

## OPINION

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on the materials for participation in the competition for occupation of the academic position "Associate Professor", Professional field 6.5. Forestry, scientific specialty "Forest Melioration, Forest Protection and Special Forest Uses ", announced by the Forest Research Institute - BAS, SG. 12/12.02.2021.

### **Applicant to the competition is:**

Ch. Assist. Prof. Gergana Ivanova Zaemdzhikova, PhD

**Prepared by:** Rumen Ignatov Tomov, PhD, Professor in professional field 6.2 Plant protection from the University of Forestry

### **1. Brief biographical data of the applicant**

Ch. Assistant Professor Dr. Gergana Ivanova Zaemdzhikova graduated from the University of Forestry in 2005 and obtained a Master's degree in Landscape Architect. In 2015 he obtained a scientific and educational degree "Doctor" at the Institute of Forestry, Bulgarian Academy of Sciences, defending a dissertation on: Species composition and bioecological characteristics of leafhoppers (Lepidoptera: Tortricidae) on Quercus spp. in the Sofia region ". She began her career in 2008 as a Landscape Architect, Head of Nursery at the University Botanical Gardens (UBG). During the period 2011-2014 she was a full-time doctoral student at the Institute of Forestry at the Bulgarian Academy of Sciences. In the period 2014-2016 she was an Entomologist in the section "Forest entomology, phytopathology and hunting fauna" at the Institute of Forestry at the Bulgarian Academy of Sciences, section "Forest entomology", and since 2016 until now she has been a senior assistant at the same institute. Ch. Assistant Professor Zaemdzhikova has 7 years and 13 days of work experience at the Institute of Forestry at the Bulgarian Academy of Sciences.

In 2018 she improved her qualification through her participation in the Short Term Scientific Mission, Institut National de la Recherche Agronomique, INRA (Orléans, France) (Orléans, France). She is a representative of the young scientists with an advisory vote in the Scientific Council of the Forest Institute at the Bulgarian Academy of Sciences for the period 2016 - 2020). Ch. Assistant Professor Zaemdzhikova has 41 publications. Her scientific results are reflected by the scientific community with 15 citations.

**2. Compliance of the submitted documents and materials of the applicant with the required ones in accordance with the Regulations for acquiring scientific degrees and holding academic positions at the Forest Research Institute - BAS.**

Ch. Assistant Professor Zaemdzhikova has submitted all the necessary documents for participation in the competition. The submitted documents and materials comply with the requirements of the Regulations on the terms and conditions for obtaining a scientific degree and for holding academic positions at the Forest Institute at the Bulgarian Academy of Sciences. The presented materials meet the minimum required points by groups of indicators for holding the academic position of "Associate Professor" for Professional field 6.5. "Forestry". The candidate has completed 908.87 points with a required 500 ones.

### 3. General description of submitted materials

Ch. Assistant Professor Zaemdzhikova participated in the competition with 34 works, as follows: Scientific publications that are referenced and indexed in world-famous databases with scientific information 10; Articles and reports published in scientific journals, referenced and indexed in world-famous databases with scientific information - 17. Articles and reports published in non-refereed journals with scientific review or published in edited collective volumes - 6; Popular publications - 1 pc.

The scientific publications are 33, of which 23 are in a foreign language. They are published in 13 scientific journals, 6 of which are foreign and book of proceedings of 3 scientific forums.

### 4. Main fields in the research work of the candidate and the most important scientific and scientific-applied contributions.

The scientific contributions of Ch. Assistant Professor Zaemdzhikova are indisputable and can be summarized in the following three main areas: (1) *Studies on the species composition, biology and ecology of insect pests*, (2) *Natural regulators of the number of forest insects and trophic relationships*, (3) *Insect damage by forest and shrub species*.

#### *Studies on the species composition, biology and ecology of insect pests.*

The main studies of Ch. Assistant Professor Zaemdzhikova in this direction are directed to the pine procession (*Thaumetopoea pityocampa*). The timing of the flight period of *Thaumetopoea pityocampa* in different regions of the country has been determined. It was found that in Bulgaria the average fertility of *T. pityocampa* is 236 eggs. The relative share of hatched eggs is 66.1%, and of sterile - 3.7%. A large difference was found in the relative share of sterile eggs, which ranged from 0.2% in the northern part of the range to 29.1% in the south. The phenological development of *T. pityocampa* was found in 21 sample plots. The presence of objects that are pure in form (inhabited only by summer or winter populations), as well as those in which both forms coexist at the same time, has been established. For the first time the terms and dynamics of hatching of the larvae of the summer form of *T. pityocampa* in the region of Kirkovo were studied. The rates of expansion of the pine procession in Central Bulgaria have been clarified. (D 7.3, D 7.5, D 7.10, D 7.15, D 8.2, D 8.3, NP1,)

Two new species have been identified for the fauna of Bulgaria - *Mesophleps oxycedrella* and *Rhimphoctona xoridiformis* (D 7.12, D 7.14). The terms of the appearance of the adults and the duration of the imaginary period of 12 species of the family Tortricidae have been established. (D 7.1).

#### *Natural regulators of forest insect numbers and trophic relationships*

24 species of parasitoids from the family Ichneumonidae have been identified on 6 species from the family Tortricidae. Eight parasitoid-host connections are new for science, and seven parasitoid-host connections are new for Bulgaria. Two species of parasitoids - *Apophua genalis* and *M. punctipleuris* are associated for the first time with hosts in Bulgaria. The percentage of parasitoids of the family Ichneumonidae in leaf-eating representatives of the family Tortricidae was established. Three types of parasitoids have been identified. Chalcidoidea, which were isolated from pupae of *T. viridana* and 4 *A. crataegana*. Two parasitoid-host relationships are new to Bulgaria. For the first time in Bulgaria a list of 15 species of leaf-eating representatives of the family Tortricidae, trophically related to 7 species

of oak species (*Quercus* spp.) was developed. *Oecanthus pellucens* was reported as a predator on *T. pityocampa* larvae. The parasitoid *Chorebus gedanensis* was found to be highly effective on the abundance of *Hexomyza schineri*. Six trophic relationships "parasitoid - host" are new to the country.

86 taxons from Cerambycinae on 49 tree and shrub species belonging to 2 coniferous and 11 deciduous families have been identified. New or additional information on trophic relationships with host plants for 59 taxa is presented. 69 food connections are new for Bulgaria. (D 7.7, D 7.9, D 7.13, etc.).

#### *Insect damage to forest and shrub species*

The economic importance of insect pests in the forests of the country for a thirty-year period (1990 - 2002 and 2003 - 2018) has been determined. The complete list of insects is presented - xylophages, trophically related to the two "economically insignificant" tree species - hornbeam (*Carpinus orientalis* Mill.) and mulberry (*Fraxinus ornus* L.) was developed (D 7.6, D 7.8, D 7.11, D 7.1, D 7.16, D 8.1).

Ch. Assistant Professor Zaemdzhikova also has significant applied contributions.

It was found that in deciduous forests, especially in oak ecosystems, insect attacks play a secondary role in their drying, which is insignificant against the background of the urgent need to implement a silvicultural system that allows coppice oak forests to be successfully converted into seed. The terms and dynamics of hatching of the larvae of the early phenological form of *T. pityocampa* in the region of Kirkovo (Eastern Rhodopes) are determined, which are essential for optimizing the control of the pest. For the first time in the country, in the region of Slivnitsa that transport traffic in areas with a high road network density is the reason for the spread of *T. pityocampa*. It has been established that the planning of forest protection measures against the Pine Procession should be carried out according to the density of winter nests and egg rings, and not according to the number of male butterflies caught. The effectiveness of 3 types of pheromone traps - open type "Delta" and closed type with slits - "Carton Box" and "Plastic Jar" was studied. (D 7.6, D 7.10, D 7.17, etc.)

### **5. Reflection of the applicant's scientific activity in the literature (Citation)**

The scientific results of Ch. Assistant Professor Zaemdzhkova have received a response at home and abroad, which is expressed in a total of 15 citations of 35 of her works, as follows: in scientific publications, referenced and indexed in world-famous databases with scientific information or in monographs and collective volumes – 10, in a monograph - 2, in an unrefereed magazine – 3.

### **6. Participation in research projects**

Ch. Assistant Professor Zaemdzhikova has participated in 6 projects funded by various national sources, as follows: NSF - 2, the Budget Subsidy of BAS - 1, EEA - 2, MES - 1, Ch. Assistant Professor Zaemdzhkova is the leader of a project funded by BAS

### **7. Assessment of the applicant's educational activity**

Ch. Assistant Professor Zaemdzhikova has experience as a part-time lecturer at the University of Forestry. In the academic year 2018-2019 she conducted 107 hours of exercises in the discipline "Pests of cultivated plants", and in the academic year 2019-2020 she conducted 121 hours in the same discipline.

## **8. Assessment of the applicant's personal contribution**

The personal participation of Ch. Assistant Professor Zaemdzhikova in research and applied projects and the published 34 publications is indisputable. She is the lead author of 62% of the publications presented. Seven of the publications are stand-alone (№№ 10, 18, 19, 20, 21, 22, 23). She is the the first author of 12 of the publications (№№ 8, 9, 11, 12, 13, 14, 24, 25, 26, 34, 35, 38), She is a second author in two publications (№№ 27, 28), and in the remaining 13 publications she is the third and next author.

## **9. Critical notes and recommendations**

I have no critical comments on the submissions

## **10. Personal impressions**

Based on my professional contacts with Ch. Assistant Professor Zaemdzhikova, I would define her as an extremely motivated and purposeful researcher and expert in the field of forest protection. The feedback from her teaching activities at the University of Forestry by the colleagues and students is excellent.

## **11. Conclusion**

Based on above mentioned I SUGGEST the candidate Ch. Assist. Prof. Gergana Ivanova Zaemdzhikova, PhD, to occupy the academic position of "Associate Professor" in professional field 6.5. Forestry, scientific specialty "Forest Melioration, Forest Protection and Special Forest Uses "

Prepared by:

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