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STANDPOINT

regarding the competition for the academic position of "Professor" in the scientific specialty "Fodder Production and Meadow Cultivation", announced in the State Gazette, issue 65 of 17 July 2026, with candidate Assoc. Prof. Atanas Veselinov Sevov, PhD, from the Agricultural University of Plovdiv, appointed by Order № RD 16-901 of 17 September 2026 by the Rector of the Agricultural University – Plovdiv.

Reviewer: Prof. Boryana Georgieva Churkova, PhD (Research Institute of Mountain Stockbreeding and Agriculture – Troyan; Higher Education Area 6. Agricultural Sciences and Veterinary Medicine, Professional Field 6.1. Plant Growing, Scientific Specialty: Fodder Production and Meadow Cultivation), appointed as a member of the scientific jury by Order № RD-16-901 of 17 September 2026 by the Rector of the Agricultural University.

1. General data on the candidate's career and thematic development

Assoc. Prof. Atanas Veselinov Sevov, PhD, graduated from the Agricultural University of Plovdiv in 2002 with a degree in "Agronomy - Field Crops" and acquired the qualification of an Agronomist Engineer. In 2011, he obtained the Educational and Scientific Degree of "PhD" in the scientific specialty "Fodder Production and Meadow Cultivation", defending a dissertation titled *"Study on the Influence of Some Agrotechnical Factors on the Productivity and Quality of Multifoliate Alfalfa"*.

His career development as a scientist, as presented in his curriculum vitae, reflects a consistent academic advancement. From 2011 to 2017, he held the academic position of "Chief Assistant Professor". During this period, his main activities were related to teaching and research work, involving the delivery of lectures and practical classes, the development of teaching materials, participation in research projects, publication of the results of scientific experiments, and participation in scientific forums and academic committees. Since October 2, 2017, he has held the academic position of "Associate Professor" in Fodder Production and Meadow Cultivation. From 2020 to the present, he has been the Decan of the Faculty of Agronomy at the Agricultural University of Plovdiv.

An essential place in the research activity of Assoc. Prof. Atanas Veselinov Sevov, PhD, is occupied by studies related to the sustainable management, productivity, and functional state of grassland ecosystems, as well as the dynamics of carbon exchange, the state of permanent grasslands, and the possibilities for assessing degradation processes. A large share of the research is related to the application of modern remote, digital, statistical, and modeling approaches for the monitoring, assessment, and management of grasslands and agro-ecosystems. The monitored impact of climatic conditions, soil processes, biological agents, and technological solutions on productivity, sustainability, and efficiency in crop production is extremely relevant to modern agriculture. A logical consistency is observed in the research presented in the dissertation thesis and the scientific output certifying the procedures for the academic positions of "Associate Professor" and "Professor". The materials presented under the procedure correspond to the scientific specialty "Fodder Production and Meadow Cultivation".

2. General description of the submitted materials

In the competition for "Professor", Assoc. Prof. Atanas Veselinov Sevov, PhD, participates with a total output of 29 works, grouped as follows:

- Scientific publications in the nomenclature specialty – 30 in total, of which:

Publications with an impact factor / impact rank – 27;

Publications in peer-reviewed and refereed scientific journals – 29;

Publications in conference proceedings – 17;

The personal participation of Assoc. Prof. Atanas Sevov in the aforementioned 29 works is illustrated by the fact that one is single-authored, in eight he is the first author, in eight he is the second author, and in the remaining thirteen he is the third and subsequent author.

- Textbooks – 1.

The number of works subject to analysis for the preparation of this review is 29.

3. MAIN DIRECTIONS IN THE CANDIDATE'S RESEARCH WORK. DEMONSTRATED SKILLS OR APTITUDES FOR MANAGING SCIENTIFIC RESEARCH (PROJECT MANAGEMENT, ATTRACTED EXTERNAL FUNDING, ETC.)

The research activity of Assoc. Prof. Atanas Sevov, PhD, is focused on areas addressing the core priorities of fodder production and meadow cultivation, management of natural swards, sustainable agriculture, organic production of fodder, and the implementation of innovative technologies.

The scientific works submitted for the competition present eight directions related to the contemporary challenges of fodder production and meadow cultivation.

Smart management and digitalization of pasture phytocoenoses. Studies related to the smart management of pasture phytocoenoses are presented, aiming at the implementation of modern digital technologies for the monitoring, analysis, and optimization of grassland communities. The research is in line with continuously changing climatic conditions and the associated degradation of natural resources, which necessitates the development of effective and accessible tools for the assessment and management of pastures in relation to sustainable agriculture.

Carbon balance and ecological functions of grassland phytocoenoses. Scientific experiments determining the role of natural and semi-natural grassland communities in the global carbon cycle and their significance as a key element for mitigating climate change are presented. The capacity of grassland communities to accumulate and store carbon in plants and soil, thereby regulating the carbon balance, has been proven.

Soil fertility and biological technologies. Sustainable approaches for improving soil condition and crop growth through the use of biological and eco-friendly agents have been developed. The research is highlighted as essential for the transition to sustainable agro-ecosystems amid escalating soil degradation and the need to reduce chemical pressure in agriculture.

Agrotechnologies under climate change conditions. An analysis has been made of the impact of climatic factors on agricultural crop productivity and the need to develop adaptive agrotechnological solutions to enhance the resilience of agro-ecosystems. Crop adaptation is presented as a primary factor in coping with the consequences of climate change.

Plant protection and productivity. The effectiveness of various agents and approaches for weed and pest control and their impact on agricultural crop productivity have been investigated. Sustainable plant protection strategies ensuring stable yields under conditions of changing climate and intensifying pressure from biotic factors are presented.

Genetics and breeding. The genetic regularities determining agricultural crop productivity have been studied, and approaches for enhancing breeding progress under changing environmental conditions have been developed. Breeding is identified as a key tool for adapting agro-ecosystems to cope with climate change.

Engineering and robotic solutions in agriculture. Engineering and robotic solutions are presented as an element of the development of modern precision agriculture. The research

in this direction focuses on the development and application of innovative technological solutions for the automation and optimization of agrotechnical processes.

State and sustainable management of permanent grasslands in Bulgaria. An analysis of the state of pastures and meadows, which are inextricably linked to the sustainable management of grassland phytocoenoses, has been carried out. Through the conducted research *"State of permanent grasslands (pastures and meadows) in Bulgaria (2015–2024)"*, an integrated analysis of the area dynamics, productivity, botanical composition, and ecological functions of permanent grasslands in Bulgaria was performed based on statistical data, scientific publication results, and spatial information.

The participation of Assoc. Prof. Atanas Sevov, PhD, in two national programs: "Smart Crop Science" and "Smart Animal Husbandry" (Council of Ministers Decision № 866 of 26 November 2020) under the Ministry of Education and Science during the period 2020–2024 demonstrates the candidate's ability to work in a team. His leadership of Work Package 2 (or Work Package 4) under the National Research Program "Smart Animal Husbandry" proves his capability to organize research teams and manage research projects, which I evaluate positively.

4. Assessment of the candidate's pedagogical training and activities. Their role in the training of young researchers.

The submitted Certificate № NOR 5-22 of 17 July 2026 proves the pedagogical experience of Assoc. Prof. Atanas Sevov, PhD, in the training of students in Bachelor's and Master's degree programs at the Agricultural University of Plovdiv. A total of 17 syllabi developed for the following disciplines are presented: "Design, Establishment and Maintenance of Grasslands"; "Establishment and Maintenance of Landscape Objects and the Use of Plants Therein"; "Plant Diversity in Natural Swards"; "Grass Seed Mixtures"; "Forage Crops and Pasture Management"; "Forage Crops and Pasture Management" [repeated in source]; "Grass Seed Mixtures for Landscaping"; and "Introduction to Agrarian Education", which fully correspond to the scientific specialty for which the candidate is applying for the academic position of "Professor". The candidate's teaching workload for the period from 2021/2022 to 2025/2026 is 2,875.3 hours, including lectures, practical exercises, and extracurricular engagement. The total number of hours per academic year is as follows: 552 (2021/2022); 452.4 (2022/2023); 609 (2023/2024); 673.9 (2024/2025); and 588 (2025/2026). The presented co-authorship in one textbook and two university study aids intended for the school network complements the candidate's pedagogical activity.

Assoc. Prof. Atanas Sevov has submitted evidentiary material for a teaching experience of 18 years, 3 months, and 6 days (Ref. № LS 92 of 20 July 2026) at the Agricultural University of Plovdiv. Under his supervision, 24 graduate students have successfully defended their thesis, and he is currently the academic supervisor of four graduate students. He has served as the supervisor of two successfully defended PhD students: Georgi Stoyanov, who defended his dissertation on 3 October 2025, titled *"Study on the Possibilities of Using Mathematical Models to Manage the Yield of Maize (Zea mays L.) Grown in Various Directions"*, and Ivelin Markov, who defended on 27 March 2026, with a dissertation titled *"Study on the Influence of Various Sustainable Grass System Management Practices on Soil C Sequestration under Intensive Maintenance of Sand-Based Putting Greens and on the Annual Carbon Budget"*.

The indicated hours of lectures and practical exercises, the developed syllabi for a large number of disciplines and teaching aids, and the training of successfully defended graduate and PhD students attest to the pedagogical training and the role of Assoc. Prof. Atanas Sevov, PhD, in the training of young researchers. This proves that the candidate is an established educator in the field of fodder production and meadow cultivation.

5. SIGNIFICANCE OF THE OBTAINED RESULTS, PROVEN BY CITATIONS, PUBLICATIONS IN PRESTIGIOUS JOURNALS, AWARDS, MEMBERSHIP IN INTERNATIONAL AND NATIONAL SCIENTIFIC ORGANIZATIONS, ETC.

The significance of the obtained results of Assoc. Prof. Sevov, PhD, is proven by the presented 10 citations of his publications. All citations for the competition are in journals refereed and indexed in the world databases Web of Science and Scopus. Of these, 4 are in quartile Q1, 1 in Q2, 1 in Q3, 2 in Q4, and 1 in a journal with SJR without an impact factor. The candidate's publications have been cited in the following journals: *International Journal of Geo-Information, Sustainability, Journal of Food and Agriculture, EDP Sciences, Theoretical and Applied Genetics, Agronomy, Scientific Papers Series "Management, Economic Engineering in Agriculture and Rural Development", Industrial Crops and Products, Scientific Papers. Series A. Agronomy*. The citation of the candidate's publications in prestigious scientific editions with a high quartile is evidence of the high evaluation of the research work of Assoc. Prof. Atanas Sevov, PhD. The total number of points indicated in group D is 150 against a requirement of 100. The frequent citation in renowned sources provides grounds to state that his scientific work is recognizable in scientific circles both in our country and abroad.

6. SIGNIFICANCE OF THE CONTRIBUTIONS TO SCIENCE AND PRACTICE. A MOTIVATED ANSWER TO THE QUESTION OF TO WHAT EXTENT THE CANDIDATE HAS A CLEARLY OUTLINED PROFILE OF RESEARCH WORK.

In the reference of contributions in scientific publications, Assoc. Prof. Sevov, PhD, has presented 10 scientific-theoretical contributions and 11 scientific-applied contributions related to the sustainable management of grassland ecosystems, the application of modern digital and modeling approaches, and the determination of the impact of climatic, soil, and biological factors on crop production. I distribute the contributions as follows:

I. ORIGINAL CONTRIBUTIONS

1. The capacity for carbon dioxide (CO_2) assimilation was tracked by monitoring photosynthesis, plant and soil respiration in natural grassland communities, and the influence of climatic conditions on the intensity of the process was proven.
2. Regional differentiation and a trend toward a decrease in the share of high-productivity grassland species at the expense of more drought-resistant but lower-yielding species, associated with increasing climatic risk, have been established.
3. The possibility of using unmanned aerial vehicles, visible spectrum imagery, and machine learning algorithms for the identification and quantitative assessment of semi-natural pasture degradation has been substantiated. It was found that the object-based Random Trees and Support Vector Machine models achieve higher classification accuracy, with Cohen's Kappa coefficient reaching 0.86 and 0.82, respectively.

II. METHODOLOGICAL CONTRIBUTIONS

The methodological contributions are related to the development of:

1. A methodology for identifying the degradation of semi-natural pastures using unmanned aerial vehicles and machine learning algorithms (*"Identification of semi-natural grassland degradation using UAV imagery and machine learning algorithms"*).
2. An innovative method for rapid assessment of above-ground biomass using ground-based imagery, including those captured with mobile devices (*"Application of MGRVI*

index for rapid biomass estimation using ground-based imagery"). The method utilizes the MGRVI index for the classification of grazed and ungrazed areas.

3. An experimental model of a remote-access grassland system (*"Development of a remote-access experimental grassland system for environmental monitoring"*), which allows the simulation and monitoring of microclimatic conditions in real time.

4. An integrated probabilistic framework combining Natural Language Processing (NLP), machine learning, and Bayesian networks (*"Integration of NLP and Bayesian networks for smart grassland management"*) aimed at optimizing agrotechnical practices as a tool for sustainable resource management.

5. A methodological approach for assessing greenhouse gas emissions in agriculture (*"Greenhouse gas emissions assessment methodology in agriculture"*), which enables a comprehensive assessment of greenhouse gas emissions at various stages of agricultural production.

6. An agricultural robot based on the TRIZ methodology (*"Development of agricultural robot based on TRIZ methodology"*) aimed at automated performance of activities related to grassland maintenance, reducing manual labor, and increasing production efficiency.

III. SCIENTIFIC CONTRIBUTIONS

1. An assessment of the state of permanent grasslands in Bulgaria for the period 2015–2024 was carried out by integrating statistical data and results from scientific publications, establishing changes in the areas, productivity, species composition, and fodder qualities of the swards. The dependence between botanical composition and dry matter yield, as well as the significance of sustainable grass seed mixtures for stabilizing productivity, was confirmed.

2. A conceptual and probabilistic framework for integrating scientific knowledge and empirical data in grassland management was developed by combining natural language processing, machine learning, and Bayesian networks. By transforming information from scientific literature into structured cause-and-effect relationships and combining them with data from IoT sensors, remote measurements, and machine learning models, a basis for more transparent and adaptive management decision-making was created.

3. The possibility of using microalgae in the remediation of oil-contaminated soils was established, investigating the influence of the biological agent on soil processes and the restoration of the soil environment.

4. The influence of bio-fertilizers on the growth and development of wheat was established, substantiating their application as a tool for improving the plant nutritional regime and increasing production efficiency and sustainability.

5. The impact of climate change on agricultural crop productivity was analyzed, identifying prolonged dry spells, high temperatures, heat stress, and water stress as key factors limiting the development and productivity of spring crops. The necessity of optimizing technological regimes and applying a differentiated approach according to soil type, precipitation regime, and temperature conditions was substantiated.

6. The dependence between climatic conditions and phytosanitary risk was investigated, establishing that unfavorable temperature and water regimes in various phenological phases can worsen the phytopathological situation and limit the possibilities for obtaining high yields under rain-fed conditions.

7. The genotype-by-environment interaction in wheat under Bulgarian conditions was studied, with an emphasis on the expression of productivity and the stability of genotypes. The obtained results substantiate the importance of selecting appropriate genotypes to adapt production to specific environmental conditions.

8. The necessity of an integrated approach in the management of agro-ecosystems was substantiated, in which climatic factors, soil processes, plant responses, and technological solutions are considered as interrelated elements for enhancing the resilience and efficiency of crop production.

IV. APPLIED CONTRIBUTIONS

1. An approach for operational monitoring of the state and degradation of grasslands using UAV imagery and machine learning algorithms was developed and applied, allowing a rapid and objective assessment of plant cover and the degree of degradation.
2. The MGRVI index was applied for rapid biomass assessment using ground-based imagery obtained with mobile devices, creating an opportunity for accessible and operational monitoring of grassland productivity.
3. An experimental model grassland system was created, which reproduces with a certain precision the microclimatic conditions for the growth of grass seed mixtures and allows remote access to data and modeling of various cultivation conditions.
4. A practical-applied framework for smart grassland management was developed by integrating NLP, machine learning, and Bayesian networks. The pilot application demonstrates the possibility of reducing irrigation requirements by 14.9% while maintaining a 98% probability of acceptable grassland quality, as well as reducing nitrogen inputs by 25%.
5. The application of microalgae for the remediation of oil-contaminated soils was substantiated as a biological solution for restoring soil properties and mitigating the negative impact of pollution.
6. The possibility of using bio-fertilizers in wheat cultivation was demonstrated in order to improve plant growth and development and increase the efficiency of crop-growing technologies.
7. Guidelines for adapting crop cultivation technologies to changing climatic conditions were developed by optimizing technological regimes and differentiating agrotechnological solutions according to soil and climatic regimes.
8. Approaches for managing phytosanitary risk under changing climate conditions were substantiated, including the need to align plant protection measures with temperature and water regimes and the developmental phase of crops.
9. The applicability of silicon as a tool for increasing plant resistance to pest attacks and supporting photosynthetic activity in crops was established.
10. The possibility of integrating UAV technologies and robotic systems in precision fertilization and aeration was substantiated with a view to more efficient resource utilization and improved agro-ecosystem management.
11. Guidelines for the application of TRIZ principles in the design and improvement of agricultural robots were developed, aimed at solving technological tasks and increasing the efficiency of mechanized and automated processes in crop production.

7. Critical remarks and recommendations

I have no remarks regarding the teaching and research-experimental activities of Assoc. Prof. Atanas Sevov, PhD. For the future, I recommend the candidate's participation in international projects, which would provide an opportunity to expand international cooperation and increase citation rates in world-renowned editions.

8. Personal impressions and opinion of the reviewer

My personal impressions of the materials presented for the competition give me grounds to state that Assoc. Prof. Atanas Sevov, PhD, is an established educator and researcher in the field of fodder production and meadow cultivation.

CONCLUSION

Based on the analysis of the candidate's pedagogical, scientific, and scientific-applied activities, I consider that Assoc. Prof. Atanas Veselinov Sevov, PhD, meets the requirements of the Development of Academic Staff in the Republic of Bulgaria Act (DASRBA), the Rules for its Implementation, and the Regulations of the Agricultural University for its application for occupying the academic position of "Professor".

The scientific output presented, published in editions indexed in world-renowned databases, the extensive teaching activity, the supervision of successfully defended graduate and PhD students, the developed teaching aids, and his recognition among the scientific community testify to the qualities of Assoc. Prof. Atanas Veselinov Sevov, PhD, as an educator and scientist.

All of the above gives me grounds to evaluate his overall activity **POSITIVELY**.

I take the liberty to propose that the esteemed Scientific Jury also vote positively, and that the Faculty Council of the Faculty of Agronomy at the Agricultural University of Plovdiv elect Assoc. Prof. Atanas Veselinov Sevov, PhD, as a "Professor" in the scientific specialty "Fodder Production and Meadow Cultivation".

Date: 22.10.2026
City of Plovdiv

REVIEWER: .....
(Prof. B. Churkova, PhD)