

The External Evaluation Report of a Doctoral Study Domain Horticulture

Contents

- I. Introduction
- II. Methods used
- III. Analysis of performance indicators
- IV. SWOT Analysis
- V. Overview of judgments awarded and of the recommendations
- VI. Conclusions and general recommendations
- VII. Annexes

I. Introduction¹

External evaluation report was drafted for evaluation of doctoral university studies , study domain Horticulture at University of Agronomic Sciences and Veterinary Medicine in Bucharest, Faculty of Horticulture, in order to comply with the legal provision of the Emergency Ordinance no. 75/2005, approved with amendments and additions by Law no. 87/2006 and Ministerial Order no. 3651/2021. Evaluation was performed during June 14th-18th, 2021. Due to the ongoing pandemic situation, evaluation in person was not possible and my participation was online via ZOOM platform.

Members of the Expert Panel for domain Horticulture:

- Prof.univ.dr. Sina Cosmulescu, coordinator
- Prof.univ.dr. Mato Drenjančević, international expert
- Maria Maruni Codrea, PhD student

The doctoral School of Engineering and Management of Plant and Animal Resources (IMRVA) organizes and carries out a program in doctoral field Horticulture and four additional fields. The general framework of organization and functioning of the doctoral school is established by the provision of GD 681/2011 on the approval of the Code of doctoral studies and other documents in compliance with the law. Currently, within the IMRVA Doctoral School, Horticulture field, there are 10 doctoral supervisors. During 2016-2020, the period under evaluation, 84 PhD students were enrolled in the Horticulture PhD field.

II. Methods used

Methods and tools used in the external evaluation process:

- internal evaluation report of the doctoral study domain Horticulture and its Annexes;
- analysis of documents, data and information available on the IOSUD/Doctoral School website, in electronic format;
- meeting with representatives of the institution and of the Council for Academic Doctoral Studies;

¹ Each time when applicable the information shall be presented gender-wise.



- meeting with the contact person for doctoral study domain Horticulture and the team who drafted the internal evaluation report;
- meeting with academic staff corresponding to the doctoral study domain Horticulture
- meeting with doctoral students in the doctoral study domain Horticulture;
- meeting with the members of Ethics Commission;
- meeting with the persons in charge of the research centers and laboratories within the doctoral study domain Horticulture;
- meeting with the graduates of the doctoral study domain Horticulture;
- meeting with the Doctoral School Council;
- meeting with employers of the graduates in the doctoral study domain Horticulture
- information about research infrastructure available on Youtube presentation clips.

III. Analysis of ARACIS's performance indicators

Domain A. INSTITUTIONAL CAPACITY

Criterion A.1. The administrative, managerial institutional structures and the financial resources.

Standard A.1.1. The institution organizing doctoral studies (IOSUD) has implemented the effective functioning mechanisms provided for in the specific legislation on the organization of doctoral studies.

Performance Indicator A.1.1.1. *The existence of specific regulations and their application at the level of the Doctoral School of the respective university doctoral study domain.*

The institutional rules of organizing and conducting university doctoral studies, in force when achieving internal assessment, has been adopted by the Decision of the University Senate and being available for consultation on the IOSUD web page. The rules of Doctoral School IMRVA, in force when having the internal assessment has been adopted by the Decision of the University Senate from 27 February 2012. The election of the University management structures and therefore IOSUD's has been done in total transparency, both at the beginning of the mandate as when occupying some vacant positions throughout the term. The elections of the management structures also respect the stipulations of the art. 14 paragraph(5), paragraph (7) and paragraph (8) from the Code of University Doctoral Studies. Admission of PhD students is done according to its own admission technology and takes place according to the laws in force. In chapter 6, pages 9-11, articles 11-16, from the Regulation of the Doctoral School the information necessary to the students concerning the studies completion are explicitly provided. Concerning the recognition of the right to coordinate doctoral stages or the recognition of a title obtained in other states, there weren't any requests within IMRVA Horticulture field, until present. According to the 52 IMRVA School Regulation , art.2., point 2 and art.4, point 7, there is the possibility of adopting some coordinators who obtained the right to coordinate outside the university. After the registration, the PhD students conclude a study contract with IOSUD and the coordinating professor. I have not noticed anything that indicated the lack of regularities.

The indicator is fulfilled.



Performance Indicator A.1.1.2. *The doctoral school' Regulation includes mandatory criteria, procedures and standards binding on the aspects specified in Article 17, paragraph (5) of the Government Decision No. 681/2011 on the approval of the Code of Doctoral Studies with subsequent amendments and additions.*

The regulation of the IMRVA Doctoral School has mentioned the functional aspects for the proper organization and conduct of the activity, out of which, there are mentioned:

- acceptance of new members, Article 3, point 1 c and f, Article 3, point 4 m and Article 4, point 7; and the revocation of the coordination right – Article 3, point, c and f, paragraph no.2.*
 - decisions to improve the structure and content of the doctoral training programme, Article 6;*
 - the possibility of changing the doctoral supervisor , Article 3, point f and Article 4, point 10;*
 - the conditions for interrupting the training programme for PhD students: Article 5, point 10;*
 - ways of preventing fraud, Article 11, points 4 and 5;*
 - ensuring access to research resources – Article 17, point 1, paragraph d, h.*
 - the PhD students' frequency obligations – Art.17, point 1, k paragraph, Article 17, point 2*
- I have not noticed anything that indicated the lack of regularities.*

The indicator is fulfilled.

Standard A.1.2. The IOSUD has the logistical resources necessary to carry out the doctoral studies' mission.

Performance Indicator A.1.2.1. *The existence and effectiveness of an appropriate IT system to keep track of doctoral students and their academic background.*

IOSUD has implemented a computer data management system for PhD students that integrates both personal, teaching and financial data. A second computer system for registering PhD students is the Single Academic Record containing the record of Doctoral students from the academic year 2015/2016, and includes personal, school data (promotion, expulsion, interruption of studies, extension), scholarships, completion of studies and issued documents of studies (series and number of the diploma).

The indicator is fulfilled.

Performance Indicator A.1.2.2. *The existence and use of an appropriate software program and evidence of its use to verify the percentage of similarity in all doctoral theses.*

IOSUD uses a computer system for checking the similarities percent, being a software accepted by the Ministry of Education (Turnitin anti-plagiarism system) by means of which the similarities percent is checked. At CSUD level, it was adopted a decision for taking into process the coefficients of similarity of not more than 10 for coefficient 1 and maximum 5 for coefficient 2. Following the verification of the thesis, the extract attesting to the degree of similarity is obtained, and according to the values of the coefficients, the thesis is accepted or must be modified.

The indicator is fulfilled.



Standard A.1.3. *The IOSUD makes sure that financial resources are used optimally, and the revenues obtained from doctoral studies are supplemented through additional funding besides governmental funding.*

Performance Indicator A.1.3.1. *Existence of at least one research or institutional / human resources development grant under implementation at the time of submission of the internal evaluation file, per doctoral study domain under evaluation, or existence of at least 2 research or institutional development / human resources grant for the doctoral study domain, obtained by doctoral thesis advisors operating in the evaluated domain within the past 5 years. The grants address relevant themes for the respective domain and, as a rule, are engaging doctoral students.*

IMRVA Doctoral School, Horticulture field, there were concerns to ensure extra-budgetary funding, with a view to attracting funds to finance research activities or to support PhD students.

Although the financing offer was quite small during this period, some contracts were obtained by means of which there was ensured some PhD students funding in their research activities or other PhD students mobility to scientific events or for training stages. These numbers of international projects (one H2020) are fairly low comparing to general European standards, and there is a space to improve through international cooperation and participation in international consortiums.

The indicator is fulfilled.

Performance Indicator *A.1.3.2. *The percentage of doctoral students active at the time of the evaluation, who for at least six months receive additional funding sources besides government funding, through scholarships awarded by individual persons or by legal entities, or who are financially supported through research or institutional / human resources development grants is not less than 20%.*

Within the field of Horticulture doctoral studies, during the period under review, there are a total of 58 PhD students who benefit from the state budget funding. The number of PhD students funded from the state budget who have benefited or benefit from other funding sources is 24, out of 84 students funded from the State budget which represents 28,57%. The funding source comes from research funds obtained by PhD students, by coordinating professors or by other teaching staff from the PhD students coordination team.

The indicator is fulfilled.

Performance Indicator *A.1.3.3.² *At least 10% of the total amount of doctoral grants obtained by the university through institutional contracts and of tuition fees collected from the doctoral students enrolled in the paid tuition system is used to reimburse professional training expenses of doctoral students*

² The indicators marked with an asterisk (*) hold a special status, referring exclusively to the evaluation of doctoral studies domains, as per Article 12 from the annex No.1 of the Order of the minister of education No. 3651/12.04.2021 approving the Methodology for evaluating university doctoral studies and the system of criteria, standards and performance indicators used in the evaluation. In case they are not met, the Agency extends a period of maximum 3 years to IOSUD to correct the respective deficiencies.



(attending conferences, summer schools, training, programs abroad, publication of specialty papers or other specific forms of dissemination etc.).

Within the Doctoral School from USAMV Bucharest, an annual funding of 3000 lei was established up to 2019 and 3500 in 2020 for all PhD students who are financed from the budget and CPV PhD students, the amount being approved by the Administration Council of the University and it is put at students' disposal on the basis of their request by means of a report. This amount is used by PhD students for office expenses, fees for participation in scientific sessions, mobility (accommodation + transport) to localities where national or international scientific symposiums are organized and for the materials they need within experiments. Out of the total amount received in the last three years of funding, namely 3101000 lei, the amount of 382000 lei was made available to students for distribution according to their needs, representing a percentage of 12,31%

The indicator is fulfilled.

Criterion A.2. Research infrastructure

Standard A.2.1. The IOSUD has a modern research infrastructure to support the conduct of doctoral studies' specific activities.

The PhD students registered within the Doctoral School "Engineering and Management of Vegetal and Animal Resources from Bucharest", have at their disposal excellent material basis, both in the form of experimental fields and laboratory equipment.

Performance Indicator A.2.1.1. *The venues and the material equipment available to the doctoral school enable the research activities in the evaluated domain to be carried out, in line with the assumed mission and objectives (computers, specific software, equipment, laboratory equipment, library, access to international databases etc.). The research infrastructure and the provision of research services are presented to the public through a specific platform. The research infrastructure described above, which was purchased and developed within the past 5 years will be presented distinctly.*

The Horticulture Faculty owns didactic and research station as a part of Herăstrău Campus which includes orchard, vineyard, equipment for wine making, solarimus, greenhouse and botanical garden. On three dislocated experimental stations the University owns impressive orchards and vineyard plantations and also fields for vegetables and other crops, a cold warehouse, wine cellar and laboratory for food quality analysis. Within the Faculty of Horticulture, there are three research centers with well-equipped laboratories, especially Research Centre HORTINVEST with very modern equipment.

Research infrastructure is very well and available to students, but for more basic research lack of funds is visible. This makes it difficult to achieve research excellence on an international level.

The indicator is fulfilled.



Criterion A.3. Quality of Human Resources

Standard A.3.1. At the level of each domain there are sufficient qualified staff to ensure the conduct of doctoral study program.

In 2010, before publishing the Education Law 1/2011, in the Horticulture field, 17 coordinating professors were working there. After the law enforcement, there left only three coordinating professors, and over the following years, by means of habilitation, other teaching staff received the right to coordinate.

Performance Indicator A.3.1.1. *Minimum three doctoral thesis advisors within that doctoral domain, and at least 50% of them (but no less than three) meet the minimum standards of the National Council for Attestation of University Degrees, Diplomas and Certificates (CNATDCU) in force at the time when the evaluation is carried out, which standards are required and mandatory for obtaining the enabling certification.*

Out of 8 tutors working in the IMRVA Doctoral School, Horticulture field, five of them satisfy CNATDCU criteria in force at the time of evaluation, and three do not have required number of indexed ISI papers. Even though in terms of the number of ISI papers with Impact Factor, four tutors (Hoza Dorel, Ion Ligia, Necula Cezarina, Toma Florin) do not demonstrate five papers, but there are another activities that compensate for this deficiency (patents, prizes).

The indicator is fulfilled

Performance Indicator *A.3.1.2. *At least 50% of all doctoral advisors have a full-time employment contract for an indefinite period with the IOSUD.*

Membership percentage of doctoral supervisors in the doctoral institution is 87,5% according to Employment certificate at USAMV Bucharest.

The indicator is fulfilled

Performance Indicator A.3.1.3. *The study subjects in the education program based on advanced higher education studies pertaining to the doctoral domain are taught by teaching staff or researchers who are doctoral thesis advisors / certified doctoral thesis advisors, professors / CS I or lecturer / CS II, with proved expertise in the field of the study subjects they teach, or other specialists in the field who meet the standards established by the institution in relation with the aforementioned teaching and research functions, as provided by the law.*

In the IMRVA Doctoral School training programme, the subjects in curriculum are taught exclusively by the University's own teaching staff. Out of four subjects included in the plan, three of them are common to the Doctoral School and the fourth is specialised and is taught by each PhD supervisor to his own PhD students. All supervisors have the necessary skills according to their CVs. According to the PhD students' statements supervisors are excellent experts and researchers in their field and they collaborate very well.



The indicator is fulfilled.

Performance Indicator *A.3.1.4. *The percentage of doctoral thesis advisors who concomitantly coordinate more than 8 doctoral students, but no more than 12, who are themselves studying in doctoral programs³ does not exceed 20%.*

From Table 6 on page 63 of Internal evaluation report, field Horticulture, it can be seen that out of eight supervisors, none exceeds twelve PhD students. It is visible that some individual supervisors are overloaded with PhD students in comparison with others, but if the distribution of students per supervisor were equal, the number of students per supervisor would be 6,5. According to PhD students' statements supervisors are available for all kinds of questions and help.

The indicator is fulfilled.

Standard A.3.2. The Doctoral advisors within the domain are carrying out a scientific activity visible at international level.

Doctoral supervisors' research activity is carried out in their field of expertise and the results are published in national and international journals.

Performance Indicator A.3.2.1. *At least 50% of the doctoral thesis advisors in the evaluated domain have at least 5 Web of Science- or ERIH-indexed publications in magazines of impact, or other achievements of relevant significance for that domain, including international-level contributions that indicate progress in scientific research - development - innovation for the evaluated domain. The aforementioned doctoral thesis advisors enjoy international awareness within the past five years, consisting of: membership on scientific boards of international publications and conferences; membership on boards of international professional associations; guests in conferences or expert groups working abroad, or membership on doctoral defense commissions at universities abroad or co-leading with universities abroad. For Arts and Sports and Physical Education Sciences, doctoral thesis advisors shall prove their international visibility within the past five years by their membership on the boards of professional associations, membership in organizing committees of arts events and international competitions, membership on juries or umpire teams in artistic events or international competitions.*

All doctoral supervisors in the field of Horticulture present a list of their own results through the publication of ISI listed articles. Much of the research carried out is of national importance and of local interest. Because of that international visibility it is not at the level it should be, especially if we take into account the excellent research infrastructure. Most research is based on industry collaborations or investigation of local cultivars which has the negative consequence since advanced basic research projects are largely missing. To improve the level of research it will be necessary to focus on basic research in international co-operation projects.

The indicator is fulfilled.

³ 3 years for the doctoral university studies with the duration stipulated at Article 159, paragraph (3), respectively 4 years for the doctoral university studies with the duration stipulated at Article 174, paragraph (3) of the Law of national education No.1/2011 with subsequent amendments and additions, with additional extension periods approved as per Article 39, paragraph (3) of the Code of doctoral studies approved by the GD No. 681/2011 with subsequent amendments and additions.



Performance Indicator *A.3.2.2. *At least 50% of the doctoral thesis advisors in a specific doctoral study domain continue to be active in their scientific field, and acquire at least 25% of the score requested by the minimal CNATDCU standards in force at the time of the evaluation, which are required and mandatory for acquiring their enabling certificate, based on their scientific results within the past five years.*

Summarizing the score from the report for the last five years the research activity of doctoral supervisors is constant over the time and the minimum score is satisfied by all supervisors in the Horticulture field. In spite of that the quality of research and the publications is reflected in the number of citations and these numbers are fairly low compared to general European standard, and there is a way to go before excellence is reached.

The indicator is fulfilled.

Domain B. EDUCATIONAL EFFECTIVENESS

Criterion B.1. The number, quality and diversity of candidates enrolled for the admission contest

Standard B.1.1. The institution organizing doctoral studies has the capacity to attract candidates from outside the higher education institution or a number of candidates exceeding the number of seats available.

The number of places allocated to the doctoral field Horticulture in the past five years was 66 funded by the budget. A total of 84 candidates applied for these places, out of which 20 PhD students were graduates of the other educational institutions in Romania or abroad. According to the statements of the teaching staff there is a need for more places but before that it is necessary to improve financial construction in a way to establish a better connection with the industry.

Performance Indicator *B.1.1.1. *The ratio between the number of graduates of masters' programs of other higher education institutions, national or foreign, who have enrolled for the doctoral admission contest within the past five years and the number of seats funded by the state budget, put out through contest within the doctoral domain is at least 0.2 or the ratio between the number of candidates within the past five years and the number of seats funded by the state budget put out through contest within the doctoral studies domain is at least 1,2.*

The ratio between the number of graduates of masters' programs of other higher education institutions, who have enrolled for the doctoral admission contest within the past five years and the number of seats funded by the state budget is 0,3. The ratio between the number of candidates within the past five years and the number of seats funded by the state budget put out through contest within the doctoral studies domain is 1,27.

The indicator is fulfilled.



Standard B.1.2 Candidates admitted to doctoral studies demonstrate academic, research and professional performance.

Selection process is public and based on merit and examinations. For foreign students additional selection criteria is knowledge of Romanian. To attract more foreign students, English should be used more generally.

Performance Indicator *B.1.2.1. *Admission to doctoral study programs is based on selection criteria including: previous academic, research and professional performance, their interest for scientific or arts/sports research, publications in the domain and a proposal for a research subject. Interviewing the candidate is compulsory, as part of the admission procedure.*

The selection procedure was found to be clear and open.

The indicator is fulfilled.

Performance Indicator B.1.2.2. *The expelling rate, including renouncement / dropping out of doctoral students 3, respectively 4, years after admission⁴ does not exceed 30%.*

During 2016-2020 84 PhD students were enrolled in the Horticulture field, out of which none quit the study during the first two years. 22 PhD students enrolled in previous years were expelled during this time frame due different reasons. Doctoral School collects the drop-out numbers, but reasons are not analysed good enough. They should collect and analyse feedback from involved individuals at all levels, and act on these in order to improve.

The indicator is fulfilled.

Criterion B.2. The content of doctoral programs

Standard B.2.1. The training program based on advanced university studies is appropriate to improve doctoral students' research skills and to strengthen ethical behavior in science.

Training program is satisfactory, but there is a need for widening the horizon and inspiration from basic science. When talking about research skills and ethical behavior in science, it is visible that PhD students discuss ethics at an early time-point of the programme, but more discussion is recommended.

Performance Indicator B.2.1.1. *The training program based on advanced academic studies includes at least 3 disciplines relevant to the scientific research training of doctoral students; at least one of these disciplines is intended to study in-depth the research methodology and/or the statistical data processing.*

⁴ 3 years for the doctoral university studies with the duration stipulated at Article 159, paragraph (3), respectively 4 years for the doctoral university studies with the duration stipulated at Article 174, paragraph (3) of the Law of national education No. 1/2011 with subsequent amendments and additions.



The curriculum includes three common disciplines at the level of Doctoral School, which provides general research skills and the ethical attitude, and there is also a special discipline, appropriate to the research topics addressed by the doctoral candidate. The discipline “Methodology of scientific research” trains students’ skills on how to organize experiments, statistics and statistical programs.

The indicator is fulfilled.

Performance Indicator B.2.1.2. *At least one discipline is dedicated to Ethics and Intellectual Property in scientific research or there are well-defined topics on these subjects within a discipline taught in the doctoral program.*

In the curriculum there is a subject of Ethic and Academic Integrity, with two hours per week and seven transferable credits, but more emphasis should be put on ethics in scientific research in the overall learning outcomes development.

The indicator is fulfilled.

Performance Indicator B.2.1.3. *The IOSUD has mechanisms to ensure that the academic training program based on advanced university studies addresses „the learning outcomes”, specifying the knowledge, skills, responsibility and autonomy that doctoral students should acquire after completing each discipline or through the research activities⁵.*

Each discipline in the curriculum has foreseen competences that doctoral students should acquire after completing the discipline and the expected outcomes. Since the courses in Syllabus are only for the first semester of the first year, students have to carry out research according to chosen topics for the rest of study. Problem may be the fact that industry related projects suffer from reduced freedom for the students to define their own research questions. Nationally or Eu funded projects are more flexible and can be adapted.

The indicator is fulfilled.

Performance Indicator B.2.1.4. *All along the duration of the doctoral training, doctoral students in the domain receive counselling/guidance from functional guidance commissions, which is reflected in written guidance and feedback or regular meeting.*

Doctoral students present their annual reports to the committee, composed of four professors, and are assisted by teaching staff whenever is necessary. They also receive advice on the organization of experiments or on carrying out laboratory analyses according to the specificity of each topic. PhD students should be more focused on their independent project work, which should start at the very beginning of the

⁵ Or by what the graduate should know, understand and to be able to do, according to the provisions of the Methodology of 17 March 2017 regarding inscription and registration of higher education qualifications in the National Register of Qualifications in Higher Education (RNCIS) approved by the Order No.3475/2017 with subsequent amendments and additions.



programme. Thesis topic should be defined from the first day of the enrolment/a part of the selection process.

The indicator is fulfilled.

Performance Indicator B.2.1.5. For a doctoral study domain, the ratio between the number of doctoral students and the number of teaching staff/researchers providing doctoral guidance must not exceed 3:1.

84 students in total have been enrolled in the field of Horticulture between academic years 2015/2016 – 2019/2020 and 50 persons have been included in the mentoring committees. The annual ratio between PhD students and committee members being between 0.65 and 1.30 per year, with value per period of 1,68.

The indicator is fulfilled.

Criterion B.3. The results of doctoral studies and procedures for their evaluation.

Standard B.3.1. Doctoral students capitalize on the research through presentations at scientific conferences, scientific publications, technological transfer, patents, products and service orders.

Doctoral students participate in conferences and symposiums with scientific papers during their doctoral studies and publish their research results partially or entirely.

Performance Indicator B.3.1.1. For the evaluated domain, the evaluation commission will be provided with at least one paper or some other relevant contribution per doctoral student who has obtained a doctor's title within the past 5 years. From this list, the members of the evaluation commission shall randomly select 5 such papers / relevant contributions per doctoral study domain for review. At least 3 selected papers must contain significant original contributions in the respective domain.

According to the legislation in force, each doctoral student had to present at least two scientific papers on the topic addressed as a doctoral thesis before the thesis defense. After review of five papers (Veith Cristina: Studies regarding the wine consumption in Germany and the perspective of increasing the Romanian wine export on this market; Drăgan (Artem) Victoria: The Effect of Green Harvest on the Quality of Organic Grapes Cultivated in Murfatlar Viticultural Centre; Ahmad Holia: Preliminary Characterization of some Fig Biotypes in Romania; Kotrotsios Ioannis: Influence of the intensity of plant cutting on the growth and fructification of blueberry; Chivu Cătălina: Consumer Preferences Regarding Sources Of Information And Use Of Technology For Wine Selection – A Survey Of Millennials And Generation X Sample In Romania) it is evident that all of them have relevant contribution per doctoral study domain Horticulture. I think it should be avoided that PhD student is not first or coresponding author as it is in the case of Kotrotsios Ioannis. If a PhD student is submitting their own work then he/she should be the first author in the paper and that should make them the corresponding author by default.

The indicator is fulfilled.



Performance Indicator *B.3.1.2. *The ratio between the number of presentations of doctoral students who completed their doctoral studies within the evaluated period (past 5 years), including posters, exhibitions made at prestigious international events (organized in the country or abroad) and the number of doctoral students who have completed their doctoral studies within the evaluated period (past 5 years) is at least 1.*

Research results were presented by PhD students at international scientific events and each of them participating with at least one paper in scientific sessions of the country's faculties or in international events. The ratio between the number of scientific symposium participation and PhD graduates is at least 2.65.

The indicator is fulfilled.

Standard B.3.2. The Doctoral School engages a significant number of external scientific specialists in the commissions for public defense of doctoral theses in the analyzed domain.

20 theses were defended during the period under review. For these, 45 academics and researchers were invited and responded as referees.

Performance Indicator *B.3.2.1. *The number of doctoral theses allocated to one specialist coming from a higher education institution, other than the evaluated IOSUD should not exceed two (2) in a year for the theses coordinated by the same doctoral thesis advisor.*

Concerning the number of theses coordinated by a supervisor of the Doctoral School and assigned to a reviewer from outside IOSUD, there were no situations where a professor participated in more than 2 committees per year for the same scientific supervisor.

The indicator is fulfilled.

Performance Indicator *B.3.2.2. *The ratio between the doctoral theses allocated to one scientific specialist coming from a higher education institution, other than the institution where the defense on the doctoral thesis is organized, and the number of doctoral theses presented in the same doctoral study domain in the doctoral school should not exceed 0.3, considering the past five years. Only those doctoral study domains in which minimum ten doctoral theses have been presented within the past five years should be analyzed.*

The number of theses that an external IOSUD reviewer evaluated in the period 2016 - 2020 is between 0.05 for the reviewers who evaluated a thesis in the IMRVA-Horticulture School and 0.35 for a reviewer (Prof.Dr. Cosmulescu Sina Niculina), who was part of the completion committees for 2 PhD supervisors.

The indicator is fulfilled.



Domain C. QUALITY MANAGEMENT

Criterion C.1. Existence and periodic implementation of the internal quality assurance system

USAMV B establishes, implements, updates and maintains the policy on quality assurance.

Standard C.1.1. There are an institutional framework and procedures in place and relevant internal quality assurance policies, applied for monitoring the internal quality assurance.

The management of USAMV B is constantly concerned with the continuous improvement of the organization and execution of activities, feedback, with priority on the main dimensions: teaching, scientific research and social insertion which has been confirmed according to the statements of PhD students and graduates.

Performance Indicator C.1.1.1. *The Doctoral school in the respective university study domain shall demonstrate the continuous development of the evaluation process and its internal quality assurance following a procedure developed and applied at the level of the IOSUD.*

The PhD supervisors scientific activity is evaluated at the level of their departments, through the self-evaluation report they submit annually on the Prometheus platform, the results being visible to the faculty academic management, IOSUD and university levels. USAMV and IOSUD Bucharest, provide doctoral students with the material and logistical basis for carrying out documentation and research through the material base they own. Within IOSUD Bucharest-Horticulture field doctoral studies are carried out in accordance with a series of documents that regulate the activity in terms of operation and all of the are available on the IOSUD web site. At the end of the year all PhD students draw up a self-evaluation which they submit to the Doctoral School after being approved by the scientific advisor, to which they attach a list of their works if necessary. The supervising professor draws up a report on the work carried out with the doctoral students he/she supervises, in the form of a summary of publications, research contracts, distinctions obtained, etc., which he/she submits to the Doctoral School. At the end of the research period, doctoral students prepare a preliminary thesis which they present to the mentoring committee, where they may also receive recommendations, generally for the presentation of their results. The state budget or scholarships funded students evaluation is done monthly through the report that they draw up and after its endorsement by the scientific supervisor, this one being submitted to the Doctoral School.

The indicator is fulfilled.

Performance Indicator *C.1.1.2. *Mechanisms are implemented during the stage of the doctoral study program to enable feedback from doctoral students allowing to identify their needs, as well as their overall level of satisfaction with the doctoral study program in order to ensure continuous improvement of the academic and administrative processes. Following the analysis of the results, there is evidence that an action plan was drafted and implemented.*



According to the statements of PhD students and graduate, they have the possibility and obligation to fill different types of surveys to IOUSD can identify their needs and level of satisfaction to ensure continuous improvement of academic and administrative processes.

The indicator is fulfilled.

Criterion C.2. Transparency of information and accessibility of learning resources

Standard C.2.1. Information of interest to doctoral students, future candidates and public interest information is available for electronic format consultation.

The Doctoral School through IOSUD web site ensures transparency of public interest information where data of interest to doctoral students, professors and other interested persons are presented.

Performance Indicator C.2.1.1. *The IOSUD publishes on the website of the organizing institution, in compliance with the general regulations on data protection.*

On the Doctoral Schools website you can find all the necessary information about organization and functioning of Doctoral School. Also on the University's website the Curriculum, the Work Schedule, the PhD supervisors list, the PhD theses defended since 2010 are available, with the possibility to see the abstracts in Romanian, English and French.

The indicator is fulfilled.

Standard C.2.2. The IOSUD/The Doctoral School provides doctoral students with access to the resources needed for conducting doctoral studies.

The IRMVA Doctoral School provides students with access to international databases through the University Library and through the computer network that exists in the research centres where students have access, and also through the computer network in the Faculty of Horticulture but also to other information sources in the university library: books, Romanian or foreign speciality magazines and various periodical collections.

Performance Indicator C.2.2.1. *All doctoral students have free access to one platform providing academic databases relevant to the doctoral studies domain of their thesis.*

According to the Internal evaluation report and the statements of PhD students and graduates they have possibility for free access to platforms providing academic databases related to horticulture.

The indicator is fulfilled.

Performance Indicator C.2.2.2. *Each doctoral student shall have access, upon request, to an electronic system for verifying the degree of similarity with other existing scientific or artistic works.*



Doctoral students have the possibility to check the scientific papers they are preparing through the Plagiarism Detector software, which is installed and managed by the Scientific Research Dean of the Horticulture Faculty. Also, when the thesis is completed, it is checked through the Doctoral Studies School Secretary Department by a TURNITIN software approved by the Ministry of Education.

The indicator is fulfilled..

Performance Indicator C.2.2.3. All doctoral students have access to scientific research laboratories or other facilities depending on the specific domain/domains within the Doctoral School, according to internal order procedures.

According to the Internal evaluation report and the statements of PhD students and graduets scientific research laboratories or other facilities are available for their scientific work.

The indicator is fulfilled.

Criterion C.3. Internationalization

Standard C.3.1. There is a strategy in place and it is applied to enhance the internationalization of doctoral studies.

At university level there are collaboration and mobility agreements with many universities and strategy to stimulating doctoral students to undertake internships in the form of various external mobilities for their professional development.

Performance Indicator *C.3.1.1. IOSUD, for every evaluated domain, has concluded mobility agreements with universities abroad, with research institutes, with companies working in the field of study, aimed at the mobility of doctoral students and academic staff (e.g., ERASMUS agreements for the doctoral studies). At least 35% of the doctoral students have completed a training course abroad or other mobility forms such as attending international scientific conferences. IOSUD drafts and applies policies and measures aiming at increasing the number of doctoral students participating at mobility periods abroad, up to at least 20%, which is the target at the level of the European Higher Education Area.

There were 13 mobilities to scientific congress and symposiums and 21 external mobilities carried out during the period under review, 2016-2020, including: one training period lasting 4 months, 7 mobilities lasting 2 weeks and 13 mobilities to scientific congresses and symposiums. More than 50% of these mobilities were carried out at the level of the European Higher Education Area. There were no mobilities for more than 4 months, one training period lasting four months and the rest were short mobilities. Respecting the fact that some students, according to their statements, do two jobs in order to be able to study, it is necessary to increase the number of mobilities, as well as its duration to improve international connections and visibility in European Research Area. The industry collaboration is occupying time and resources, which makes this difficult. Independent financial resources need to be directed to this area.

The indicator is fulfilled.



Performance Indicator C.3.1.2. *In the evaluated doctoral study domain, support is granted, including financial support, to the organization of doctoral studies in international co-tutelage or invitation of leading experts to deliver courses/lectures for doctoral students.*

There was no co-tutelage during evaluation period. There was only one lecture given by the international expert. In my dialogue with the professors and PhD students during the evaluation, I experienced resistance towards using English and this, for obvious reasons, cannot facilitate the establishment of international collaborations.

The indicator is partially fulfilled.

Performance Indicator C.3.1.3. *The internationalization of activities carried out during the doctoral studies is supported by IOSUD through concrete measures (e.g., by participating in educational fairs to attract international doctoral students; by including international experts in guidance committees or doctoral committees etc.).*

The University, through International Relations and Teaching Vice-Rectorates, participated in several international education fairs. In the period 2016-2020, 4 foreign PhD students completed their doctoral studies, and currently, 4 more foreign PhD students are in various stages of preparation. In regard to research infrastructure and equipment, the potential for the arrival of international doctoral students is enormous. English should be used more generally. This is required to get the international perspective and to work towards excellence.

The indicator is partially fulfilled.

IV. SWOT Analysis

<p><u>Strengths:</u></p> <ul style="list-style-type: none"> - tradition - research infrastructure - human capacities 	<p><u>Weaknesses:</u></p> <ul style="list-style-type: none"> - lack of courses in English - lack of specific thematic lectures and business skills
<p><u>Opportunities:</u></p> <ul style="list-style-type: none"> - international cooperation and participation in international consortiums - better cooperation with former students 	<p><u>Threats:</u></p> <ul style="list-style-type: none"> - a number of similar studies inside the country and in the surrounding countries - new trends in the labor market

V. Overview of judgments awarded and of the recommendations

No.	Type of indicator (* , C)	Performance indicator	Judgment	Recommendations
1.	A	1.1.1.	<i>fulfilled</i>	
2.	A	1.1.2.	fulfilled	
3.	A	1.2.1.	fulfilled	
4.	A	1.2.2.	fulfilled	
5.	A	1.3.1.	fulfilled	
6.	A	1.3.2.	fulfilled	
7.	A	1.3.3.	fulfilled	
8.	A	2.1.1.	fulfilled	
9.	A	3.1.1.	fulfilled	
10.	A	3.1.2.	fulfilled	
11.	A	3.1.3.	fulfilled	
12.	A	3.1.4.	fulfilled	
13.	A	3.2.1.	fulfilled	
14.	A	3.2.2.	fulfilled	
15.	B	1.1.1.	fulfilled	
16.	B	1.2.1.	fulfilled	
17.	B	1.2.2.	fulfilled	
18.	B	2.1.1.	fulfilled	
19.	B	2.1.2.	fulfilled	
20.	B	2.1.3.	fulfilled	
21.	B	2.1.4.	fulfilled	
22.	B	2.1.5.	fulfilled	
23.	B	3.1.1.	fulfilled	
24.	B	3.1.2.	fulfilled	
25.	B	3.2.1.	fulfilled	
26.	B	3.2.2.	fulfilled	
27.	C	1.1.1.	fulfilled	
28.	C	1.1.2.	fulfilled	
29.	C	2.1.1.	fulfilled	
30.	C	2.2.2.	fulfilled	
31.	C	2.2.3.	fulfilled	
32.	C	3.1.1.	fulfilled	
33.	C	3.1.2.	partially fulfilled	In my dialogue with the professors and PhD students during the evalutaion I

				experienced resistance towards using English and this, for obvious reasons, cannot facilitate the establishment of international collaborations.
34.	C	3.1.3.	partially fulfilled	In regard to research infrastructure and equipment, the potential for the arrival of international doctoral students is enormous. English should be used more generally. This is required to get the international perspective and to work towards excellence.

VI. Conclusions and general recommendations

Doctoral School “Engineering an Management of Vegetal and Animal Resources from Bucharest”, field Horticulture is a mixture of excellent professors, who are experts in their fields, highly motivated students, up to date equipment, and experimental fields, which is a guarantee of successful education. Despite this there are several points to improve, as follows:

- *Research infrastructure is very well and available to students, but for more basic research lack of funds is visible. This makes it difficult to achieve research excellence on an international level.*
- *Most research is based on industry collaborations or investigation of local cultivars which has the negative consequence, since advanced basic research projects are largely*



missing. To improve the level of research, it will be necessary to focus on basic research in international co-operation projects.

- *Quality of research and the publications is reflected in the number of citations and these numbers are fairly low compared to general European standard, therefore these indicators should be improved during the following period.*
- *To attract more foreign students, English should be used more generally.*
- *Industry related projects suffer from reduced freedom for the students to define their own research questions. National or Eu funded projects are more flexible and can be adapted.*
- *PhD students should be more focused on their independent project work, which should start at the very beginning of the programme. Thesis topic should be defined from the first day of the enrolment/a part of the selection process in order to set the experiments as soon as possible.*
- *It is necessary to increase the number of mobilities, as well as its duration to improve international connections and visibility in European Research Area.*
- *Resistance towards using English is apparent and this, for obvious reasons, cannot facilitate the establishment of international collaborations.*

In Osijek, Croatia, 25/06/2021