



STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

Aleksandro Stulginskio universiteto
STUDIJŲ PROGRAMOS AGROBIOTECHNOLOGIJA
(valstybinis kodas – 621J70002)
VERTINIMO IŠVADOS

EVALUATION REPORT
OF AGROBIOTECHNOLOGY *(state code – 621J70002)*
STUDY PROGRAMME

At Aleksandras Stulginskis University

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DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	<i>Agrobiotechnologija</i>
Valstybinis kodas	621J70002
Studijų sritis	Technologijos mokslai
Studijų kryptis	Biotechnologijos
Studijų programos rūšis	Universitetinės studijos
Studijų pakopa	Antroji
Studijų forma (trukmė metais)	Nuolatinė (2), iššęstinė (3)
Studijų programos apimtis kreditais	120 ECTS
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	Biotechnologijos magistras
Studijų programos įregistravimo data	9 th November 2007, under the Order of the Minister of the Ministry for Education and Science of the Republic of Lithuania No. ISAK-2166.

INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	<i>Agrobiotechnology</i>
State code	621J70002
Study area	Technological Sciences
Study field	Biotechnology
Type of the study programme	University studies
Study cycle	Second
Study mode (length in years)	Full-time (2), part-time (3)
Volume of the study programme in credits	120 ECTS
Degree and (or) professional qualifications awarded	Master of Biotechnology
Date of registration of the study programme	9 th November 2007, under the Order of the Minister of the Ministry for Education and Science of the Republic of Lithuania No. ISAK-2166.

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The Centre for Quality Assessment in Higher Education

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I. INTRODUCTION

1.1. Background of evaluation process

The evaluation of on-going study programmes is based on the Methodology for Evaluation of Higher Education Study Programmes, approved by the Order No 1-01-162 of 20th December 2010 of the Director of the Centre for Quality Assessment in Higher Education (hereafter, SKVC). Evaluation is intended to help higher education institutions to constantly improve their study programmes and to inform the public about the quality of studies.

The evaluation process consists of the main following stages: *1) self-evaluation and the Self-evaluation Report (hereafter, the SER) prepared by a Higher Education Institution (hereafter, the HEI); 2) a visit of the Review Panel at the higher education institution; 3) preparation of the evaluation report by the Review Panel and its publication; 4) follow-up activities.*

On the basis of the study programme external evaluation SKVC takes a decision to accredit the study programme either for 6 years or for 3 years. If evaluation of the programme is negative such programme is not accredited.

The programme is accredited for 6 years if all evaluation areas were evaluated as “very good” (4 points) or “good” (3 points).

The programme is accredited for 3 years if none of the areas was evaluated as “unsatisfactory” (1 point) and at least one evaluation area was evaluated as “satisfactory” (2 points).

The programme is not accredited if at least one of evaluation areas was evaluated as “unsatisfactory” (1 point).

1.2. General

The application documentation submitted by the HEI follows the outline recommended by SKVC.

1.3. Background of the HEI/Faculty/Study field/Additional information

The Master’s degree programme in *Agrobiotechnology* at Aleksandras Stulginskis University (hereafter, ASU) is implemented by the Faculty of Agronomy. In 2012 the Faculty has been reorganized into 3 institutes: Institute of Agroecosystem and Soil Sciences, Institute of Biology and Plant Biotechnology, and Institute of Agricultural and Food Sciences which results in better

consistency between teaching and scientific activities. The second cycle *Agrobiotechnology* programme is designed to train specialists who integrate knowledge in the fields of plant biotechnology and agricultural sciences. The graduates are prepared to use biotechnology and ecology knowledge in agricultural practice and agro-environmental protection, i.e. they gain competences in the fields of genetic testing, plant selection and biotechnology.

The SER was made available to the Review Panel in April 2016. The Panel members analyzed the report individually, prepared preliminary reports and indicated questions to be discussed and/or cleared. The site visit included interviews with ASU administration, staff responsible for the preparation of the SER, teaching staff, students and social partners. Thereafter, the Review Panel discussed the contents of the SER, compared its content with the information gathered during the site visit and agreed upon the score of each particular evaluation section.

1.4. The Review Panel

The Review Panel was composed according to the *Description of the Review Team Member Recruitment*, approved by the Order No 1-01-151, 11/11/2011 of the Director of the Centre for Quality Assessment in Higher Education. The visit to the HEI was conducted by the Panel on 12/05/2016.

1. Prof. Halina Gabryś (Chair of the Team)

Professor at Jagiellonian University, Poland.

2. Prof. Ruth Shimmo

Professor at Tallinn University, Estonia.

3. Assoc. Prof. Niels Thomas Eriksen

Associate Professor at Aalborg University, Denmark.

4. Mr Julius Gagilas

Managing Director at JSC "Diagnolita", Lithuania.

5. Ms Vaida Šidlauskaitė

Doctorate candidate at Lithuanian Sports University (Biology field), Lithuania.

II. PROGRAMME ANALYSIS

2.1. Programme aims and learning outcomes

Agrobiotechnology at ASU is the first programme in Lithuania that combines two fields, namely agriculture and biotechnology, which is a commendable initiative.

The programme aims and the intended learning outcomes provided in the SER are not very detailed, but they give an overall setting. It should be mentioned that it is a bit confusing that under the title “2.1.1. Programme Demand, Purpose and Aims” there is no definition of the aim(s) of the programme. The aims are described in the next chapter “2.1.2. Learning Outcomes” while the intended learning outcomes are then described in the following chapter.

The aims and the intended learning outcomes of the study programme are publicly available in Lithuanian on the University’s website at www.asu.lt. The key aim of the programme is to prepare highly qualified multidisciplinary specialists with a Master’s degree in Biotechnology, who have deep fundamental knowledge in plant biotechnology and are capable of planning and carrying out biotechnology research and efficiently use the findings to increase business competitiveness. This aim is reflected in 2 sub-aims: the first sub-aim refers to skills required for professional activities and third cycle studies based on fundamental and applied knowledge in biotechnology and other related fields. The intended learning outcomes of this sub-aim include professional knowledge and competences in choosing, using and managing biotechnological instruments in the agricultural sector. The second sub-aim refers to scientific research skills and innovation competences required for the research career and the applied biotechnology sector. The intended learning outcomes of this sub-aim describe the graduate’s readiness for scientific research and studies in the third cycle or professional career, which require applied biotechnology knowledge and skills in addressing agrobiotechnology problems.

The aims of the programme are consistent with the type and level of the studies.

The aims are seen to meet the needs of Lithuania, as revealed by the survey of Lithuanian biotech enterprises covering the period of 2007-2011; the resulting survey identified a growing demand for trained biotechnology specialists; also a survey of employers (e.g. Lithuanian Research Centre for Agriculture and Forestry, Institutes of Botanic and Biotechnology, the GMO Laboratory of the State Food and Veterinary Service, etc.) confirmed the need for the study programme. Both social partners and alumni claimed that it is easy to find a job for the graduates of *Agrobiotechnology* study programme.

It should be noted that while the intended learning outcomes reflecting the agronomy part of the programme are more substantial and detailed, the intended learning outcomes related to biotechnology have to be improved. The field the programme is registered, Biotechnology, requires a substantial enlargement of biotechnology-related subjects as well as more specific description of the intended learning outcomes. Additionally, regarding the research methods mainly the generic terms are used (for example, “To outline the strategies for solving scientific problems in agro-biotechnology, to plan and undertake biotechnological research independently, to summarise and justify the findings leading to innovative solutions in preparing projects in biotechnology areas; to provide consultations on agro-biotechnology issues”, the SER p. 9). There should be a more detailed description of research skills. At the moment the research skills description sounds too ambitious and superficial. Discussion with students during the site visit revealed that they have not learned enough research methods to make an independent choice of biotechnological processes and to outline the strategies for solving scientific problems in agro-biotechnology.

As the intended learning outcomes are unbalanced, the current name of the programme does not fully reflect the content of the programme.

In conclusion: the programme aims and the intended learning outcomes are well defined for the agronomy part of the programme, but too ambitious and not enough detailed for the biotechnology part, especially when the content and design of the programme are taken into consideration.

2.2. Curriculum design

The legal requirements of *Agrobiotechnology* study programme are met¹. The volume of the analysed study programme is 120 ECTS. In accordance with the previously mentioned requirements, the study subjects on a higher problem or innovation scientific level shall cover at least 50% of the master’s programme and the final thesis should provide at least 25% of the programme’s credit value. Both requirements are met: the study subjects on a higher problem or innovation scientific level provide 60 ECTS and the final thesis provides 30 ECTS.

In full-time mode the credit value of studies is 60 ECTS per year or 29–31 ECTS per term, whereas in part-time mode it shall not exceed 42 ECTS per one academic year or 18–24 ECTS

¹ Order of the Minister for Education and Science of the Republic of Lithuania “General Requirements for Master Degree Study Programmes”.

per term which results in even distribution of the study subjects. The part-time studies are not extensively discussed in the SER, as currently there are only full-time students on the programme.

For the academic year 2015/2016 the structure of the study programmes in ASU was changed by the Order No. 92-PA, 31-03-2015, of the Rector *On Contact Work Planning in the Detailed Plan of the Study Programmes*. For master degree studies, the contact work volume decreased from 12 hours to 7 hours per one credit in full-time studies which results in 26.3% of contact work per programme (instead the former 45%). Lectures make a bit over 50% of the contact hours, the rest are seminars, laboratory works, practical works, consultations, and exams. The proportion of students' independent work is very high. Limited access to practical supervision may influence negatively the practical skills of the students.

The repetitions in the study programme (on different study subjects) are welcomed by the students who claim that there are no plain repetitions but the lecturers bring the topics always to higher levels.

The study plan is built up logically. The main field-related study subjects (high problem or innovation scientific level subjects of the study field) make up the first two semesters. The third semester is mainly reserved for research works (projects which may be related to the final work but do not have to necessarily be) and for few electives. The last semester is reserved for the final work. When looking into the list of topics taught, the modern aspects of plant biotechnology which are crucial for agrobiotechnology, are underrepresented or absent in the programme (e.g. molecular genetics, secondary metabolites, genetic engineering of plants). This opinion was also expressed by social partners and it was seen from the discussions with the students. More statistics and bioinformatics should also be included into the curriculum as well.

The set of classes is generally consistent with the type and level of studies. A class specifically on professional, legal and ethical issues is not present but they are included into all study subjects, according to the SER.

The content of the study subjects taught is up-to-date, according to the site visit interviews. As the teachers are involved into research they need to keep themselves scientifically up-to-date. They are expected to reflect the newest knowledge in their study subjects and according to the interviews (administration, students), they do it. However, many of the teachers needed a

translator during the discussion with the Panel, which may make it difficult to obtain the newest scientific information or to convey it to foreign students.

Deficiencies in the selection of the study subjects and their content have been identified. The proportions between independent and class work should be looked over. Improvements to the curriculum are necessary to ensure a full achievement of the intended learning outcomes of the *Agrobiotechnology* study programme.

2.3. Teaching staff

The teaching staff of the programme meet the legal requirements in that (i) teachers of all study subjects have scientific degrees; out of them, over 75% of major study field teachers' exercised research activity which complies with the study subjects taught; (ii) 50% of major study field subjects' volume is taught by the teachers holding a Professor's degree. Both number and qualifications of the teaching staff are adequate to ensure the achievement of the intended learning outcomes. In the academic year 2014/2015, 14 persons (5 professors, 8 associate professors and 1 lecturer) were teaching 20 first and second year students. Thus, the teacher to student ratio in the evaluated programme was very high, 1:1,5.

Most of the programme teachers have more than 10-years teaching experience and among them 50% have teaching experience of more than 20 years. The age distribution is more or less symmetrical with 6 persons in the range from 40 to 50 and 7 from 50 to 60, which complies with an adequate professional experience. On the other hand, only two members of the teaching staff are younger than 40, one of them employed permanently at Vytautas Magnus University Faculty of Natural Sciences, thus belonging to the category of guest teachers. Younger generation should be better represented among the teaching staff, especially as modern techniques of molecular biotechnology could be better presented. According to the SER, teachers are selected according to their professional competence and the area of their scientific activities. Information on scientific and teaching qualifications of the teachers has been provided in Annex 3 of the SER.

The site-visit demonstrated that the teachers are genuinely enthusiastic about their work. Nevertheless, they expressed concerns regarding their teaching load which is very high leaving little time left for research (teaching on more than one study programme). It is a common practice that the teachers have to work extra hours.

The teachers find that while ASU is doing well regarding equipment, they have problems finding the funding for chemicals and disposables for practical teaching. This critical remark is

addressed to the programme management rather than to the teachers. The site visit meetings also revealed that part of the teaching staff have problems communicating in English.

The changes in the teaching staff are minor and due to retirement and/or promotion. Numbers and qualifications of the teaching staff are stable. Most of the study subjects are taught by two or more teachers which also adds to the stability. 4 teachers from other universities on one year contracts have been teaching in addition to permanent employees of ASU. The guest teachers are experts in the fields of agrobiological, plant biotechnology, plant pathology and population genetics i.e. mostly in the fields that are underrepresented in the study programme.

According to the SER, students have access to assistance by the technical staff during laboratory and practical works. A professional technical support is particularly important as it helps the student to achieve the intended learning outcomes in the applied field of agrobiotechnology. Students who took part in the meeting with the Review Panel confirmed an easy access to technical staff.

ASU establishes conditions for professional development of the teaching staff necessary for the provision of the programme. Teachers improve their teaching, methodological, and research qualifications by participating in professional development sessions and training courses in Lithuania and abroad, in international exchange programmes, among others Erasmus+, BOVA, NOVA and REHAUT–BIOTECH project Reform of Higher Education on Biotechnology. Each year several teachers were engaged in lecturing and academic work in various science and study institutions abroad. In turn, 40 foreign scientists visited ASU in the last 5 years under the teacher exchange programmes. However, only a few programme teachers had a real internship abroad – most visits listed as internships or courses lasted only a few days. The main reasons of this situation given during the site visit discussion are the large teaching workload which makes it impossible for a teacher to leave for longer periods of time and the teachers' financial condition.

Similar to other Lithuanian universities, the teachers' workload is high at ASU. Diminishing the teaching workload would enable teachers to invest more time into raising their qualifications. This possibility is very important in a rapidly developing field of biotechnology.

Analysis of publications listed in Annex 3.3 of the SER shows that the teaching staff is in most cases involved in research directly related to the study programme. However, a big part of research works belongs to the fields of agricultural and environmental sciences. The teaching staff members are involved in numerous research projects, mostly funded by the State. Because

many of these projects concern subjects of vital importance to Lithuania, many publications appear in local journals. The Panel would encourage ASU to intensify the level of international collaboration in the agrobiotechnology area; this would improve the quality of research and help student mobility in the programme. The Erasmus+ mobility could be used for that.

It is worth mentioning that in the last 5 years the programme teachers have co-authored 2 books, 8 course-books, and 4 other learning aids. Moreover, the teachers employed in the study programme take an active part in scientific project activities and carry out special-order research. During the evaluation period, 37 research projects were financed by the Ministry of Agriculture, the Fund of Science and Studies, the Research Council of Lithuania, local administration, farmers as well as business. Most teachers participated in international projects, including 5 science and 7 study projects. The teachers are also active members of numerous scientific organizations research councils, expert groups and editorial boards of Lithuanian and foreign journals.

2.4. Facilities and learning resources

Facilities available to and used by the students of *Agrobiotechnology* study programme are shared with other study programmes at the Faculty of Agronomy. They are located in the Central Building of ASU and in two other buildings. The unit is called Laboratory of Agrobiotechnology of the Joint Research Centre. The total floor area of 33 classrooms currently used by the Faculty is over 500 m² and can accommodate 370 students. Practical training takes place in training rooms and laboratories. This space has been organized into 3 specialized study and research laboratories dedicated to Plant Biotechnology, Plant Food Raw Material Processing and Food Raw Materials. The facilities have recently undergone a major renovation and they are in good technical condition. The renovation was visible during the tour through the campus. Not all laboratories seem to be ready yet in the renovated lab-building: furniture is new but instruments are not yet in place. However, the potential for really good arrangement is visible. Additionally, 19 study laboratories for agricultural and zootechnical research offer about 500 workplaces for the students.

Laboratories which are the main space for students' practice seem to be well equipped in basic laboratory tools and consumables. Many laboratories were being reconstructed during the site-visit and thus still not entirely functional. When fully reconstructed, the laboratories will meet modern standards. More advanced equipment is also present, including quite sophisticated equipment, like next generation sequencer, gas chromatography, capillary gel electrophoresis

system and an electron microscope. The latter equipment is not used for general hands-on training because of expenses and a necessary involvement of qualified operator but it may be made available for master thesis work. Facilities for growing plant material, greenhouses and experimental fields are adequate.

In some cases it is not quite evident how the laboratories are actually used for teaching biotechnology. For example well-equipped laboratories for soil analyses are not really relevant for that type of training. The facility fully dedicated to agrobiotechnology is the laboratory for micropropagation and plant tissue culture.

Masters' students can also use modern equipment of the Laboratory of Agrobiotechnology in the Joint Research Centre. Among others this equipment includes a donor plant and *in vitro* culture monitoring system, anthropogenic factor analysis systems and a capillary gel electrophoresis system. However, the area for further improvement is molecular biology related equipment which is underrepresented and thus the existing PCR workflow is organized in the same room. When more equipment of that type is introduced, it will have to be separated in order to follow good laboratory practices.

The Faculty library is well structured and heavily used as could be observed during the site visit. It is well equipped in scientific literature in the classical as well as electronic form. The prevailing agronomy profile is visible also in the library with many copies of textbooks on the shelves addressing aspects of agronomy and fewer addressing biotechnology. Even though this seems to be compensated by the ample access to electronic databases/journals the programme management is advised to review the library supplies and order more updated biotechnological literature.

In order to improve the quality of agrobiotechnological studies, the teachers of the programme regularly update the teaching materials and make it available to students in the virtual learning environment Moodle.

Numerous computers are available to students in the library. Moreover, two well-equipped computer labs offering unlimited Internet and special-purpose software, mainly for statistical computations, are available for students at the Faculty.

2.5. Study process and students' performance assessment

The admission process is well organized. The admission rules to the programme are described on the University webpage at <http://asu.lt/?studijos=agrobiotechnologija>. To the programme are admitted students with BSc degrees in biotechnology, agronomy, biology and ecology, and environmental sciences and also the students with BSc degrees in related technological areas if their BSc programmes have included at least 15-30 ECTS of biology subjects. ASU also offers bridging courses for applicants. The programme therefore accepts students with a broad range of educational backgrounds. Table 7 of the SER provides information that since 2010 number of admitted students (varying from 8 to 12) tends to be higher than the admission plans (from 7 to 10) and there is a healthy competition to enroll the programme.

Most students enrolled in the programme come from agronomy bachelor studies at ASU, some from other universities, for example Vytautas Magnus University. The Review Panel suspects that biotechnological background of agronomy bachelors comparing to other university bachelors is different. Students that came from other universities seem to be less excited about the study programme.

The study programme (Table 3 of the SER) with its different study subjects should take students through the topics and should fulfil the intended learning outcomes (Table 2 of the SER) with a strong emphasis on cell biology, genetics and plant biology, and biotechnology. The organisation of each individual study subject is described in a great detail in Table 4 of the SER.

The site visit revealed, however, that students do not achieve all the intended learning outcomes, particularly within the areas central to biotechnology (e.g. cell biology, genetics, and plant biotechnology). Students were not acquainted to a number of topics of central importance to agrobiotechnology, e.g. molecular methods in plant biotechnology, genetic engineering of plants, or plant metabolism and secondary metabolites. Students seemed also to be unaware of the importance of these subjects in plant biotechnology. Only one of the students participating in the meeting with the Panel had entered the programme with a BSc degree in biotechnology. The programme in *Agrobiotechnology* had not succeeded in introducing the basics of plant biotechnology to students who have entered the programme with BSc degrees in different subjects.

Lectures are organized only two days per week to allow students to combine their studies with their job. This also provides some time for research. Both students and teaching staff find this

organisation convenient for the students, although very long work days of up to 11 h of studies may challenge the students.

The programme encourages students to participate in research activities, in this respect mainly within applied research. The curriculum includes 2 research works and 30 ECTS final project. Probably because of the nature of the study field and the close proximity to research environments in agronomy, basic research activities seem to be given lesser attention than applied research. Master's students are required to publish a scientific article in the University journal called "Jaunasis mokslininkas" ("Young scientist") and to present the project at a public meeting at the University. The master theses and publications are very well prepared, structured, data are presented and analysed using statistical methods. The Review Panel found this very positive for student's presentation and publishing skill development.

Topics and contents of the research in the thesis are more related to agronomy. Biotechnology and especially the modern biotechnology field are not really presented in the theses. Intended learning outcomes related to biotechnology area are poorly reflected in the contents of master's thesis presented for evaluation. Students at the site visit were not aware of the use of modern biotechnologies, as for example in plant disease diagnostics, they were familiar only with classical microbiological methods.

Students have opportunities to participate in student mobility programmes. The University tries to use mobility programmes as a motivation factor. Students mobility is, however, very low (1 student in Erasmus, 2 in NOVA-BOVA programme for the period of 2010-2015). For the students of *Agrobiotechnology* programme social situations, financial limitations, and language skills are major barriers for going abroad. Many students have jobs and possibly a family to provide for, and find it difficult to travel for longer periods of time.

ASU ensures an adequate level of academic and social support to the students. The University has procedures for the provision of written information, and offers a number of social activities. Very importantly, the University also has a policy for feedback to students, and students can get academic support on the website, they get consulting hours, and can communicate via the Internet. Well performing students and students having small children can arrange customized schedules, although this opportunity has not been used so far by the students of this study programme. The University also supports a wide range of social activities for students, including e.g., sports, singing, and dancing activities. Students having financial difficulties can apply for social scholarships.

The assessment system of students' performance is clear, adequate and publicly available in quality handbook at http://asu.lt/wp-content/uploads/2015/07/asu_kokybes_vadovas-2.pdf. Assessment of each study subject is based on 4 clearly described criteria. Final master thesis evaluation is carried out according to the rules approved by the Rector.

The graduates meet the expectations of programme providers and external partners. 69% of the graduates have been employed at the day of their defence and 90% after 1 year. It is not clear from the SER, how many were employed within biotechnology, agro-industrial or related industries in academic jobs. From meetings with former students and social partners it appears that students are employed mainly in the fields of agronomy and forestry, and in agricultural and environmental areas rather than in biotechnology.

2.6. Programme management

The programme is coordinated by the Study Programme Committee, comprised of the active teachers, of whom 3 are professors active also in research, 1 external expert, and 1 student. The Study Programme Committee has a Head. No one, however, seems to take the overall responsibility for the daily operations and management of the programme. Students are unaware of the programme management system and generally do not know how to get in contact with the management, as demonstrated during the site visit.

The Study Programme Committee is responsible for proposing improvements to the study programme that are approved by the Institute and the Faculty when needed. The programme is taken through a yearly evaluation, involving students, teachers and external stakeholders. Teachers, students and graduates are involved in the yearly evaluations in variable forms. Students surveys are conducted twice a year.

The programme is quite young and has not been internationally evaluated so far. Employers seem, however, not to be able to differentiate between the current programme in *Agrobiotechnology* and other programmes at ASU, particularly the programme in *Agronomy*. Employers' satisfaction therefore largely relies on their satisfaction with the apparently well-established programme in *Agronomy* at ASU.

The internal quality assurance procedures are extensive but seem to a large extent to be based on a per need basis. For a small programme like *Agrobiotechnology*, this seems to be a reasonable practice. However, the evaluation procedures have not been effective in the sense that they have

revealed the obvious shortcomings in the definition of the intended learning outcomes and the study process in relation to the achievement of the intended learning outcomes.

III. RECOMMENDATIONS

1. The intended learning outcomes and the content of the study subjects of the programme should be reviewed to ensure that they are balanced between agronomy and biotechnology and reflect better the title of the study programme and degree awarded.
2. It is recommended that students become better acquainted with study subjects of central importance to agrobiotechnology, e.g. molecular methods in plant biotechnology, genetic engineering of plants, and/or plant metabolism and secondary metabolites. In particular, laboratory training in these fields is necessary.
3. The proportion between independent and class work should be looked over as it is very high and may negatively influence the practical skills of the students.
4. University support is needed for the teaching staff to improve their English communication skills which is crucial for obtaining the newest scientific information and/or conveying it to the foreign students.
5. The teaching staff needs to be complemented by employing preferentially younger researchers specializing in modern techniques of plant molecular biology and biotechnology.
6. It would be helpful to make the management system transparent to students and to facilitate their contact with the Study Programme Committee.

IV. SUMMARY

Agrobiotechnology is the first programme in the country that combines two fields, agriculture and biotechnology. The construction of such study programme has to be praised as a very good initiative. As pointed out by the alumni and by the social partners, the professional profile represented by the graduates is sought after so they find jobs without a problem.

Only a part of agrobiotechnology is covered in the programme. Modern aspects of plant biotechnology are underrepresented or absent, particularly in its practical (laboratory) part. Molecular genetics and secondary metabolites are examples of such fields. This opinion of the Review Panel was also approved by the social partners. The present title of the programme, *Agrobiotechnology*, requires a substantial enlargement of biotechnology-related subjects as well as more specific description of the intended learning outcomes in the field of biotechnology.

The proportion between individual and class work is very high and may influence negatively the practical skills of students. However, students are satisfied with knowledge and skills obtained and strongly support the programme. Students have also stressed that the teaching staff is a strong point of *Agrobiotechnology* studies, the staff that is genuinely devoted to teaching and always ready to help. On the other hand, the teaching load of the staff is very high, leaving little time for research, thus it is a common practice that they have to work extra hours.

The learning facilities have recently undergone a major renovation and they are in a good technical condition. The facilities are generally adequate but the equipment used for laboratory practice should be further improved.

Lectures are organized only two days per week to allow students to combine their studies with a job. This also provides some time for research. Both students and teaching staff find this organisation convenient for the students, although work days of up to 11 h of studies may challenge the intended learning outcomes. Students are encouraged to participate in research activities; the curriculum includes 2 research works. Master's students are required to publish a scientific article in a University journal. Publication of students' works is a very good step; thereby students learn methodology of scientific publication. Topics and contents of the research in the theses are mostly related to agronomy. Biotechnology, especially the modern biotechnology field are not really presented in the theses.

The programme management overestimates the possibility of development. For example, if the programme is to be taught in English, the teaching staff has to obtain extra support in getting language competences. The Review Panel find it a too big effort for the teaching staff to care for that by themselves, also financially.

The programme is coordinated by the Study Programme Committee that includes 1 student but students are generally unaware of the programme management system and do not know how to get in contact with the management.

V. GENERAL ASSESSMENT

The study programme *Agrobiotechnology* (state code – 621J70004) at Aleksandras Stulginskis University is given a positive evaluation.

Study programme assessment in points by evaluation areas.

No.	Evaluation Area	Evaluation of an area in points*
1.	Programme aims and learning outcomes	2
2.	Curriculum design	2
3.	Teaching staff	3
4.	Facilities and learning resources	3
5.	Study process and students' performance assessment	2
6.	Programme management	2
	Total:	14

*1 (unsatisfactory) - there are essential shortcomings that must be eliminated;

2 (satisfactory) - meets the established minimum requirements, needs improvement;

3 (good) - the field develops systematically, has distinctive features;

4 (very good) - the field is exceptionally good.

Grupės vadovas: Team leader:	Prof. Halina Gabrys
Grupės nariai: Team members:	Prof. Ruth Shimmo
	Assoc. Prof. Niels Thomas Eriksen
	Mr Julius Gagilas
	Ms Vaida Šidlauskaitė

**ALEKSANDRO STULGINSKIO UNIVERSITETO ANTROSIOS PAKOPOS STUDIJŲ
PROGRAMOS AGROBIOTECHNOLOGIJA (VALSTYBINIS KODAS – 621J70002) 2016
RUGPJŪČIO 22 D. EKSPERTINIO VERTINIMO IŠVADŲ NR. SV4-198 IŠRAŠAS**

<...>

V. APIBENDRINAMASIS ĮVERTINIMAS

Aleksandro Stulginskio universiteto studijų programa *Agrobiotechnologija* (valstybinis kodas – 621J70002) vertinama **teigiamai**.

Eil. Nr.	Vertinimo sritis	Srities įvertinimas, balais*
1.	Programos tikslai ir numatomi studijų rezultatai	2
2.	Programos sandara	2
3.	Personalas	3
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* 1 - Nepatenkinamai (yra esminių trūkumų, kuriuos būtina pašalinti)

2 - Patenkinamai (tenkina minimalius reikalavimus, reikia tobulinti)

3 - Gerai (sistemiškai plėtojama sritis, turi savitų bruožų)

4 - Labai gerai (sritis yra išskirtinė)

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IV. SANTRAUKA

Studijų programa *Agrobiotechnologija* yra pirmoji Lietuvoje studijų programa, apimanti dvi sritis – žemės ūkį ir biotechnologiją. Tokios studijų programos sukūrimas – labai pagirtina iniciatyva. Kaip nurodė alumnai ir socialiniai partneriai, dėl plataus absolventų profesinio profilio (*programos tarpdalykiškumo*) jie nesunkiai susiranda darbą.

Ši studijų programa apima tik agrobiotechnologijos dalį. Šiuolaikiniai augalų biotechnologijos aspektai nepakankamai pateikti arba visai nepateikti, ypač praktinėje (laboratorinėje) dalyje. Tokios sritys yra, pavyzdžiui, molekulinė genetika ir antriniai metabolitai. Šią vertinimo grupės nuomonę patvirtino ir socialiniai partneriai. Atsižvelgiant į dabartinę šios programos pavadinimą (*Agrobiotechnologija*), reikia iš esmės padidinti biotechnologijos dalykų skaičių ir konkrečiau apibūdinti numatomus studijų dalykus, susijusius su biotechnologijos kryptimi.

Savarankiško darbo ir darbo paskaitose/seminaruose santykis labai neproporcingas, ir tai gali turėti neigiamo poveikio studentų praktinių įgūdžių lavinimui. Tačiau studentus tenkina įgytos žinios ir gebėjimai, ir jie tvirtai palaiko šią programą. Be to, studentai pabrėžė, kad dėstytojai yra studijų programos *Agrobiotechnologija* stiprybė – jie yra nuoširdžiai atsidavę mokymui ir visada pasirengę padėti. Antra vertus, dėstytojų darbo krūvis labai didelis, mažai laiko lieko moksliniams tyrimams, taigi paprastai jiems tenka dirbti viršvalandžius.

Mokymosi priemonės neseniai nemažai atnaujintos, jų techninė būklė gera. Įranga iš esmės tinkama, bet tą, kuri naudojama laboratorinei praktikai, reikėtų ir toliau gerinti.

Paskaitos organizuojamos tik dvi dienas per savaitę, kad studentai galėtų derinti studijas ir darbą. Be to, lieka laiko tyrimams. Ir studentams, ir dėstytojams toks paskaitų organizavimas yra patogus, nors 11 studijoms skiriamų valandų gali būti iššūkis siekiant numatomų studijų rezultatų. Studentai raginami dalyvauti mokslinių tyrimų veikloje; programa apima du mokslinių tyrimų darbus. Magistrantūros studentai privalo universiteto žurnale paskelbti mokslinį straipsnį. Studentų darbų publikavimas yra labai geras žingsnis; taip studentai mokosi mokslinio publikavimo metodikos. Su baigiamaisiais darbais susijusių mokslinių tyrimų temos ir turinys daugiausia susiję su agronomija. Biotechnologija, ypač modernioji biotechnologijos kryptis, baigiamuosiuose darbuose neatspindima.

Programos vadovai pervertina tobulinimo galimybę. Pavyzdžiui, jei ši programa turi būti dėstoma anglų kalba, dėstytojams reikia suteikti daugiau pagalbos kalbai išmokti. Vertinimo grupės nuomone, rūpintis šiais dalykais patiems dėstytojams kainuoja pernelyg daug pastangų, taip pat ir pinigų.

Šią studijų programą koordinuoja Studijų programos komitetas, į kurio sudėtį įeina vienas studentas, bet paprastai studentai nėra susipažinę su programos vadybos sistema ir nežino, kaip užmegzti ryšį su vadovybe.

<...>

III. REKOMENDACIJOS

1. Reikėtų persvarstyti studijų programos *Agrobiotechnologija* numatomus studijų rezultatus ir studijų dalykų turinį, kad juose būtų užtikrinta agronomijos ir biotechnologijos pusiausvyra ir kad jie labiau atitiktų studijų programos pavadinimą bei suteikiamą laipsnį.
2. Rekomenduojama geriau supažindinti studentus su studijų dalykais, kurie yra svarbiausi agrobiotechnologijai, t. y., molekuliniai metodai augalų biotechnologijoje, augalų genų inžinerija ir (arba) augalų metabolizmas ir antriniai metabolitai. Visų pirma būtinas laboratorinis mokymas šiose srityse.
3. Reikėtų peržiūrėti savarankiško darbo ir darbo paskaitose/seminaruose santykį, nes savarankiškas darbas sudaro labai didelę dalį, o tai gali turėti neigiamo poveikio studentų praktinių įgūdžių lavinimui.
4. Dėstytojams reikalinga universiteto parama bendravimo anglų kalba įgūdžiams gerinti, nes tai labai svarbu norint gauti naujausią mokslinę informaciją ir (arba) perduoti ją užsienio studentams.
5. Dėstytojų kolektyvą reikėtų papildyti, pageidautina priimti jaunesnių tyrėjų, kurie specializuojasi šiuolaikinių augalų molekulinės biologijos ir augalų biotechnologijos metodų srityje.
6. Būtų naudinga geriau supažindinti studentus su vadybos sistema ir palengvinti jų bendravimą su studijų programos komitetu.

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Paslaugos teikėjas patvirtina, jog yra susipažinęs su Lietuvos Respublikos baudžiamojo kodekso 235 straipsnio, numatančio atsakomybę už melagingą ar žinomai neteisingai atliktą vertimą, reikalavimais.

Vertėjos rekvizitai (vardas, pavardė, parašas)