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Bachelor Plantenwetenschappen
Master Plant Biotechnology
Master Plant Sciences
Master Resilient Farming and Food Systems

Wageningen University

Advisory report of the assessment of the existing programmes
14 and 15 October 2024

Colophon

Institution and programme

Wageningen University

Wageningen

Institutional Audit: yes

Bachelor's programme Plantenwetenschappen (Croho 56835)

Master's programme Plant Biotechnology (Croho 60105)

Master's programme Plant Sciences (Croho 66835)

Master's programme Resilient Farming and Food Systems (Croho 69300)

Wageningen University

Location: Wageningen

Mode: Full-time

Parttime (online specialisation Plant Breeding
from the master's programme Plant Sciences)

Assessment panel

Stanley Brul, chair

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Summary

On 14 and 15 October 2024, the bachelor's programme Plantenwetenschappen, the master's programme Plant Biotechnology, the master's programme Plant Sciences and the master's programme Resilient Farming and Food Systems of Wageningen University were assessed. The panel's overall judgement of the four programmes is **positive**.

Intended learning outcomes

Plant Sciences is a particularly strong and internationally visible discipline at Wageningen University. All four programmes are demonstrably unique within the Netherlands. The panel welcomes the broad, integrated profile of the Plant Sciences bachelor's and master's programmes, which cover all relevant levels from molecule to ecosystem, thus encouraging systems thinking.

The bachelor's programme Plantenwetenschappen aims to give students a strong basis in all domains of plant sciences. Students learn to design experiments and carry out a research plan on a plant sciences topic. The broad common core prepares students for the programme's two specialisations: (A) Plant Genomics and Health, (B) Plant Production and Ecology.

The master's programme Plant Biotechnology focuses on the development and application of biotechnological tools and concepts to study and improve plant characteristics and traits. The programme offers three specialisations: Functional Plant Genomics, Plants for Human Health and Molecular Plant Breeding and Pathology.

The master's programme Plant Sciences focuses on the dynamics and complexity of plant production at the different organisation levels, from molecules, cells, organisms, populations and communities up to ecosystems. The programme offers five specialisations: Crop Science, Greenhouse Horticulture, Natural Resource Manage-

ment, Plant Breeding and Genetic Resources, and Plant Pathology and Entomology. A sixth specialisation of the master's programme Plant Sciences is the online master's programme Plant Breeding. The specialisation Plant Breeding involves a variety of aspects, ranging from the molecular level to the population level and requires knowledge on the physiology, ecology and genetics of cultivated plants.

The master's programme Resilient Farming and Food Systems explores agroecosystems, sustainable food systems, and multi-functional land use from the viewpoint of various disciplines (i.e. plant, soil, animal, social and environmental sciences), multiple perspectives (i.e. sustainability, health, and ethics) and different geographical scales (local, regional, and global). The programme offers two specialisations: Agroecology and Sustainable Food Systems. The programme offers the possibility to do a double degree programme in Agroecology in collaboration with ISARA in Lyon.

The profiles of the bachelor's programme and the master's programmes are translated into sets of intended learning outcomes, categorised in a) domain-specific knowledge, understanding and experimental skills, b) scientific skills and c) general academic skills. For the master's programme Resilient Farming and Food Systems, a category societal awareness is also added. The intended learning outcomes of the four programmes fit the level and orientation of

the programmes and are aligned with the expectations of the (international) professional field. There is sufficient differentiation between the intended learning outcomes of the bachelor's programme and those of the master's programme. The latter are clearly formulated at a higher level.

The programmes have good contacts with the professional field. The programmes align their objectives and curricula with the professional field through informal contacts with stakeholders and annual consultations of their External Advisory Committee.

The panel thus concludes that the bachelor's programme *Plantenwetenschappen*, the master's programme *Plant Biotechnology*, the master's programme *Plant Sciences* and the master's programme *Resilient Farming and Food Systems* meet this standard.

Teaching-learning environment

The fulltime bachelors' programme has a duration of three years and comprises a total of 180 EC. The English-language fulltime master's programmes have a duration of two years and comprise a total of 120 EC. The part-time variant *Plant Breeding* takes about four years.

The contents of the four programmes enable students to achieve the intended learning outcomes. The bachelor's programme and the three master's programmes have clearly translated the intended learning outcomes into the educational programmes. The online learning variant of the master's programme *Plant Sciences* is a valuable addition to regular full-time education. In the bachelor's programme, the students start with learning about plant sciences. From the second year, students go into depth and choose a specialisation. They complete the programme with a minor or electives

and a bachelor thesis. The master's programmes come with different elements: a joint part, a specialisation part, a thesis track and an internship (or research project). The master's programmes include an Academic Master Cluster which includes general academic skills and academic research and/or design skills applied to a scientific field relevant to the master's programme.

The programmes started with a redesign of the curricula. The bachelor's programme has already actually started implementing; the first academic year of the new curriculum will be offered for the first time this year.

The didactic concept of the programmes supports the learning process of the students. The educational formats are adequate. The study of the programmes consists of lectures, tutorials (making assignments under the guidance of a lecturer), practica (practical assignments in a lab room) and self-study. The programmes have excellent facilities specifically in the field of plant sciences, which are sufficiently available to the bachelor's and master's students.

The programmes have a strong teaching team. The various disciplines are well represented by the input of staff from a variety of research groups, as is practical and scientific experience in the various fields of work.

The admission requirements of both the bachelor's programme and the master's programme adequately match the programmes.

The panel thus concludes that the bachelor's programme *Plantenwetenschappen*, the master's programme *Plant Biotechnology*, the master's programme *Plant Sciences* and the master's programme *Resilient Farming and Food Systems* meet this standard.

Student assessment

The programmes have an adequate, solid assessment system and assessment procedures. The system is adequately based on the university wide policy. Frequently used assessment forms are written tests (open and/or closed questions), assignment (reflection) report, oral presentation, other assignment and performance. The exams for the online variant Plant Breeding of the master's programme Plant Sciences are all online. Forms of assessment are written tests (open and closed questions), assignments (for example a group assignment, an essay or a reflection) and for one course an oral assessment.

Quality assurance of assessment is ensured by a proactive Examination Board for the programmes. The board, focusing on a group of programmes, show a sufficient knowledge of the individual programmes and their assessment. In the past years the capacity of the Board is sufficiently increased.

The panel thus concludes that the bachelor's programme Plantenwetenschappen, the master's programme Plant Biotechnology, the master's programme Plant Sciences and the master's programme Resilient Farming and Food Systems meet this standard.

Achieved learning outcomes

The bachelor thesis Plant Sciences (18 EC) is the concluding part of the bachelor's programme and aims to assess whether the students meet all the intended learning outcomes of the programme. With the master's programme thesis (36 EC), the master's programmes aim to assess the majority of the intended learning outcomes. Some of the intended learning outcomes are assessed in the internship.

After the bachelor's programme, students have access to a number of master's programmes. The bachelor's programme leads to the master's programmes Plant Sciences, Plant Biotechnology and Resilient Farming and Food Systems, for example.

The master's programmes prepare students for a wide variety of jobs, as plant scientists, crop production specialists, or in consultancy or management in agribusiness, the plant breeding industry, and in governmental and non-governmental organisations, for example.

Based on reviewing the recent theses of 15 alumni from each programme, the panel finds that the students achieve the intended level of the programmes in the subject area. The programmes prepare students very well for the job market and students end up in positions that fit the intended exit profiles.

The panel thus concludes that the bachelor's programme Plantenwetenschappen, the master's programme Plant Biotechnology, the master's programme Plant Sciences and the master's programme Resilient Farming and Food Systems meet this standard.

Suggestions

Looking ahead, the panel offers a number of suggestions for consideration, including the following recommendations:

- The programs should keep monitoring that, also while redesigning, key intended learning outcomes of onsite and distant learning variant do not diverge.
- In the redesigned programmes, ensure an adequate connection to the rapidly changing field of work. Ensure, for example, more focus on phenotyping and big data in plant science.

- Pay attention to the high workload of lecturers and take appropriate measures to bring it to a desirable level, especially in the phase of redesigning the courses, which requires more commitment from lecturers.
- When redesigning, ensure that the mode of assessment is well aligned with the changing didactic vision, with a good balance between formative and summative assessment.
- Pay attention to the design of assessment forms and their expected completion, to ensure alignment with the intended learning outcomes to be tested and make the rationale for judgements transparent, especially for the thesis.
- Implement a stronger central policy around the teachers' and students' use of AI.

All standards of the NVAO framework have been positively assessed. On this basis, the panel provides a positive recommendation regarding the accreditation of the bachelor's programme Plantenwetenschappen, the master's programme Plant Biotechnology, the master's programme Plant Sciences and the master's programme Resilient Farming and Food Systems.

On behalf of the entire assessment panel,
Utrecht, December 2024

Stanley Brul
Chair

Linda van der Grijspaarde
Secretary

Introduction

Profile

Wageningen University & Research is a collaboration between Wageningen University and the Wageningen Research foundation. The domain of Wageningen University & Research consists of three related core areas: Food, feed & biobased production, natural resources & living environment and society & well-being. The mission of Wageningen University & Research is 'to explore the potential of nature to improve the quality of life'. Wageningen University & Research has 7,600 employees and 13,100 students.

In 2023, Wageningen University & Research consisted of 1 faculty, 5 departments and 95 chair groups. One of the departments is Plant Sciences with 20 chair groups. By 2023, there were 20 bachelor's programmes, 31 master's programmes and 49 Massive Open Online Courses.

Four programmes of the domain Plant Sciences are assessed: the bachelor's programme *Plantenwetenschappen*, the master's programme *Plant Biotechnology*, the master's programme *Plant Sciences* and the master's programme *Resilient Farming and Food Systems*.

The bachelor's programme is offered in Dutch. The master's programmes are offered in English and use an English title. Ever since the establishment of the bachelor's and master's programmes system, English has been the language of instruction for all master's programmes at Wageningen University. This is a condition for a basic principle of education at Wageningen University: the 'international classroom'. The language of English is defined in the

Code of Conduct of the Wageningen University. With this policy, Wageningen University not only aims to ensure that students from all over the world can participate in the instruction and share its knowledge; it also aims to endow graduates with a basic skill that will help them to launch their (international) careers. The panel considers this an adequate explanation. In this respect, the panel finds it logical that English-language master programmes have also chosen a corresponding English title.

The assessment

Wageningen University has commissioned AeQui to carry out the current assessment. For this purpose, AeQui, in collaboration with the programme, has assembled an independent and knowledgeable panel. A preparatory meeting with representatives of the programme has taken place.

The assessment was conducted based on the Accreditation Framework for Higher Education in the Netherlands, according to the programme outlined in Appendix 2. The institution has a positive institutional audit decision, and therefore four standards were assessed.

Recommendations for further development were made during the previous assessment. The programme has taken action in response (see Appendix 3). The panel has integrated this follow-up into its considerations for the current assessment.

The panel conducted the assessment independently; the panel received the necessary information to arrive at a judgement. At the end

of the assessment, the programme was informed of the findings and conclusions.

This report was sent in draft to the programme; the programmes responses have been incorporated into this final report.

At the initiative of the programme, a development meeting took place during the visit. The results of this development meeting will not affect the assessment presented in this report.

Intended learning outcomes

Standard 1: The intended learning outcomes tie in with the level and orientation of the programme; they are geared to the expectations of the professional field, the discipline, and international requirements.

Findings

For the individual programmes, the profile and intended learning outcomes are described. The link with the professional field is then described for the programmes as a whole.

Bachelor's programme Plantenwetenschappen

In the bachelor Plant Sciences, students learn to combine fundamental knowledge of ecology, physiology, genetics, molecular biology, biodiversity, agronomy, plant breeding and plant pathology. Additionally, students learn to apply this knowledge for food production, human health, bio-based resources, and a green environment. The programme aims to give students a strong basis in all domains of plant sciences. Students learn to design experiments and carry out a research plan on a plant sciences topic. The broad common core prepares students for the programme's two specialisations: (A) Plant Genomics and Health, (B) Plant Production and Ecology.

The specialisation Plant Genomics and Health focuses on processes that occur in the plant on a cellular and molecular level. The specialisation Plant Production and Ecology aims at the ecological interactions between plants and environmental factors in nature and in cropping systems.

The profile of the programme is translated into 10 intended learning outcomes, categorised in a) domain-specific knowledge, understanding

and experimental skills, b) scientific skills and c) general academic skills. The first category includes two specific intended learning outcomes for each of the two specialisations.

Master's programme Plant Biotechnology

The master's programme Plant Biotechnology focuses on the development and application of biotechnological tools and concepts to study and improve plant characteristics and traits. AI and big data play a crucial role to enable the analysis of vast genomic datasets, bioinformatics, computational biology and machine learning. In the programme the technological perspective is taught in combination with aspects that are relevant in today's society regarding intellectual property rights, entrepreneurship, dilemmas in food safety, and consumer acceptance. The domain of plant biotechnology contributes to the sustainable production of food and renewable resources, human health, global food security and climate change adaptation and mitigation.

The programme offers three specialisations: Functional Plant Genomics, Plants for Human Health and Molecular Plant Breeding and Pathology.

The specialisation Functional Plant Genomics focuses on gene and protein functions and the interaction of genes and proteins in the regulation of gene expression.

Within the specialisation Plants for Human Health students analyse how plants affect human health as they provide essential nutrients including vitamins, amino acids, proteins and lipids.

The focus of the specialisation Molecular Plant Breeding and Pathology is the increase of the demand for improved crop varieties, because of the growing global human population and increased demand for plant-based food and resources. Molecular approaches are used to develop new plant breeding strategies for complex quantitative traits to improve crop resilience, yield and quality of food and renewable resources.

The profile is translated into 11 intended learning outcomes, categorised in a) domain-specific knowledge, understanding and experimental skills, b) scientific skills and c) general academic skills. The first category includes one specific intended learning outcome for each of the specialisations.

Master's programme Plant Sciences

The master's programme Plant Sciences focuses on the dynamics and complexity of plant production at the different organisation levels, from molecules, cells, organisms, populations and communities up to ecosystems. Therefore, the programme combines plant biology, plant physiology, (population) genetics, ecology, epidemiology, animal biology, microbiology and soil biology. These combined disciplines are based on supporting disciplines such as statistics and mathematics, data science, biochemistry, molecular and cell biology and environmental physics.

The programme offers five specialisations: Crop Science, Greenhouse Horticulture, Natural Resource Management, Plant Breeding and

Genetic Resources, and Plant Pathology and Entomology.

The specialisation Crop Science takes organismal plant physiology as a starting point and focuses on the regulation of key processes such as photosynthesis, phenotypic plasticity, intra- and interspecific plant interactions, and agronomy. Quantitative modelling, simulation and data science methods are used to analyse and understand yield constraints in the development of productive resilient cropping systems.

The specialisation Greenhouse Horticulture focuses on greenhouses and vertical farms which provide a growth environment for plants that enables integrated crop management by control of abiotic circumstances such as temperature, (LED-)light, humidity, irrigation and nutrient supply (in soil and hydroponics), as well as biotic factors including pollination and biological control. This specialisation also focuses on processes that influence post-harvest quality.

The specialisation Natural Resource Management focuses on the design of sustainable agroecosystems, which requires knowledge on ecosystems and the environment, and understanding of the complex relationships between ecology, soil health, agronomic practices, (a-) biotic stress resilience, nutrient management, resource use efficiency and the broader socio-ecological context.

The specialisation Plant Breeding and Genetic Resources focuses on the design of plant breeding schemes. This includes the use of crop wild relatives and other genetic resources, parent choice, hybridization techniques to overcome or induce crossing barriers, varietal selection and seed propagation and quality.

The specialisation Plant Pathology and Entomology investigates the molecular biological, ecological and epidemiological aspects of the interaction between plants and insects, nematodes, weeds, fungi, bacteria and viruses. It includes multitrophic interactions and mechanisms of transmission.

The profile of the master's programme is translated into 11 intended learning outcomes, categorised in a) Domain-specific knowledge, understanding and experimental skills, b) scientific skills and c) general academic skills. The first category includes one specific intended learning outcome for each of the specialisations.

Online master's programme Plant Breeding

A sixth specialisation of the master's programme Plant Sciences is the online master's programme Plant Breeding. The specialisation Plant Breeding involves a variety of aspects, ranging from the molecular level to the population level and requires knowledge on the physiology, ecology and genetics of cultivated plants.

The online specialisation Plant Breeding has its own set of intended learning outcomes. The profile of this specialisation is translated into 12 intended learning outcomes, categorised in a) domain-specific knowledge, understanding and experimental skills, b) scientific skills and c) general academic skills. In all three categories the intended learning outcomes partly deviate (slightly) from the intended learning outcomes of the joint set of intended learning outcomes of the other specialisations of the master's in plant sciences.

Master's programme Resilient Farming and Food Systems

The master's programme Resilient Farming and Food Systems explores agroecosystems,

sustainable food systems, and multi-functional land use from the viewpoint of various disciplines (i.e. plant, soil, animal, social and environmental sciences), multiple perspectives (i.e. sustainability, health, and ethics) and different geographical scales (local, regional, and global). A transdisciplinary systems approach characterizes both the research and education domains in the master's programme. Ecological concepts are applied in various domains, including agroecology, organic agriculture, permaculture, conservation agriculture, and are connected to the economic, societal and sociological context.

The programme offers two specialisations: Agroecology and Sustainable Food Systems.

In the specialisation Agroecology students learn to apply ecological principles to agriculture to create food production systems that work with nature and contribute to wildlife conservation, climate change mitigation and social justice, among others.

The specialisation Sustainable Food Systems focuses on the social sciences perspective of resilient food provisioning. Topics range from globalisation and sustainability of food production and consumption to the (inter)national policies and legislation that affect organic production, processing and marketing.

The profile is translated into 16 intended learning outcomes, categorised in a) Domain-specific knowledge, understanding and experimental skills, b) scientific skills, c) societal awareness and d) general academic skills. Two specific learning outcomes have been formulated for each of the two specialisations.

As of the academic year 2023-2024, the programme changed its name from Organic Agriculture to Resilient Farming and Food Systems.

The new name is broader and aims to be a better reflection of the contents of the curriculum. The new name combines the three unique characteristics of the programme, namely a link between farming and food; an explicit reference to systems thinking, with more emphasis on social and environmental systems, combined in a holistic and integrative approach; and the ambition of resilience which is distinctive and more ambitious than 'sustainable'.

Double Degree Agroecology

Wageningen University offers the possibility to do a double degree programme in Agroecology in collaboration with Institut Supérieur d'agriculture et d'agroalimentaire Rhône-Alpes (ISARA) in Lyon. ISARA-Lyon is a French "grande école" (graduate college) specialized in agricultural, food and environmental science. For the two-year programme a double master's programme degree is delivered.

The Agroecology programme is aimed at international students with a strong interest in sustainable agriculture and agroecosystem management. Students get the opportunity to understand the structure and function of complex agroecosystems. They will learn to apply systems approaches in studying, designing and evaluating (agricultural) systems and food production chains, and to develop creative solutions for sustainable farming and marketing of organic products. The program teaches a multidisciplinary approach in which natural science is combined with social science and economics.

The profile of the Double Degree is translated into 16 intended learning outcomes, categorised in a) domain-specific knowledge, understanding and experimental skills, b) scientific skills, c) societal awareness and d) general academic skills. All but two of the intended learning outcomes are similar to those of the master's

programme Resilient Farming and Food Systems. The two intended learning outcomes in the category Domain-specific knowledge on Agroecology specifically, differ from those of the eponymous specialisation in the master's programme. They focus in the Double Degree lies on understanding complex agroecosystems and analysing/designing agricultural systems and (food) production chains.

Link with the professional field

To match the demands of the field, the programmes maintain formal and informal contacts with potential employers. In addition to the frequent contacts and meetings of staff with representatives of the professional field, there is an External Advisory Committee that meets annually to discuss the intended learning outcomes, the content and quality of the programme and the performance of graduates.

Like the other programmes, the master's programme Resilient Farming and Food Systems has its own External Advisory Committee, which mainly consists of representatives of the Dutch organic agriculture sector. During annual meetings, the committee provides input on the intended learning outcomes and curriculum.

Considerations

The panel believes that Plant Sciences is a particularly strong and internationally visible discipline at Wageningen University. All four programmes are demonstrably unique within the Netherlands. The panel welcomes the broad, integrated profile of the Plant Sciences bachelor's and master's programmes, which cover all relevant levels from molecule to ecosystem, thus encouraging systems thinking.

The panel assesses that the intended learning outcomes of the four programmes fit the level and orientation of the programmes and are

aligned with the expectations of the (international) professional field. According to the panel, there is sufficient differentiation between the intended learning outcomes of the bachelor's programme and those of the master's programme. The latter are clearly formulated at a higher level. This is especially clear from the intended learning outcomes that specify the academic and research skills that students need to obtain.

The programmes have started redesigning the curricula. The bachelor's redesign has started with a phased introduction. The master's programmes are now starting to work out the redesign. The panel recommends that this redesign should revisit the differentiation in learning outcomes per specialisation and tighten up where necessary. There is overlap in some, and in practice, especially in master's programmes, students can often make their own choices outside the specialisations, so the need for the delineation in intended learning outcomes seems to be lacking.

The panel appreciates the programme's good contacts with the professional field. The programmes align their objectives and curricula with the professional field through informal contacts with stakeholders and annual consultations of their External Advisory Committee. The panel notes that the programme's good relations with the professional field enable it to continuously monitor current developments and incorporate them into the programme's profile and programme.

Regarding the bachelor's programme Plantenwetenschappen, the panel notes the following. According to the panel, the programme has a strong, broad knowledge base that introduces students to the different components of the Plant Sciences domain. The intended learning

outcomes are in line with the broad, integrated profile of the bachelor's programme. The domain-specific intended learning outcomes adequately cover the relevant knowledge, insight and experimental skills. There is sufficient attention to research skills, underlining the research-based nature of the programme. There is also attention to professional competences, such as cooperation, communication and reflection. The panel suggests redefining the intended learning outcome on organising large-scale datasets (2b) and bringing it more in line with skills appropriate to current practice.

Regarding the master's programme Plant Biotechnology, the panel notes the following. The profile of the master's in plant biotechnology is relevant according to the panel, with an appropriate combination of biotechnology with approaches from the social sciences.

Regarding the master's programme Plant Sciences, the panel notes the following. The panel appreciates the specific focus on the full domain of plant sciences. The specialisations cover important aspects of the domain. The panel has a suggestion on the intended learning outcome about formulating future perspectives (ILO 10). The panel thinks these are better suited to the domain-specific skills. The panel also thinks that the programme could take advantage of the described intended learning outcomes of the master's programme Resilient Farming and Food Systems, where a category on social aspects has also been added. Plant Sciences also stands in society, and this is now a bit invisible in the intended learning outcomes. More emphasis would be good. Finally, the panel sees that phenotyping is not explicitly included in the intended learning outcomes. It would be good to give it more specific attention in the intended learning outcomes.

The specialisation Plant Breeding, which is offered in an online variant, enables participants to combine work and study by way of distance learning. The panel notes that the intended learning outcomes are somewhat different from those of the eponymous specialisation in the master's programme. It was not clear to the panel from the documentation and interviews why these differences exist; the idea seems to be that only the form of teaching is different to facilitate working students, and not the intended learning outcomes. Should the intention be that the profiles do differ, the panel recommends describing a more explicit comparison on this and then also making clear how this translates into the curriculum and assessment.

Plant Sciences research is now highly technological both in a research setting and in practical application. This brings the Plant Sciences and Plant Biotechnology master's programmes closer and closer together. The panel recommends that the programmes periodically review what this means for (the distinction between) the two master's programmes and the content of both.

Regarding the master's programme Resilient Farming and Food Systems, the panel notes the following. The intended learning outcomes of the master's programme Organic Agriculture are attuned to the specific nature of the field and are truly interdisciplinary. Compared to the intended learning outcomes of the other two master's programmes, the intended learning outcomes are more specific, also because of the addition of a fourth category, societal awareness, which is highly relevant for the particular field. The panel believes that the interdisciplinary, internationally oriented profile of the master's programme is well reflected in the

programme's new title. The panel suggests that 'resilience' should also be specifically reflected in the intended learning outcomes (e.g. as No 5). The panel misses the balance between agroecology and organic. Some of the outcomes are not adapted to switching from organic to more general. According to the panel, the intended learning outcomes could be more specific about change of focus. There is still a lot of organic formulation. The panel can understand this but suggests that a rethink is in order given the changed title of the programme.

For the double degree programme in Agroecology in collaboration with ISARA a specific set of intended learning outcomes is in place. The panel notes that because of ISARA's profile, this double degree focuses more on agroecology. There is less focus on production and on political and social issues. The panel does not see this different focus reflected in the intended learning outcomes. The panel advises the programme to carefully evaluate the focus: is the focus on the agroecology system level what you want? Where do you position yourself in the field of agroecology to food systems transformation? The panel expects that the outcome of the evaluation could affect the profile description and the intended learning outcomes derived from it.

Taking these considerations into account, the panel assesses that the bachelor's programme Plantenwetenschappen, the master's programme Plant Biotechnology, the master's programme Plant Sciences and the master's programme Resilient Farming and Food Systems meet this standard.

Teaching-learning environment

Standard 2: The curriculum, the teaching-learning environment and the quality of the teaching staff enable the incoming students to achieve the intended learning outcomes.

Findings

The academic year consists of 6 periods. Period 1,2,5 and 6 comprise seven weeks of classes, time for self-study and the exam week. In these periods students of all programmes often follow two courses worth 6 EC each. Periods 3 and 4 entail of four weeks in which both the lectures and the exams take place. In these periods students usually follow one course worth 6 EC.

The curricula and teaching-learning environment of the bachelor's programme and the three master's programmes are discussed separately. General information is then given for the three programmes on curriculum redesign, admission criteria and staffing.

Bachelor's programme Plantenwetenschappen

The fulltime bachelors' programme has a duration of three years and comprises a total of 180 EC. In each of the six periods in a year, students take one to three subjects. In the first year of study, students learn about plant sciences. The subjects are unique to this bachelor's degree. The student also lays a foundation with subjects such as Mathematics, Cell Biology and Ecology, which the student takes together with students from other programmes. The second year is more in-depth. The student takes courses on plant physiology and statistics and chooses one of two specialisations. Students who choose the specialisation Plant Genomics and Health learn about plant biotechnology and bioinformatics, and the role of plants for human health. Students who choose the specialisation Plant Production and Ecology will learn how to grow food as sustainably and efficiently as possible. At the beginning of the third year, students complete

the specialisation. Afterwards, the student chooses a minor or electives and works on the bachelor thesis. This is an individual research project.

The study consists of lectures, working lectures (making assignments under the guidance of a lecturer), practica (practical assignments in a lab room, greenhouse or field) and self-study.

Master's programme Plant Biotechnology

The English-language fulltime master's programme has a duration of two years and comprises a total of 120 EC. Students follow a joint part of 12 EC. They choose one of three specialisations ranging from 72 EC to 78 EC: Functional Plant Genomics, Plants for Human Health and Molecular Plant Breeding and Pathology. Within the specialisation, they take a number of courses and follow the thesis track (42 EC). The thesis track always consists of an advanced course (6EC) and a master thesis (36EC). In addition, they do an internship or Research Practice (24 EC) and follow the Academic Master Cluster. They also have a free choice of 12 EC to 24 EC.

The core of the programme, is the thesis track, as part of the specialisation. The track consists of a scientific research project which is concluded by writing a thesis. The subject of the thesis is developed in consultation with a senior staff member of Wageningen University. If the necessary facilities and technical guidance are available, part of the research work may in some cases be done in the home country or another country.

Preceding the thesis project, a selection of courses (at graduate level) will be composed by each individual student in consultation with the study adviser and in accordance with the thesis topic and related to the chosen specialisation.

Part of the Academic Master Cluster is the Academic Consultancy Training. During this training, general academic skills and academic research and/or design skills are applied to a scientific area that is relevant to the master's study programme, in the form of an external research or design assignment. This may be design of new technologies, but also policy papers, business plans, communications or draft research plans are possibilities. This is done in a multidisciplinary team of four to seven students.

Master's programme Plant Sciences

The English-language fulltime master's programme has a duration of two years and comprises a total of 120 EC. Students choose one of five specialisations (as listed in standard 1) ranging from 72 EC to 78 EC. Within the specialisation, they take a number of Common Basis courses (0 EC to 12 EC) and Restricted Optionals (6 EC). The students follow the thesis track (42 EC). In addition, they do an internship or Research Practice (24 EC) and follow the Academic Master Cluster (12 EC). They also have a free choice of 24 EC to 36 EC. Preceding the thesis project, a selection of courses will be composed by each individual student in consultation with the study adviser and in accordance with the thesis topic and related to the chosen specialisation. The rest depends on the chosen specialisation.

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member of Wageningen University. If the necessary facilities and technical guidance are available, part of the research work may - in some cases - be done in the home country or another country.

Part of the Academic Master Cluster is the Academic Consultancy Training. During this training, general academic skills and academic research and/or design skills are applied to a scientific area that is relevant to the master's study programme, in the form of an external research or design assignment. This may be design of new technologies, but also policy papers, business plans, communications or draft research plans are possibilities. This is done in a multidisciplinary team of four to seven students.

A sixth specialisation is the part time online programme Plant Breeding. This programme is designed for part time study (approx. 20 hours per week) to combine work and study. A course-programme of 2 years will be followed by a tailor-made internship and master's thesis, ranging from 1 to 2 years. During the courses the students collaborate with lecturers, tutors and fellow distance learning students on a virtual learning platform. The course programme includes two short stays of two weeks each in Wageningen for essential practicals that relate to the theory. Students of the online variant indicated that the thesis track should basically take place in Wageningen, because of the connection with Wageningen Research.

Master's programme Resilient Farming and Food Systems

The English-language fulltime master's programme has a duration of two years and comprises a total of 120 EC. Students follow the Common Basis of 0 EC to 12 EC and the Compulsory Common Part (15 EC). Courses of the compulsory core focus on an integrated

approach towards exploring the future of food and farming. This provides a strong basis for the specializations Agroecology and Sustainable Food Systems (42 EC). Within the specialisation, students take a number of courses and follow the thesis track (42 EC). In addition, they do an internship (24 EC) and follow the Academic Master Cluster. They also have a free choice of 9 EC to 24 EC.

The master's programme is experiential (learning by doing), authentic (departing from real world issues and utilising real life case studies) and interactive (involving multiple stakeholders and social learning). In addition, students form a community of learners where they share their academic and professional expertise in an international classroom and develop essential skills for the master's programme thesis and the master's programme internship.

Double Degree Agroecology

Students in the Double Degree study their first year in Wageningen. The second year is taught at ISARA in Lyon, France. The master's programme thesis (semester 4) will be carried out under the major responsibility of one of two partners and will be co-supervised by the other partner.

Redesign of the programmes

The bachelor's programme was the first to start redesigning the curriculum. Implementation of the new programme has begun. The new first year has started September 2024, years 2 and 3 are work in progress. The improvements in the new programme include a stronger focus on (agro)ecology, a new learning line data science, a new longitudinal course on crop recognition, dedicated focus on bachelor skills through the Academic Journey approach and an overall improved coherence of the curriculum through alignment of course content and course level.

Many courses of the programme have been restructured, rescheduled, and/or combined with other courses to improve coherence of the course content. The number of 3 EC courses has decreased, especially in period 1 of year 2, where students formerly had four 3 EC-courses, with a remarkably high workload.

The redesign will continue for the master's programmes Plant Biotechnology and Plant Sciences. The programmes plan to improve the coherence of the curricula and the specificity of the master's by redefining the focus of both programmes and their specialisations.

For the master's programme Plant Biotechnology, it's the plan to strengthen the focus on fundamental academic research on molecular biological issues such as studying molecular plant-environment interactions to improve crop resilience. This will be complemented with a strengthened focus on bioinformatics and data science. For this programme it is also the aim to strengthen the distinctiveness of the three specialisations. This will be done by redesigning the Thesis Tracks in each of the specialisations.

The master's programme Plant Sciences plans to develop a new course for the compulsory core that aims to introduce the broad plant science domain including related societal perspectives. As this new course will be compulsory, this will help to improve cohort building among students.

Furthermore, the master's programmes plan to develop online modules to prepare future students of the two master's programmes for their study at Wageningen University. The online modules will replace harmonisation courses with a high demand. Some new courses will have to be developed whereas other courses

can build on courses in the online Plant Breeding programme.

Admission requirements

Students are admissible to the bachelor's programme with a vwo diploma with the profile Nature and Technology and/or Nature and Health. There are opportunities for admission based on other diplomas. For example, there is the possibility for admission of students aged twenty-one or older through the so-called Colloquium Doctum.

For the master's programme Plant Biotechnology, the entry requirement is a bachelor's degree in plant sciences, Biotechnology or Molecular Life Sciences, a bachelor's degree in Biology (with CROHO 56860 or 59325), or equivalent.

For the master's programme Plant Sciences, the entry requirement is a bachelor's degree in plant sciences, a bachelor's degree in Biology (with CROHO 56860 or 59325), or equivalent. In addition, admission is possible with a university bachelor's degree in International Land and Water Management, Biotechnology, Biology, or Life Science and Technology. A student may also be admitted with a number of defined bachelor's degrees. Eligibility in all these cases depends heavily on subject choice and specialisation.

For the master's programme Resilient Farming and Food Systems, the entry requirement is a bachelor's degree in plant sciences, Animal Sciences, or equivalent. The norm for this equivalence is an assessment of the student's experience with agricultural sciences, biology, and social sciences. Also, the experience with statistics, mathematics and research methodology is assessed. The mastery will be weighed by the Admission Board per individual application.

Staff

The programmes present a list of 350 lecturers teaching in one or more of the four programmes. The lecturers come from the various chair groups of the Department of Plant Sciences. Around 150 lecturers hold at least the UTQ. Just under one hundred lecturers are in the process of obtaining the UTQ. Of the other lecturers, it is not recorded whether he or she holds the UTQ. Recently, the university adopted new policies to achieve better registration.

The university stimulates its staff to evaluate and further improve their English language skills, as stated in the university's Code of Conduct for Foreign Languages: 'All teaching staff at Wageningen University must be proficient in English. All lecturers are asked to evaluate and, if necessary, improve their level of English language proficiency. During recruitment and selection of new lecturers, explicit attention will be paid to their language proficiency'.

Considerations

The panel has established that the contents of the four programmes enable students to achieve the intended learning outcomes. The bachelor's programme and the three master's programmes have clearly translated the intended learning outcomes into the educational programmes. In the eyes of the panel, the admission requirements of both the bachelor's programme and the master's programme adequately match the programmes.

The panel understands that it is difficult for the programmes to keep up with trends in society as these trends are rapid and by the time courses are developed, they may be partially outdated again. From the interviews and documentation, the panel concludes that the programmes are nevertheless managing to keep the curricula well aligned with the changing

outside world. The panel suggests a greater focus on phenotyping in the (redesigned) programmes. This dovetails nicely with the focus already on computational science.

The previous accreditation panel recommended ending the practice of master's students participating in bachelor's courses by creating two versions of the course, a regular version for bachelor's students and an accelerated version with more advanced learning outcomes for master's students. The current panel discussed deploying courses for both bachelor's and master's students. The panel believes that the university has found an effective way in this, with limited drawbacks. The panel appreciates the addition of courses available exclusively to master's students. In addition, good measures have been taken to regulate the number of master's students in bachelor's courses. However, it remains relevant to keep exchange possible. One example is taking the advanced statistics course, which is compulsory for master's students from outside Wageningen.

The university chooses to offer programmes with a strong scientific character. In their SWOT-analyses, the programmes indicate that this means that students might not have the optimal skillset for a career outside academics and may have moderate insight into non-academic professions. The programmes themselves indicate as a solution that more 'real-life' learning could be helpful. Students in both the bachelor's programme and the various master's programmes are also asking for more practice in the programme, the panel notes. The panel supports the programmes' intention to take care of this and recommends including this topic as one of the spearheads in the redesign of the curricula.

In the eyes of the panel the didactic concept of the programmes structures the programme and

supports the learning process of the students. The educational formats are adequate. The committee is positive about the impact of the dedicated focus on bachelor skills through the Academic Journey approach in the redesigned bachelor's programme. The panel notes a particularly good atmosphere. Students and alumni indicate that they find the lecturers very approachable and helpful. According to the students, there is no hierarchy, and the teachers and staff have genuine interest in students.

The panel observed that the programmes have a strong teaching team. The various disciplines are well represented by the input of staff from a variety of research groups, as is practical and scientific experience in the various fields of work. The panel observes that the staff is also qualified for the execution of the programme in terms of educational expertise. The panel thinks the number of staff with a teaching qualification (UTQ) could be higher based on the list of staff and qualifications. However, the panel understands from the interviews that the lecturers who are still in the process of obtaining the UTQ are the young staff who have only been employed for a brief time. The panel notes that all staff members have adequate English language skills for teaching which is guaranteed by the university's policy. The panel appreciates the opportunity to get an appointment with an emphasis on teaching, which increases the number of lecturers with a focus on developing and delivering teaching. A concern is still the high workload, which was also mentioned by teachers in the interviews. Especially in times of curricula redesign, this is a concern that deserves management attention, the panel noted.

The panel understood from the interviews and documentation that there are differences in the approach to supervision of theses. In the experience of the students some supervisors are

exceptionally good, but if you are unlucky there are also a few that do not offer a good quality of supervision. The panel notes that the programmes are aware of this, and that there is consultation between the (supervisors in the) chair groups on the organisation of supervision. The intention is not to equalise, but to calibrate. The panel appreciates this approach.

The tutoring and provision of information to students are conducive to study progress and tie in with the needs of the (international) students and students with functional disabilities.

The panel was impressed by the specific facilities available for the Plant Sciences domain. The panel visited some of the facilities during the visitation visit, namely the parts of the Plant Eco-phenotyping Centre (NPEC) located in Wageningen, the Netherlands. The NPEC is a joint initiative of Wageningen University & Research and Utrecht University. The panel learned from the interviews that students also have the opportunity to gain experience about these facilities and carry out work here in the education programme. There is also scope for bachelor students to learn about the facilities, the panel noted. The students value the high quality of facilities.

The panel has some specific considerations regarding the bachelor's programme Plantenwetenschappen. The panel notes that students highly appreciate the number and high variety of practicals that are offered. They also like the high number of contact hours, which motivates and establishes a strong connection with peers. Students feel heard, seen, understood, respected, and appreciated by all the staff (study advisers and teachers). Also, the high quality of facilities is valued.

The previous accreditation panel recommended that the bachelor's programme pay more structural attention to social and ethical aspects. The current panel is pleased to see that, although no dedicated curriculum for social and ethical aspects has been added, attention to these aspects has increased sufficiently.

The first experiences with the redesigned curriculum are known. Interviews and documentation show that the subjects are better aligned, partly because of the clearer learning lines. As mentioned, experiences with the skills courses are positive. It makes the students more aware of their programme and their own actions in it. There is a good balance between general subjects and specific subjects around plant sciences. The panel appreciates the stronger focus on (agro)ecology to connect better to the current discussion around sustainable agriculture in society and provide a stronger foundation for students who want to continue with the master's programme Resilient Farming and Food Systems.

The panel has some specific considerations regarding the master's programme Plant Biotechnology. This master's programme has a lot of flexibility in shaping a programme according to students' own interests, which students appreciate, notes the panel. The programme starts with an introductory course that is valuable for a joint start, both socially and in terms of content. It has added value, according to the panel, that students from diverse backgrounds can learn from each other in the programme. For the redesign of the programme, the panel recommends paying explicit attention to the current student-reported concurrent programming of interesting and compulsory courses. As mentioned earlier, it is also wise to reconsider the profiling of specialisations in the redesign. Students sometimes feel choosing a specialisation

as a constraint. The question is to what extent this structuring is necessary to achieve the intended learning outcomes, or whether there are more flexible options.

The previous accreditation panel recommended paying attention to students' comment that they perceived the teaching as academic, with too little recognition of the level of student responsibility that should be expected at master's level. The current panel notes that the programme itself observes that there is still work to be done here and notes that the programme is paying sufficient attention to this when redesigning the programme.

The panel has some specific considerations regarding the master's programme Plant Sciences. Based on the interviews and documentation, the panel notes that there is overlap between the specialisations. The panel thinks it would be good to rethink the delineation of the specialisations when redesigning. Incidentally, the panel notes that students highly value the opportunity to put together their own programme.

The panel notes that the programme is paying attention to challenges in terms of scheduling, partly based on a recommendation from the previous accreditation panel.

The previous accreditation panel recommended a greater emphasis on soft skills, which are considered important by future employers, and a greater focus on bioinformatics, quantitative analytical skills and dealing with big data in general. The current panel notes that the focus on soft skills is extensive.

The panel challenges the programme to look for ways in the redesign to strengthen the interdisciplinary nature of courses and pay more

attention to practical applications of innovative topics in courses, such as AI, data analytics and other recent technologies. Students also indicate that they would prefer to be trained in looking at the entire system, rather than studying only part of it. Finally, the panel recommends that the redesign should scrutinise and reduce the reported overlap between bachelor's and master's courses.

It became clear to the panel that the international students have a distinct experience of the programme than the Dutch students who also took the bachelor's at Wageningen University. The students (international students in particular), for example, miss the formation of a group at the start of the programme, mainly because they must take a number of general courses where students from multiple programmes join. In 2018, the previous accreditation panel already recommended further action to make the common core truly effective in building a recognisable cohort of the students. The current panel considers it a logical step by the programme to stop the February intake, which was not beneficial to the cohesion of the cohort of students. In addition, the panel finds it a good development that Academic Preparation Week has been strengthened. These actions have strengthened the cohort feeling. However, the panel recommends an even greater focus on cohort cohesion.

The panel notes that for international students and students who took a bachelor's elsewhere, there is a lack of overview of for example planning, exemptions and electives. The panel notes that the programme is aware of this and proposes measures.

The online learning variant is a valuable addition to regular full-time education, the panel notes. Although it is not chosen by a large group of

students, it is a very suitable learning environment for the current group of students, allowing them to combine a job and studying well. The teaching and contact with teachers are good and inspiring, students indicated. The panel recommends that the programme look again at opportunities to also be able to conduct the thesis phase remotely. Students indicated that it is not feasible for all students to come to Wageningen for a longer period.

The panel has some specific considerations regarding the master's programme Resilient Farming and Food Systems. The panel notes that the programme strikes a good balance between life sciences and social sciences thanks to its interdisciplinary nature. The content of the programme and the diversity of disciplines are highly relevant and appreciated by students, the panel notes from interviews and the documentation. It addresses current and pressing issues and is adapted to the challenges of today and tomorrow.

The previous accreditation panel noted that the diversity of the student population poses a challenge in determining the appropriate level and content of courses. In response, the programme has strengthened study advice and Academic Preparation Week, among other things. The current panel sees that the adjustments are having the right effect, while continuing attention to this issue is needed.

Students are happy with the number of electives they can choose from, the panel notes. This allows them to personalise their study programme and be unique. However, the two specialisations seem to have little meaning and limit interdisciplinarity, following the interdisciplinary first joint modules in the programme. The panel understands that there are also internal discussions about this and recommends that

the specialisations, as with the other masters, be scrutinised during the redesign.

The panel recommends the programme to pay sufficient explicit attention to economic aspects. The panel sees that this is limited and implicitly present. The students mention this themselves and indicate that they would also like to see the topic of spatial planning expanded in the programme.

From the student chapter, the panel notes that students would like to see more interactive teaching methods, such as problem-based teaching, art-based teaching, discussion-based teaching, workshops, guest lectures and engaging students' opinions. They indicate that the diversity of teaching methods offered will help them understand knowledge at various levels. Now, they experience too much group work in almost all subjects, which is very time-consuming in addition to individual assignments and prevents them from getting personal feedback on their work. The panel recommends that the programme take note of this and make use of the expertise regarding interactive teaching methods that already exists in various chair groups.

Regarding the Double Degree, the panel has the following comments. As is not unusual with a Double Degree, students face the undermining differences in guidelines and information provision between the two universities. According to students, this sometimes leads to ambiguity. Also, according to the panel, it would be good to revisit the Double Degree curriculum when revising the master's programme. For example, the place of the internship in the programme is named as inappropriate.

In summary, according to the panel, the curriculum, faculty, and facilities for all four programmes form a cohesive, inspiring learning

environment. Taking these considerations into account, the panel assesses that the bachelor's programme Plantenwetenschappen, the master's programme Plant Biotechnology, the

master's programme Plant Sciences and the master's programme Resilient Farming and Food Systems meet this standard.

Student assessment

Standard 3: The programme has an adequate system of student assessment in place.

Findings

The bachelor's programme and the three master's programmes present an overview of the forms of assessment per course. The intended learning outcomes to be assessed are indicated for each assessment. This overview shows that frequently used assessment forms are written tests (open and/or closed questions), assignment (reflection) report, oral presentation, other assignment, and performance.

With the redesign of the curriculum, the bachelor's programme also investigates course assessments and explores options for formative and programmatic assessment.

The exams for the online specialisation Plant Breeding of the master's programme Plant Sciences are all online. Forms of assessment are written tests (open and closed questions), assignments (for example a group assignment, an essay or a reflection) and for one course an oral assessment. The exams take place at the end of each course. A typical exam takes about 2 hours. The exams are proctored. A proctored exam is an online exam that is closely monitored to ensure the quality of the exam.

To properly assure the quality of interim examinations and final examinations, there are institution-wide guidelines and instructions for assessment. These guidelines and instructions include the following: the method of testing whether the student has met the learning outcomes; the procedures for testing in individual teaching methods; the role of assessment strategies and assessment criteria in the examination

per course; and the supervision on these aspects by the Examiners and the Examining Boards.

Wageningen University has four Examining Boards: Life Sciences, Social Sciences, Environment and Landscape, and Technology and Nutrition. Each of the boards is responsible for the examination arrangements for one of the four groups of study programmes. Joint degrees have their own specific Examining Boards. The four programmes in the Plant Sciences domain fall under the Examining Board Life Sciences. This Board consists of a chairman, a secretary, a second secretary, six members employed by the University and one external member (employed by Utrecht University).

The Examining Board evaluates the sets of study components, approves exemptions, and determines the results of the final evaluations of the study programmes. The Examining Board is also responsible for assuring the quality of interim examinations and final evaluations. The Examining Board periodically consults with the programme directors.

Considerations

The panel judges that the programmes have an adequate, solid assessment system and assessment procedures. The system is adequately based on the university wide policy, the panel notes. Multiple adequate assessment types are implemented in the programmes: from written exams to (individual and group) assessments. The panel believes that the variety of assessment formats allows students to develop the necessary knowledge and skills.

The panel appreciates the frequent use of group work, which is an appropriate assessment of the intended learning outcomes. However, it did occur to the panel from the interviews that preparation for working together and, for example, giving feedback to each other could be done better and earlier. The panel notes that the guidelines for courses differ in how they execute group assignments. It might be wise to use unambiguous guidelines for this, the panel thinks.

According to the panel, the procedures for assessing the final product of the programmes, the thesis, are clear and the assessment itself is sound. However, the panel notes that the feedback on assessment forms of theses is not always of the same level. In a number of cases, for example, the feedback is limited or only mentions points for improvement, so that the grounds for the judgment are not in line with the outcome from the completed Rubric. The panel observes that the programmes pay attention to the justification on the forms and recommends that the programmes continue this attention, for example in calibration sessions with each other to assess whether the justification for a judgement can also be followed by outsiders.

In interviews with management, lecturers, the Examining Board and students, the panel discussed at length how programmes deal with the use of AI by students. It became clear to the panel that there is a lot of focus on this issue within the university. Guidelines are in use and the university is tightening them further, the panel noted, but programmes would benefit from a stronger central policy, according to the panel. Students must indicate in their thesis whether and how they have used AI, but it is not yet clear what the implications are for assessment. Is the assessment lower if AI has been used for reporting, for example? The panel suspects that there are now differences between

assessors and that both students and examiners would benefit from clearer guidelines and implications.

The programme uses assessment forms prepared centrally in the university, for example when assessing the internship. Based on the interviews and documentation, the panel finds that these general forms do not always fit well with the objectives to be assessed. Teachers use the option for substantiation in the text box to supplement the Rubric that does not match the objectives. The panel finds it undesirable that the assessment criteria in the rubric cannot be adapted to the actual situation and recommends allowing the possibility of adaptation when this is necessary for alignment with the learning outcomes.

The panel notes that suitable testing is deployed for the online specialisation Plant Breeding, which students can take flexibly and online. Students, who live in different time zones around the world, are given the opportunity to take an assessment at a time convenient to them, so they do not have to be available for an assessment in the middle of the night, for example. The panel advises the programme to keep a close eye on the reliability of the assessment now that students are given the same assessment at different times.

According to the panel, quality assurance of assessment is ensured by an initiative-taking Examining Board for the programmes. The Board, focusing on a group of programmes, show sufficient knowledge of the individual programmes and their assessment. Since the previous accreditation, the capacity of the Board is sufficiently increased, and its agency in relation to the rather autonomous Chair Groups is improved. For ensuring the quality and uniformity of assessment in general, the panel appreciates

the increased use of calibration sessions in which assessors participate.

Taking these considerations into account, the panel assesses that the bachelor's programme

Plantenwetenschappen, the master's programme Plant Biotechnology, the master's programme Plant Sciences and the master's programme Resilient Farming and Food Systems meet this standard.

Achieved learning outcomes

Standard 4: The programme demonstrates that the intended learning outcomes are achieved.

Findings

Bachelor's programme Plantenwetenschappen

The bachelor thesis Plant Sciences (18 EC) is the concluding part of the bachelor's programme and aims to assess whether the students meet all the intended learning outcomes of the programme. In particular, it involves demonstrating the ability to prepare, conduct and report verbally and in writing on a research project under supervision. The bachelor thesis is an individual project. A component of the thesis is self-reflection. The aim of this is to look back at the own abilities, skills, experiences, and choices in the bachelor's programme, and to look ahead at your learning goals and wishes for the thesis and further study planning. Research competences and experimental skills are also assessed, as well as a concluding discussion and an oral presentation.

After the bachelor's programme, students have access to several master's programmes. The bachelor's programme leads to the master's programmes Plant Sciences, Plant Biotechnology and Resilient Farming and Food Systems. The alumnus also has unconditional access to Bioinformatics and Development and Rural Innovation. Besides the programmes to which students have direct access, there are opportunities to move on to other master's programmes.

Master's programme Plant Biotechnology and master's programme Plant Sciences

With the master's programme thesis (36 EC), the programmes aim to assess seven of the eleven intended learning outcomes. The thesis consists of a performance (40%), an assignment report (50%), an oral presentation and an oral defence (both 5%). All components must be assessed with a 5.50 for a satisfactory final grade.

In the internship, the programme assesses the intended learning outcomes on translating scientific knowledge into relevant solutions to complex problems, on experiencing the junior academic working environment and on reflection on personal knowledge, skills, attitudes and performance. Cooperating in a multi-disciplinary intercultural team in different team roles, is assessed in group projects such as Academic Consultancy Training.

The programmes prepare students for a wide variety of jobs as plant scientists, crop production specialists, or in consultancy or management in agribusiness, the plant breeding industry, and in governmental and non-governmental organisations.

Master's programme Resilient Farming and Food Systems

With the master's programme thesis (36 EC), the programmes aim to assess the majority of the intended learning outcomes. The thesis consists of the same components with the same weighting as for the other two master's programmes.

In the internship, the programme assesses the intended learning outcomes on translating scientific knowledge into relevant solutions to complex problems, on experiencing the junior academic working environment and on reflection on personal knowledge, skills, attitudes, and performance. Cooperating in a multi-disciplinary intercultural team in different team roles, is assessed in group projects such as Academic Consultancy Training.

The same arrangement of the thesis applies to the double degree. The student carries it out at one of the two universities. The thesis in the double degree is co-supervised by staff from both universities.

The programme prepares students for a wide range of positions in consultancy, policy, (social) entrepreneurship, or research & development that are related to multiple land use, agroecology, and sustainable food systems on a global scale.

Considerations

To form an opinion about the final level of the students, the panel read recent theses of a total of fifteen graduates per programme and viewed the assessments of these works. The selection included theses with a variety of topics and a distribution between lower and higher grades. Theses from all specialisations were considered, including theses from the Double Degree and the online variant. The panel found that all the theses attested to the bachelor's or master's level and the content matches the profiles of the programmes. The quality of the works varies, with the grade given corresponding to the panel's assessment of quality. In general, the panel was pleased with the quality of the work. Adequate research ability is evident in all theses. This finding is in line with the strong research

profiling of the bachelor's programme and the master's programmes.

From surveys and conversations with alumni, the panel concludes that the programme prepares students very well for the job market and that students end up in positions that fit the intended exit profiles.

The previous accreditation panel noted that students felt the programme could be more initiative-taking in highlighting graduate opportunities and in bringing in more representatives from the field, who could share their own experiences with students. The current panel notes that this need is still present and believes that programmes could pay more attention to this.

A general observation of the previous accreditation panel was that the panel would like to make for all four programmes is that efforts could be made to establish alumni policies at programme level. From the interviews, the panel established that initiatives in this respect were currently limited to the central university level. Existing alumni relations at programme level were mostly informal, which means that the possibilities that alumni have to offer were not optimally used. Noting that the situation in recent years is still like the observations described by the previous panel, the current panel recommends that programmes strengthen formal contacts with alumni.

Taking these considerations into account, the panel assesses that the bachelor's programme *Plantenwetenschappen*, the master's programme *Plant Biotechnology*, the master's programme *Plant Sciences* and the master's programme *Resilient Farming and Food Systems* meet this standard.

Attachment 1: assessment panel

Prof.dr. Stanley Brul chair
Chair Molecular Biology and Microbial Food Safety, UvA

Marloes van Dort
Policy advisor Erasmus School of Health Policy & Management, EUR

Philippe Baret
Professor UC Louvain

Erik Alexandersson
Professor Lund University

Thomas Westerhuis Student-member
Student MSc Biomoleculair Sciences RUG

Linda van der Grijspaarde supported the panel as a certified secretary.

All panel members have completed and signed a statement of independence and impartiality, and these have been submitted to NVAO.

Attachment 2: site visit program

Monday 14 October 2024

9.30	Arrival panel	
10.30	Management of programmes	• Dean of education • Staff member Board of Education • Chair Programme Committee Plant • Chair Programme Committee MSc Resilient Farming and Food Systems • Deputy Programme Director • Programme Director
11.30	Guided tour	• Programme Director • 3d year student MSc Plant Sciences • Alumnus MSc Plant Biotechnology
12.30	Lunch	
13.30	Teaching staff bachelor BSc Planten-wetenschappen	• Member Programme Committee Plant • Member Programme Committee Plant • 6 lecturers from various Chair Groups
14.30	Students bachelor BSc Planten-wetenschappen	Nine students of all years, of which three members of the Programme Committee Plant
15.30	Teaching staff master's programme MSc Resilient Farming and Food Systems	7 lecturers from various Chair Groups
16.30	Students master's programme MSc Resilient Farming and Food Systems (including alumni)	• 6 students of all years, of which one members of the Programme Committee MSc Resilient Farming and Food Systems • 2 Double Degree students • 2 alumni

Tuesday 15 October 2024

9.00	Examining board/ study advisors	• Chair Examining Board Life Sciences • Secretary Examining Board Life Sciences • Secretary Examining Board Life Sciences • Study Adviser Online Master Plant Breeding • Study Adviser MSc Plant Biotechnology and MSc Resilient Farming and Food Systems • Study Adviser MSc Plant Sciences • 2 Study Advisors BSc Plantenwetenschappen
10.00	Teaching staff master's programme MSc Plant Biotechnology, MSc Plant Sciences, MSc Plant Sciences-DL	• 4 lecturers MSc Plant Biotechnology, of which one member Programme Committee Plant • 5 lecturers MSc Plant Sciences, of which one member Programme Committee Plant
11.00	Students master's programme MSc Plant Biotechnology, MSc Plant Sciences (including alumni)	• 8 students of all years, including two members Programme Committee Plant • 3 alumni
12.00	Students master's programme MSc Plant Sciences-DL online (including alumni)	• 5 students
13.00	Lunch and deliberation time	
14.30	Preliminary feedback	
15.30	Development dialogue (4 programmes)	Representatives of the programmes

The open consultation took place online prior to the visitation. Two people signed up for this. The chair and secretary received information from the staff members and shared the findings with the entire panel for inclusion in the judgment process.

Attachment 3: Recommendations from previous assessment

The underlying text is taken verbatim from Wageningen University's document 'Recommendations previous accreditation Plant programmes (BPW, MPB, MPS, MRF): actions and reflections'.

The previous panel visit in 2018 provided valuable feedback on strong points and points for improvement, that aligned well with ongoing innovation projects, such as the MOA Name Change Project and the Redesign Plant Sciences Project, and also brought new perspectives. The recommendations been elaborated over the past six years in broad cooperation with the Study Programme Committee, academic staff, students, and representatives from the professional field.

General recommendations previous accreditation

General - Recommendation 1: All programmes have an adequate number of weekly contact hours and are sufficiently feasible. Important to note is the demand-driven system of student guidance, in which study advisors play an important role. While the panel appreciates the principle of leaving much of the initiative to the student, it wonders whether this works for all parts of the student community.

At WU-level, there has been a discussion on the role and tasks of study advisors, finding the balance between supporting students well and keeping a feasible workload. This resulted in the policy document Study Advice Service Level Commitment 2023 (document 2.1 g.). In a workshop with the Programme Team Plant Sciences, we translated this into a new team strategy for study advice:

For BPW the "BPW Information timeline" (document 2.2.b1.) was developed to explain the set-up of study advice and direct the students to the dedicated "BPW Opleidingssite" on Brightspace.

For MPS, MPB and MRF, all new students receive an information package including the booklet "MPS, MPB & MRF in Wageningen: Getting started for September 2024" (document 2.2.b2) and an invitation to meet the study advisors online before their arrival in Wageningen. Once in Wageningen this is followed with intake sessions and access to the "MPS MPB MRF Programme Site" on Brightspace. With this enhanced approach it is clear to students what support and services are available during their studies, which was already noticeable in the reduced number of questions received in the general mailboxes at the start of this academic year.

At WU-level, the website Student Guidance - Find your Way provides an overview of all available support options. In addition, special facilities and support are available for students with a functional disability.

Lastly, new MPS, MPB and MRF students are recommended to follow the course Academic Preparation Week MPS, MPB, MRF (YPS10301). This 3-day course takes place in the week before the start of the Academic year and familiarises the student with the WUR course (infra)structure, so they feel well-prepared for their first "real" courses. Furthermore, the course helps students meet their new classmates and increase social cohesion, especially during the newly added Project Day, which focusses on problem solving in an interdisciplinary and international group.

General - Recommendation 2: A specific recommendation is to put an end to the practice of master's students participating in bachelor's classes by creating two versions of the course, a regular version for bachelor's students and a fast-track version with more advanced learning outcomes for master's students.

As part of a WU-wide policy, from the academic year 2024-2025 onwards a new category of advanced courses will be exclusively available to master students (code-4 courses), which will limit the participation of BSc students in MSc courses.

However, because of the way the education system at WUR is structured (financially), with courses being shared between many programmes, it is not possible to end this practice completely for our programmes. Furthermore, we also see several benefits of MSc students being able to follow a limited number of BSc courses, including allowing students who are only lacking experience in one or two subjects to start their (second) MSc without study delay.

Nevertheless, we have taken two actions to reduce the number of MSc students in BSc courses:

1. The February start is no longer available to students in MPS, MPB and MRF, which limits master's students participating in bachelor's courses to Period 1 and 2.
2. The Redesign of MPB and MPS includes the development of online modules to prepare new MPS and MPB students for their study at Wageningen University. The online modules will replace harmonisation courses with a high demand. Some new courses will have to be developed, and some courses can build on existing course materials. In July 2024 the Board of Education decided to grant an education innovation budget for this project.

Recommendations previous accreditation of the BSc Plant Sciences

BPW - Recommendation 1: A recommendation is to pay more structural attention to societal and ethical aspects. To ensure that these issues are more clearly recognizable to students throughout the courses, the programme could consider developing a dedicated learning line.

While the programme has not adopted a dedicated learning line for societal and ethical aspects, several actions have been taken to make these aspects more visible to our students in the course content.

In the Redesign of BPW, one of the main changes is an increased focus on Agroecology to educate students more about the discussion around sustainable and circular agriculture, which are often topics in politics and popular media nowadays. Additionally, new excursions are added in the courses NEM11808 and CSA10302 to bring students out into the field and learn how Plant Sciences impacts everyday practise and food production. This is further emphasized in the new Academic Journey, where students are encouraged to think about their future job by studying professional profiles and read the stories of alumni.

Within the BPW programme, ethics are always discussed as part of the course content of courses that handle topics closely related to ethical discussions such as Plant Breeding and Plant Biotechnology. We believe that this course-content related approach keeps students more engaged in the complexity of ethical dilemmas and encourages them to explore this further in their electives or MSc.

In 2021 we have made a fingerprint of all skills in BPW-courses, including "practical ethics and dilemma's", which can be used by lecturers and students to gain more insight into where skills are practiced during the programme (see figure 1 below). This fingerprint will be updated this year for the new BPW-curriculum.

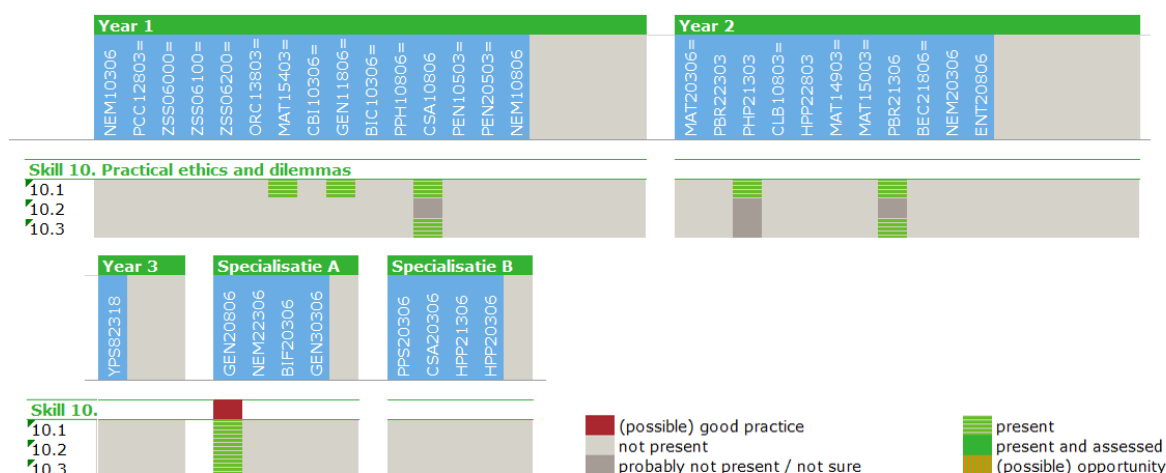


Figure 1: Fingerprint of the skills "Practical ethics and dilemmas" in the BSc Plant Sciences. The courses are listed in blue, organised by year and specialisations. 10.1, 10.2 and 10.3 are three different learning levels that were formulated by the larger BSc Skills project at WUR. 10.1 = Ethical dilemmas and practical ethics (cognition), 10.2 = Ethical reflection (skill) and 10.3 = Personal ethics (attitude).

BPW - Recommendation 2: The panel supports the current initiative to map the (knowledge and skills) curriculum to minimize overlap between courses and between the bachelor's and master's programme Plant Sciences.

Part of the BPW Redesign was implementation of the skills learning trajectory under the name "BPW Academic Journey", 16 skills were mapped across the programme (including type of assignment and whether students receive instructions) and this information is made accessible for students and lecturers through the Academic Journey Brightspace.

We also continued with mapping the knowledge curriculum. In lecturers' meetings, course content was discussed and compared to prevent overlap and develop learning lines to increase coherence between courses in the curriculum.

The Course Library project was continued through analysis of the curriculum to map the concepts, principles, theories, methods and assessments that are covered in the courses. Recently, resources have become available to make this information accessible to teachers as part of the annual Education Modification Cycle, an existing and known process at WU to prepare the Study Handbook for the next academic year. A first result is the structured mapping of assessment types per course which we used to develop the assessment matrices for BPW as well as all master's programmes for Standard 3. Assessment (see documents 3.3 a. – 3.3 f.). Further development of the Course Library project is now part of "Smarter Academic Year" a national survey by the Ministry of Education, Culture and Science (OCW), in which 15 higher education institutions work on pilot projects with the aim to reduce pressure on students and staff. Once completed, the Course Library can serve as a base to define coherent learning paths, linked to subject content and assessment, and to develop online teaching materials to refresh knowledge.

Recommendations previous accreditation of the MSc Plant Biotechnology

MPB - Recommendation 1: The panel was pleased to find that the core curriculum of the master's programme Plant Biotechnology was redesigned since the previous assessment, with the intention to increase its specificity and introduce the recently established dual focus on technology and societal aspects into the courses. Nonetheless, the panel believes that further action is needed in order to make the common core truly effective in building a recognisable cohort of MPB students.

As of September 2020, we stopped the February intake for MPB, which was not beneficial to the cohesion of the relatively small cohort of students (50-60). In parallel, we strengthened the Academic Preparation Week (discussed in General Recommendation 1) and converted the course Current Topics in Plant Biotechnology into a starting course for the master's degree in the same academic year. These actions have improved the effectivity of the common core in building a recognisable cohort of MPB students.

MPB - Recommendation 2: At present, the considerable flexibility in the programme seems to lead to some fragmentation. After studying material from a number of sample courses, the panel is satisfied with the level and content of the curriculum, which is clearly academic in orientation. Even so, it is worth looking into the opinion expressed by some students that the course content is sometimes too basic and not entirely representative of the cutting-edge research that takes place at the relevant WU Chair Groups. A specific remark that was made with respect to the master's programme Plant Biotechnology is that some students perceive the teaching as rather scholastic, with too little recognition of the level of student responsibility that could be expected at master's level.

With the measures described under General recommendation 2, we expect that this issue is partially resolved by the reduction of courses in which BSc and MSc students are mixed. However, we recognise that more work needs to be done here, and we are currently further developing the academic perspective of the MSc Plant Biotechnology based on feedback from and discussions with the Programme Committee, academic staff, students, and representatives from the professional field as part of the upcoming Redesign of MPB.

Recommendations previous accreditation of the MSc Plant Sciences, including the online master Plant Breeding

MPS - Recommendation 1: The master's programme Plant Sciences spans a wide variety of specialisations on different spatial levels (including the online specialization Plant Breeding) that start directly in the first period of the first year. This setup guarantees that students enjoy maximum freedom of choice, but at the same time the flexibility and large number of courses also seem to pose challenges in terms of scheduling and keeping an overview of everything that is on offer.

We have improved our study advice to students as described under General Recommendation 1, which has already resulted in a reduced number of questions to study advisors and the general mailbox at the start of this academic year and we will continue to monitor and evaluate students' needs in this aspect.

MPS - Recommendation 2: The content of the curriculum ties in with the research of the WU Chair Groups and is topical and sufficiently innovative. Even so, the connection with the labour market could be strengthened. The panel supports the recommendation of the EAC to put more emphasis on 'soft skills', which are considered important by future employers, and to increase the attention for bioinformatics, quantitative analytical skills and handling big data in general.

Currently, soft skills are trained in the Academic Consultancy Training (YMC60809), Modular Skills Training (MOS) and during the Academic Internship, three compulsory components of MPS. A cluster with optional data science courses has been added to the common core of the master for students who wish to improve their data skills. Additionally, the focus on bioinformatics, modelling and data science in several existing courses has been enhanced in line with current research at chair groups.

Furthermore, the soft skills creativity, collaboration, intercultural communication and presentation have been added to Academic Preparation Week for new MPS students. The BPW-students that continue with MPS will have a strong foundation in skills after the Academic Journey, on which they can build in their MSc.

MPS - Recommendation 3: The panel especially appreciates the innovative online teaching in the Online Master Plant Breeding, which is a specialization of the Plant Sciences master's programme and to a certain extent functions as a 'laboratory' for innovative teaching from which the other programmes also benefit.

The innovation potential of the online master Plant Breeding regarding innovative online teaching proved valuable during the Covid pandemic, when almost overnight all teaching had to be converted from on-campus to online. The experience with proctored examination helped to develop secured online course exams. Currently, online teaching has also become a valued additional teaching approach in regular on-campus courses.

Recommendations previous accreditation of the MSc Organic Agriculture (current MSc Resilient Farming and Food Systems)

MOA - Recommendation 1: The interdisciplinary, internationally oriented profile of the master's programme Organic Agriculture (MOA) is highly attractive, but the panel wonders whether the current programme title fully reflects the broad scope of the programme.

Following the recommendation of the 2018-Visitation Panel, the Programme Committee started a trajectory to reconsider the programme name (see document 2.2 h.). The process involved desk research, and an international benchmark study combined with consultations and questionnaires among current students, alumni, staff of the programme, other stakeholders within WUR, and representatives of the professional field.

The new name 'Resilient Farming and Food Systems' combines the three unique characteristics of the programme:

- A link between farming and food;
- An explicit reference to the systems approach, more emphasis on social and environmental systems, holistic and integrative approach;
- The ambition of resilience: distinctive and more ambitious than 'sustainable'.

The trajectory resulted in the formal approval of the Professional Field Committee, the Programme Committee, the Board of Education, representatives from the 2018-Visitation Panel, and the Executive Board of "MSc Resilient Farming and Food Systems" as the new name for our programme as of the academic year 2023-2024. The Programme Committee is very pleased with the implementation of the new name, especially because the new name clearly resonates with current and new students of this master.

MOA - Recommendation 2: The panel is generally contented with the level and content of the integrated, interdisciplinary MOA curriculum that was designed to strike a balance between fundamental knowledge on the one hand, and its application in agroecology and sustainable for systems on the other. It particularly notes the international outlook of the curriculum, including the option for students to complete a double degree

from WU and ISARA Lyon. A major factor in successful cohort building is the MOA Masterclass that runs throughout the programme. Nevertheless, the panel notes that the diversity of the student population does provide somewhat of a challenge in terms of determining the right level and content for courses.

The diversity of the student community indeed is a challenge for an effective programme start. This is reflected by feedback from students and has been discussed extensively in the Programme Committee. As a result, several actions have been implemented:

- Strengthening of the study advice and Academic Preparation Week (general recommendation 1)
- The MRF Masterclass has been improved by linking the courses and the thesis more prominently with thematic evenings, organized by the students, on topics like designing your research, philosophy of science and research ethics. This course allows students to form a community of learners; to learn from each other's knowledge and experiences, and to share insights and skills.
- The content of P1 courses was improved, and better aligned to prepare for the compulsory P2 courses. This is reflected in new course names, adjusted course content and learning outcomes: Exploring the Future of Farming and Food (designed for students with a life sciences bachelor) and Introduction to Organic Production Systems (designed for students with a social sciences bachelor).
- Specific attention was paid to the two compulsory courses in period 2, regarding their complementarity, the connection with both preparatory courses in P1, study load and communication with students on course planning. This also resulted in new course names, adjusted course content and learning outcomes: Functional Agricultural Resource Management (F.A.R.M.) and The Politics of Food Systems Transformations.

MOA - Recommendation 3: Characteristic of the master's programme Organic Agriculture is the large share of group work, which is both an asset and somewhat of a liability.

Group work still is a point of attention. In this respect, the experiences with novel online and more individually oriented teaching methods that were gained during the Covid lockdown were valuable. It appeared that some of the measures taken to introduce and apply online elements in the courses were very successful in keeping the students involved in class work and individual assignments. As a next step, some of these online elements have been introduced in courses in a more permanent way. The balance between group work and individual assignments will be one of the topics in our plans for further development of the programme.

Attachment 4: reviewed documents

0. *Introduction and Reading Guide*

- 0.1. Cover letter BPW, MPS, MPB, MRF
- 0.2. Reading Guide
- 0.3. Domain perspectives and descriptions Plant Sciences & MRF
- 0.4. Recommendations previous accreditation
- 0.5. Questions to the panel
- 0.6. Overview existing documents BPW MPS MPB MRF

1. *Practical information for the visit*

- 1a. Overview interviews and participants 14-15 October 2024
- 1b. WU Campus map

2. *General information*

2.1. **General information WU**

- 2.1 a. Administrative data of the programmes
- 2.1 b. Governance structure and organization of WU degree programmes 2024
- 2.1 c. WU Vision for Education 2017
- 2.1 d. EER WU 2023-2024
- 2.1 e. Assessment Policy WU 2023
- 2.1 f. Framework for Education Wageningen University 2023-2024
- 2.1 g. Study Advice Service level commitment 2023
- 2.1 h. Language of the MSc programmes
- 2.1 i. Wageningen University & Research at a Glance 2023-2024

2.2. **General information study programmes**

- 2.2 a. Education Monitor BPW-MPB-MPS-MOA May2024
- 2.2 b1. BPW information timeline
- 2.2 b2. Getting Started September 2024
- 2.2 c. Student SWOT BPW 2023
- 2.2 d. Student SWOT MPB 2023
- 2.2 e. Student SWOT MPS 2023
- 2.2 f. Student SWOT MRF 2023
- 2.2 g. Final report new name Master Organic Agriculture_v1.1
- 2.2 h. Redesign Plant Sciences 2023
- 2.2 i. Joint letter of agreement DD Agroecology WU-ISARA
- 2.2 j. Renewal MSc 684 ISARA
- 2.2 k. Accompanying mail on Renouvellement MSc 684 ISARA
- 2.2 l. NSE2024_BPW_EN
- 2.2 m. NSE2024_MPB_EN
- 2.2 n. NSE2024_MPS-excl_DL_EN
- 2.2 o. NSE2024_MRF_EN

3. *Documents per standard*

3.1 **Standard 1. Intended Learning Outcomes**

- 3.1 a. BPW Profile and Intended Learning outcomes 2023
- 3.1 b. MPB Profile and Intended Learning outcomes 2023
- 3.1 c. MPS Profile and Intended Learning outcomes 2023
- 3.1 d. MRF Profile and Intended Learning outcomes 2023
- 3.1 e. Online Master Plant Breeding (MPS-DL) Profile and Intended Learning outcomes 2023

- 3.1 f. DD Agroecology (MRF-DD) Profile and Intended Learning outcomes 2023
- 3.1 g. Skills fingerprint BPW
- 3.1 h. Report Professional Field Committee 06-12-2023
- 3.1 i. Report MRF Alumni Event 08-06-2024
- 3.1 j. NIBI Arbeidsmarktonderzoek Werkgevers 2020-2021
- 3.1 k. NIBI Trendanalyse 2009-2021

3.2 *Standard 2. Teaching and Learning Environment*

- 3.2 a. Study programme BPW (curriculum)
- 3.2 b. Study programme MPB (curriculum)
- 3.2 c. Study programme MPS (curriculum)
- 3.2 d. Study programme MRF (curriculum)
- 3.2 e. Study programme MPS-DL (curriculum)
- 3.2 f. Study programme MRF-DD (curriculum)
- 3.2 g. Lecturers list with UTQ status
- 3.2 h. Admission criteria

3.3 *Standard 3. Assessment*

- 3.3 a. BPW assessment matrix 2023-2024
- 3.3 b. MPB assessment matrix 2023-2024
- 3.3 c. MPS assessment matrix 2023-2024
- 3.3 d. MRF assessment matrix 2023-2024
- 3.3 e. MPS-DL assessment matrix 2023-2024
- 3.3 f. MRF-DD assessment matrix 2023-2024

3.4 *Standard 4. Achieved Learning Outcomes*

- 3.4 a. Alumni BPW - transition to Master and outflow
- 3.4 b. NAE 2023 WUR Master - Tabellenboek
- 3.4 c. NAE 2023 WUR Master - Reading Guide
- 3.4 d. Alumni MPB factsheet
- 3.4 e. Alumni MPS factsheet
- 3.4 f. Alumni MOA factsheet
- 3.4 g. Career booklet MPS, MPB, MOA

4. *Selection of courses*

4.1 *BPW*

- HPP20306 - Physiology of Plants in Horticulture
- NEM10306 - Introduction Plant Sciences
- NEM22306 - Plants & Health I
- PPH10806 - Structure and Function of Plants

4.2 *MPB*

- MOB30806 - Regulation of Plant Development
- PHP32006 - Current Topics in Plant Biotechnology
- PPH31306 - Seed Science and Technology

4.3 *MPS*

- CSA34806 - Advanced Agronomy
- HPP32306 - Vertical Farming
- PBR30806 - Design of Plant Breeding Programmes

4.4 *MPS-DL*

- PBR23803 - Plant Biotechnology
- PBR31802 - Breeding for Quality
- PBR32303 - Wageningen Weeks 1

4.5 *MRF*

- FEM32206 - Agroforestry
- PPS31806 - Functional Agricultural Resource Management (F.A.R.M.)
- RSO30806 - The Sociology of Farming and Rural Life

5. *Thesis*

5.1 **BSc**

- 5.1 a. Study guide BSc Thesis Plant Sciences (NL)
- 5.1 b. Assessment form BSc Thesis Plant Sciences
- 5.1 c. Rubric BSc Thesis Plant Sciences
- 5.1 d. BSc Thesis and assessment forms selected students BPW

5.2 **MSc**

5.2.1 **MSc Thesis Course Guide WU**

- 5.2.1 a. MSc Thesis Course Guide WU 2023-2024
- 5.2.1 b. MSc Internship Course Guide WU 2023-2024
- 5.2.1 c. MSc Research Practice Course Guide WU 2020-2021

5.2.2 **Rubrics**

- 5.2.2 a. Rubric MSc Thesis WU
- 5.2.2 b. Rubric MSc professional internship
- 5.2.2 c. Rubric MSc research internship
- 5.2.2 d. Rubric MSc research practice

5.2.3 **Thesis and assessment forms selected students**

- 5.2.3 a. MPB
- 5.2.3 b. MPS
- 5.2.3 c. MPS-DL
- 5.2.3 d. MRF
- 5.2.3 e. MRF-DD

6. *Examining Board*

6.1 **Rules and Regulations**

- 6.1 a. Rules and Regulations Examining Boards WU 2023-2024

6.2 **Annual reports**

- 6.2 a. Annual reports Examining Boards 2020-2021
- 6.2 b. Annual reports Examining Boards 2021-2022
- 6.2 c. Annual reports Examining Boards 2022-2023

6.3 **Report Thesis review**

- 6.3 a. BPW Report thesis review of the Examining Board EBLs
- 6.3 b. MPB Report thesis review of the Examining Board EBLs
- 6.3 c. MPS Report thesis review of the Examining Board EBLs
- 6.3 d. MRF Report thesis review of the Examining Board EBLs

7. *Programme Committee*

7.1 **BPW-MPB-MPS**

- 7.1 a. PC annual reports 2020-2021 and plans 2021-2022 SPC BPW-MPB-MPS
- 7.1 b. PC annual reports 2021-2022 and plans 2022-2023 SPC BPW-MPB-MPS
- 7.1 c. PC annual reports 2022-2023 and plans 2023-2024 SPC BPE-MPB-MPS

7.2 **MRF (Previously MOA)**

- 7.2 a. PC annual reports 2020-2021 and plans 2021-2022 SPC MOA
- 7.2 b. PC annual reports 2021-2022 and plans 2022-2023 SPC MOA
- 7.2 c. PC annual reports 2022-2023 MOA and plans 2023-2024 SPC MRF