

RECENSION

From **prof. dr. Alexander Nikolov Tashev**
University of Forestry – Sofia

For the materials presented by **Dr. Slavcho Asenov Savev** from the University of Forestry – Sofia (UoF), for participation in a competition for the academic position of "associate professor" in higher education 6. Agricultural sciences and veterinary medicine, professional direction 6.5. Forestry, scientific specialty "Forest amelioration, protection of forests and special uses in forests", for the needs of the Department of "Forestry", Faculty of Forestry of UoF, announced by decision of the AS of UoF No. 42/22.11.2023 in DV No.102 of 08.12.2023, published on the website of the University of Forestry on 30.11.2023 with procedure code: **FOR-AsP-1123-114**.

1. Brief biographical data about the candidate.

Slavcho Asenov Savev was born on August 19, 1969 in Sofia. In 1994, he graduated from the University of Forestry - Sofia, majoring in "Forestry", specializing in "Environmental Protection". From 1995 until now, he has been working at the University of Forestry - Sofia. From 1995 to 1998, he was a full-time doctoral student and part-time assistant in "Botany" at the Faculty of Forestry of UoF-Sofia. The topic of his doctoral dissertation is "Study of non-wood forest-plant resources in the Petrokhan region - Western Stara Planina with a view to their rational use" and was defended in 2003.

From 1998 to 2003 he was an assistant in the Department of Forestry at the Faculty of Forestry, and since 2003 he has been the main assistant in the same department. Since the academic year 2008/2009, he has been conducting lectures on the discipline "Management of non-timber resources in protected sites", and since the academic year 2013/2014 he has been conducting lectures on the disciplines "Non-timber forest resources" and "Cultivation of mushrooms and herbs" for students of the specialty "Forestry", "Bachelor" educational qualification degree. Since the academic year 2017/2018, he has been conducting a master's course in the discipline "Multifunctional forest management".

2. General description of the presented materials.

The candidate Slavcho Asenov Savev submitted a **total of 21** scientific publications for his participation in the competition. From them:

Abstract of dissertation work for obtaining the educational and scientific degree "doctor" - 1 pc.

Monographs – 1 pc.

A book based on a protected dissertation work for awarding the educational and scientific degree "doctor" - 1 pc.

Book chapters or collective monographs – 2 pcs.

Articles in journals with an impact factor (according to Web of Science, IF) – 4 pcs.

Articles in Bulgarian magazines, referenced and indexed in other databases - 3 pcs.

Publications in proceedings of international scientific forums - 3 pcs.

Publications in non-refereed scientific journals – 6 pcs.

There are 21 graded publications according to the "Regulations for the conditions and procedures for acquiring scientific degrees and holding academic positions at the University of Forestry". The 21 publications scored can be classified as follows: according to indicator A – **1 item – 50** points;

according to indicator B 3 – **1 item – 100** points;

according to indicator G 6 - **1 item – 40** points;

according to indicator G 7 – **7 items – 97** points;

according to indicator G 8 – **9 items – 41.16** points;

according to indicator G 11 – **2 items – 24** points;

according to indicator D - **18 citations - 170** points.

Total: **522** points with a minimum of **400** points required.

12 of the publications are in English and 9 are in Bulgarian. There are 5 independent publications, 4 have one co-author, and the rest have two to more co-authors. In 12 of the submitted publications, the candidate is the first author, in 3 publications he is the second author, etc.

The candidate has participated in **13** scientific forums where posters or presentations have been presented. He participated in 3 scientific projects financed by the NIS of the University of Forestry as a member of the working team and in 3 scientific and applied projects financed by Bulgarian institutions and also participated in one international scientific project financed by a foreign institution. He was the head of 7 scientific-applied projects financed by international institutions and 2 topics financed by the educational experiential forestry unit at the University of Forestry. There are 4 participations in scientific and educational projects and 3 participations in the preparation of expert opinions for municipalities.

3. Reflection of the candidate's scientific publications in the literature.

To date, the candidate has submitted 18 citations to 8 of his publications, which are scored according to the "The Regulations". Of these citations, only two are in Bulgarian, and the rest are in English. This fact testifies to the good scientific level of the candidate's publications.

4. General characteristics of the applicant's activity:

4.1. Educational and pedagogical activity.

The educational and pedagogical activities of Ch. Assistant Slavcho Savev is significant in volume and includes the conduct of lectures, practical lessons, and field practices in disciplines studied by students from the specialty "Forestry" at the University of Forestry from 1995 until now.

From the academic year 2010/2011 for 13 consecutive years of Ch. Ass. Dr. Slavcho Savev, was assigned to deliver the lecture courses on the discipline "Management of non-wood resources in protected sites" - elective for the "Bachelor's" educational qualification degree, both full-time and part-time. Since the academic year 2013/2014, for 11 consecutive years, he has been assigned presentation of the lecture courses on the disciplines "Non-timber forest resources" - mandatory for educational qualification degree "bachelor" and "Cultivation of mushrooms and herbs" - optional for educational qualification degree "bachelor", full-time and part-time study. From the academic year 2016/2017, for 8 consecutive years, Ch. Ass. Dr. Slavcho Savev was assigned to deliver the lecture courses on the discipline "Multifunctional forest management" - mandatory for the master's degree program (during the academic years 2016/2017 and 2017/2018 independently, and then jointly with the chief assistant dr. Kalin Karamfilov)

The candidate has independently prepared 3 study programs in the disciplines: "Management of non-wood resources in protected sites", "Non-timber forest resources", "Cultivation of mushrooms and herbs" and 2 study programs in co-authorship - in the disciplines "Multifunctional forest management" and "Ecosystem Services in Forest Territories".

In the above disciplines, Dr. Savev has developed electronic courses in the e-learning systems of the University of Forestry (elearn.ltu.bg and in the Microsoft Teams platform). An examination test system has also been developed and e-courses of lectures in the form of presentations and an e-exercise guide have been uploaded.

In the period from 2012 to 2024 Ch. Ass. Dr. Slavcho Asenov Savev, supervised 18 successfully defended diplomas, and from 1995 to 2024 he reviewed 16 diploma theses of students majoring in Forestry, both Bachelor's degrees and Master's degrees.

During the period 2001-2023, Dr. Savev has been a co-author in writing one book, two editions of a practical guide for cultivating Oyster mushrooms, two entrepreneur handbooks in forestry, a manual for exercises in the discipline "Non-wood forest resources," and a "Guide for starting your own business in forestry."

4.2. Scientific, applied-scientific, and methodical contributions.

The scientific contributions presented for the competition are the result of research that can be summarized in the following directions:

Scientific contributions;

- Contributions from scientific and applied research;
- Applied research.

A detailed habilitation certificate is presented, which summarizes the results of the research and the contributions in the scientific publications of the candidate under indicator G.

4.2.1. Contributions of a scientific nature.

4.2.1.1. Studies related to non-timber forest resources.

4.2.1.1.1. Inventory studies and resource assessment of non-timber forest resources:

- The species composition, productivity, biological and exploitation stocks of medicinal plants and forest fruit species in beech forests, open spaces, and conifers in beech natural habitats, in the zone of the anthropogenically altered border between beech forests and the upper forest border in the Petrokhansky region were established share of Western Stara Planina;
- An original methodology for the inventory and mapping of medicinal plants by types of areas in forest territories has also been developed;
- Phytocoenotic features, productivity, and stocks of the European wild ginger (*Asarum europaeum*) in the beech forests of the Western Stara Planina and the spring pheasant's eye (*Adonis vernalis*) in Western Bulgaria have been established.

4.2.1.1.2. Studies related to mycota

- Five species of subterranean macromycetes were established for the first time in Bulgaria: *Tuber rufum*, *Gautieria graveolens* and *Lactarius stephensii* and two new species of the genus *Tuber* in the old oak-hornbeam forests in the plain belt;
- New occurrences of *Tuber excavatum* and *Gautieria morchelliformis* were reported;
- DNA sequencing of studied subterranean fungi was performed and a detailed phylogenetic analysis was performed for *T. excavatum*. Members of the *T. excavatum* group have been confirmed to have high intraspecific genetic variability;

- The relationship between the regeneration of old forests and the hypogean mycota was studied.

4.2.1.1.3. Status of populations of medicinal highland plants

- The population ecology of the rose root (*Rhodiola rosea*), the yellow gentian (*Gentiana lutea*), and the bearberry (*Arctostaphylos uva-ursi*) on the territory of the Pirin National Park and of the rose root (*Rhodiola rosea*) in the Rila National Park were studied. The size of the deposits, their density, age structure, and reproductive capacity were established;
- New data were obtained on the distribution of the rose root (*Rhodiola rosea*) in the National Park "Pirin" - seventeen larger or smaller localities of the species and on the yellow gentian (*Gentiana lutea*) - six new localities. The hortology of the bearberry (*Arctostaphylos uva-ursi*) in the park has also been completed.

4.2.1.1.4. Ecological studies related to subterranean ectomycorrhizal mycota:

- It was established that the spread of *Tuber aestivum* is related to a certain intrazonality in climate, soil conditions, and vegetation, and their influence on the symbiotic relationships between host plants and ectomycorrhizal fungi was traced;
- The most important soil factors for the formation of the fruiting body in the productive habitats of *Tuber aestivum* in Western Bulgaria were determined and the taxonomic diversity of its symbiotrophic flora was studied.

4.2.1.1.5. Methods of use and protection of resources.

- An overview of the medicinal plants from the Bulgarian dendroflora was made to their sustainable use and conservation;
- Regimes have been developed for the protection and sustainable use of the pastures in the high mountain zone of the Belasitsa National Park.

4.2.1.1.6. Pharmacological features of medicinal plant species

- Ten species of the genus *Astragalus* were studied for their content of mauritanin. Mauritanin was first reported in *Astragalus cicer*, *A. onobrychis*, *A. glycyphyllos*, *A. glycyphylloides*, *A. corniculatus* and *A. ponticus*. In *A. depressus* the compound was not detected. It was found

that *A. onobrychis* var. *chlorocarpus* and *A. cicer* can be used as a potential source of muartanin, replacing the rarer *A. monspessulanus* ssp. *monspessulanus*.

4.2.1.2. Biological diversity in the old forests of Strandja and their management and conservation regimes.

- The area, distribution, biological diversity, and the main management regimes for maintaining a favorable environmental condition of the old forests in the "Strandja" PP have been established.

4.2.2. Contributions of applied-science nature:

4.2.2.1. Cultivation, bonification and zoning, variety testing, introduction and methods of cultivation of forest fruit species, medicinal plants, and mushrooms.

- A technology for growing the tall American blueberry has been developed, including methodical and applied approaches to the cultivation of the different varieties;
- A methodical guide was implemented on the creation, maintenance, and variety testing of fields for plantations of tall American blueberry and chokeberry on the territories of the "Petrohan" and "Yundola" educational experiential forestry unit and forest territories in free areas in forest nurseries in different parts of the country. Regionalization and assessment of the main soil characteristics and bonification were carried out during the creation of tall American blueberry crops with the possibility of cultivation in nine regions in four climatic regions of Bulgaria, at altitudes of 400 m. up to 1400 m.
- The duration of the main phenological phases of vegetation and dormancy in the conditions of nine regions of Bulgaria was established for twenty varieties from four groups of the tall American blueberry. Interception and survival were evaluated in different groups of cultivars depending on the use of different cultivation techniques.

4.2.2.2. Propagation and reintroduction of rare and protected plant species.

- Suitable methods for vegetative reproduction, substrates, and periods of collection of vegetative propagating materials of the conservationally significant five-stem willow (*Salix*

pentandra) and Elwes's snowdrop (*Galanthus elwesii*) are proposed;

- The appropriate age of the donor plants for the ex-situ propagation in the wild reintroduction of the common yew (*Taxus baccata*) has been established.
- Based on the biological and ecological features of the individual species, the potentially productive areas for growing medicinal plants have been established;
- Guidelines for the sustainable protection of the rose root (*Rhodiola rozea*) in Rila and the bearberry (*Arctostaphylos uva-ursi*) in Pirin have been defined;
- The ecological features of the summer truffle (*Tuber aestivum* Vittad.) were studied in deposits in Western Stara Planina and it was found that the most productive habitats of the species in Western Bulgaria have high values of cation exchange capacity (CEC) and low CaCO₃ content. It has been confirmed that Ca²⁺, total organic carbon, and total nitrogen are among the most important factors for the formation of fruiting bodies in the summer truffle;
- The medicinal dendroflora of Bulgaria was analyzed, and the structure was established in terms of the raw materials used, the application in various medical fields, and the type of biologically active substances. The economic importance of the most used medicinal plants from the dendroflora was assessed;
- The set of necessary soil-climatic characteristics and agrochemical analyses for the selection of areas for the cultivation of tall American blueberry and chokeberry in forest territories has been determined. The technological features of the cultivation of forest fruit species and medicinal plants in forest territories are presented;
- The reintroduction of the five-stemmed willow and the Elvesian snowdrops in their natural habitats on Vitosha was tracked. The attempt to introduce yew (*Taxus baccata*) into the Vitosha and Strandzha nature parks showed that young plants hardly develop;
- The main indicators of the old forests in terms of their management on the territory of the Natural Park "Strandja" have been determined.

4.2.3. Applied Contributions

- The influence of the structure of the tree stand and the intensity of different types of fellings in beech forests on the distribution and productivity of medicinal plants and forest fruit species has been determined;
- The ecological parameters of the regions in Bulgaria suitable for the creation of plantations with common summer truffle (*T. aestivum*) have been established;
- Two grazing areas have been set aside on a rotational basis in two areas of the "Belasitsa" Natural Park;
- Certain schemes and methodological approaches are proposed for planting the tall American blueberry in different cultivation areas;
- The requirements regarding the microclimatic and edaphic factors during the reintroduction of the yew in the territories of the "Strandja" and "Vitosha" Natural Park have been determined.

5. Evaluation of the candidate's personal contribution.

From the materials presented by the candidate, it can be seen that his independent publications are 5, four are with one co-author, and the others have from two to 4 co-authors. In 12 of the presented publications, the candidate is the first author, in 3 publications he is the second author, etc. The data shows Dr. Savev's ability to work independently in the directions of his scientific research - to successfully formulate and solve the tasks set. At the same time, the rest of the publications demonstrate the ability to work in a team - collaborative work is a natural phenomenon in modern science and is highly valued all over the world.

6. Critical Notes.

The following critical remarks can be made on the presented materials:

- 6.1. Some of the applied contributions are presented as scientific in the reference.
- 6.2. The candidate is hardly the first author who has "Defined criteria for the establishment of medicinal plants of nature protection and economic importance".
- 6.3. What should be understood of the statement from document 9: "Tall American blueberry crop zoning has been carried out"?
- 6.4. What is the meaning of the expression: "grazing can be used as a conservation tool"?
- 6.5. How should the expression be understood: "In twenty varieties of four groups of the tall American blueberry..." What groups are we talking about?
- 6.6. In the "Contributions" it is noted that: "Established the conservation status of the rose root (*Rhodiola rozea*) and yellow gentian (*Gentiana lutea*) in the

territory of Pirin and co-authored that of the bear grape (*Arctostaphylos uva-ursi*) in Pirin". The conservation status of the mentioned species is well known from the relevant reference documents – Red books and lists, Laws on species protection and medicinal plants, etc.

7. Personal impression.

I have known Dr. Slavcho Savev as a younger colleague for many years during which we have communicated as colleagues in our professional field. We have also jointly conducted many "botany" practices with students from the "forestry" specialty. Colleague Savev has shown himself to be a competent connoisseur of plants and mushrooms and their medicinal properties. He has always shown collegiality in our mutual contacts. I hope our professional cooperation will continue in the future.

8. Conclusion.

The documents and materials presented by Ch. Ass. Dr. Slavcho Asenov Savev, meet all the requirements of the ZRASRB, the Regulations for its implementation, and the Regulations of the University of Forestry-Sofia and meet and even exceed the requirements for the academic position of "associate professor". It is obvious that Dr. S. Savev is an experienced and highly erudite scientific researcher with a clearly defined scientific topic. All this gives me grounds to announce my positive assessment and to recommend to the respected members of the Scientific Jury to vote for him to be awarded the academic position of "associate professor" in professional direction 6.5. Forestry, scientific specialty "Forest reclamation, forest protection and special uses in forests",

27.03.2024

Jury member:


/prof. dr. A. Tashev/