

Meeting title: The 3rd meeting on 598444-EPP-1-2018-1-HR-EPPKA2-CBHE-JP project "Harmonization and Innovation in PhD Study Programs for Plant Health in Sustainable Agriculture –HarISA"

Work package 3 (DEVELOPMENT-Improving the scientific content)

Date and Place of Meeting: October, 28th and 29th, 2019 Belgrade, Serbia

Minutes Prepared By: Martina Kadoić Balaško

1. Purpose of Meeting

- Propose student and staff mobility to WP5.
- Identification of learning outcomes
- Discussion on developing common learning materials, teaching methods and tools.

2. Agenda

1. Introduction: participants, WP3 agenda and appointment of the Minute-taker Secretary of WP3 meeting
2. Resume of gained results - 2nd meeting Podgorica and further tasks to accomplish
3. Parallel and joint workshops – Meeting Task 1: Joint research topics –Joint mentorship and scientific cooperation - Mobility's of students and teachers among PIs (discussion and proposals)
4. WP3 and WP5 Joint Meeting-Meeting Task 1: Proposals and discussion related to Joint research topics –Joint mentorship and scientific cooperation - Mobility of students and teachers among PIs and available sources for mobility
5. Parallel and joint workshops–Meeting Task 2: Identification of learning outcomes in each scientific subgroup (SG); discussion and report
6. Parallel and joint workshops in subgroups – Meeting Task 3: Identification of similar and new courses, proposals regarding joint learning materials, action plan for developing joint learning material
7. Joint meeting (all participants, WP3, WP4, WP 5 and WP6): Report about the WP3 workshops results and plans for future activities in WPs

3. Meeting Notes, Decisions, Issues

- The meeting of WP3 started on 28/10/2019 at 10:00, with the introduction, followed by parallel and joint workshops of subgroups (Task1 and Task 2), including the joint meeting with WP5 (Task 1)
- The second day, on 29/10/2019, the WP3 meeting started at 10:00, with parallel and joint workshops in subgroups (Task 3) according to the Agenda. At the end, during the final meeting, WP3 members actively participated in the Joint meeting with other WPs (WP4, WP5 and WP6), when the WP3 leaders presented the achieved results at the 3rd meeting on 598444-EPP-1-2018-1-HR-EPPKA2- CBHE-JP project "Harmonization and Innovation in PhD Study Programs for Plant Health in Sustainable Agriculture –HarISA" and discussed on planned future activities of WP3
- The meeting of WP3 was chaired by Aleksandra Ignjatović Čupina and Eustachio Tarasco, Leaders of WP3.
- Martina Kadoić Balaško (FAZ) was unanimously appointed as Minute-taker Secretary of the WP3 meeting.
- Detailed overview of the meeting results is given in the pdf document (Pdf file: WP3 presentation Belgrade 2019), which along with the Minutes represents the integral part of the 3rd meeting report of WP3.



1. At the beginning of The 3rd meeting in Belgrade, the lists of registered WP3 participants (teachers and students) per each scientific subgroup (SG) and partner institution (PI) were presented (pdf. file, page 3-6). The list consisted of 39 teachers and 21 students (i.e. 60 WP3 members in total, with some of them involved in other WPs, as well). The agenda of WP3 activities during the 3rd meeting was presented and unanimously accepted by the participants. Martina Kadoić Balaško was appointed as the Minute Taker.

2. The Leaders of WP3, Aleksandra Ignjatović Čupina and Eustachio Tarasco, presented the chronological overview of completed results, ongoing and future tasks and activities of WP3, with special attention to the achievements of the previous, 2nd meeting in Podgorica, held in June, 9th -11th 2019. During the 2nd meeting in Podgorica, each scientific subgroup (SG) had the following tasks: to prepare the joint list of the courses available at all PIs; to identify the courses with similar learning outcomes; to identify the courses that eventually don't fit in a specific subgroup and suggest their correct classification; to review the contents and suggest some important areas or topics not currently covered by the proposed list and discuss about possible improvements of the specific courses. The suggestions, decisions and documents - results of the 2nd meeting in Podgorica represented the basics for future WP3 activities, including the 3rd meeting in Belgrade.

3. After the introduction, parallel workshops in subgroups started their work. **Meeting Task 1** regarded the proposals of joint research topics and joint mentorship to PhD students. (Note: According the contents of Harlsa project, Meeting Task 1. belongs to Task 3.3. Scientific content improvement, mobility of students and staff).

In the introduction, it was emphasized that the Joint Mentorship to a student should be provided by appointment of a Joint Mentor from another PI-participant of the Harlsa project, who will be actively involved in the research and production of the PhD thesis of a candidate, along with the Mentor from the student's home institution. According the project rules, each mobility of a PhD student should be intended for research activities, while the mobility of Joint Mentors should imply research and/or teaching activities; each PI institution from EU countries should propose the mobility for 2 students and 3 teachers, with the maximum duration of the mobility of 30 days per student and 14 days per teacher; each PI institution from non-EU countries should propose the mobility for 2-3 students and 2 teachers, with the maximum duration of the mobility of 90 days per student and 21 days per teacher.

After discussion, it was decided to propose to WP5 and Project Leader to consider the possibility to extend the number of mobilities of students and teachers by conducting shorter mobility duration per person wherever it is possible (with respecting the specificity of the activity and duration of the period needed for its fulfillment). In any case, it was suggested that the duration of mobility should not be shorter than 14 days per person, and the planned mobility budget for each PI should be respected.

Apart the selection of Joint Mentors, in order to intensify the collaboration among different PIs and achieve additional project results, up on the proposal of Aleksandra Ignjatović Čupina (UNS) it was decided to appoint joint Members in Commissions for PhD Thesis Defense for students who already conducted their research (i.e. students in the final phase of the PhD production, with already appointed Mentor/Mentors at their home institution).

In cases of both options, Joint Mentors and Joint Members in Commissions for thesis defense, the selection of teachers for each particular student (i.e. PhD thesis subject) should be based on teacher's experience and expertise in the related scientific field, subject of the student's research. In order to facilitate the appropriate selection of teachers and students for the mobility, Questionnaires for both students and teachers were suggested by Aleksandra Ignjatović Čupina. Each PI should provide the filled Questionnaires with the relevant data for their candidates (both students and teachers). The data contained in Questionnaires could be useful also for WP5, which is responsible for organizing the mobility action plan.

Each PI presented the list of their PhD students (except AUT and UNKO, who will provide the names of student candidates later on), along with the thesis title of each student (or research topics for students in the initial phase of the research), the belonging scientific field (Subgroup according Harlsa) and the names of appointed Mentors at home institution. In continuation, the Joint Mentors and/or Members of Commission for thesis defense from other PIs were jointly proposed (pdf file, pages 56-72 sorted by students, pages 73-90 sorted by teachers, here reported in Tab 1, containing only the offered proposals sorted by students).

It was also agreed by all WP3 participants to keep the call for mobility of students and teachers open during the project life time, allowing eventual additional changes.

4. During the WP3 and WP5 Joint meeting, the proposals and suggestions of WP3 regarding Meeting task 1 (Joint research topics –joint mentorship and scientific cooperation- mobilities of students and teachers among Pis) were presented and discussed.

The idea to include teachers from different PI not only as Joint Mentors, but also in Commissions for PhD Thesis Defense was jointly accepted among WP3 and WP5, but according the clarification of Renata Bažok, the Project Leader, the travel costs and costs of stay of a teacher, deriving from his/her involvement as a Member in Commission during the Thesis Defense will not be reimbursed by the project funds. Also, in such case the mobility of a student to the PI of a Joint Member of Commission for Thesis Defense cannot be reimbursed by Harlsa project funds. Anyhow, the use of other available financial resources for reimbursement is strongly suggested.

All the WP3 proposals for joint activities of students and teachers were presented separately for each partner institution, in form of tables containing student`s names, thesis titles/research topics, related scientific group, names of Mentors at home institution and Joint Mentors and/or Joint Members of Commission for thesis defense assigned by WP3. A summarizing table containing the number of assigned Joint Mentors and Members in Commissions for thesis defense to students of each PI was also presented. In total, to 20 students a Joint Mentor was assigned, and additionally to 10 students a Joint Member of the Commission for thesis defense was also assigned (Tab.2).

Regarding the discussion on the possibility to extend the number of students` and teachers` mobility by conducting shorter mobility duration per person, the project leader Renata Bažok remarked that this option could be applied, but she emphasized that the budget for travel costs and costs of stay is limited and the bounds of budget should be respected. She also pointed out that each mobility must be justified by the purpose of the mobility (for both students and teachers); and after the termination of a mobility, the report on conducted activities will be required. In this context, the project leader recommended to reconsider in any specific case if it is realistic to conduct a good quality research if the mobility duration at a PI will be shorter than 30 days.

Tab. 1. List of PhD students, their research topics, Mentors at home institution (HI), assigned teachers from partner institution (PI) according the assigned role (1. Joint Mentor; 2-Member of Commission), declared mobility destination and student`s research status

STUDENT Name, Family name, Home Institution acronym	TITLE OF THESIS	Sci. field /SG	MENTOR at Home Institution (teacher name)	Assigned role of teacher from PI (teacher`s name; PI acronym)		Destination of student`s mobility (PI acronym); research status
				1. Joint Mentor	2. Member in Commission for thesis defense	
Mariya Hristozova, AU	Biology and possibilities to control of the Green stink bug <i>Nezara viridula</i> (Linnaeus)	SG3 SG2	Vili Harizanova	1. Aleksandra Konjević (UNS)		UNS
Maria Iliadi, AUA	Integrative management of ochratoxigenic fungi in vineyards	SG4	Dimitris Tsitsigiannis	1. Nedeljko Latinović (UoM)		UoM; concluding stage
Christina Lagogianni, AUA	Mycotoxigenic fungi and methods of integrative management of mycotoxins in barley	SG6	Dimitris Tsitsigiannis	1. Magdalena Cara (AUT)		AUT; concluding stage
Helena Virić Gašparić, FAZ	Neonicotinoid degradation dynamic in sugar beet grown from treated seed and their influence on pest and beneficial fauna	SG2	Renata Bažok		2. Sanja Lazić (UNS)/ or Dragana Šunjka (UNS)	- advanced (research done)
Valentina Šoštarčić, FAZ	Estimation of biological parameters for weed germination and development of predictive weed emergence model	SG5	Maja Šćepanović and Roberta Masin (Padova)		2. Dragana Božić (UB)	- Mid – research still ongoing

Tab. 1 continued

STUDENT Name, Family name, Home Institution acronym	TITLE OF THESIS	Sci. field/ SG	MENTOR at Home Institution (teacher name)	Assigned role of teacher from PI (teacher's name; PI acronym)		Destination of student's mobility (PI acronym); research status
				1. Joint Mentor	2. Member in Commission for thesis defense	
Ivan Paponja, FAZOS	Ecologically acceptable methods in protection of different species and varieties of cereals against stored product pests.	SG3	Anita Liška		2 Aleksandra Ignjatović Čupina (UNS)	-
Josipa Puškarić, FAZOS	Nematodes as an ecosystem bioindicators in intercropping system of wood species and agricultural crops.	SG7	Mirjana Brmež	Already has 2 mentors	2. Milan Radivojević (UB)	UB -
Toni Kujundžić, FAZOS	The Effectiveness of Various Protection Means in Suppression of <i>Botrytis cinerea</i> Pers. and Their Influence on Grape Yield and Must Quality cv. <i>Cabernet sauvignon</i> (<i>Vitis vinifera</i> L.).	SG4	Karolina Vrandečić	Already has 2 mentors	2. Nedeljko Latinović (UoM)	-
Magdalena Matić, FAZOS	Influence of nitrogen fertilization on antioxidant response of wheat infected by <i>Fusarium</i> head blight	SG4	Karolina Vrandečić	Already has 2 mentors	2. Aleksandra Bulajić (UB) OR Adriana Filipović (UoM)	UB -
Tamara Siber, FAZOS	Antifungal activities of pyridinium derivatives	SG4	Karolina Vrandečić	Already has 2 mentors	2. Aleksandra Bulajić (UB)	
Dragan Jurković, SVEMO	Important factors of spray dispersion in coverage of leaf area in protection of wine grape	SG2	Mentor at home institution unknown (to Add).	Already has 2 mentors, with 1. Vjekoslav Tadić (FAZOS) included		FAZOS
Ana Sesar, SVEMO	Micotoxins in wine varieties from Herezegovina	SG6	Anita Jurić	1. Stefania Pollastro (UNIBA)		UNIBA
Uroš Vojinović, UB	Sensitivity of <i>Erysiphe necator</i> populations to fungicides of different modes of actions in Serbia	SG2	Milan Stević	1. Francesco Faretra (UNIBA)		UNIBA
Mira Vojvodić, UB	Diversity of <i>Rhizoctonia</i> spp. in Serbia	SG4	Aleksandra Bulajić	1. Tiziana Mascia/OR Francesco Nigro (UNIBA)		UNIBA
Marija Simonović, UB	Phenology and importance of scales of family Coccidae (Hemiptera: Coccoidea) and their natural enemies on grapevine	SG3	Draga Graora	1. Francesco Porcelli (UNIBA)		-
Vincenzo Tragni, UNIBA	Inhibition of patulin production using computational approach	SG6 SG7	Antonio Ippolito	1. Magdalena Cara (AUT)		UNS
Claudia Greco, UNIBA	Transcriptomic analysis of <i>Xylella fastidiosa</i>	SG4	Vito Nicola Savino	1. Jelena Latinović (UoM)		
Hysen Kokici, UNIBA	<i>Capnodis</i> sustainable control	SG1	Enrico de Lillo	1. Ivan Ostojić (SVEMO)		
Ilaria Laterza, UNIBA	<i>Halyomorpha halys</i> IPM	SG1 SG3	Enrico de Lillo	1. Aleksandra Konjević (UNS)		UNS
Yara El Kahoury UNIBA	Forest IPM	SG1 SG3	Eustachio Tarasco	1. Igor Pajović (UoM)		

Tab. 1 continued

STUDENT Name, Family name, Home Institution acronym	TITLE OF THESIS	Sci. field/ SG	MENTOR at Home Institution (teacher name)	Assigned role of teacher from PI (teacher's name; PI acronym)		Destination of student's mobility (PI acronym); research status
				1. Joint Mentor	2. Member in Commission for thesis defense	
Fejzo Bašić, UNSA	The spreading factors of the invasive weed species common ragweed in function of its control	SG5	Mirha Đikić	1. Maja Ščepanović (FAZ)		FAZ
Arnela Okić, UNSA	Detection and partial molecular characterization of viruses on indigenous nad introduced plum varieties in Bosnia and Herzegovina	SG4	Mentor at home institution not reported	1. Darko Vončina (FAZ)		FAZ
Marta Loc, UNS	Causal agents of bacterial soft rot on potato - identification, characterization and alternative control measures	SG4	Mila Grahovac	1. Epameinondas Paplomatas (AUA)	2. Edita Đermić (FAZ)	
Antonije Žunić, UNS	Suppression of <i>Cydia molesta</i> in peach orchards using insecticides, its fate in the environment and residues in peach fruit	SG2	Slavica Vuković	1. Ivana Pajač Živković, (FAZ)		FAZ
Boško Jezerkić, UNS	<i>Drosophilla suzukii</i> - not yet defined	SG1 SG3	Aleksandra Ignjatović Čupina	1. Ivana Pajač Živković or Darija Lemić (FAZ)		FAZ
Aleksandar Ivezić, UNS	Identification of <i>Trichogramma</i> egg parasitoids of the European corn borer <i>Ostrinia nubilalis</i> (Hübner, 1796) in Vojvodina (Serbia)	SG1 SG3	Aleksandra Ignjatović Čupina		2. Ivana Majić, FAZOS	- Research done
Balša Bajagić, UoM	Impact testing of the effect of fungicide application on the control of grapevine pathogens	SG2	Nedeljko Latinović	1. Aleksandar Sedlar (UNS)	2. Dimitris Tsitsigiannis (AUA)	UNS (AUA?)
Ana Velimirović, UoM	Molecular and Morphological characterisation of Durum Wheat Accessions from Montenegro	SG7	Zoran Jovović	1-UNIBA declared to provide the the name of Joint Mentor later		UNIBA
TOTAL	28	1-7	24	20	10	7 (8)

Abbreviations of Scientific Subgroups:

SG1-Diagnosis in plant health and IPM; SG2-Sustainable use of pesticides; SG3-Plant Feeders; SG4-Plant Pathology; SG5-Weed Science; SG6-Mycotoxins and food safety; SG7-General contents of transversal interest

Tab. 2. Summarizing overview of assigned roles to teachers for students from each HE institution

ASSIGNED ROLES TO TEACHERS FROM OTHER PI	STUDENTS HOME INSTITUTION												TOT.
	AU	AUA	FAZ	FAZOS	SVEMO	UB	UNIBA	UNSA	UNS	UOM	AUT	UNKO	
MENTORSHIP	1	2	-	-	2	3	5	2	3	2	-	-	20
MEMBERSHIP	-	-	2	5	-	-	-	-	2	1	-	-	10
TOTAL	1	2	2	5	2	3	5	2	5	3	-	-	30

5. Parallel and joint workshops–Meeting Task 2: Identification of learning outcomes-each scientific subgroup (SG); discussion and report. (Note: According the contents of Harlsa project, Meeting Task 2. belongs to Task 3.2. The improvements of the existing and developing the new courses).

Before the start of work in parallel SGs, the WP3 Leader Aleksandra Ignjatović Čupina gave the instructions regarding Task2. Based on the list of the existing courses in each scientific subgroup (SG1- SG7) that had been already prepared at the previous meeting in Podgorica, each SG had the task to identify and define several learning outcomes, which should properly and comprehensively depict the overall group of the courses in each scientific subgroup. Before the meeting in Belgrade, Renata Bažok, the Project Leader, delivered to all WP3 member participants the publication of Bloom (2004) containing the list of verbs and matching assessment types. This taxonomic publication served as a useful tool for adequate selection of terms for defining of the learning outcomes. Ivana Majić (FAZOS) remarked that there could arise the problem with overlapping of learning outcomes between different courses and SGs and suggested to create a wider list of learning outcomes for each subgroup. Ana Mandić (SVMO) pointed out the problem to create the common learning outcomes for SG7(General contents of transversal interest), due to substantial differences among the courses listed in this scientific subgroup. Enrico de Lillo (UNIBA) and Renata Bažok (FAZ) suggested that the attention should be focused on the broad area (i.e. scientific subgroup-SG), so the learning outcomes should properly describe the same/similar group of subjects contained in each SG. In order to define the main learning outcomes correctly, Renata Bažok suggested to focus on Bloom's taxonomy groups of terms appropriate for PhD study level outcomes (i.e. analysis, synthesis and evaluation).

After clarifications and resolving ambiguities, each SG conducted mutual creative work and identified the learning outcomes related to the appropriate scientific field (see pdf file, pages 91-99, here presented in Tab.3).

Tab. 3. Learning outcomes of each Scientific Subgroup (SG)

SG	DESCRIPTION OF LEARNING OUTCOMES
1	<ul style="list-style-type: none"> • Apply various advanced diagnostic methods in plant prejudicial organism detection in relation to their reliability, cost and ease use • Select, develop, set up and validate the appropriate methods of monitoring of plant materials and soil so as identification methods in order to determine the level of plant prejudicial organisms • Analyze and identify the reasons for the appearance of certain pathogens and plant feeders • Design and compare plant protection measures in conventional, integrated and organic agricultural production for their efficiency with regard to environmental impact, and operator and consumer safety • Explain the principles and evaluate the potentiality of application of precision agriculture in IPM • Create/design and conduct field and laboratory research in the area of IPM
2	<ul style="list-style-type: none"> • Appraise and revise the most important pesticide properties, efficiency, safety of application, phytotoxicity, resistance, and environmental impact; • Develop innovative methods in accordance with the comprehensive methods in phytopharmacy • Predict of pests and disease appearance and assess of their harmfulness , as well as recommend of IPM strategy • Compare and rate potential impacts and consequences of application of different group of PPPs on agro-ecosystem • Generate and evaluate new ideas or tactics in system of sustainable use of pesticides.

Tab. 3. Continued

SG	DESCRIPTION OF LEARNING OUTCOMES
3	<ul style="list-style-type: none"> • Judge the importance and analyze morphological and physiological characteristics of plant feeders • Compare and assess the fundamental principles of plant feeders phylogeny and systematics. • Discuss and distinguish biological and ecological characteristics of plant feeders • Argue the molecular mechanisms by which DNA controls development, growth or morphological characteristics of plant feeders, and use of molecular data in pest and resistance management. • Employ, test and design advanced methods of monitoring, collection, identification and damage evaluation of economically important plant feeders • Predict plant feeders population size and dynamics based on phenology models • Interpret the principles of plant feeders specific adaptations and evaluate host plant resistance mechanisms. • Assess and develop a pest and resistance management plan based on a modern and sustainable approach which implies a sustainability and preservation of biodiversity • Formulate major pest damage thresholds, develop surveillance programs and risk maps for major pests and invasive species
4	<ul style="list-style-type: none"> • Recognize & Differentiate between plant pathogens • Formulate scientific hypothesis on plant pathology for disease resistance and virulence • Design disease resistance and pathogenicity experiments based on correct methodology • Collect Experimental data from in planta experiments • Rate & Evaluate disease resistance • Manage and formulate raw data of pathogenicity experiments • Interpret plant pathology and molecular biology data • Conclude to scientific results
5	<ul style="list-style-type: none"> • Attach weed biology and ecology to sustainable weed management • Explain weed-crop interaction in agriculture • Predict weed emergence and develop new methods for weed monitoring and mapping • Categorize advantages and disadvantages of each weed control method
6	<ul style="list-style-type: none"> • Define the terms food safety, food poisoning, food hazard and mycotoxins • Identify what might happen if mycotoxin hazards are not controlled • Recognize the importance of reporting food safety hazards regarding mycotoxins and the importance of implementing procedures to control mycotoxins • Identify and describe the present worldwide status on mycotoxin contamination in food and feed • Define and describe the methodology of classical, molecular and chemical identification of mycotoxigenic fungi • Define and describe mycotoxin risk assessment and the epidemiology of mycotoxigenic fungi at pre- and post-harvest level • Design experiments based on the epidemiology of mycotoxigenic fungi • Describe the classical and new methods on the identification of mycotoxins in food and feed • Describe and analyze mycotoxin prediction modeling at pre- and post-harvest level of food production • Develop an integrated pest management approach to prevent mycotoxins • Collect and analyze data from the experimentation on mycotoxins management strategies • Identify the costs of poor food safety practices to a business
7	<ul style="list-style-type: none"> • Categorize basic concepts of scientific research: set-up explicable hypothesis, determine the measurable research goals and design original research in the field of plant health for sustainable agriculture • Critically analyse and evaluate the results of its own scientific research in sense of scientific writing, • Evaluate bio-indicators of soil health to interpret interaction among soil organisms in order to value biodiversity • Access appropriate ecological indices in sustainable agriculture • Interpret and argue the latest technical, technological and socio-economic knowledge related to plant health in the field of sustainable agriculture.

6. Parallel and joint workshops–Meeting Task 3: Identification of similar and new courses, proposals regarding joint learning materials and action plan for developing joint learning material (Note: According to the contents of Harisa project, Meeting Task 2. belongs to Task 3.2. The improvements of the existing and developing the new courses).

Before the start of parallel work in SGs, Aleksandra Ignjatović Čupina gave a short introduction, pointing out that according to the project plan, for both existing and new group of courses, learning material should be developed, emphasizing that the deadline for improvement of the existing courses contents is November 15th 2020, while the production of joint learning/teaching material should be done until October 15th, 2021. Each subgroup had the task to prepare: a list of similar courses given at different PIs, present proposals of new courses/new contents, appoint the leader who will be in charge and coordinate the activity in collaboration with other teachers-members of the related SG and/or other invited teachers, in accordance with the action plan.

WP3 participants (teachers and students) discussed about the type of learning materials that should be produced. It was concluded that writing of textbooks is not needed for PhD study level. Instead, as more appropriate, it was proposed to produce material containing different kind of specific scientific information that would be more useful for PhD students, such as Guidelines to some specific topics regarding Plant Health issues (e.g. Guidelines for surveillance of invasive species, Guide to EU Legislation- on quarantine, pesticide residues etc.), Protocols for field and laboratory research (e.g. Protocol for molecular identification etc), lists of useful peer reviewed scientific journals, repository of recommended scientific publications and ppt presentations, links to international and national scientific societies and events in the field of plant health (conferences, workshops, trainings, forums etc). The student Uroš Vojnović (UB) suggested producing protocols for resistance research, while the student Marta Loc (UNS) expressed the interest in protocols for procedures of molecular identification of pathogens. Ivana Majić (FAZOS) suggested that each scientific subgroup could produce their own protocol handbook. According to the information given by Renata Bažok, training of teachers will be planned during the project lifetime. Materials derived from trainings could also represent the teaching material.

The working template form was delivered to each subgroup, containing the required information to provide. After the parallel work in subgroups, SG1, SG2, SG3, SG5, SG7 provided the required data, while in case of SG4 and SG6 the task remained incompletely fulfilled (pdf file, pages 100-110, here presented in Tab.4).

7. Joint meeting (all participants, WP3, WP4, WP 5 and WP6):

During the Joint meeting of all participants (all WPs) Aleksandra Ignjatović Čupina gave the report on the results of WP3 workshops achieved during the 3rd meeting in Belgrade, specified task by task.

Plans for further WP3 activities were also presented.

Table 4. Overview Identification of similar courses, proposals of new courses, appointment of teachers in development of joint learning materials and action plan for the activity

SG	SIMILAR COURSES	NEW COURSES	TEACHERS INVOLVED	APPOINTED LEADER	ACTION PLAN
1	<ul style="list-style-type: none"> • Pests of field crops • Pest of vegetables • Pests of fruit trees and grapevines • Pests in storages • Plant resistance to pests • Acarology • Nematology • Seed diseases • Vegetable production • Diseases of arable crops • Diseases of fruit trees and grapevine <ul style="list-style-type: none"> • Methods to assess plant reactions to diseases • Laboratory on plant disease symptom studies • Advanced diagnostic techniques in Plant Pathology • Molecular plant pathology • Advanced diagnosis of pathogens and pests • Pro and parasitic Eucariotes of Agricultural Plants • Pest Insects of Agricultural Systems • Plant infectious units of crops <ul style="list-style-type: none"> • Non-insect pests in agro-organisms • Plant pathology • Entomology • Herbology • Detection and identification of phytopathogenic bacteria • Diagnosis of plant pathogenic fungi and fungi-like organisms/Diagnosis of phytopathogenic pseudofungi and fungi • Diagnosis of plant pathogenic viruses • Techniques of insect identification • Diagnostics of plant pathogens <ul style="list-style-type: none"> • Methods for Ecological Quality Evaluation in the Integrated Plant Protection • Control methods of stored pests • Interaction herbicide – soil – plant • Orchard and vineyard protection against weeds • Weed management in vegetable crops • Integrated control of plant diseases • Integrated control of pests • Plant Protection • Integrated pest management /Integrated control methods of pest organisms • Plant protection in organic agriculture • GMO in plant protection • Integrated control of disease, sanitation and quarantine of planting material • Integrated Pest Management and implementation of EU protocols 	<ul style="list-style-type: none"> • Advanced diagnostic methods and techniques for detection of prejudicial organisms • Integrated approach to surveillance of prejudicial organisms affecting plant health • Control of quarantine prejudicial organisms and evaluation of risk assessment based on EU protocols 	SG1 Members	Maja Čaćija, FAZ	to be discussed and defined

Table 4. Continued

SG	SIMILAR COURSES	NEW COURSES	TEACHERS INVOLVED	APPOINTED LEADER	ACTION PLAN
2	<ul style="list-style-type: none"> Phytopharmacy Mode of Action of pesticides Advanced phytopharmacy Target resistance to pesticides Pesticide chemistry Physicochemical properties and fate in the environment Ecotoxicology Toxicology of pesticides Food toxicology Chemical analysis of residues 	<ul style="list-style-type: none"> Phytopharmacy (scientific field) Environmental fate of pesticides (including mitigation and remediation) Toxicology of pesticides 	Slavica Vuković Nedeljko Latinović Matteo Spagnuolo Miroslav Tityanov Renata Bažok Dragica Brkić Matteo Spagnuolo Ivan Ostojić Sanja Lazić Zorica Leka Dragica Brkić Matteo Spagnuolo Ivan Ostojić Sanja Lazić	Slavica Vuković(UNS) Matteo Spagnuolo(UN IBA) Dragica Brkić (UB)	Guidelines for self-directed learning, Scientific papers, PowerPoint Presentations
3	<ul style="list-style-type: none"> Methods in entomology Physiology of insects Morphology and anatomy of insects Entomology Research Methods in Agricultural Entomology Insect Morphology and Physiology Insect Systematic Pests of Field Crops Pests of Vegetables Pests of Fruit Trees and Grape Vines Pests in Storages Control Methods of Stored Pests Plant Resistance to Pests Quarantine Pests Agricultural entomology Neglected Vector Species and Pathogens Monitoring of Insects Parameters of Insect Populations/Insect Populations Parameters Advanced entomology 1 Advanced entomology 2 Techniques of Insect Identification Methods in nematology Nematology (UB) Nematology (FAZOS) Nematode Ecology Nematology (UNSA) Methods in acarology General phytoacarology Applied phytoacarology Acarology Phytoacarology Principles of zoosystematics Methods in malacology Small rodents Malacology Agricultural Zoology Special zoology/Advanced zoology Special parasitology 	<ul style="list-style-type: none"> Advanced morphology, physiology and biology of arthropod pest Advanced morphology and biology of nematodes and other zoological groups Advanced zoosystematic Postharvest Integrated Pest and Resistance Management Insect-nematode-plant interactions Plant feeders phenology modelling in changing environment Frontiers in pest and resistance management Biological Control Agents Nematology Acarology Alien and Quarantine pests Biosecurity surveillance and arthropod pest risk analysis Integrated Management of urban pests 	SG3 members	Ivana Majić (FAZOS)	to be discussed and defined respecting the deadlines

Table 4. Continued

SG	SIMILAR COURSES	NEW COURSES	TEACHERS INVOLVED	APPOINTED LEADER	ACTION PLAN
4	Not yet Provided	<ul style="list-style-type: none"> Plant Microbe Interactions 	SG4 Members	Not yet appointed	Developing teaching material
5	<ul style="list-style-type: none"> Advance weed management (FAZ, UNS) Weed Science (UNS, UNKO, FAZOS) Herbology (UNSA, SVEMO) 	New contents: <ul style="list-style-type: none"> Precision weed management Modelling in Weed Science (weed emergence model, seed bank model, invasive weed spreading model, model for weed resistance prediction) 	Maja Šćepanović, Dragana Božić, Mirna Đikić	Not yet appointed	Requirement of teacher with experience in bio-statistics (for example Jasmin Grahić, Roberta Masin)
6.	<ul style="list-style-type: none"> Mycotoxins Mycotoxinogenic fungi Toxicogenic Fungi and Mycotoxins Mycotoxigenic Fungi Analytics of residues and contaminants in food and environment Food Toxicology Phytotoxins 	Not provided	SG5 Members	Not yet appointed	To be discussed
7	<ul style="list-style-type: none"> Statistics Principals of scientific work Ecology 	<ul style="list-style-type: none"> Principles of Scientific Work in Bioscience (including ethics and laboratory hazards) Biodiversity and bio-indicators in sustainable agriculture Project proposal writing GIS and Spatial Data Analysis 	<ul style="list-style-type: none"> Dusan Petric, and/or Antonio Ippolito Brmez Mirjana, Lemic Darija and/or Dinka Grubišić Renata Bažok and ? ?to be defined 	Ana Mandić	To be discussed

4. Final conclusions:

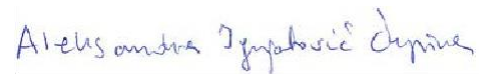
- Members of WP3 successfully conducted main of the tasks planned for the 3rd HarISA project meeting. Joint research and selection of research topics were agreed among students and teachers. Joint Mentorship and scientific cooperation among PIs were defined for a significant number of students, including also proposals for Joint Membership in Commissions for Thesis Defense. Student and staff mobility to PIs were proposed according the declared and agreed joint research topics of doctoral students. Depending on objective circumstances, eventual changes/additions will be enabled in the next project steps with previous mutual consent of WP3 members, and with respecting the project rules.
- Learning outcomes were properly identified and formulated for each SG.
- Teaching needs and plan for improvement of the existing and development of new courses/scientific contents were partly identified, as well as the action plan for production of learning material.

Therefore, these topics will represent the focus in the next activities of WP3.

- Based on the proposals, achieved results and agreements, the next workshop in Mostar will be mainly focused on the improvements of the teaching materials, teaching methods and tools, with special attention to the development of joint learning materials.

The meeting was concluded on 29/10 at 01:25 pm.

WP3 Leaders:



Aleksandra Ignjatović Čupina, Associate Professor



Eustachio Tarasco, Associate Professor

Minute-taker Secretary:



Martina Kadoić Balaško, MSc