

# **DOCTORAL DEGREE REGULATIONS**

## **Wageningen University**

January 2017



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## **General provisions**

### Article 1 Definitions and general provisions

#### 1.1 Definitions

As used in these regulations, the following terms are defined below:

Act: the Higher Education and Research Act.

Regulations: these doctoral degree regulations, including the corresponding appendices;

The other terms appearing in these regulations have the same meaning as those same terms from the Act.

#### 1.2

When these regulations refer to a promotor or co-promotor, if reference is made to more than one promotor or co-promotor, this should be read as: promotors or co-promotors.

#### 1.3

For purposes of clarity and simplicity, the feminine form (she, her) is used in these regulations. Of course, these regulations apply equally to both men and women.

### Article 2 Introductory provisions

#### 2.1.1

At Wageningen University, the doctorate can be conferred based on the PhD thesis.

#### 2.1.2

The Academic Board confers the doctorate subject to the provisions in the Act and in these regulations.

#### 2.2.1

At Wageningen University, a joint doctorate can be conferred based on the PhD thesis.

#### 2.2.2

The Academic Board confers the joint doctorate together with one or more bodies authorised to confer the doctorate, the latter being linked to one or more partner institutes, on the basis of statutory provisions, these regulations and agreements made with the partner institute(s).

#### 2.2.3

For a joint doctorate, prior written permission must be received from the Academic Board for the PhD programme.

#### 2.2.4

Appendix 8 of these regulations contains additional rules on the joint doctorate.

### 2.3

The Academic Board enacts the regulations concerning the conferral of a doctorate after acquiring approval from the Executive Board.

## **The PhD candidate**

### Article 3 Qualifications for the doctorate

#### 3.1

To qualify for the doctorate:

- a. based on the provisions in Article 7.10a, first, second or third clause of the Act, the candidate must have earned the degree of Master at an institute of academic education which is recognised by the Academic Board;
- b. as proof of her ability to perform as an independent practitioner of science, the candidate must have written a PhD thesis or created a technological design; and
- c. must have written at least six and no more than eight propositions; and
- d. must have satisfied the other requirements in these regulations.

#### 3.2

In exceptional cases, the Academic Board can grant a doctorate to individuals who have satisfied the provisions in the first clause under b, c and d, but have not satisfied the provision in that clause under a.

#### 3.3

The PhD candidate must have demonstrable proficiency in the language in which the thesis is written at the level established by the Academic Board as described in Appendix 2.

## **The promotor and co-promotor**

### Article 4 Qualifications and tasks of the promotor

#### 4.1

A promotor can be a professor at Wageningen University (with the exception of a honorary professor) or at another accredited university.

#### 4.2

An honourably discharged professor retains her right to act as a promotor for candidates for whom she was already appointed as intended promotor for five years after her discharge.

#### 4.3

If the promotor to be appointed is not a professor at Wageningen University (and not recently was, as meant in article 4.2), the Academic Board also appoints a professor from Wageningen University as promotor.

#### 4.4

No more than two promotors will be appointed. The Academic Board can appoint more than two promotors only in exceptional cases. If multiple promotors are appointed, then they will determine amongst each other their individual tasks after consulting the PhD candidate.

#### 4.5

Individuals who have a family relationship with the PhD candidate, or have a relationship with the PhD candidate that might impair their objectivity, do not qualify for the position of promotor.

#### 4.6

The promotor has the task of supervising the PhD candidate and is responsible for the supervision. She ensures that the thesis satisfies the requirements pursuant to these regulations.

### Article 5 Qualifications and tasks of the co-promotor

#### 5.1

The promotor can request the Academic Board to appoint one or two promotors. If a single promotor is appointed, the Academic Board can appoint one or two co-promotors. If multiple promotors have been appointed, the Academic Board will appoint only one co-promotor, if requested to do so. In such cases, the Academic Board can appoint two co-promotors only in exceptional cases.

#### 5.2

The co-promotor is employed as a member of scientific staff, not necessarily at Wageningen University, and has earned a doctorate at an accredited university.

#### 5.3

Individuals who have a family relationship with the PhD candidate, or have a relationship with the PhD candidate that might impair their objectivity, do not qualify for the position of co-promotor.

#### 5.4

The co-promotor aids the promotor with the supervision of the PhD candidate. She determines whether the PhD thesis satisfies the requirements pursuant to these regulations and advises the promotor in this matter.



## **The thesis committee**

### Article 6      Composition and operation of the thesis committee

#### 6.1

The Academic Board appoints a thesis committee for every PhD candidate.

#### 6.2

The composition of the thesis committee is as follows:

- a. as chairperson, the rector magnificus in her capacity as chairman of the Academic Board, or her replacement;
- b. the appointed promotor(s) and co-promotor(s), including in any case one promotor who is (or recently was, as meant in article 4.2) a professor at Wageningen University;
- c. four opponents, as further described in Article 6.3, of whom at least one is (or recently was, as meant in article 4.2) a professor at Wageningen University.

#### 6.3

Professors or individuals who have earned doctorates can be appointed as opponents after the Academic Board has evaluated these individuals and determined that they are sufficiently qualified to be a member of the thesis committee.

Opponents must not be affiliated with or employed by the chair group of the PhD candidate or the chair group of one of the promotors or co-promotors. They may not have a family relationship with the PhD candidate or a relationship with her that might impair their independent judgement. They may not be a co-author in any of the thesis chapters.

#### 6.4

The chairperson appoints the primary promotor as secretary.

The chairperson cannot vote. The members referred to under clause 2 sub b jointly have a single vote, the other members as referred to in clause 2 sub c have one vote per person. The thesis committee makes decisions based on a simple majority of votes, unless stated otherwise in these regulations. The members can also submit their evaluation and their vote in writing to the chairperson. In any case, the chairperson calls a meeting if the required majority is not achieved by written ballot.

## **Application for the PhD defence and appointment of the promotor**

### Article 7 Application for the PhD defence

#### 7.1

At least six months in advance of the desired date of the PhD defence, the PhD candidate applies to the Academic Board by submitting the application form (Appendix 3) to the Secretariat; the application must include all the information referred to on the application form.

#### 7.2

The PhD candidate ensures that at the time of application she meets the education requirements referred to in Article 3 of these regulations.

#### 7.3

On the application form, the PhD candidate lists the name(s) of the proposed promotor(s), their teaching and research remit, university affiliation and work address, along with the same information for the proposed co-promotor(s). The application form is signed by the (first) proposed promotor.

### Article 8 Appointment of promotor and co-promotor

#### 8.1

Immediately after a PhD study begins, the Academic Board appoints a promotor and possibly (at the request of the promotor(s)) a co-promotor. If needed, upon application for the PhD defence as referred to in Article 7, either the promotor or PhD candidate can request the appointment of a different promotor.

#### 8.2

As a result of the request of the PhD candidate on the application form referred to in Article 7.1, the Academic Board appoints one or more promotors and possibly one or two co-promotors, if this has not yet occurred as referred to in Article 8.1.

#### 8.3

Preceding the appointment, the Academic Board can provide a hearing to the PhD candidate, the proposed promotor(s) and co-promotor(s).

#### 8.4

Both the PhD candidate and the appointed (co-)promotor must accept the appointment. By accepting her appointment, the (co-)promotor accepts the applicability of these regulations.

## **Evaluation of the PhD thesis and the propositions**

### Article 9 Evaluation by the promotor

#### 9.1

The PhD candidate submits the PhD thesis and the propositions to the promotor for her evaluation.

#### 9.2

In her evaluation of the PhD thesis and the propositions, the promotor takes the recommendation of the co-promotor into account.

#### 9.3

The evaluation of the PhD thesis takes place by reviewing it in accordance with the requirements in these regulations, especially regarding the requirements in Articles 12 through 14 and 18, as well as the attainment targets established by the Academic Board as set down in Appendix 1.

#### 9.4

The evaluation of the propositions takes place by reviewing them according to the requirements in Articles 12.3, 14.1 and 14.3, and according to general principles of morality and decency.

#### 9.5

If the promotor determines that the PhD thesis and the propositions have satisfied the requirements, she approves the thesis and the propositions.

#### 9.6

The promotor (or primary promotor if there is more than one) informs the Academic Board and the PhD candidate about this approval. This approval is not a final decision, but a recommendation to the Academic Board.

#### 9.7

The Academic Board, taking account of the approval of the thesis and the propositions by the promotor, decides to appoint the thesis committee.

### Article 10 Evaluation of the propositions by the Academic Board

#### 10.1

After being approved by the promotor, the propositions are submitted to the Academic Board for evaluation.

#### 10.2

The Academic Board decides whether the propositions meet the requirements set in articles 12.3 and 14.3.

### Article 11 Evaluation of the PhD thesis by the opponents

#### 11.1

After being approved by the promotor, the thesis is submitted to the opponents, who have been appointed for this purpose.

#### 11.2

Within six weeks after receiving the thesis as approved by the promotor, the opponents decide whether or not the thesis has provided sufficient proof of competency in the independent practice of science to allow the PhD candidate to publicly defend her thesis. A positive decision requires a positive evaluation of all opponents.

#### 11.3

The decision referred to in Article 11.2 is based on a review of the thesis with respect to the attainment targets formulated by the Academic Board, which have been listed in Appendix 1 and in Articles 12.1, 12.2 and 18 (cum laude).

#### 11.4

As secretary of the thesis committee, the promotor reports the decision of the thesis committee in writing to the PhD candidate. If the thesis committee has decided that the PhD candidate cannot defend her thesis, the reasons for this decision will be explained.

## The thesis

### Article 12 Contents of the thesis and the propositions

#### 12.1

The thesis can be:

- a. a scientific treatment concerning a specific topic; or
- b. a number of distinct scientific treatments which already may have been published (partially or entirely), if they display sufficient coherence with respect to a specific topic; this coherence is to be demonstrated by the inclusion of a general introduction and general discussion; or
- c. a technological design, comprised of a drawing created with the help of appropriate theoretical knowledge and methodologies from the relevant field, accompanied by a scientific explanation and documentation.

#### 12.2

The thesis is intended as proof of the competency of the PhD candidate to conduct independent scientific research.

#### 12.3

At least six and no more than eight propositions are added to the thesis. Two of the propositions concern the topic of the thesis or the technological design, two to four propositions concern a different scientific field and two propositions concern a socially relevant topic. Propositions are concisely worded positions taken by the PhD candidate that are formulated in such a way that they can be debated at a scientific level and consist of one sentence.

#### 12.4

A distinct scientific treatment, as referred to in Article 12.1 under b, which has been written by the PhD candidate in cooperation with others, can be part of the thesis only if she has provided a significant contribution and if the portion for which she is primarily responsible is clearly indicated in the thesis.

#### 12.5

The thesis can be written by one individual, or by two or three individuals together. The individuals who have written a thesis together must satisfy the following conditions:

- a. all authors are PhD candidates, each of whom satisfies the provisions and procedures in these regulations;
- b. the PhD candidates have at least one promotor in common;
- c. in the thesis, the portions for which each PhD candidate is primarily responsible are clearly indicated;
- d. each PhD candidate adds the prescribed number of her own propositions to the thesis;
- e. all PhD candidates must defend their thesis on the same day at Wageningen University.

## Article 13 Structure and design of the thesis

### 13.1

The structure and design of the thesis must satisfy the corresponding guidelines established by the Academic Board, which are included in these regulations as Appendix 4.

### 13.2

It is not allowed to include advertising or logos in the thesis or on the cover. If a thesis is the result of a joint PhD programme and if the partner university requires so, logos of both universities may be presented on the cover and/or first title page.

### 13.3

If the PhD research has been made possible in part by support, financial or otherwise, from outside the university, this must be reported in the thesis according to the guidelines referred to in article 13.1.

### 13.4

Sections which fall beyond the scope of the scientific treatment in the strictest sense can only be added to the thesis with permission from the Academic Board. Statements regarding religion or politics are not allowed, other than those related to acknowledgement of the support the PhD candidate has received.

## Article 14 Language of the thesis and the propositions

### 14.1

The thesis is written in English. Upon request from the PhD candidate, the Academic Board can give her permission to write the thesis in Dutch.

### 14.2

The thesis contains a summary in English. One or two summaries in other languages are allowed. A thesis written in Dutch, contains a Dutch summary and an English summary that also provides a translation of the thesis title in English.

### 14.3

The propositions are formulated in the same language as that in which the thesis is written.

## Article 15 Printing/reproduction and distribution of the thesis

### 15.1

Before the thesis is printed or reproduced in any other fashion:

- a. the thesis committee must have decided that the PhD candidate can be allowed to defend her thesis;
- b. the cover, the four title pages and the page opposite the end leaf must be approved by the Academic Board. To this end, the PhD candidate must submit copies of these pages for approval to the secretariat of the Academic Board;
- c. the printer's proof of the thesis and the propositions must be approved in writing by the promotor, where the promotor takes the standards in or pursuant to these regulations into account.

## 15.2

In the guidelines that are included in these regulations as Appendix 4, the Academic Board determines the following:

- a. the number of copies of the thesis that, preceding the public defence, must be provided to the Academic Board.
- b. the number of copies of the thesis that the PhD candidate must supply at cost to the Wageningen University library, in consultation with the Executive Board.
- c. the way in which an electronic version of the thesis must be provided.

## **The public defence of the thesis**

### Article 16 The thesis defence ceremony

#### 16.1

The defence of the thesis takes place in public in the presence of the thesis committee.

#### 16.2

The public defence is chaired by the rector magnificus as chairperson of the Academic Board, or her replacement.

#### 16.3

The time and place of the public defence are determined by the Academic Board following consultation with the PhD candidate and promotor. The PhD candidate must submit a request for a time and place well in advance.

#### 16.4

The Academic Board establishes the protocol of the public defence. The standard protocol is included in these regulations as Appendix 7.

#### 16.5

The PhD candidate defends the thesis and the propositions for a period of 45 minutes; during this defence, she is opposed by the thesis committee and all other individuals who have been granted permission by the Academic Board. A request for permission to oppose the PhD candidate during the defence must be submitted to the Academic Board at least one week before the date of the public defence.

#### 16.6

The public defence is conducted in English unless the PhD candidate has submitted a written request to conduct the defence in Dutch and all members of the thesis committee are able to discuss in Dutch.

### Article 17 Conferring the doctorate and the degree certificate

#### 17.1

During a private meeting that takes place immediately following the thesis defence, the thesis committee, on behalf of the Academic Board, decides whether or not to confer the doctorate.

#### 17.2

Following the private meeting of the thesis committee, the chairperson reopens the public meeting and announces the decision of the thesis committee.

#### 17.3

As proof of conferral of the doctorate, the PhD candidate receives a degree certificate. The degree certificate is signed on behalf of the Academic Board by the rector magnificus or her replacement, the promotor(s), if relevant, the co-promotor(s) and by the PhD candidate.



#### 17.4

If a decision has been made to confer the doctorate *cum laude*, then this is listed on the degree certificate.

## **The designation *cum laude***

### Article 18 The designation *cum laude*

#### 18.1

If the PhD candidate has shown exceptional competency in the independent practice of science, the Academic Board can confer the doctorate *cum laude* (with distinction).

#### 18.2

Upon submission of the thesis, or up to six weeks before the day of public defence, the promotor and any other member of the thesis committee can submit a written proposal to the Academic Board to confer the designation *cum laude*. This document must explain the reasons for the proposed designation and will be forwarded to all members of the thesis committee.

#### 18.3

If the evaluation by the thesis committee gives reason to do so, then the Academic Board immediately submits the thesis and the proposal to two experts and requests them to make a recommendation about the proposal in an explanatory letter. The experts must be professors, but not at Wageningen University. At least one of the experts must be affiliated with a university outside the Netherlands.

#### 18.4

Only if at least one of the experts advised positively, the Academic Board informs the thesis committee about the submitted proposal and calls a closed meeting of the thesis committee immediately preceding the defence ceremony. During this meeting, the thesis committee discusses the possible designation *cum laude*.

#### 18.5

The thesis committee makes a decision about the proposal to confer the designation *cum laude* on behalf of the Academic Board during the closed meeting referred to in Article 17.1. The proposal will be approved if no member of the committee votes against it or if no more than one member of the committee abstains from voting. If one of the two consulted experts has made a negative recommendation, the proposal can be accepted only if there is a unanimous decision of the committee.

## **Settling disputes**

### Article 19 Settling disputes

#### 19.1

The provisions of the General Administrative Law Act (Awb) apply.

#### 19.2

The regulations concerning the conferral of a doctorate do not apply to legal disputes.

### Article 20 Complaint handling procedure

#### 20.1

An interested party can submit a request for mediation or complaint handling to the Academic Board in case of a dispute that concerns the behaviours or decisions of promoters, co-promoters, the Academic Board itself, or individuals who are acting on behalf of the Academic Board. Mediation does not suspend the term referred to in Article 21.1. In consultation with the party submitting the request, the chairperson of the Academic Board provides mediation or complaint handling in accordance with Chapter 9 of the General Administrative Law Act.

### Article 21 Objection procedure

#### 21.1

An interested party can object to decisions made by or on behalf of the Academic Board within six weeks after she is informed of the decision; she does this by submitting a notice of objection in an explanatory letter to the Academic Board.

#### 21.2

After receiving a notice of objection, the Academic Board appoints an advisory committee.

#### 21.3

The advisory committee comprises two members from the Academic Board and a chairperson who is not a member of and is not responsible to the Academic Board. The members of the advisory committee have not been involved in the PhD procedure that is the subject of the decision.

#### 21.4

The advisory committee acts in accordance with the provisions in Article 7.13 of the General Administrative Law Act. The advisory committee can provide hearings to the parties involved and is authorised to obtain all information that is necessary for the adequate performance of its task.

#### 21.5

The advisory committee makes a written recommendation to the Academic Board. The recommendation includes a report of the hearings.

#### 21.6

Within 12 weeks after receiving the notice of objection, the Academic Board makes its decision about the objection, which it reports in an explanatory letter sent to the party who submitted the notice of objection and the other parties involved in the objection procedure.

#### 21.7

If the decision on the objection deviates from the recommendation made by the advisory committee, the letter about the decision explains the reasons for this deviation, and the advisory committee recommendation is included.

#### 21.8

Within six weeks after receiving the decision referred to in Article 21.6, an interested party can appeal to the competent Dutch court against this decision.

## **Honorary doctorate**

### Article 22 Honorary doctorate

#### 22.1

Upon nomination by the Executive Board, the Academic Board is authorised to award the degree *doctor honoris causa* (honorary doctorate) to an individual in recognition of her outstanding accomplishments. This doctorate is conferred by and in the presence of the Academic Board in a manner which is determined by this Board.

#### 22.2

The other provisions in these regulations do not apply to the conferral of an honorary doctorate.

## **Final provisions**

### Article 23 Final provisions

In all cases not covered by these regulations, the Academic Board will make a decision on the matter.

These regulations were determined by the Academic Board of Wageningen University on 21 December 2016 and approved by the Executive Board of Wageningen University on 9 January 2017.

**Appendices:**

1. Learning targets of the doctorate
2. Language requirements
3. Application form for the PhD thesis defence
4. Guidelines for structure, design and distribution of the thesis
5. PhD candidate's authorship statement
6. Thesis evaluation form with rubric
7. Protocol for the thesis defence ceremony
8. Regulations for conferring a joint, double or dual doctorate

## **Appendix 1 Learning targets for the PhD degree (doctorate)**

The recipient of the doctorate is capable of:

1. functioning as an independent practitioner of science who is able to:
  - a. formulate scientific questions, either based on social issues or scientific progress;
  - b. conduct original scientific research;
  - c. publish articles in peer-reviewed scientific journals, publish books with scientific publishers or make a technical design;
2. integrating her research in, or placing it within the framework of, the own scientific discipline and against the background of a broader scientific area;
3. placing the research aims and research results in a societal context;
4. postulating concisely worded propositions in scientific and societal areas, formulated in such a way that they are subject to opposition and defence.



## **Appendix 2 Language requirements**

In order to be admitted to the PhD programme, the PhD candidate must demonstrate proficiency in the English language, as well as the Dutch language if the thesis is written in Dutch, at the level established by the Academic Board.

Proficiency in Dutch is defined as having passed the final exam in Dutch for pre-university education in the Netherlands, as shown by possession of a VWO diploma or comparable certificate.

For proficiency in English, the required level is CEFR C1 ('advanced'). CEFR stands for Common European Framework of Reference for Languages. Level C1 is defined as:

'Can understand a wide range of demanding, longer texts, and recognise implicit meaning. Can express him/herself fluently and spontaneously without much obvious searching for expressions. Can use language flexibly and effectively for social, academic and professional purposes. Can produce clear, well-structured, detailed text on complex subjects, showing controlled use of organisational patterns, connectors and cohesive devices.'

This corresponds to:

- TOEFL internet-based 90, with minimum sub-score 23 for speaking,
- IELTS 6.5, with minimum sub-score 6.0 for speaking,
- Cambridge Certificate of Advanced English (CAE) minimum grade B,
- Cambridge Certificate of Proficiency in English (CPE) any grade.

All PhD candidates must have passed one of the English language tests mentioned above within the past two years, except:

1. Dutch candidates.
2. Native English speaking candidates from the UK, Ireland, USA, Canada (except Quebec), Australia or New Zealand.
3. Candidates who can prove that the language of instruction in their MSc was completely in English.

## Appendix 3 Application letter for the public defence

### Application letter for the public defence of a PhD thesis at Wageningen University

Please download this letter from the PhD registration system Promis. This letter can only be downloaded after you have obtained formal admission to the PhD Programme by the Dean of Research on behalf of the Academic Board.

#### Send this letter to:

**Doctorate's secretariat**

**Att. of ms. D. Alkema / ms. J. Sloot**

**Droevendaalsesteeg 2**

**6708 PB Wageningen**

**(Bode 15)**

**or by email: [promovendi@wur.nl](mailto:promovendi@wur.nl)**

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Rector Magnificus Wageningen University  
c/o Doctorate's secretariat (bode 15)  
Droevendaalsesteeg 2  
6708 PB Wageningen

Dear Rector Magnificus,

Hereby I request my PhD thesis and propositions to be judged for public defence according to the doctoral degree regulations of Wageningen University.

The title of my thesis is: <thesis title>

I declare that this work is original and has not been used to confer a doctorate elsewhere.

In addition, I declare to meet all the criteria of article 3.1a, 3.2 and 3.3 of the doctoral degree regulations of Wageningen University, and that I am formally admitted to the PhD Programme of Wageningen University by means of a letter of the Dean of Research d.d. <date>

My personal data is shown below:

<WUR-account>

<First Name(s)>

<Family Name>

<Home address>

<Phone mobile>

<Phone>

<E-mail>

<Date of birth>

<Place of birth>

<Field of study>

<Short summary of my thesis (2 sentences is enough)>

<Promotor(s)>

<Co-promotor(s)>

*(If a (co-)promotor is not a Wageningen UR staff member, please mention function/chair and affiliation with full address):*

With kind regards,

Signature PhD candidate, date

Signature (first) promotor, date

## **Appendix 4 Design, format, reproduction and distribution of the thesis**

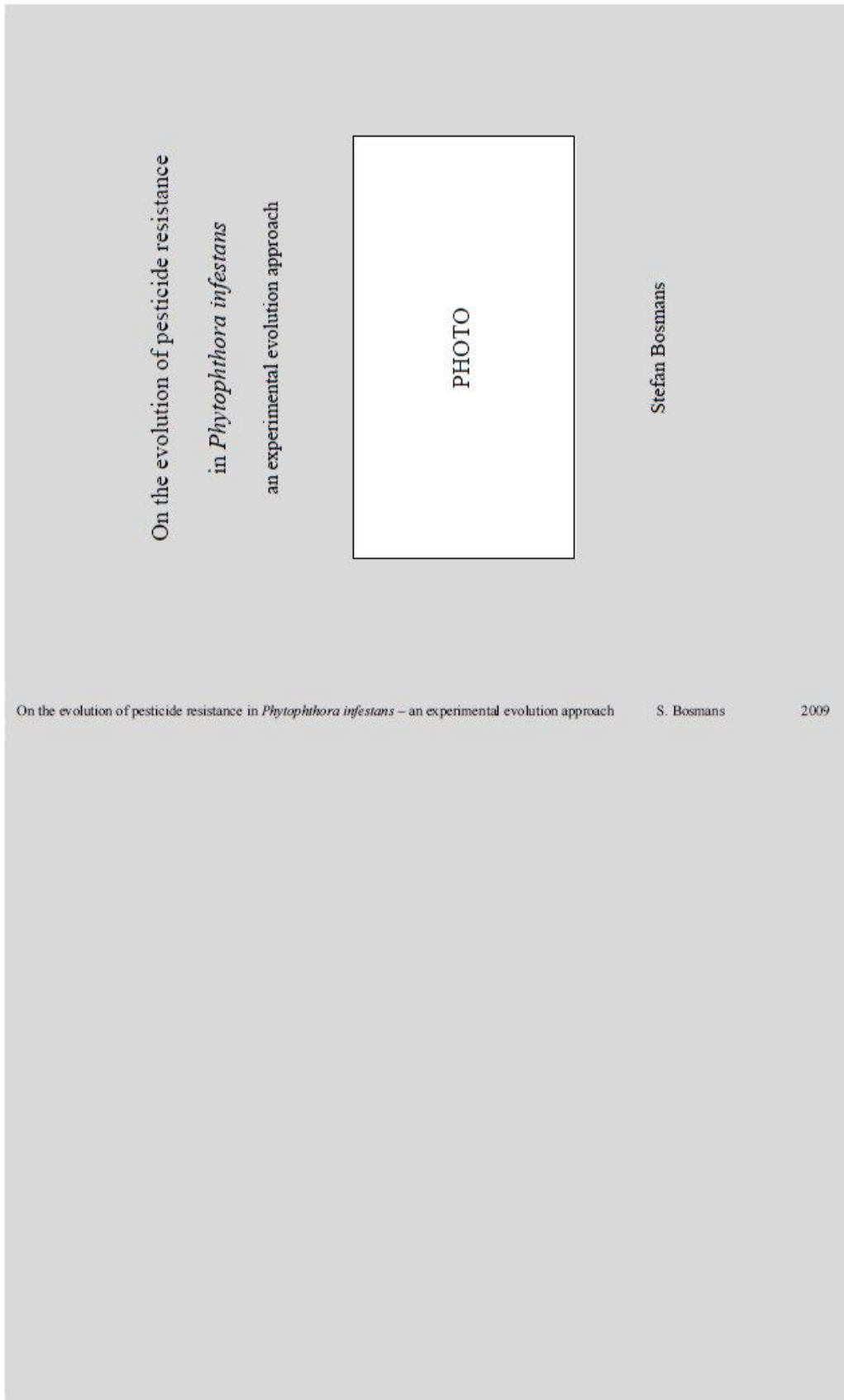
Appendices 4a through 4d show how the thesis should appear regarding its cover (4a), required title pages (4b), acknowledgements of financial support (4c) and the propositions (4d).

Any deviation from these examples requires prior permission from the Academic Board.

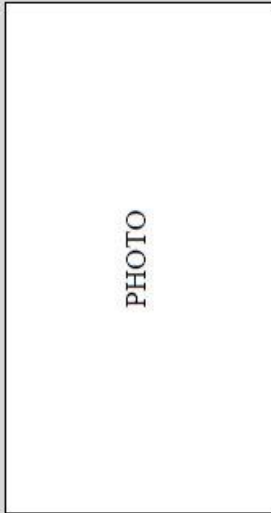
Two weeks before the public defence, the PhD candidate submits 15 copies of the thesis to the secretariat for PhD conferrals, and one (1) copy, a PDF file (which must include the thesis cover and the propositions) and an abstract in Word format to the Library.

**Appendix 4a Cover**

Logos on the cover are not allowed, except in the case of a joint degree, see appendix 8.



On the evolution of pesticide resistance  
in *Phytophthora infestans*  
an experimental evolution approach



Stefan Bosmans

On the evolution of pesticide resistance in *Phytophthora infestans* – an experimental evolution approach      S. Bosmans      2009

**Appendix 4b - required title pages**

**First title page**

**The *Phytophthora infestans* avirulence gene  
X5yz and its potato counterpart A6**

**Piet A. Ardappel**

## **Second title page**

In the list of the promotor(s), the type of professor is added in case of a personal chair or a special chair. Also, the affiliation is added.

In the list of the co-promotor(s), their function and affiliation is added.

For WUR (co-)promotors, the affiliation states their basic organisational unit (chair group or business unit) plus Wageningen University & Research as main affiliation.

The other members (the opponents) are listed with their main affiliation.

Affiliations outside the Netherlands include the name of the country.

## **Thesis committee**

### **Promotors**

Prof. Dr F. Pietersen

Personal chair at the Laboratory of Phytopathology  
Wageningen University & Research

Prof. Dr F. Swartjes

Professor of Phytopathology  
Wageningen University & Research

### **Co-promotor**

Dr P.A. Willis

Associate professor, Animal Nutrition Group  
Wageningen University & Research

### **Other members**

Prof. Dr W.J. Stekels, Wageningen University & Research

Dr P. de Groot, University of Amsterdam

Dr A. de Bruin, Keygene N.V., Wageningen

Dr P. van Oost, University of Aberdeen, UK

This research was conducted under the auspices of the Graduate School Experimental Plant Sciences

**Third title page**

Note that on this page 'Wageningen University' is used because that is the legal entity that issues the doctorate.

**The *Phytophthora infestans* avirulence gene  
X5yz and its potato counterpart A6**

**Piet A. Ardappel**

**Thesis**

submitted in fulfilment of the requirements for the degree of doctor  
at Wageningen University  
by the authority of the Rector Magnificus,  
Prof. Dr A.P.J. Mol,  
in the presence of the  
Thesis Committee appointed by the Academic Board  
to be defended in public  
on Wednesday 1 February 2017  
at 4 p.m. in the Aula.

**Fourth title page**

Note that on this page 'Wageningen University' is used because that is the legal entity that issues the doctorate.

Piet A. Ardappel

The *Phytophthora infestans* avirulence gene X5yz and its potato counterpart A6,  
83 pages.

PhD thesis, Wageningen University, Wageningen, the Netherlands (2017)

With references, with summary in English

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**Appendix 4c – acknowledgements of financial support** (last inside page of thesis)  
Logos are not allowed, except the FSC logo if the thesis is printed on FSC-certified paper.  
Acknowledgments of the cover designer and printing company are optional.

The research described in this thesis was financially supported by The Dutch Financer.

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Cover design by <name designer>

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## **Appendix 4d – propositions** (as a separate leaflet)

### **Propositions**

1. The general assumption that the mesophyll conductance to carbon dioxide in leaves of green plants is infinite cannot be maintained.  
(this thesis)
2. The partitioning of excited electrons to photosystems I and II is unbalanced in plants suffering from severe drought stress.  
(this thesis)
3. Zinc biofortification of cereals through plant breeding is inefficient, especially in the case of wheat.
4. For the analysis of the crop physiological background of tuber size distribution in potato it is essential to analyse phenomena of tuber set and tuber bulking at the level of the individual plant.
5. Moral acceptance of techniques of genetic modification plays a much smaller role in the debate on genetically modified organisms than proponents of such techniques assume.
6. The current debate in literature on the question whether green plants are intelligent suggests that plants might have a greater ability to perceive signals from their environment and to learn from these signals than some scientists do.

Propositions belonging to the thesis, entitled

Why electrons get excited and how to cool them down: on the thermodynamics of photosynthesis in green plants

Paul Herbert Droef  
Wageningen, 1 February 2017

## Appendix 5 PhD candidate's authorship statement

### Aim of the authorship statement

The authorship statement is sent with the thesis manuscript to the opponents to help them judge the candidate's contribution to (chapters in) the thesis. A PhD study is a learning process, so the candidate is not supposed to have it done all by her/himself. The promotor may have come up with the research question, for example, or suggested text improvements. Perhaps an MSc student did an experiment under the candidate's guidance.

### The authorship statement should focus on the candidate's own contribution

While it may be needed to mention what others did, in particular when the candidate is not the first author of a chapter, the statement should focus on the candidate's own contribution. Therefore, the text is written in the first person.

The text must be concise, maximum 1 page A4, about 500 words. If there are authorship statements on chapters that were already submitted or published as paper, these may be re-used in this authorship statement.

Items to address in the research chapters are usually: research question, methodology, research and data collection, data analysis, text and graphs, and the final discussion. For other chapters or for other types of research, the items to address may differ.

### Example of an authorship statement

PhD candidate's name: . . .  
First promotor: . . .  
Title of PhD thesis: . . .  
Date of public defence: . . .

*Chapter 1 General introduction.* The general research question and its general scientific and social perspective were proposed by my promotor. I delineated the research question, described how it fits in the current scientific literature and described its potential social impact. I revised the text two times, after comments of my co-promotor.

*Chapter 2 . . .*

*Chapter 3 Heat resistance of ice-cream.* I contributed to defining the research question, proposed the methodology and the experimental design, carried out the experiments together with an MSc student whom I supervised, and did the data analysis together with the student and a statistician. The student wrote the first draft (therefore, I am second author) and revised it after the comments of myself (which were quite many) and the other co-authors.

*Chapter 4 . . .*

*Chapter 5 . . .*

*Chapter 6 General discussion.* I wrote the first draft of the text after just one discussion with my co-promotor on the subjects and arguments to be included. I revised the text once, after comments of my promotor and co-promotor.

Date  
Signature PhD candidate  
Signature promotor for agreement

## **Appendix 6 Thesis evaluation form with rubric**

### **Aim of a thesis evaluation with rubric**

Quality standards for PhD theses differ worldwide, and so do quality grades (such as 'cum laude') and evaluation procedures. Therefore, we provide here information about the evaluation procedure and a rubric for the evaluation of the thesis. This is not only useful for the opponents who evaluate the thesis, it may also help PhD candidates and their supervisors by making the Wageningen University thesis requirements transparent.

### **Thesis evaluation form as sent to the opponents**

Dear members of the examining committee,

Thank you for your willingness to evaluate this PhD thesis.

Your thesis evaluation will be made available to the Dean of Research and will be used:

- to decide whether the PhD candidate can be allowed to defend the thesis;
- to decide whether the PhD thesis should be considered for 'cum laude' ('with distinction') in which case two extra reviewers will be asked for advice;
- by the rector or her replacement after the thesis defence, when the examining committee discusses the final grading of thesis and defence.

Your thesis evaluation will only be shared with the other examiners when the PhD thesis would be considered for 'cum laude' grading.

Also, the promotor will receive your anonymised thesis evaluation for two purposes:

- in the case when the thesis is marked 'unacceptable', to let the candidate improve the thesis;
- otherwise immediately after the defence, as feedback to the promotor about the quality of this particular thesis and to clarify the expectations for possible next PhD theses under her/his supervision.

An important note on your possible suggestions for revision:

- if you would mark the thesis 'unacceptable', your suggestions for a major revision are very welcome and will be forwarded to the promotor;
- if you propose that the candidate can be allowed to defend the thesis, the timeframe does not allow for major revisions anymore; however, if you would spot some errors or inconsistencies, your suggestions for textual corrections will be forwarded to the promotor, who has the right to decide, together with the PhD candidate, whether or not to follow your suggestions.

### **Requirements for the degree of doctor awarded by Wageningen University**

In order to be awarded the degree of doctor, the candidate must have demonstrated the capability of:

1. functioning as an independent practitioner of science who is able to:
  - a. formulate scientific questions, either based on social issues or scientific progress;
  - b. conduct original scientific research;
  - c. publish articles in peer-reviewed scientific journals, publish books with scientific publishers or make a technical design;
2. integrating her research in, or placing it within the framework of, the own scientific discipline and against the background of a broader scientific area;
3. placing the research aims and research results in a societal context;
4. postulating concisely worded propositions in scientific and societal areas, formulated in such a way that they are subject to opposition and defence.

## **User instructions**

Please evaluate the PhD thesis on four criteria using the rubric at the end of this form:

- each row represents one criterion, e.g. originality of the research;
- each column represents a level for the grading, e.g. 'good';
- and each cell describes the level for that criterion.

The aim of using a rubric is to enhance homogeneity of assessments and the ability to discuss assessments with other examiners and the promotor. Also, it clarifies to PhD candidates the expectations for a PhD thesis.

Use of the comment fields on the evaluation form is highly recommended. It provides extra feedback to both promotor and candidate.

Keep in mind that each row (criterion) in the rubric should be read independently. It could be that the PhD thesis scores 'unacceptable' on one criterion and 'good' on another. Always start at the lowest mark in the rubric and test whether the PhD thesis should be awarded the next higher mark. Achievements at lower levels are implicit at higher levels and not again included in the criteria.

You are kindly asked to describe in 25 – 100 words your evaluation of each criterion. You could do this by comparing representative examples from the thesis to the descriptors from the rubric.

## **Reference**

Barbara E. Lovitts: Making the Implicit Explicit: creating performance expectations for the dissertation. Stylus, Sterling, Virginia, USA, 2007.

## Your evaluation of the PhD thesis

Name of the PhD candidate : .....

Planned date of the public defence : .....

Title of the PhD thesis : .....

### 1. Originality of the research

Grade: unacceptable / acceptable / satisfactory / good / very good / excellent

Reason for evaluation (25-100 words):

### 2. Scientific quality of the research chapters

Grade: unacceptable / acceptable / satisfactory / good / very good / excellent

Reason for evaluation (25-100 words):

### 3. Reflection on the research as shown in the Introduction and General discussion

Grade: unacceptable / acceptable / satisfactory / good / very good / excellent

Reason for evaluation (25-100 words):

### 4. Quality of written presentation

Grade: unacceptable / acceptable / satisfactory / good / very good / excellent

Reason for evaluation (25-100 words):

### 5. Overall Assessment (based on the above evaluation categories 1 – 4)

Grade: unacceptable / acceptable / satisfactory / good / very good / excellent

Reason for evaluation (25-100 words):

**Your conclusion (1) - should the candidate be allowed to defend the thesis?**

The PhD candidate will only be allowed to defend the thesis if none of the above criteria is marked as 'unacceptable' by any of the examiners. In the case of a negative ('no') decision, please provide your arguments for that qualification in the box below. The anonymized evaluation form will be forwarded to the candidate's promotor with the request to let the candidate improve the manuscript. The revised version of the manuscript, with a letter explaining the modifications made, will be evaluated by the examiner. Unless changes in the manuscript have been substantial, other members of the examining committee will only be informed about the changes and will not be asked to re-evaluate the thesis.

**"I propose that the PhD candidate can defend the thesis:"** **yes / no**  
**Note: this question must be answered!**

Reason for negative evaluation (25-100 words):

**Your conclusion (2) - should the thesis be considered for 'cum laude'?**

The qualification of 'excellent' for all or nearly all of the above criteria indicates that this PhD thesis belongs to the top of your scientific field. This may be a reason for awarding 'cum laude' ('with distinction'). After the oral defence, the committee will be asked to comment on the quality of the defence. At that point the final decision whether or not to award 'cum laude' is made by voting.

**"I propose to have this PhD thesis considered for 'cum laude':"** **yes / no**  
**Note: not answering this question will be interpreted as neither yes nor no.**

Reason for cum laude proposal (25-100 words):

Keep on separate page so that the form can be anonymised easily

Name of committee member : .....

Chair / Function / Affiliation : .....

Date : .....

---

Please e-mail the completed form to the Doctorate's Secretariat: [promovendi@wur.nl](mailto:promovendi@wur.nl)



## Rubric for evaluation of a PhD thesis

Criteria	Unacceptable	Acceptable	Satisfactory	Good	Very good	Excellent
<b>1. Originality of the research *</b>	Does not make a contribution, either because it is a copy, or nearly so, of work done before by others, or because the research question is trivial.	Makes a small and not very original contribution, uses a cookbook approach, is not really interesting but shows the ability to do research.	Makes a modest contribution by addressing a relevant, but small and traditional question that is interesting for those who work on the same subject.	Makes a substantial contribution by addressing a relevant question that is interesting for others within the field. Is a solid part of normal science, but does not open up the field.	Makes an important contribution by solving an old problem in a new way, or by addressing a new and relevant question, however without completely exploring and solving that new question.	Makes an exciting, major contribution, either by solving an old problem in a brilliant, innovative way or by asking and answering a new and intriguing question.
<b>2. Scientific quality of the research chapters **</b>	Chapters lack the scientific quality to be publishable in any reputable journal or by any reputable book publisher.	Chapters lack clear cohesion and/or show variable quality. One or two chapters have the quality to be publishable in low-ranking journals or as part of a larger book, but will probably remain uncited.	Chapters have sufficient cohesion and quality to address the research question. Most chapters are publishable in low-ranking journals or by a low-ranking book publisher and may be get cited a few times.	Most chapters are published or likely to be published in reputable journals, and may become cited within the field. If a monograph, the thesis may be interesting for a reputable publisher.	All or most chapters are published or likely to be published in the upper range of journals in the field, likely to become well cited within the field. If a monograph, the thesis will certainly evoke interest from reputable publishers.	All or most chapters are published or likely to be published in top journals in the field, likely to become well cited within and outside the own field. If a monograph, top publishers will like to publish it.
<b>3. Reflection on the research as shown in Introduction and General discussion</b>	<p>Candidate cannot show clearly what s/he has done and why s/he did it.</p> <p>Candidate cannot show how the results fit in the existing knowledge, or what the social impact is.</p> <p>Possible weaknesses in the research are not discussed.</p>	<p>Candidate describes in a simple way what s/he has done, but not why s/he did it.</p> <p>Trivial reflection on how results fit in the existing knowledge and what the social impact is.</p> <p>The most obvious weaknesses in the research are indicated, but not how they affect the conclusions.</p>	<p>Candidate describes adequately what s/he has done, but hardly, or unclear, why s/he did it.</p> <p>Narrow view on how results fit in the existing knowledge and what the social impact is.</p> <p>Most weaknesses in the research are indicated, but less clearly how they affect the conclusions.</p>	<p>Candidate describes clearly what s/he has done, but less clearly why s/he did it.</p> <p>Obvious correspondences and conflicts with existing knowledge are identified. Most obvious social impact is indicated.</p> <p>Most weaknesses in the research are indicated, and how they affect the main conclusions.</p>	<p>Candidate describes clearly what s/he has done and why s/he did it.</p> <p>Most correspondences and conflicts with existing knowledge are identified. Most social impact is indicated.</p> <p>All weaknesses in the research are indicated, and how they affect the main conclusions.</p>	<p>Candidate shows clearly, compellingly and critically what s/he has done and why s/he did it.</p> <p>Results are critically confronted with existing knowledge. Possible social impact is addressed in full.</p> <p>All weaknesses in the research are indicated, and how they affect each of the conclusions.</p>

<b>Criteria</b>	<b>Unacceptable</b>	<b>Acceptable</b>	<b>Satisfactory</b>	<b>Good</b>	<b>Very good</b>	<b>Excellent</b>
<b>4. Quality of written presentation</b>	<p>Writing, figures and lay-out are so poor that it is hard to understand what the candidate wants to say. Reading is very difficult.</p> <p>Thesis is badly structured, often information is missing or appearing at the wrong spot.</p>	<p>Writing, figures and lay-out are not always correct and clear, level of detail varies widely, but with effort the text is understandable. Reading is difficult.</p> <p>Main structure of the thesis is adequate, but placement and structure of sections are often not logical.</p>	<p>Writing, figures and lay-out are mostly adequate, but level of detail varies and text could be more concise. Reading is laborious.</p> <p>Main structure of the thesis is correct, placement and structure of sections are not logical in places.</p>	<p>Writing is correct and mostly clear, but text could be more concise. Figures and lay-out are mostly clear, with few flaws. Reading is effortless.</p> <p>Main structure of the thesis is correct, but some sections are less well placed or less well structured.</p>	<p>Writing is clear and concise, figures and lay-out are functional and flawless. Reading is a joy.</p> <p>Main structure of the thesis is clear and correct, most sections are well structured and well placed.</p>	<p>Writing is crystal clear and compelling, concise but balanced with sufficient detail, with attractive, functional figures and lay-out. Reading is exciting.</p> <p>Thesis is very well structured with each chapter and section having a clear function and sitting at the right spot.</p>

\* In the case of a thesis on interdisciplinary or applied research, please consider the contribution to the interdisciplinary or applied field rather than to each of the underlying disciplines.

In the case of a design, please consider the originality of the design and the contribution to technology. Consider the candidate's technological competence, application of design methodologies, and analytical and integrative skills.

\*\* If the research chapters are multi-authored, it is important to consider the candidate's contribution to each chapter, in particular when s/he is not the first author. To this end, an authorship statement by the candidate has been added to the thesis manuscript. Also, it's good to check whether the research chapters show a level of written presentation similar to the Introduction and General discussion. If the research chapters are written in a better way, this may result in a higher grade for the criterion 'research chapters' but it suggests an important contribution of co-authors. Thus, a higher grade for the research chapters alone should perhaps not be reflected in the overall grade of the thesis.

## **Appendix 7 Protocol for the thesis defence ceremony**

### **Location**

Wageningen University Auditorium  
Gen. Foulkesweg 1a, Wageningen

### **General aspects**

The thesis defence ceremony has a long tradition. It is a high point in the practice of science, where new ideas are discussed and defended at a high level in public, preferably in an international context, between newly arrived and established scientists.

Wageningen University believes the ceremony should take place in the most dignified fashion possible, and has therefore established behaviour requirements for the ceremony.

The PhD candidate may be accompanied by at most two paranymphs. The paranymphs are ceremonial assistants to the PhD candidate. They assist the PhD candidate in practical matters, for example reading one of the propositions on request.

Opponents need to be present. If an opponent cannot attend, she can be replaced by another scholar in her field. Distant participation in the discussion with the candidate is not allowed.

The ceremony is accessible to the public and is recorded and broadcasted on WUR-TV. The broadcast can be viewed and obtained on the website of Wageningen University: [wurtv.wur.nl](http://wurtv.wur.nl)

The video recording will be kept for three years and filed afterwards.

Wageningen University deals carefully with recorded video material and complies with all legal requirements. At Wageningen University, a Privacy Regulation is in force, which is published on the website of Wageningen University.

### **Conventions**

The focus of the ceremony is the practice of science. It is therefore unsuitable for the PhD candidate, paranymphs or members of the thesis committee to make any religious, political or nationalistic statements by means of clothing, words, gestures or in any other way. Any other statements that do not show respect for the scientific and dignified character of the ceremony are also unsuitable.

### **Formal titles of address**

Rector Magnificus (or her substitute)	Madame / Mister Rector / Chair
Promotor	Highly esteemed promotor
Co-promotor	Highly esteemed co-promotor
Opponents	Highly esteemed opponent

### **Clothing regulations**

There are no emphatic clothing regulations, but compliance with the following guidelines is appreciated.

PhD candidate and paranymphs, gentlemen: white tie with black shoes and black socks.  
PhD candidate and paranymphs, ladies: festive clothing in subdued colours.

Thesis committee:

Full professors, gentlemen: gown and cap or dark suit with black shoes and black socks.  
Full professors, ladies: gown and cap or festive clothing in subdued colours.

Other members, gentlemen: dark suit or morning coat with black shoes and black socks.  
Other members, ladies: festive clothing in subdued colours.

## **Schedule**

- 30 minutes before the start of the academic session

Preparations:

Thesis committee goes to meeting room at the Aula to discuss opposition themes, propositions, time allocation.

PhD candidate, paranymphs and beadle go to the small auditorium.

Public is admitted to the main auditorium.

- 15 minutes before the start of the academic session

Beadle brings the PhD candidate and the paranymphs to the main auditorium.

The PhD candidate gives a brief explanation of the PhD research, the paranymphs sit at the front of the auditorium. After the explanation, the paranymphs join the PhD candidate and stand next to her on the podium.

- 2 minutes before the start of the academic session

Ceremonial procession of the thesis committee, Beadle going first; the procession is led by the Rector Magnificus or her substitute.

Thesis committee members take their seats on the podium.

The Rector Magnificus and the promotor/co-promotor(s) seat themselves at the table at the right side of the podium (as seen from the auditorium). The first promotor sits left from the Rector Magnificus, the second promotor and/or co-promotor(s) sit right from the Rector.

The other members of the thesis committee take their places at the table at the left side of the podium (as seen from the auditorium), in the order in which they will oppose the PhD candidate, with the first opponent on the auditorium side.

The Beadle invites the PhD candidate and the paranymphs to take their places behind the lectern in the middle of the podium. The PhD candidate and the paranymphs take their places.

The Beadle leaves the auditorium.

- Start of the academic session

The Rector Magnificus opens the meeting by sounding the gavel and begins the ceremony as follows:

"I hereby open this ceremony, convened by the Academic Board of Wageningen University, in which <name of PhD candidate> is offered the opportunity of defending a thesis, with propositions, entitled '<title of thesis>'. The defence will take place before an examining committee appointed by the Academic Board as a prerequisite for conferring the degree of doctor. Good morning/afternoon, ladies and gentlemen. I would like to welcome you all to this graduation. My name is <name>. I am professor of <name chair> and member of the academic board. In this capacity, I represent the rector magnificus today."

The Rector Magnificus opens the defence a ceremony by introducing the first opponent:

"I call on the first examiner, <name and job title of opponent>."

The Rector Magnificus introduces each subsequent member of the thesis committee to the PhD candidate when they ask their first question.

The opponents discuss their objections with the PhD candidate during the time that is allocated, which is monitored by the Rector Magnificus.

- 45 minutes after the start of the academic session

Beadle enters the auditorium, walks to the podium and announces that the time has elapsed with the words: "Hora est".

The Rector Magnificus ensures that any continuing discussion or argument is completed, including its defence, and adjourns the meeting as follows: "I adjourn the meeting; the examining committee will now withdraw for consultation."

Preceded by the Beadle, the procession leaves the auditorium and enters the meeting room.

The thesis committee decides whether or not to confer the doctorate and consults on the formulation of the degree classification (*judicium*), based on the draft text provided by the promotor. In any case, the text of the degree classification also refers to the thesis defence and the propositions.

- 60 minutes after the start of the academic session

The procession enters the auditorium, preceded by the Beadle. Everyone takes their places again.

The Rector Magnificus reopens the meeting and announces the decision that the thesis committee has taken on behalf of the Academic Board with the following words: "I hereby re-open this meeting. The Academic Board of Wageningen University, represented by the Rector Magnificus and <number> committee members appointed by the Academic Board, having noted the content of a thesis, entitled '<title of the thesis>' with propositions, having heard the defence of that thesis, has decided to confer the degree of doctor on: <name of PhD candidate>, born in <city of birth> on <birthdate> and to grant to him/her all rights and privileges ensuing from that doctorate by law and custom."

(If the degree is awarded cum laude: "Moreover, due to the exceptional capability in the independent practice of science shown by the candidate, the designation 'cum laude' is attached to this degree.")

"The Academic Board assumes that you accept your duty as a scientist to execute your future research ethically and with due diligence according to the Netherlands code of conduct of good scientific practice. I now invite the promotor (name) to acquit himself of her/his duty."

The promotor presents the degree certificate with the following words: "You have heard the decision of the Academic Board of Wageningen University to confer on you, <name PhD candidate>, the degree of doctor. It is now my honour to present you with the degree, signed by the Rector Magnificus and the promotor(s), and sealed with the Great Seal of Wageningen University. I first invite you to sign the degree as well. With this signature, you declare to act according to the scientific code of conduct in the future."

The promotor allows the new doctor to sign the certificate and continues with the words: "Allow me, Rector Magnificus, to offer my congratulations and to add a personal address."

The *judicium* and laudation (*laudatio*) last no more than five minutes in total and are business-like and constructive in tone. In the *judicium*, the grade of thesis and defence will be mentioned only in case of cum laude.

The Rector Magnificus congratulates the new doctor on behalf of the university, after which she closes the meeting. The ceremonial procession leaves the main auditorium, followed by the new doctor and the paranymphs. The promotor and co-promotor have the first opportunity to congratulate the new doctor.

## **Appendix 8 Regulations for conferring a joint, double or dual doctorate**

### **Introduction**

Wageningen University offers the opportunity to award joint doctorates. In 2010, Dutch universities were given the legal right to offer such joint doctoral degrees as described in the WHW (Higher Education and Research Act). The development of joint doctorates is made possible by the Bologna treaty and is strongly supported by the European Union. At Wageningen University, joint doctorates can only be awarded as part of a joint PhD programme that has been approved by the Academic Board of Wageningen University. The guiding principle is that the requirements of a joint doctorate programme should meet the requirements of the institutions involved in awarding the degree of Doctor.

### **Joint, double and dual degrees**

The increase of joint doctoral programmes, within and outside the European Union, is accompanied by a proliferation in terminology used to describe the awarded degrees. Thus, PhD programmes with joint governance, joint admission and joint supervision of PhD candidates, may issue either 'joint', 'double' or 'dual' degrees. For all such joint programmes, irrespective of the terminology used for the degree, the regulations in this appendix 8 apply.

### **Certificate**

After the public defence, the candidate will receive two certificates, issued by WU and by the partner institution.

A diploma supplement will state that the degree was awarded for a single thesis resulting from a joint doctoral programme of the partner institutions.

### **Place of public defence**

In the framework of an approved joint, double or dual degree programme, the public defence may take place either in Wageningen or at the partner institution.

If the public defence takes place in Wageningen, the partner institution may – if desired – organise later its own public defence or other ceremony.

If the public defence takes place at the partner institution and subsequently also a ceremony is desired in Wageningen, that ceremony will not be an official public defence in the Aula but a ceremony organised by the supervisors.

### **Procedure for a joint doctorate programme**

A joint doctorate programme preferably consists of a number of PhD projects/candidates. The proposal for the joint doctorate programme should describe the entry requirements and end terms that are applicable to all candidates in the programme. The joint doctorate programme should at least meet the conditions described in the Doctoral degree regulations of Wageningen University for the regular PhD programme.

A proposal for a joint doctorate programme has to be submitted by the graduate school of the participating chair group(s) to the Academic Board before the start of the PhD projects.

The proposal for a joint doctorate programme should include:

1. a description of the partner institutions and existing collaborations;
2. a description of the common scientific goal, framework or issue, including the number of intended PhD projects, the added value of the programme for Wageningen University and the planned joint activities such as joint courses as part of the joint doctorate programme;
3. a description of the selection procedure for PhD projects and candidates
4. a format for the supervision and training plans;
5. a budget plan for the joint doctorate programme with special attention to arrangements governing PhD reimbursements;
6. the conditions for admission to the PhD programme, awarding the thesis and the thesis defence (location and procedure) based on the requirements set by Wageningen University at least. Within a programme, a fair distribution (a distribution

reflecting the input from the institutions) of the defence ceremonies over the different locations should be pursued;

7. a proposal for the degree(s) to be conferred (joint, double or dual) and for the certificates to be issued, including supplements if applicable.

## **Explanation of items to be covered in application for joint doctorate programme**

### *Description of partner institutes*

Setting up a joint doctorate programme minimally requires comparable scientific quality of the partners. Large differences in quality may lead to discussions on a number of aspects concerning the joint doctorate programme, like the selection of candidates, PhD requirements, safeguarding quality, organisation of supervision, etc. Partners with equivalent quality are more likely to agree on issues related to a joint doctorate programme. In cases where substantial differences in quality between partners exist, it is important to take this into consideration when PhD projects are defined. With weaker partners, a double degree could be a better option.

When more than two partners participate in a programme, it must be clearly defined before the start of the programme whether joint degrees are established with all partners or only with selected partners.

### *Description of the scientific rationale*

The core of the joint doctorate programme consists of a common scientific goal, framework or issue around which the PhD programme is organised. This constitutes the foundation of the programme and should therefore be clearly elaborated and agreed upon among programme partners. Participation of the graduate school or chair group (hereinafter: participant) in the programme should create added value in terms of achieving the scientific goals of the participant. Thus, the programme should fit into the strategy of the participant as well.

### *Selection procedure*

Develop a joint selection procedure for PhD candidates that at least pays attention to proficiency in the English language, scientific quality of the candidate and the selection procedure. These criteria are comparable to the criteria Wageningen University maintains. A well-defined selection procedure of both PhD projects and PhD candidates is essential. Elements in the selection of PhD candidates are to a high degree compatible with the standards already in use at Wageningen University. As a rule, they cover English proficiency, scientific quality of the candidate and quality of the research proposal. It is important to take notice of cultural differences between partners when it comes to the selection of candidates. For example, at APT (France) the daily supervisor is not involved in the selection of a PhD candidate, while at WU the daily supervisor plays a key role. Identification of these issues early on might prevent discussion during the implementation of the programme. Pay attention to cultural differences and agree upon the way the candidates are ranked.

### *Supervision and training plans*

The supervision and training plan format should include information on:

- the primary and secondary supervisor and the frequency of contact. All institutions involved in the joint PhD project should provide supervision.
- the formal time the decision is made on the continuation of the PhD project after 12-18 months.
- the training activities.

### *Budget plan*

In the Netherlands, universities are paid by the government based on the number of completed PhD theses. Considerable differences between countries exist with respect to

this. The Dutch government is also very critical towards payments for PhD theses that were written in an international programme, such as joint doctorate programmes. In the current situation, a Dutch university receives payment for a PhD thesis only if the defence took place within the Netherlands. In cases where the defence takes place outside the Netherlands, no payment from the Dutch government is awarded. It is therefore extremely important when planning a budget for a joint doctorate programme to take national rules concerning PhD thesis payments into account and lay the agreements down in a budget plan. For WU groups, it is important to clarify this: all in all, the number of PhD defences at WU should be a fair representation of WU's contribution to the programme.

### *Conditions*

The requirements regarding the quality of the PhD candidate, the thesis and the defence should in any case meet the requirements set by Wageningen University for the regular (non-joint) degree or doctorate.

There will be a single PhD defence for a joint doctorate. The protocol for the PhD defence will depend on the actual location.

There will be a single evaluation procedure for a PhD thesis and for the defence within a joint PhD programme. The title pages to be used for a joint thesis, as far as different from the regular pages, are included below.

### Procedure when PhD defence takes place at WU

When the PhD thesis defence takes place at WU the standard procedure is used. The thesis and propositions must be approved by supervisors from both institutions before it can be sent to the examining committee. The examining committee consists of at least four members and includes at least one full professor from WU. The composition of the examining committee must be approved by the Academic Board of both institutions. The supervisor at WU is responsible for seeking approval from both institutions and will inform the secretariat for doctoral conferrals. The conditions set in the doctoral degree regulations of WU regarding the defence are minimum requirements. Modifications to the composition of the examining committee to meet the requirements of the partner institution are possible. The defence must follow the WU protocol.

### Procedure when PhD defence is at a partner institution

When the PhD thesis defence takes place at a partner institution, the standard procedure of the partner institution is used. The thesis and propositions must be approved by supervisors from both institutions before it can be sent to the examining committee. The examining committee consists of at least four members and includes at least one full professor from WU. The composition of the examining committee must be approved by the Academic Board of both institutions. The supervisor from WU is responsible for seeking approval from WU no later than 6 months before the defence. Modifications to the composition of the examining committee of the partner institution might be requested to meet WU requirements. The defence will follow the protocol of the partner institution.

### **Registration and output-based funding at WU**

With respect to the registration of output, Wageningen University will act according to the rules agreed upon by the Association of Universities in the Netherlands (VSNU) on publications that involve more than one organisation:

- Each joint doctorate counts as a WU PhD graduation, irrespective of where the defence has taken place.
- The joint doctorate is registered in a way that prevents double counting of PhD theses at the European level.

With respect to the registration of the PhD thesis, the category 'Joint Doctorate' and the place of the defence will be added to the library thesis categories.

To determine whether or not a PhD graduation is eligible for output-based funding, the location of the PhD defence will be registered in PROMIS. In case of a defence at a



location other than Wageningen University, the joint doctorate graduation will be considered a non-Wageningen defence from the viewpoint of output-based funding.

**Required title pages for a joint PhD thesis defended at Wageningen University**

If requested by the partner university, the thesis cover and/or the first title page may contain the logos of both universities.

**First title page of a joint PhD thesis**

**The *Phytophthora infestans* avirulence gene  
X5yz and its potato counterpart A6**

**Piet A. Ardappel**

**Second title page of a joint PhD thesis**

In the list of the promotor(s), the type of professor is added in case of a personal chair or a special chair. Also, the affiliation is added.

In the list of the co-promotor(s), their function and affiliation is added.

For WUR (co-)promotors, the affiliation states their basic organisational unit (chair group or business unit) plus Wageningen University & Research as main affiliation.

The other members (the opponents) are listed with their main affiliation.

Affiliations outside the Netherlands include the name of the country.

**Thesis committee****Promotors**

Prof. Dr F. Pietersen  
Personal Chair at the Laboratory of Phytopathology  
Wageningen University & Research

Prof. Dr F. Swartjes  
Professor of Phytopathology  
Partner Institution

**Co-promotor**

Dr P.A. Willis  
Associate professor, Animal Nutrition Group  
Wageningen University & Research

**Other members**

Prof. Dr W.J. Stekels, Wageningen University & Research  
Dr P. de Groot, Partner Institution  
Dr A. de Bruin, Keygene N.V., Wageningen  
Dr P. van Oost, University of Aberdeen, UK

This research was conducted under the auspices of the Graduate School of Partner Institution, Partner Country, and the Graduate School Experimental Plant Sciences, The Netherlands, and as part of the joint PhD programme NAME.

**Third title page of a joint PhD thesis**

Note that on this page 'Wageningen University' is used because that is the legal entity that issues the doctorate.

**The *Phytophthora infestans* avirulence gene  
X5yz and its potato counterpart A6**

**Piet A. Ardappel**

**Thesis**

submitted in fulfilment of the requirements for the joint degree of doctor between

**Partner Institution**

by the authority of the Rector Magnificus, Prof. Dr Other Rector,  
and

**Wageningen University**

by the authority of the Rector Magnificus, Prof. Dr A.P.J. Mol,  
in the presence of the

Thesis Committee appointed by the Academic Boards of both universities  
to be defended in public

on Wednesday 1 February 2017  
at 4 p.m. in the Aula of Wageningen University.

**Fourth title page of a joint thesis**

Note that on this page 'Wageningen University' is used because that is the legal entity that issues the doctorate.

Piet A. Ardappel

The Phytophthora infestans avirulence gene X5yz and its potato counterpart A6  
83 pages.

Joint PhD thesis, Partner Institution, Partner Country, and Wageningen University,  
Wageningen, the Netherlands (2017)

With references, with summary in English

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The last inside page of a joint PhD thesis is similar to Appendix 4c.

The leaflet with the propositions of a joint PhD thesis is similar to Appendix 4d.