



REVIEW

Concerning the competition for occupation of the academic position „Assoc. Professor“, in the professional field 6.1. Crop Production, scientific speciality „Soil Science“, announced in the State Gazette No. 98 of November, 17, 2020 by Agricultural University – Plovdiv, Bulgaria

Candidate for the competition: Chief Assist. Violeta Stilianova Valcheva, PhD from Agricultural University – Plovdiv

Revuwer: Assoc. Prof. Rossitsa Stoyanova Ilieva, University of Forestry, Sofia, professional field 6.1. Crop production; scientific speciality Soil Science, appointed as a member of the scientific jury according to order RD 16-52/22.01.2020 of the Agricultural University – Plovdiv

In the competition for „Assoc. Professor“, announced for the need of the department „Agrochemistry and Soil Science“ at the Agricultural University – Plovdiv, participates one candidate - Chief Assist. Violeta Stilianova Valcheva, PhD. The competition documents have been prepared in accordance with the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria, and the regulation for the implementation of the law in the Agricultural University – Plovdiv.

1. General data on the career and thematic development of the applicant

Violeta Stilianova Valcheva was born on 12.06.1980 in Plovdiv. In 2003 she graduated a bachelor's degree in Agricultural Economics, and in 2005 - a master's degree in Accounting and Control at the Agricultural University - Plovdiv. In the period 2006 - 2011 she was a doctoral student in the scientific specialty "Soil Science" in the Department of Agrochemistry and Soil Science. In 2008 she was an Assistant, and after obtaining the educational and scientific degree "Doctor" in 2011, until now - Chief Assistant in Soil Science in the same department. Conducts lectures, practical and laboratory exercises in the following disciplines: Soil Science, Melioration Soil Science, Forest Soil Science, Technologies for Restoration of Problematic Soils and Terrains, Problematic Soils and Chemical Reclamation of Acid and Saline Soils. At present Chief Assist. Valcheva has 12 years of teaching experience.

She is fluent in Russian and English. She has very good communication and presentation skills, works with modern computer programs for mapping, scale imaging and three-dimensional visualization of soil and landscape objects, with Autocad and its applications MS Office Package: Windows 95/98/2000/ME/XP/Vista, (Word, Excel, Access, Power Point); Database Systems: Internet.

2. General description of the materials presented

In the competition for the academic position «Assoc. Professor» Chief Assist. Violeta Valcheva participate with a total production of 35 scientific works, grouped as following:

- Publications related to the educational and scientific degree "Doctor" — 3 publication, which cover the National science-metric requirements for the acquisition of the Doctor degree (Indicator A). They are not subject to review.
- Publications, with which the candidate Valcheva participate in the current competition for the acquisition of the academic position „Assoc. Professor“- 31 items, which are subject to analysis and they cover the National minimum science-metric indicators for the acquisition of the academic position „Assoc. Professor“.

Chief Assist. Violeta Valcheva presented proven information on science-metric indicators, according to the accepted groups of categories as following:

Indicator A with minimum requirements 50 points – submitted material for 50 points.

Compliance 100%.

Indicator B with minimum requirements 100 points – submitted material for 169,5 points.

Exceeds the criteria.

Indicator Г with minimum requirements 200 points – submitted material for 236,15 points.

Exceeds the criteria.

Indicator Д with minimum requirements 50 points – submitted material for 50 points.

Compliance 100%.

The submitted documents and materials of the candidate Valcheva indicate that they cover in indicators A and Д and exceed in indicators B and Г the requirement of the ZRASRB and the Regulation for the implementation of the law in the Agricultural University – Plovdiv for participation in competition for occupation of the academic position of „Assoc. Professor“ in the professional field 6.1. Crop production, scientific speciality „Soil Science“.

The publications of the candidate are grouped as follows:

- Scientific publications, referenced and indexed in world-famous databases with scientific information - 10 issues.
- Articles and reports published in scientific journals, referenced and indexed in world-famous databases with scientific information - 11 issues;
- Scientific publications in non-peer-reviewed journals with scientific review – 10 issues.

The personal participation of Chief Assistant Valcheva in these 31 works is illustrated by the fact that in 14 of them (45%) she is an independent or leading author, in 12 (38%) she is second

author, and in 5 – she is third and the next author.

In journals 12 of the scientific materials were published, and 19 papers in collections and international forums. The largest number of articles - 7 - have been published in the journal „Agriculture Science and Technology“.

The publishing activity of Dr. Violeta Valcheva is predominantly in English - 58%, the remaining 42% of the publications are in Bulgarian.

The candidate has submitted an official note for co-authorship in a published university textbook - "Guide to exercises in soil science" - 1 issue.

Thirty one articles are subject to analysis for the preparation of the review.

3. Main directions of the applicants research work. Demonstrated research leadership skills or assets (project management, external funding involved, etc.)

The presented scientific papers show that the research work of Chief Assist. Valcheva is in the field of Soil Science. The main scientific fields in which the candidate has worked are related to:

- ◆ study of the natural potential of soils and changes in their chemical properties in the conditions of long-term organo-mineral fertilization and after its termination. It has been found that the natural potential of the studied soils cannot provide the necessary nutrients for plant growth and development. Imports of organic and mineral fertilizers should be normal based on soil stocks. This will avoid excessive imports of fertilizers, which will minimize the risk to the environment and reduce production costs;

- ◆ reclamation approaches to improve soil quality - liming of acid soils and anti-erosion measures for soils on eroded terrains. In the conditions of acidic soil environment the application of hydrated lime as an ameliorant in combination with balanced mineral fertilization leads to increased intensity of physiological and redox processes in the plant and to increased intensity of enzyme synthesis;

- ◆ soil-climatic characteristics and suitability of the lands for growing vineyards and perennials;

- ◆ scientifically based technological solutions for construction of irrigation systems and differentiated mineral fertilization.

From 2013 to 2017, Ch. Valcheva has participated in 3 research projects, two of which are funded by external organizations - «Devnya Cement» AD, and «Minyo Staykov Commerce» ET and one project funded by Agricultural University.

4. Assessment of the candidate's pedagogical preparation and activity, His role in training of young scientific staff

Chief Assistant Valcheva has 12 years of teaching experience in the Department of Agrochemistry and Soil Science. Her academic load for the period 2015/2016 2019/2020 is 2561 hours in exercises or an average of 631 hours for each academic year. She gives lectures, practical and laboratory exercises in the following disciplines: Soil Science, Melioration Soil Science, Forest Soil Science, Technologies for Restoration of Problematic Soils and Terrains, Problematic Soils and Chemical Reclamation of Acid and Saline Soils. At present Chief Assist. Valcheva has 12 years of teaching experience.

The role of the candidate in teaching of young people is also illustrated by the fact that 5 students from Bachelor's Degree Program and from Master's Degree Program were successfully defended under her supervision.

Chief Assistant Valcheva co-authored the writing of one published university textbook "Guide to exercises in soil science" (2017).

The analysis of the pedagogical activity and the materials presented by Chief Assistant Valcheva indicate that she makes a significant contribution to the education of students in the field of Soil Science in Agricultural University — Plovdiv.

5. Significance of the results obtained, proven by citations, publications in prestigious journals, awards, membership in international and national scientific bodies, etc.

The candidate has submitted a list of 8 notable citations to his scientific publications in scientific journals, referenced and indexed in world-famous databases with scientific information or journals with scientific review, which proves interest in the achieved scientific results. The candidate has scored as per assessment 50 points in indicator Д.

Chief assist. Valcheva has participated in 13 national and 14 international scientific forums with oral and poster presentations, which has contributed to the promotion of the results of her research in the field of soil science.

Valcheva is an active member of the Bulgarian Society of Humic Substances and the International Society of Humic Substances.

6. Significance of contributions to science and practice. Reasoned answer to the question of whether the candidate has a clearly defined research profile

From the documents and materials submitted for review, it is evident that the candidate for the academic position of "Associate Professor", Chief Assistant Violeta Valcheva has a clearly

defined profile of teaching and research work in the field of soil science.

I. ORIGINAL CONTRIBUTIONS

I accept as original the developed principles of reclamation and taxonomic assessment of the suitability of cinnamon forest soils for growing vines.

➤ The proposed system, extended with the system for landscape research and assessment, is applied in an assessment model in which, in addition to the soil and landscape assessment components, reclamation and land management solutions are set. The aim is minimal reclamation intervention in the degraded lands, in order to preserve their specificity as a wine terroir.

➤ The influence of micronized limestone as a fast-acting chemical ameliorant for neutralizing the harmful acidity in the soil has been tested. The high efficiency is due to two reasons: the fine dispersion of the material and the form of Ca^{2+} in it, such as $\text{Ca}(\text{OH})_2$. It was found that part of the calcium in the ameliorant is absorbed even before its absorption by the sorption positions in the soil, and that a significant part of this ameliorant has the ability to quickly migrate to the depths of the soil layers. The latter is important in the liming of perennials.

II. METHODOLOGICAL CONTRIBUTIONS

➤ In the research on the suitability of the soils for growing vineyards, a basic method has been developed, which covers the aspects of the research work in the terrains - object of different reclamation intervention. A concept has been developed according to which the reduced productivity and reclamation deficiencies of some soils in the conditions of a specific landscape can be considered as a specificity of the terroir and not as a reclamation problem.

III. SCIENTIFIC CONTRIBUTIONS

➤ The influence of hydrated lime $\text{Ca}(\text{OH})_2$ as an active and soluble calcium-containing chemical ameliorant on the indicators of acid-base balance in the soil was studied. It was found that the reclamation effect in doses increasing in the order of a square parabola caused a reliable response to a linear increase only with respect to soil Ca^{2+} in easily mobile metabolic form and in none of the other indicators of acid-base balance in the treated soil.

➤ The influence of liming and the resulting change in the levels of easily mobile exchanged Ca^{2+} in the soil on the content of Ca^{2+} and Mg^{2+} in the leaf mass of vines was monitored. It was found that with a severe deficiency of Ca^{2+} in easily mobile metabolic form in the soil, there is a very rapid absorption of the element and a long after-effect,

which leads to a change in the Ca: Mg ratio and indirectly in the K: Mg ratio in the vegetative mass.

- The change in the levels of phosphorus absorption as a result of liming has been established and statistically proven. High levels of Ca^{2+} inhibit the absorption of phosphorus in the leaf mass of the vines.
- The influence of liming on the absorption and accumulation of iron and manganese in the leaf mass was studied. It was found that the increase of calcium content in acidic and well-aerated soils and balanced mineral fertilization is the reason for more intensive oxidation processes in plants and to increased absorption of manganese.
- The reactions of vine rootstocks to different levels of calcium saturation in the nutrient medium were studied. In the conditions of moderate deficiency of Ca^{2+} in the nutrient medium, the substrates react with increased affinity to its absorption. Antagonism of Ca^{2+} and Mg^{2+} uptake has been found in nutrient-tolerant substrates of *Vitis Berlandieri*.

IV. APPLIED CONTRIBUTIONS

- A system for reclamation-research sampling from terrains of different complexity has been tested. It generally solves the issue of a reliable and sufficient for the purposes of reclamation practice accurate description of the soil cover and landscape.
- The methods of application of the lime material in the cultivation of lavender on deluvial soils have been studied. It was found that the best economic and reclamation effect is obtained at full saturation and excess with Ca^{2+} .
- The influence of liming with micronized limestone in lavender, roses and vines and the after-effect of the ameliorant at different depths in the soil profile were studied. It was found that its application achieves a full reclamation effect in the first year, at a depth of up to 40 cm (in arable land and subsoil) of the studied soils. The studied cultures showed a stable habit.

7. Critical notes and recommendations

My recommendations are in the future Ch. Assistant Valcheva to expand hers research to other soil units in Bulgaria.

8. The personal impressions and opinion of the reviewer

I know well the candidate for the academic position "Associate Professor" Dr. Valcheva and I can express my best impressions as a teacher and scientist. She is able to work in a team, she is very good communication skills. She has the respect of colleagues and students.

CONCLUSION

Based on the analysis of the candidate's pedagogical, scientific and scientific-applied activity, I believe that Chief Assistant Violeta Stilianova Valcheva **meets the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria and the Regulations of the Agrarian University**. The scientific production presented by her and its overall activity indicate that PhD Valcheva is a very well-trained teacher and a proven professional in the field of soil science.

All this gives me reason to appreciate POSITIVELY her overall activity and to suggest the members of the Scientific Jury to vote positively, and the Faculty Council of the Faculty of Agronomy at the Agricultural University - Plovdiv to select Chief Assistant Violeta Valcheva, PhD, for "Associate Professor" in the scientific specialty "Soil Science".

28.02.2021

Sofia

REVIEWER:

(Assoc.Professor Rossitsa Ilieva, PhD)

