OPINION

On the materials submitted for participation in a competition for **"Professor "**in the field of education 6. Agricultural Sciences and Veterinary Medicine, Professional field 6.5. Forestry, scientific speciality Technology, Mechanization and Automation in Forestry and Timber harvesting in the discipline Mechanization of Forest Activities

In the competition for a professor, published in the State Gazette issue 35/19.04.2024 and on the site of the University of Forestry with the code FOR-P-0324-128 for the needs of the Department of "Technologies and Mechanization in Forestry " at the Faculty of Forestry, as a candidate participate Assoc. Prof. Dr Konstantin Ivanov Marinov, Faculty of Forestry, Department of Technologies and Mechanization in Forestry

Prepared the opinion: Viktor Petrov Savov, PhD, Professor in a Professional Field 6.5 Forestry, degree subject Technology, Mechanization and Automation of the Woodworking and Furniture Industry from the University of Forestry

1. Brief biographical data for the candidate

Assoc. Prof. Dr Konstantin Ivanov Marinov was born on 10.11.1961 in Sofia. In 1980, he graduated from the "Wilhelm Pieck" Technical School of Energy, Sofia, majoring in "Internal Combustion Engines". In 1988, he graduated as a Master of Mechanical Engineering in Forestry and Logging Mechanization. During the period 1988-1989, he worked as a researcher in the research sector of the University of Forestry (then Higher Forestry Institute), specializing in "Research, design and construction of specialized forestry equipment". In 1989, he was elected as an assistant professor at the Department of "Technology and Mechanization in Forestry", Faculty of Forestry of the University of Forestry. He held the following academic positions: in 1992, senior assistant professor; in 1999, chief assistant professor; and from 2009 until now, he is associate professor. In 2001, the candidate successfully defended his PhD thesis on the topic "Technological research on machine de-winging of seeds", thereby acquiring the "Doctor" degree in the scientific speciality" Technology, Mechanization and Automation in Forestry and Timber Harvesting" (Diploma No. 31409 Higher Attestation Commission at the Council of Ministers of the Republic of Bulgaria).

From 2016 to 2020, Associate Professor Dr Konstantin Marinov was the Head of the "Technology and Mechanization in Forestry" department, which testifies to his good organizational and communication skills. In addition, the candidate has a license to work with agricultural and forestry equipment, chainsaws and brush-cutters.

Assoc. Prof. Dr Konstantin Marinov has participated in five national and international scientific projects, as well as two projects for the educational and experimental forestry of the Forestry University. He was the leader of two of these projects. The candidate is also a member of five representative scientific and scientific-applied organizations. He took part in nine national and international scientific conferences and seminars.

During his entire professional experience, Assoc. Prof. Dr Konstantin Marinov worked and developed his teaching and scientific activities in the field of the current competition for a professorship.

The candidate is fluent in English and Russian.

2. Correspondence of the submitted documents and materials of the applicant according to the Rules of the Development of Academic Staff at the University of Forestry.

The submitted documents and materials of the candidate, Associate Professor Dr Konstantin Ivanov Marinov, are under the requirements of Article 65, paragraph 1 of the Regulations for the development of the academic staff in the University of Forestry, as well as with the National requirements under Article 26, paragraphs 2, 3 and 6. For the individual indicators, the points of the candidate are as follows: for indicator A – 50 points out of the required 50; by indicator B – 100 points out of the required 100; according to indicator D – 386.32 points at the required 200; by indicator D – 455 points out of the required 100; and on indicator E – 290 points, out of the required 100.

3. Assessment of the candidate's educational and pedagogical activities (work with students and PhD students)

Assoc. Prof. Dr Konstantin Marinov gives lectures on the disciplines: "Mechanization of Forestry Works" for the students of the Faculty of Forestry; Technological Design of Forestry Activities (for master students) for students from the Faculty of Forestry; "Mechanization in Landscaping" at the Faculty of "Ecology and Landscape Architecture". Associate Professor Dr Marinov has also developed five curricula of disciplines taught to the master students of the "Forestry" speciality and the master students of the hybrid speciality "Restoration of Disturbed Landscapes" (taught jointly with the "St. Ivan Rilski" University of Mining and Geology).

The candidate was the scientific supervisor of 10 graduate students who successfully defended their works in the field of technologies and mechanization in forestry. Assoc. Prof. Dr Konstantin Marinov was also the supervisor of two PhD students dismissed with the right of defence.

The presented information about the educational and teaching activity of the candidate fully meets the requirements for the academic position of "Professor", demonstrating his conscientious and diligent attitude to pedagogical activity and work with students and PhD students.

4. Assessment of candidate's scientific, scientific-applied and publishing activities

General description of the presented materials

Candidate Associate Professor Dr Konstantin Ivanov Marinov participated in the competition with:

- Monographs - 1 number;
- Textbooks - 3 numbers;
- Learning materials - 3 numbers;
- Books - 1 number;
- Publications - 40 numbers.
- Projects - 7 numbers.

4.1 Participation in scientific, scientific-applied and educational projects

Assoc. Prof. Dr Konstantin Marinov was the Head of two projects - one at the Scientific-Research Sector at the University of Forestry and one at the educational and experiential forestry district "Petrohan". He was a working team member of one international scientific research project, three projects in the Scientific-Research Sector at the University of Forestry, and one at the educational and experiential forestry district "Petrohan". The candidate also took part as a course expert in an educational project.

4.2 Characterization of published scientific results

The publications presented by Assoc. Prof. Dr Konstantin Marinov for participation in the current competition for the academic position of "professor" can be classified as follows:

By type:

- Monographs – 1 number;
- Books – 1 number;
- Publications in scientific journals – 36 numbers;
- Publications in Proceedings of Scientific Forums – 4 numbers;

By significance:

- Articles in journals with an impact factor (IF) – 0 number;
- Articles in journals referenced and indexed in Web of Science and SCOPUS – 14 numbers;
- Articles in specialized scientific journals that are not referenced and indexed in Web of Science and SCOPUS – 22 numbers;
- Proceedings of scientific forums and conferences, refereed and indexed in Web of Science and SCOPUS – 2 numbers.
- Proceedings of scientific forums and conferences not refereed and indexed in Web of Science and SCOPUS – 2 numbers.

Publishing language:

- In Bulgarian – 16 number;
- In a foreign language – 223 numbers;

Number of co-authors:

- Stand alone – 12 numbers;
- With one co-author – 15 numbers;
- With two co-authors – 9 numbers;
- With three or more co-authors – 6 numbers.

For collective publications, no protocols are presented for individual participation in the development of each of the authors, so I assume that it is equal.

4.3 Reflection of Candidate's Scientific Publications in Literature (known citations)

- Total – 55 citations.

By type of citations:

- In reference journals and proceedings of scientific forums - 53 citations;
- In teaching aids, monographs, dissertations, etc. - 2 citations.

4.4 Contributions to the candidate's work (scientific, scientific-applied, applied)

The scientific production presented by Associate Professor Dr Konstantin Marinov reflects a wide range of research problems, which can be grouped into the following thematic areas: 1) Machines for densification of wood and non-wood forest products; 2) Technologies and machines for the extraction of forest seed materials; 3) Technologies and machines for the production of forest planting materials; 4) Technologies and machines for creating forest crops; 5) Technologies and machines for utilization of forest biomass and creation of forest plantations for energy purposes; 6) Technologies and machines for timber extraction.

The contributions of the candidate's works can be summarized as follows:

1. Scientific contributions

1.1. The theory of the movement of material particles along the screw working surface of the densifying machines has been supplemented. (Г7.1, Г8.3, Г8.4, Г8.26).

1.2. A methodology has been developed for determining the parameters of the movement of dispersed materials in densifying machines with screw working bodies. (Г8.3).

1.3. The equations for the movement of seeds of forest-tree species in the working organs of the de-wing machines are defined. (Г8.22).

2. *Scientific-applied contributions*

2.1. Graphical-analytical dependencies have been developed to determine the movement parameters and the average transport speed of wood particles in the screw mechanisms of the densifying machines (Г8.3), and a methodology was developed for determining the length of the press channel of the dies of the screw presses. (Г8.4).

2.2. The magnitude of the working pressure of the screw presses for briquettes of crushed straw and wood to produce briquettes with a specific density is defined. (Г7.1, Г8.4).

2.3. Analytical dependencies have been defined to determine the operational performance of finger dewing machines for the extraction of seeds from forest tree species (Г8.22), and the system for management and control of the technological process in regional forest seed production in Bulgaria was further developed. (Г8.1).

2.4. The existing knowledge about the physic-mechanical and technological properties of forest seed materials has been further developed and enriched, and the main parameters and functional dependencies in the de-winging process have been established. (Г8.2), (Г8.16).

2.5. A study and analysis of the technologies and machines applied at home and abroad for preliminary preparation of forest areas and clearings and essential soil treatment for afforestation with intensive poplar crops was carried out. (В3.1, Г7.4, Г7.6, Г8.19, Г8.21, Г8.25, Е20.1).

2.6. The quality indicators of the process of preparation of poplar clear-cuts for afforestation with multifunctional and meliorative forest cutters have been established (Г8.14, Г8.15), and a methodology was developed for the experimental study of the operational and technological properties of forest cutters for the preparation of poplar cuttings for afforestation with intensive poplar crops. (B3.1).

2.7. The technological, operational and technical-economic parameters of the multifunctional forest cutters have been established. (B3.1, Г7.4, Г7.6, Г8.21).

2.8. The quality indicators for soil preparation of forest areas and clearings for afforestation with forest milling machines have been established. (Г8.13, Г8.20).

3. Applied contributions

3.1. Technological regimes have been developed for various machines for de-winging seeds of common tree species in the seed harvesting and seed control stations in our country. (Г7.12, Г8.23).

3.2. The current state of technology and machinery applied to the greenhouse production of container saplings for afforestation has been studied. (E10.1).

3.3. The favourable technological parameters of the working environment in the greenhouses were established, and the optimal values of temperature and air humidity were proposed, depending on the phases of plant development, to be controlled and maintained by the air-conditioning installations. (E10.1).

3.4. It has been established that the forest cutters for soil preparation of forest areas and clearings, compared to the traditional machines used so far for afforestation in our country in the lower forest vegetation belt, provide a higher quality of work. (Г8.13, Г8.20).

3.5. It has been established that the leading share of wood used for energy production in Bulgaria is from the "wood" and "tree crown" category and reaches an average of 3.2 million m^3 annually and that this share is about 57% of the total amount harvested wood in our country. (E19.1).

3.6. It has been found that the unutilized wood waste from felling left in the felling is about 30% for softwood and 20% for hardwood. (E19.1).

3.7. It has been established that fast-growing forest-tree species of Euro-American hybrid poplar varieties, within a rotation between 2 and 4 years, in suitable habitats can reach a height of 6÷12 m, in which case their wood is entirely suitable for producing energy chips.

3.8. It has been established that for an installation for combustion or gasification of dendrobiomass to be economically efficient, the delivery price of the raw material at the current stage (2013÷2014) should not exceed BGN 60/t. Considering the transport costs and the relatively low bulk of the raw material, this requirement is achievable when the raw material is delivered at a distance of no more than 30 km (E19.1).

3.9. It was established that the highest productivity of the TAF 690 PE tractor in the conditions of the Western Stara Planina is achieved with a road slope of 10 ° to 16 ° and transport distances up to 550 m (Г7.11).

3.10. Front-end jaw loaders have been found to be suitable for working in temporary forest warehouses with limited site sizes and sloping terrain up to 12÷15°. (Г.7.7).

5. Assessment of the applicant's personal candidate

From the materials presented for the competition, I accept that a large part is the personal work of the candidate. This observation is confirmed by the fact that 12 of the presented publications are independent, and 15 publications are with 1 co-author.

The indicated data show that the presented scientific, scientific-applied, and applied contributions were achieved under the guidance of the candidate or with his active participation.

6. Critical remarks

The materials presented by Associate Professor Dr Konstantin Ivanov Marinov for obtaining the academic position of "Professor" are well classified and formatted according to the requirements. No errors or inaccuracies were found. The candidate's scientific works are well structured, and the literature used is correctly cited. Therefore, I don't have critical remarks.

7. Personal impressions

My personal impressions are that Assoc. Prof. Dr Konstantin Marinov is a well-intentioned and fair colleague, devoted to teaching and research activities. Assoc. Prof. Marinov is well known among his colleagues as a neat, responsive and highly moral teacher and scientist.

8. Conclusion

In connection with the above, I propose that Associate Professor Dr Konstantin Ivanov Marinov be elected as a "Professor "in the discipline " Mechanization of Forest Activities "in the Professional field 6.5. Forestry, scientific speciality" Technology, Mechanization and Automation in Forestry and Timber Harvesting".

Prepared the opinion:

/Prof. Viktor Savov, PhD/

Opinion delivered on August 16, 2024