on the topic: "Root-knot nematodes of the genus *Meloidogyne Goeldi* on potatoes in Southern Bulgaria". From 2010 to 2020, she successively held the academic positions of assistant and chief assistant at Institute of Vegetable Crops - "Maritsa", Plovdiv. In 2021 she was appointed as ch. assistant professor at the Agricultural University - Plovdiv, Department of "Plant Protection", where she is still working at. The candidate's career development, as a researcher and teacher, takes place at the Institute of Vegetable Crops - "Maritsa", the city of Plovdiv and the Agricultural University - Plovdiv, with 17 years of scientific experience.

She has an excellent command of English, written and spoken, and good Russian. Possesses good computer literacy and skills in working with laboratory and microscopic equipment, PCR, gel electrophoresis, etc.

2. General description of the scientific production

In the competition for "associate professor", Dr. Dima Markova participates with a total output of 61 scientific papers, grouped as follows:

According to **indicator A – 50 points**, a dissertation was defended on the topic "Root-knot nematodes of the genus *Meloidogyne Goeldi* on potatoes in southern Bulgaria".

According to **indicator B4 - 131.5 points** with a required minimum of 100 pts. 10 scientific works are presented in publications, referenced and indexed in the world-famous databases with scientific information.

According to **group of indicators D - 242.5 points** with a required minimum of 100. According to indicator **D7**, 9 scientific works are presented in publications referenced in the world databases with scientific information. According to indicator **G8**, 42 scientific works are presented in non-refereed publications with scientific review.

According to group of **indicators D – 150 points** with a required minimum of 50. Evidence material for 20 citations is presented. Of these, 15 are assigned to **an indicator D 13**, and 5 to **indicator D 15**.

Out of the total number of scientific papers – 61, the candidate is the sole author in 1 of them, in 5 - first author, in 31 - second and in 24 - third and subsequent author.

Of the 61 scientific works presented, in connection with the competition for the academic position of "associate professor", 28 (45.9%) were published in Latin script, 32 (52.5%) in Cyrillic script and 1 (1.6%) bilingual in both Cyrillic and Latin script.

A serious contribution to the candidate's research activity is the co-authorship of two newly created technologies "Biological production of tomato and cucumber seedlings", "Technology for growing *Tribulus terrestris* L. as a semi-culture of a raised bed - single-row and double-row with drip irrigation and in one book "Technologies for the production of vegetable crops and potatoes".

From the submitted individual reference of the candidate, Dr. Dima Mateeva Markova, for the implementation of the National minimum requirements of the Academic Staff Development Act and the Regulations for the application of the Academic Staff Development Act at the Agricultural University - Plovdiv for the occupation of the academic position "associate professor" , it is evident that the total number of points for all indicators (574 points) exceeds the required minimum number of points - 400 points.

Teaching activity.

The educational and pedagogical activity of Dr. Dima Markova is related to the training of Bachelor's degree students and Master's degree students majoring in "Plant Protection". In the period 2019-2023, her direct classroom employment from lectures, exercises and extracurricular employment totaled 1384.7 hours.

Under the scientific guidance of Dr. Dima Markova, 5 graduates from the Master's degree program "Plant Protection" have successfully defended their theses.

3. Research activity

Areas of publication

Dr. Dima Markova 's research work is related to:

- studying the reaction of susceptibility in different varieties, samples and lines of vegetable crops, potatoes and rice to plant-parasitic nematodes, in connection with the selection of resistance;
- studying alternative methods of plant-parasitic nematode control;
- studying the species composition and population dynamics of major pests and beneficial species in the agroecosystems of vegetable crops;
- studying the efficacy of new plant protection products against pests of vegetable crops grown in greenhouses and outdoors;
- development of systems for biological and integrated plant protection with the pests of vegetable crops
- *Tribulus* cultivation technology *terrestris* L. as a semi-crop and study of associated pests;
- studying the influence of water deficit on growth manifestations and attack by pests in pepper mutant lines.

All scientific developments are closely related to the theme of the competition and the scientific activity of the candidate, Dr. Dima Markova.

The scientific and scientific-applied contributions are significant, out of which the following can be mentioned:

- By screening different genotypes of rootstocks from the family Cucurbitaceae, forms with a high degree of resistance to gall nematodes (*Meloidogyne spp.*) and soil pathogens (*Fusarium spp.* and *Pythium spp.*) (B7; D41) have been established.
- The resistance response of 10 potato cultivars to an attack from *Ditylenchus dipsaci* and *D. destructor* were studied. It was established that the varieties Spunta and Innovator are resistant to *D. dipsaci*, and Sante and Orpheus to *D. destructor* (G25).
- The reaction of rice samples to the causative agent of Fusarium wilt (*Fusarium culmorum*), rice nematode (*Aphelenchoides besseyi* Christie) and osmotic stress tolerance have been studied. Samples were found that were resistant to fusarium wilt (CRLB 1 and Luna), tolerant to osmotic stress (Line № 77, Osmanchik 97, Line №19 and CRLB-1), but not those that were immune to *A. besseyi* (G9; G36).
- The suitability of 8 weed species occurring in the potato agroecosystems as hosts of the root-lysing nematode *Pratylenchus penetrans* and *P. Neglectus* have been studied. It was found that 6 of them are good hosts for both types of nematodes, one is bad (*Amaranthus retroflexus* L.), and another (*Sorghum halepense* (L.) is not a host for *P. penetrans* (D 23).

- The cultivation technology *Tribulus terrestris* L. has been developed as a semi-culture on a raised bed - single-row and double-row with drip irrigation, and for the first time in our country the phytosanitary status of a semi-culture has been established.
- The influence of water deficit on growth manifestations and attack by enemies in pepper mutant lines (G4, G5, G7) was studied.
- The influence of elements of the technology for growing vegetable crops such as:
 - Alternative methods for controlling phytophagous nematodes and phytopathogens by using repellent crops (B5); cover crops (G3); bioagents *Bacillus amyloliquefaciens*, *Bacillus thuringiensis* and *Trichoderma viride* (B6; B9; D20; D28) and plant extracts from *Tanacetum vulgare*, *Allium ursinum*, *Juglans regia* and *Artemisia absinthium* (G31, G34);
 - Effect of temperature and rhizobacteria *Bacillus subtilis* and *Serratia plymuthica* on the vital signs, respectively, of the gall nematode *Meloidogyne hapla* (in potatoes) and on the potato cyst nematode *Globodera pallida* (G 10, G12 and B8) and others.

Citation and referencing of scientific production.

For participation in the competition, Dr. Dima Markova submits 55 citations, of which 49 are in domestic and foreign publications, referenced in *Web of Science* and *Scopus*.

Participation in national and international scientific projects:

Dr. Dima Markova's participation in scientific projects funded by various institutions is enviable. She is a participant in 3 international and 24 national projects, 14 of which are funded by the Agricultural Academy and 10 by the Scientific Research Fund at the Ministry of Education and Science, which is proof that the candidate can work in collaboration with other scientists in joint scientific projects.

4. Notes and recommendations.

I have no critical remarks and questions for the candidate, but I want to make the following recommendation. To make efforts in the future to publish her scientific results in renowned scientific journals in order to be even better recognized in academic circles not only in our country but also abroad. To increase the number of independent publications and those in which she is the lead author.

6. Conclusion.

Based on the analysis of the candidate's pedagogical, scientific and scientific-applied activities, I consider that Dr. Dima Mateeva Markova meets the requirements of the Law on the Development of Academic Staff, Regulations for the Implementation of the Law on the Development of the Academic Staff and the Regulations of the Agrarian University for her application. All works have been highly evaluated through a significant number of citations not only in Bulgaria, but also in foreign specialized publications. Dr. Dima Markova is the co-author of 2 technologies, 1 book and participant in a large number of international and national research projects. She is an established specialist-entomologist with a significant contribution to integrated plant protection in vegetable crops and fully meets the needs of the announced competition for "associate professor" in the scientific specialty "Plant Protection" (Entomology). All this gives me reason to **positively evaluate** her overall activity.

I take the liberty of proposing to the honorable Scientific Jury to also vote positively, and the Faculty Council of the Faculty of Plant Protection and Agroecology at the Agrarian University - Plovdiv to elect Dr. Dima Mateeva Markova as an "**associate professor**" in the field of higher education 6. Agricultural Sciences and veterinary medicine, professional direction 6.2. Plant protection, scientific specialty "Plant protection" (Entomology).

Date: 12.03.2024

Shumen

PREPARED THE OPINION:

(Prof. Dr. V. Arnaudov)