

## REVIEW



on the materials for participation in a competition for the academic position of Associate Professor, Field of higher education 6. Agricultural Sciences and Veterinary Medicine, Professional field 6.1. Crop production, scientific speciality ""Selection and seed production of cultivated plants (Plant biotechnology)", announced in SG no. 7 of 25.01.2022 with a candidate Assoc. Prof. Dr. Svetla Dimitrova Yancheva

**Reviewer: Prof. Dr. Valentin Iliev Lichev**, from Agricultural University-Plovdiv, Field of higher education 6. Agricultural Sciences and Veterinary Medicine, Professional field 6.1. Crop production, Scientific speciality Fruit growing. Appointed according to Order № RD16-368/28.03.2022 of the Rector of Agricultural University-Plovdiv for member of the Scientific jury

Only one candidate is participating in the competition for the academic position of "professor" for the needs of the Agricultural University in Plovdiv. The competition documents have been prepared in accordance with the law for the development of the academic staff and in the Regulations for its application at the Agrarian University in Plovdiv.

### **1. General data on the career and thematic development of the candidate**

Svetla Yancheva was born on June 15, 1962 in Sofia. He graduated in 1989 from the Higher Agricultural Institute in Plovdiv, speciality of General Agronomy. From 1991 to 1994 she was a full-time doctoral student at the Institute of Genetic Engineering in Kostinbrod, after which in 1997 she received the educational and scientific degree "Doctor" for the defense of a thesis on "*In vitro* regeneration and genetic transformation in plum breeding (*Prunus domestica* L.)". In 1995 he started working as an agronomist at the Higher Agricultural Institute in Plovdiv, in the laboratory of plant biotechnology. During the period 1998 - 2006 she was successively a research associate II degree and a research associate I degree in the same laboratory. Since 2006 she has been a senior assistant in the Department of Genetics and Selection, and from 2006 to 2016 she was the head of the Laboratory of Plant Biotechnology. Subsequently, she habilitated as an associate professor at the Agricultural University, where she still works as a lecturer in the Department of Viticulture and Fruit Growing.

Fluent in English and Russian.

During the period 2012-2016, my colleague Yancheva was Chair of the General Assembly of the Agrarian University. From 2016 to the present she holds the position of deputy Rector for International Affairs and Public Relations and Business. In line with her position is her active public activity. Confirmation of this is her work as a municipal councilor in the municipality of Maritza for two terms - from 2007 to 2015. From February to March 2017 she was Deputy Minister of Agriculture and Food with the portfolio "European Integration and International Relations". She is a member of scientific organizations in Bulgaria and abroad.

Assoc. Prof. Yancheva has participated in scientific conferences and symposia - more than 20 abroad and over 10 in Bulgaria. She has good computer training and skills of Word, Excel, Power Point and others.

## **2. General description of the submitted materials**

Assoc. Prof. Yancheva has published a total of 91 scientific papers. In the competition for "professor" she participated with a total of 38 works, grouped as follows: scientific articles - 33, studies - 1, chapter of a collective monograph - 2 and educational guides - 2 nr.

Of the scientific publications, 25 (64%) are referenced and indexed in world-famous databases with scientific information Scopus or Web of Science. Of these - publications in scientific journals, with impact factor are 10 pieces, and publications in journals with impact rank are 13 pieces. There are 10 scientific publications in unrefereed journals (26%).

The personal participation of Assoc. Prof. Svetla Yancheva in these scientific papers is illustrated by the fact that in 13 issues (33.33%) she is the first author, in 8 issues (20%) - is second, in 8 issues (20%) - is the third, and in the remaining 26% - is the fourth and next author.

Assoc. Prof. Yancheva has more than 200 citations of her scientific production, 165 of which are in Scopus and Web of Science.

Regarding the so-called national minimum scientometric requirements for acquiring the academic position "professor" according to the law and regulations for the development of academic staff in the Republic of Bulgaria, Assoc. Prof. Yancheva meets the criteria, and some of them are many times more than required.

## **3. Main directions in the research work of the candidate**

The subject of research work of Assoc. Prof. Yancheva are various

biotechnological methods (micropropagation, regeneration systems through somatic embryogenesis and organogenesis, callus and cell cultures), which in most cases are combined with selection in some plant species, including pepper, tomatoes, vines, raspberries, wild strawberries, blueberries (black, red and tall), blackberry-raspberry hybrids, paulownia and the medicinal plant *Fabiana*.

#### **4. Assessment of the pedagogical preparation and activity of the candidate**

Assoc. Prof. Svetla Yancheva has a total teaching experience of 23 years and 9 months, acquired at the Agricultural University in Plovdiv. As a lecturer she has given lectures and practical exercises on Bulgarian and English with bachelor's and master's students in the disciplines "Plant Cell and Tissue Cultures", "Biotechnological Methods in Plant Selection", "Plant Biotechnology", "Plant Genetic Resources "Plant Breeding" and "Genetics". In the last 5 academic years, the workload has averaged 424 hours per year, including 91 hours of incoming Erasmus students.

She has conducted Erasmus mobility several times to teach at universities in Greece and the Czech Republic. She has actively participated in international educational or research projects (21 in total) under the programs Erasmus +, CEEPUS, etc., including in 9 projects she was a research supervisor. She was the research supervisor of 6 bachelor's students and 11 masters who successfully defended their thesis. She has over 45 scientific specializations abroad - in the Netherlands, the Czech Republic, England, Israel, Germany, Kazakhstan, China, Lebanon, Spain and others. She has trained four specialists in "Applied Biotechnological Methods in Plant Selection". She was the research supervisor of five doctoral students (four from abroad and one from Bulgaria), three of whom successfully defended their doctorates.

#### **5. Significance of the obtained results**

Assoc. Prof. Yancheva's scientific publications have been 167 times cited in the world-famous databases with scientific information Scopus or Web of Science. She has received awards in connection with her active participation in the Erasmus + program, letters of thanks from the Eurasian Forum, as well as from other international organizations and universities.

#### **6. Significance of contributions to science and practice.**

##### **I. ORIGINAL CONTRIBUTIONS**

The possibility to use the molecular markers as an alternative, highly effective approach in various areas of modern plant selection is established.

The possibility of cultivation the medicinal plant *Fabiana imbricata* Ruiz et Pav in *in*

*vitro* cultures with varying degrees of differentiation has been proven. Experimental protocols for micropropagation, induction of cell and protoplast cultures have been developed as a basis for future research.

The absorption of chromium from single and mixed cell cultures of nine different strains of microalgae has been established. It has been hypothesized that chromium is likely to bind with intracellular complexes such as polyphosphate bodies, which are designed to store substances and thus become harmless. The study has both theoretical and practical contribution, as it can be the basis for the development of methods aimed at protecting ecosystems from industrial pollutants, including heavy metals.

## **II. METHODOLOGICAL CONTRIBUTIONS**

Optimized protocols for micropropagation of raspberry varieties have been developed, including the Bulgarian Shopska Alena, Samodiva, Lyulin, Bulgarian Ruby and Iskra and the introduced Meeker and Willamette, as well as the "difficult" to propagate high stem bilberry.

A protocol for genetic transformation of red raspberry (*Rubus idaeus*) has been adapted using the *Agrobacterium tumefaciens* vector system. The created highly efficient regeneration system of leaf explants and the obtained transgenic plants are a prerequisite for its use in order to further improve the culture through the introduction of genes carrying valuable economic qualities such as disease resistance, pests and stress factors.

High performance liquid chromatography (HPLC) methods have been adapted to assess the biological value of pericarp in fruit. The evaluated pepper and tomato samples can be used in future breeding programs for these species.

A method for separating carotenoids with a similar chemical structure, mainly xanthophylls, has been developed and is applicable to various plant species.

An effective system for micropropagation of the medicinal plant *Fabiana imbricata* Ruiz. et Pav. has been adapted by using the optimal composition of the nutrient medium suitable for the species.

Screening tests to determine the selectivity of soil herbicides in different crops, which can be used to study the adaptability of plants to certain environmental conditions have been developed.

## **III. SCIENTIFICALLY APPLIED CONTRIBUTIONS**

Effective methods for micropropagation of Bulgarian and introduced raspberry varieties, as well as the blackberry-raspberry hybrid Tiberi, which are based on nutrient

media with optimized mineral composition and growth regulators, have been developed. This has scientific significance, as well as real practical application in the production of planting material.

An *in vitro* breeding system for three different paulownia genotypes has been developed, which can also be used directly for the production of quality planting material.

A simplified system for micropropagation of 12 vine varieties and 11 rootstocks has been developed in order to obtain pre-basic planting material. It was introduced as a standard for micropropagation of vines in the Laboratory of Plant Biotechnology at Agricultural University-Plovdiv.

Mutant genotypes of pepper with orange fruit that are more sensitive to moderately high temperature stress than those with red-colored fruit have been confirmed.

Lines with improved fruit morphology and productivity of plants, mutants with high content of  $\beta$ -carotene have been created, and lines for accelerated creation of varieties and  $F_1$  hybrids of pepper with orange and red fruit have been established in the breeding programs.

On the basis of classical selection methods such as induced mutagenesis and application of marker-assisted selection, a new variety of pepper "Desislava" was presented with orange color of the fruit and twice increased content of  $\beta$ -carotene.

The data from the screening test for herbicide resistance in pepper confirm the opinion that the modern selection for stress resistance will be primarily focused on the use of local varieties and populations that are adapted to specific soil and climatic conditions.

## **7. Critical remarks and recommendations**

Although the scientific specialty "Breeding and Seed Production of Cultivated Plants (Plant Biotechnology)", for which Assoc. Prof. Yancheva is applying, is definitely interdisciplinary, it would be good if some of the publications (albeit single) were independent. Summarizing this section, I definitely emphasize that the critical remark belittle, does not belittle the scientific and scientific-applied activity of the candidate, which has many merits. The purpose of my recommendation is that in some of her future publications the colleague will present her own and inimitable style as an author.

## **8. Personal impressions**

I know Assoc. Prof. Yancheva from our joint teaching activity at the Agraricultural University. We have also met at so-called open days in fruit growing and other forums.

Based on my observations, I can assure you that my colleague Yancheva is a precise researcher, ethical and hardworking. She has the necessary training to solve complex problems. It can definitely be relied on.

### 9. Conclusion.

Based on the analysis of the pedagogical, scientific and scientific-applied activity of the candidate, I believe that Svetla Dimitrova Yancheva meets the requirements of Law for the development of the academic staff in the Republic of Bulgaria, Rules for the application of the Law for the development of the academic staff in the Republic of Bulgaria for which the reason give me which I can argue with the fact that: I did not find any violations in the competition procedure, Assoc. Prof. Yancheva, as the only candidate in it has the educational and scientific degree "Doctor"; holds the academic position of "Associate Professor" at the Agricultural University in Plovdiv; it is provided with the necessary normative classroom and extracurricular employment; has published sufficient in volume, structure and quality, unrelated to the doctoral dissertation scientific production, with clearly identified original scientific and applied scientific contributions.

All this gives me reason to appreciate **POSITIVELY** the overall work of Svetla Dimitrova Yancheva and to vote about to award of her the academic position "professor" in Field of higher education 6. Agricultural Sciences and Veterinary Medicine, Professional field 6.1. Crop production, scientific specialty ""Selection and seed production of cultivated plants (Plant biotechnology)",

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Plovdiv

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(Prof. Dr. V. Lichev)