

## STATEMENT OF OPINION

by Maria Prokopova Geneva, PhD, Associate Professor  
Institute of Plant Physiology and Genetics, Bulgarian Academy of Sciences,  
Regarding the Thesis for the Acquisition of PhD Academic Degree in the  
Field of Higher Education: 4. Natural Sciences, Mathematics and Informatics;  
Professional Direction: 4.3. Biological Sciences  
Scientific specialty Botany

PhD Candidate: Boryanka Dimitrova Traykova

Scientific Supervisor: Prof. Marina Stanilova PhD

Scientific Consultant: Associate Professor Ina Aneva PhD

Title: Hydroponic technologies as a means of protecting and cultivating medicinal and conservation-dependent plant species

The author of the dissertation thesis is Boryanka Dimitrova Traykova - PhD student of independent preparation for the Division of "Flora and Vegetation" at IBER-BAS with a scientific Supervisor Prof. Dr. Marina Stanilova and Scientific Consultant: Assoc. Prof. Dr. Ina Aneva.

All documents and publications presented by Boryanka Traikova were provided accurately and on time. The materials are prepared precisely and follow the requirements of the Academic Staff Development Act in the Republic of Bulgaria and the Rules for its implementation, as well as the Rules for the Terms and Conditions for the acquisition of scientific degrees and for the occupation of academic positions in the Bulgarian Academy of Sciences and The conditions and procedure for acquiring scientific degrees and for the occupation of academic positions in IBER-BAS, by meeting the criteria for acquiring the scientific and educational degree "Doctor".

**PhD student data:** Boryanka Traykova began work in 2005 as a technician at a greenhouse in IBER-BAS to the "Applied Botany" section, later "Flora and Vegetation" at IBER-BAS. Since 2011 he has been a specialist agronomist for the Flora and Vegetable Section at IBEI-BAS. In 2022 she was enlisted as a doctoral student of self-preparation.

The PhD student has applied 8 publications, 5 of which are in journals with IF and SJR, a list of 6 noticed cites on publications included in the PhD thesis, and a list of 5 participations with poster presentations in scientific forums in the country and 5 in international forums. Boryanka Traykova has participated in the implementation of a total of 21 projects, with two of

them funded by a program for the support of young scientists and doctoral students BAS, has been headed.

The PhD student meets the national minimum and specific requirements for the PhD Academic Degree acquisition in IBER -BAS - with a minimum threshold of 250 points, Boryana Traikova, has collected 886 points. Regarding the implementation of the educational program a minimum of 130 points is required, it has collected 130 points. The required minimum for probation of the implementation of the scientific program is 40 points. The PhD student has collected 288 points. From the publications of the scientific results on the topic of the PhD thesis from 8 publications, the PhD student collected 468 points, with a minimum of two publications and 80 points required.

**Scientific Contributions:** The scientific interests of Boryanka Traykova are dedicated to a very up-to-date and significant area, namely establishing optimal conditions for hydroponic reproduction and growth acceleration of the selected medicinal plants and species of conservation importance, distinguished by the difficulty of reproduction (low germination and /or slow growth) and the effects on biosynthetic ability concerning secondary metabolites. The first direction in which she worked is vegetative reproduction (*Haberlea rhodopensis*, *Thymus longidentatus*, *T. pannonicus*, *T. zygiides* and *Vaccinium vitis-idea*) and seed reproduction (*Echinacea purpurea*, *Salvia officinalis*, *Alkanna tinctoria*), by various aero-hydroponic systems. The second direction in which she has worked is the application of hydroponic technologies to accelerate the growth of slow-growing bulbous species of *Lilium rhodopaeum* and *Hippeastrum papilio* when using bulbs obtained from seeds or propagated *in vitro*. The third direction is a phytochemical study to determine the effect of hydroponic cultivation of studied plant species on their ability to synthesize the typical biologically active substances.

**Conclusion:** Based on the analysis of the materials and scientific articles presented, an analysis of their significance and contained in them scientific and scientific and applied contributions, I find it justified to give my positive assessment and to recommend the Scientific Jury to prepare a report-proposal to the Scientific Council of IBER-BAS for the award of the PhD Academic Degree by Boryanka Dimitrova Traykova in IBER-BAS in professional fields 4.3. Biological Sciences, Scientific Specialty Botany

14.11.2024

The Statement of Opinion was prepared by:

(Associate Professor Maria Geneva, PhD)