

PROJECT FINAL REPORT

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Publishable Summary

AgroBioInstitute (ABI) is a scientific research institution, member of Agricultural Academy of Bulgaria, which implements fundamental, applied and service activities in the field of agriculture. An independent and competent evaluation of ABI's functioning in the area of plant biotechnology was implemented in the frame of project PlantBioServ, funded by EC.

Project's objectives

The main objective of the project was to provide an extensive evaluation of the activities of ABI in plant biotechnology and to offer suggestions with competence for further developing and improving its work. The main objective was achieved by evaluation of research capacity building, training and education capability; coordination and network potential and human capacity of ABI in the fields of plant biodiversity, plant abiotic and biotic stress, and molecular genetics of plants.

Description of the work carried out to achieve the project's objectives

The work plan pointed in the DoW was organized in five work packages and was strongly followed to complete the implementation of the project, and to bring it to successful end and useful results. Three evaluators, nominated by EC, worked in close and permanent contact and thus gave a complete and fully valuable evaluation of ABI. The staff of ABI contributed actively to the coordination and effectiveness of the support mechanisms and accomplishment of the associated work plan.

The main results of the project:

- A SWOT analysis of the AgroBioInstitute.
- An Action Plan to improve the ABI's RTD capacity with a Plan for implementation.
- A Strategic Framework Programme (2010-2013) which defines ABI's development goals and objectives and thematic areas in which the ABI will focus its work.

The main dissemination activities

The information about the project was disseminated at national level at (1) **Open Information Day (OID)** for scientists and farmers and at international level on the (2) **IXth meeting of International Consultative Council (ICC)** organized by ABI. (3) **Meetings with journalists** during the conducting the project and during the OID and ICC were organized. Short communications and popular papers in English and Bulgarian were published. (4) **A bilingual webpage of the project** was created (www.plantbioserv.com) and will be maintained and improved by the end of 2010.

Conclusion of the project

A comprehensive and competent evaluation of plant biotechnology activities of ABI was achieved that strongly contributed to the further developing measures and enhancing the ABI's competitive level, and to the intention of ABI to prepare and participate in the next calls in Specific Program Capacities and other dedicated FP7 programs of the EU.

Potential impact and use of the project (incl. socio-economic impacts)

The results of the project have an immediate effect on the existing resources of ABI and specify new resources and skills needed to strengthen further successful ABI's development. The Action Plan offers recommendations that would result in relatively quick, visible outcomes in order to encourage further adoption and implementation of management practices and communication between team members. Implementation of the recommendations leads to improved research capacity for increased contribution to regional economic and social development and for better participation in FP7 and other international projects. The evaluation raised from the project brings the higher self-confidence of the research staff about its capability and further scientific career. The project precised the strategic needs considering both internal and external factors. The resulted summary of benefits and costs and recommendations will appear to serve as Policy Instruments related to human resources, knowledge and applied research in ABI.

Target groups for whom the results of the project could be relevant:

National and international plant research organizations, Seed Companies, Farmers, PhD and Postgraduate students, Biotech specialists, Public perception. The results of the project will be disseminated between the target groups by regularly updated webpage, papers in the related scientific journals describing the achievements and direction of plant biotechnology studies in the ABI's research groups, continuously strengthening the relationships with universities through involvement of the research staff in graduate and post graduate educational student programs and cooperation with biotech companies and regular meeting with journalists.

1. Introduction

Bulgarian plant biotechnology plays a basic role for achievement a high level quality of agriculture in the country. As Centre of Excellence, the AgroBioInstitute (ABI) was given the responsibility to coordinate the research activities and training in plant biotechnology at the national and regional level. Anyway the recent statement of ABI is extremely needed to be improved. The process was initiated with an independent and competent evaluation of the Institute's functioning in the area of plant biotechnology.

Thus this project involves a range of activities to evaluate the biotechnology research, education, training and coordination facilities in ABI in the frame of European policy on biotechnology. The evaluation activities involved are focused on: 1) research capacity building; 2) advanced training and education capability; and 3) coordination and network potential. The research capacity is evaluated in the areas of biodiversity, abiotic stress, biotic stress, and molecular biology. The education and training capability of ABI was evaluated in the light of relationships with universities and participation of ABI's staff members in universities' undergraduate, master and PhD educational programs. The third activity – coordination and network potential of ABI, was appraised in order to elucidate the ability of ABI to participate and plays a substantial role in plant breeding programs.

Totally a range of three independent evaluators, each one specialized in the respective field, nominated by European Commission, was considered as optimal to reach the goal of the project. A general evaluation conclusion is expected to rise as a combined result of the evaluation activities. This evaluation of ABI was strongly recommended to serve as a base for participating if the Institute in other Specific Programmes of FP7 Programme of EU.

2. Project's objectives

The main objective of the project was to give an extensive evaluation of the activities of AgroBioInstitute in plant biotechnology in the light of its practical use from plant breeding programs and to give suggestions with competence for further developing and improving in the future.

The secondary objectives supporting the achievement of the main objective were related with the activities in evaluated area - research capacity building, training and education capability; and coordination and network potential of the Institute. All the activities were evaluated when focusing on plant biodiversity, plant abiotic stress, plant biotic stress, and molecular genetics of plants.

Totally, a range of three evaluators, each one specialized in the respective field, was found during optimal to reach the goal of the project. The evaluators, nominated by European Commission, are Prof. Søren K. Rasmussen from Denmark, Prof. Diego Rubiales from Spain, and Ir. Louis J.M. van Soest from The Netherlands.

They were expected to focus their attention on the area of biodiversity (one), abiotic and biotic stress (one), and molecular genetics (one). Each one of them was recognized specialists in the respective field. Actually, as it was planned in the DoW, all the evaluators worked in close and permanent contacts, and thus gave a complete and fully valuable evaluation of ABI. The staff of ABI contributed actively to the coordination and attainment of high quality evaluation, quality and effectiveness of the support mechanisms and accomplishment of the associated work plan and thus achieving the goal of the project.

3. Beneficiaries

AgroBioInstitute (ABI) is the only beneficiary in this project. ABI is a scientific research institution, member of Agricultural Academy of Bulgaria, which implements fundamental, applied, service and by-work activities in the field of agriculture. The Institute was established as the Central Laboratory of Molecular Genetics and Genetic Biotechnology (genetic engineering) (CLMGGB) in the frame of Agricultural Academy of Bulgaria in 1985. Since 2001 the Institute is recognized by its current name AgriBioInstitute.

ABI is carrying out its activities in the frame of the state agrarian policy by:

- Organizing and implementing research activities - fundamental and applied research and the related activities in the field of plant biotechnology.
- Improving the methods and systems for intensifying the breeding of economically important crops by using in vitro cultivation and modern technologies for genetic engineering, genomics and biosafety.
- Participating with its personnel and scientific potential in the development of national and other prognoses, programmes, concepts and plans for social and economic development of the country, assigned by Agricultural Academy, Ministry of Agriculture and Supplies and other institutions.
- Participating in international cooperation via creation of joint research groups and conclusion of contracts in the frame of the EU, UNESCO, FAO, NATO, EUCARPIA, IAEA, ICGEB, universities, private companies and others on a bilateral and multilateral basis.

- In its capacity of being Centre of Excellence, the ABI is coordinating the scientific research and the education of personnel in the field of plant biotechnology for Bulgaria and for the Balkan region.
- Organizing and participating in national and international scientific events (congresses, symposiums, conferences, seminars, schools for education of young scientific personnel etc.).
- Performing education of PhD students and improving the qualification of specialists who work for institutions in a similar field as well as of people working in the field of the agriculture and the food industry.
- Performing information and publishing activities by popularizing the results of the ABI's scientific research activities as well as the achievements of the international scientific community.
- Conducting production of seeds and planting material after licensing according to the normative decrees of the country.

4. Description of the work carried out to achieve the project's objectives

The work carried out during the implementation of the project was organized in five work packages, as follows.

WP1 Preparation of documentation and information requested from evaluators

WP2 Evaluation site visit

WP3 SWOT Analysis and Action Plan Development

WP4 Dissemination activities

WP5 Management of the project

All tasks from each work package were strictly followed according to the timetable of the project.

Detailed description of the work implemented during the project PlantBioServ:

4.1. Kick off meeting

The implementation of the project started with a Kick off meeting. EC experts (evaluators) participated at the meeting. The period of the meeting was fixed on 25th – 27th of April 2009. It took place at ABI. This meeting aimed to afford an opportunity to the evaluators to become familiar with the evaluated activities of AgroBioInstitute. They met members of ABI's working research groups at the place where they work. Each one of the group leaders of ABI provided the information concerning the activities in his research group and lab.

Evaluators together with the management bodies of ABI determined all the needed for the experts information. In the months following the Kick off meeting, totally 17 different documents were prepared from ABI's work team and delivered to the evaluators via e-mail. The delivered on time information to the evaluators allowed them to get informed in details about the ABI, institution they had to evaluate. The evaluators also visited ABI's newly given place for experimental field near Sofia and discussed with managements bodies of ABI possibilities for its organization and recovering. Later on all three evaluators and director, administrative director and scientific secretary of ABI visited the Institute of Upland Animal Husbandry and Agriculture in city of Trojan. ABI has very close collaboration for long time. Several mutual projects were conducted and part of experimental field work in some of FP7 projects of ABI are conducted in the experimental basis of this institute. The Kick off meeting was ended with determining the time when the Site Visit of the evaluators will be held.

4.2. Site Visit

Then the second visit of the evaluators to ABI was the Site Visit. It took place at AgroBioInstitute – Sofia, during the period 19th – 23rd of July 2009. This visit was longer than the previous one which was happened during the Kick off meeting, and meaning of this visit was an extensive evaluation of Institute's activities. During the visit spot interviews of the evaluators with the researchers in ABI responsible for evaluated areas were conducted. Those spot interviews outlined more narrow areas of Institute's activities that reflect different aspects of plant biotechnology in ABI. Each one representative of a research group informed the visitors in his/her respective specificity of work in details, giving a presentation and after that discussing the scientific and all other problems and aspects of group's activity. General conclusions from the visit were realized in a subsequent meeting of the evaluators with the coordinator of the project, the director of ABI and other members of management body of ABI. Those general conclusions lied down later in a final report of the evaluators.

During the time of the visit all three evaluators had a meeting with Mrs Albena Vutsova, an expert of Ministry of Education and Science (MES) of Bulgaria responsible for FP7 Progamme in the country. The possibility and circumstances for successful implementation of PlantBioServ project and the supporting politics of the MES for such projects was discussed. The information collected during the Site Visit was a base fir developing the SWAT analysis of ABI and the Action Plan.

4.3. SWOT Analysis and Action Plan Development

This is the core part of the project. First the indicators for the SWOT analysis were specified in discussions with the evaluators. Evaluators were directly involved in this task pointed the indicators of the SWOT analysis. The SWOT Analysis contains the **strengths** and **weaknesses** in plant biotechnology in ABI and shows the **opportunities** for improving of this area in the institute, and points the **threats** for failing to get that opportunity fulfilled. When pointed the strengths, real examples of success were clarified in order to see where the Institute had the most advanced, what type of policy influencing skills and capacities of the personnel and in what areas they have been used most effectively. The evaluators' responsibility in this work package was the appearance on time of final SWOT Analysis and Action Plan. The participants of ABI in the project played a supporting role in this package, which purpose is to make the evaluators work as much as easier and successful providing all the information they needed during the creation of the SWOT Analysis and the Action Plan. In this analysis are the key factors that could impact on the ABI's ability to achieve its purpose and vision were identified. About ten factors for each of four elements of the SWOT analysis were determined. The internal capacity and also the external environment that influence mostly the work of ABI in the project areas were assessed. An assessment of the external environment tends focused on what is going on outside the ABI, or areas which are not yet affecting the strategy, but could do - either positively or negatively.

The final results obtained from the SWOT analysis were a base for the developing of an Action Plan with the measures that should be taken to keep and improved the research activity level of the Institute. The Action Plan offered recommendations that would result in relatively quick, visible outcomes in order to encourage further adoption and implementation of management practices and communication between team members. It summarizes the strategic needs considering both internal and external factors. The SWOT Analysis was also a base for developing a Strategy for development of ABI (2010-2013) (the Strategy) which defines ABI's development goals and objectives and thematic areas in which the Institute will focus it work. All of them, SWOT Analyses, the Action Plan and the Strategy were published in separate book. Actually, the SWOT analysis of the AgroBioInstitute, the Action Plan for improving the ABI's RTD capacity and the Strategy for development of ABI (2010-2013) appeared to be the main results of the project, which later were broadly disseminated at national and international level. As results from the development of SWOT Analysis, the management body of AgroBioInstitute as well as the research staff has a clear concept of the Institute's situation drawing the advances and potential of AgroBioInstitute to keep and

improve the leader position in plant biotechnology research in the region and the negative tendencies that need to be avoided. The Action Plan specified particular aims that have to be reached in near future in order to give the chance of the institute to strengthen the research activities, human potential and infrastructure. Detailed measures for the implementation of the tasks pointed in the Action Plan were planned in the plan for the implementation.

5. Main dissemination activities

Dissemination of the results of the project started immediately after the site visit of evaluators and increased once the SWOT analysis was completed. In addition to created webpage of the project and meeting with journalists and published information about the project, two big events were organized, focused on the dissemination part of the project, which was considered as meaningful one. These events were the Open Information Day (OID) and IXth meeting of International Consultative Council of ABI (ICC).

5.1. Open Information Day

A number of 100 Bulgarian and foreign guests and members of ABI participated to the Open Information Day. Most of invited guests were directors of the research institutes from Bulgarian Agricultural Academy, representatives of the Agricultural Academy, scientists from Bulgarian Academy of Science, journalists from related journals and newspapers. All guests visited the laboratory part of AgroBioInstitute and Joint Genomic Centre situated, next door to ABI, and were aware with the latest equipment of ABI. The event was opened by Prof. Rossitza Batchvarova, Director of ABI. The project PlantBioServ was presented briefly by the coordinator Prof. Atanas Atanassov. Then Dr. Slavtcho Slavov showed a comprehensive presentation about the project. He explained the reason of writing and submitting such a project. Some details about the evaluation and negotiation procedure were given for the information of the guests. Then he focused more broadly on the conducting the different work packages from the project's work plan and particularly on the site visit of the evaluators. Detailed information was presented about the upcoming results of the project and especially about the dissemination activities.

A brochure with information about the project in Bulgarian language was available to all participants (applied in the attachments).

The floor was given for discussions and questions. Dr. Slavtcho Slavov and Prof. Atanas Atanassov answered the questions. Most of the guests expressed their attitude for the

invitation, usefulness of the event and possibilities to use the information gained for submitting such projects with participation of the institutions which they represent.

5.2. International Consultative Council (ICC)

The meeting of IXth International Consultative Council (ICC) of AgroBioInstitute was held from 21st to 24th of February 2010 in the Hilton hotel, Sofia, Bulgaria. The working days were 22 and 23 of February 2010. More than 70 persons, among them ICC members, members of National Scientific Council of ABI, guests and staff of ABI attended to the meeting. Totally 17 scientists from different European countries, Japan, USA, and Russia took active part in the meeting. The Chair of the meeting was Professor Konstantin Scryabin (Russia), and the Secretary of the meeting was Assoc. Prof. Slavtcho Slavov (Bulgaria). Prof. Svetla Batchvarova, the President of Agricultural Academy of Bulgaria opened the IXth ICC of ABI and welcomed all participants. Prof. Rossitza Batchvarova, Director of ABI, introduced the foreign ICC members of ABI and presented activities of AgroBioInstitute since 2005 till now. The group leaders of ABI presented the activities of their research groups, followed by round table discussion on research thematic areas of ABI. Two awarding ceremonies also took place during the first day of the meeting. Professor Svetla Batchvarova, the President of Agricultural Academy, conferred the title of Doctor Honoris Causa to Prof. Chiharu Nakamura from Kobe University, Japan. Professor Rossitza Batchvarova, Director of ABI presented a letter of grateful acknowledgements to Professor Lucien Carlier from the Institute for Agricultural and Fisheries Research (ILVO), Belgium, for the successfully accomplished common projects.

On the second day of the meeting more detailed information about the project PlantBioServ was given by Dr. Slavtcho Slavov, EC expert Ir. Louis J.M. van Soest and Prof. Rossitza Batchvarova. Discussion about the further development of AgroBioInstitute based on the given presentations took part. The already published SWOT Analyses, Action Plan and the Strategy of ABI on disposal of the guests were discussed. All the guests expressed their high impression about the activities of ABI, especially during last five years in a relatively difficult situation. They made critical analyses of the activities of ABI and gave very valuable suggestion for enhancing the RTD and management level of the Institute. The meeting was ended with the followed final recommendations for the present state of ABI and further development of the institute.

General conclusions and recommendations of ICC:

1. All members of ICC congratulate the high level of presentations from the group leaders of ABI.
2. There is a very high level of research and high qualified scientists.
3. ABI is running too many projects but there is lack of focus. It is recommended to concentrate on fewer projects but with more precise research platforms. It is better to reduce the number of crops as subjects for investigation.
4. ABI should use the unique biodiversity in Bulgaria and investigate the specific chemical compounds.
5. ABI should formulate its mission in the simple manner, understandable for the public and policymakers and precise its role in the development of the technology in Bulgaria.
6. Make clear the relations of ABI with the other agricultural institutes.
7. The relationship between ABI and JGC needs to be specified. Research on diagnostics could be a link.
8. Funding authorities in Bulgaria could make specific calls for financial support for specific research themes.

5.3. Published papers

Meetings with journalists during the conducting the project and during the OID and ICC were organized. Short communications and popular papers in English and Bulgarian were published, as well as papers in scientific biotechnology journals.

6. Management of the project

The Coordinator of the project was Prof. Atanas Atanassov, former Director of ABI. All the other members of the project's team are members of ABI, who have worked together for years. Each one of them is responsible for separate tasks of the project, but they could substitute each other in cases it was needed during the implementation of the project. Because all the members of project's team are working at the same institution, it was easy to keep in contact between them and also with the Coordinator. Traditionally there are each week meetings on which the decisions about the project will be made and adequate decisions taken. The staff of ABI involved in the project provided the logistics during development of the SWOT Analysis and the Action Plan, as well as during organization of all the events.

The financial management was accomplished by the account office of AgroBioInstitute, strictly supervised by the coordinator. Use of the resources granted by the EC in the pre-financement of the project was according the budget of the project provided in the DoW.

The total amount of budget of the project is 156,813.60 euro, and the requested EC contribution is 140,800.00 euros. The received pre-financing is 126,720.00 euros from which 7,040.00 are transferred to the Guarantee Fund. A table with the financial resources spent for the implementation of the project, distributed in the work packages is shown in the following table.

Summary Table

		Budget			Spent during implementation of the project			
		direct costs	indirect costs	Total	direct costs	indirect costs	Total	Balance
		132178.00	24635.60	156813.60	113710.66	7379.18	121089.85	35723.75
1	WP1	11021.11	2204.222	13225.332	9336.88	653.58	9990.47	3234.87
2	WP2	10439.13	2087.826	12526.956	7755.78	542.90	8298.68	4228.27
3	WP3	8296.16	1659.232	9955.392	8296.16	580.73	8876.89	1078.51
4	WP4	90421.60	18084.32	108505.92	77028.06	5391.96	82420.02	26085.90
5	WP5	3000.00	600	3600	3000.05	210.00	3210.05	389.95
	Sub-contracting	7500	0	7500	6793.74	0.00	6793.74	706.26
	audit	1500	0	1500	1500.00	0.00	1500.00	0.00

7. Potential impact and use of the project (incl. socio-economic impacts)

The results of the project have an immediate effect the existing resources of ABI that can be used immediately for making current problems to go away and specify new resources and skills needed to strengthen further successful ABI's development.

The Action Plan offers recommendations that would result in relatively quick, visible outcomes in order to encourage further adoption and implementation of management practices and communication between team members.

Implementation of the recommendations leads to improved research capacity for increased contribution to regional economic and social development and for better participation in FP7 and other international projects.

The evaluation raised from the project brings the higher self-confidence of the research staff about its capability and further scientific career.

The project precised the strategic needs considering both internal and external factors. The resulted summary of benefits and costs and recommendations appears to serve as Policy Instruments related to human resources, knowledge and applied research in the Institute.

The implementation of the latest in experimental methods and well trained human potential will contribute for the strategic development of agricultural research in the country. ABI will continue to ensure the access of Bulgarian biotechnology programs to the latest achievements in Europe and the world, as well as effective technology transfer and application of the most up-to-date technologies, for analysis and control, high-tech products development and services for national agriculture and industry.

8. Target groups for whom the dissemination of the results could be relevant

1) Plant Breeding Institutes, Seed Companies and Farmers. The cooperation with farmers is focused on the development of new products processes and technologies in the agricultural sector. Measures aim enhancing the quality of agricultural production and agricultural products by helping farmers to adapt to up-to date standards reached by biothech methods.

2) Postgraduate students, PhD students, Biotech specialists from different Labs and Institutions with related activities to those of ABI. As a result of the project ABI is able to improve and keep an excellent training and education activities.

3) Public perception. Dissemination of the results in popular media brings to the public knowledge about the possibilities of biotechnology to improve the quality of peoples live.

4) International research organizations as associations and technology platforms in the area of plant biotechnology. Encouraging the achievement an excellent level of research in plant biotechnology contributes to broaden and strengthen the contacts of ABI with top level European Biotechnology Centres, which will increase the chances in participating to consortiums and application for new projects in the frame of FP7.

9. Conclusions of the project

A comprehensive and competent evaluation of plant biotechnology activities of **AgroBioInstitute** was achieved concerning its **research capacity, infrastructure, education and training capability, cooperation performance, human capacity and management**, made by three experts, each one specialized in the respective field and appointed by European Commission. During the conducting time of the project two visits of the European experts in AgroBioInstitute were organized in order to reach the goal of the project.

The following points are brief summarized evaluation of AgroBioInstitute:

Research capacity. A range of plant species are under investigation; most of them are crop plants of importance for Bulgarian agriculture. Currently a number of innovative research projects, supported by national and international funds are successfully conducted.

Infrastructure. AgroBioInstitute has relative new lab facilities and it is equipped with advances instrumentation for carrying out basic research in Plant Biotechnology, and of a standard comparable to leading international labs in this area. ABI needs to develop its experimental farm in order to optimize applied research and bring research from lab and growth chambers to the field.

Education and training. AgroBioInstitute possess a highly evaluated accreditation for training PhD students in the disciplines Genetics and Plant Protection for the next six years. Several of the current staff members have gained research experience abroad.

Cooperation. Active cooperation with public national and international institutions is common practice for the institute. Public-private cooperation on research and development with national and international companies is well established and even increasing. ABI has been very successful by participation in international research projects including FP7 and other EC programs.

Human capacity. Highly skilled and motivated, multidisciplinary oriented permanent research staff is employed in ABI. They are fluent in spoken and written scientific English.

Management. The flexible management structure is based on project oriented working groups.

Very important documents as a SWOT analysis of AgroBioInstitute, a Strategic Vision for Development and Management of AgroBioInstitute (2010 – 2013) and an Action Plan were released. This evaluation has strongly contributed to the further developing measures and enhancing the competitive level of the Institute, and to the intention of ABI to prepare and participate in the next calls in Specific Program Capacities and other dedicated FP7 programs of the EU, as well as other international scientific programs.

10. Website of the Project and relevant contact details

www.plantbioserv.com

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