

Agricultural Science

International Comparative Evaluation of Agricultural Science related
BSc Programmes

2002

Agricultural Science

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Preface

This report contains a cross-border comparative evaluation of agricultural science related programmes offered at the Royal Veterinary and Agricultural University, Denmark, University College Dublin, Ireland, University of Hohenheim, Germany, and Wageningen University, The Netherlands. The evaluation is conducted by the Danish Evaluation Institute (EVA) in cooperation with an international panel of experts and the involved institutions. The evaluation was conducted in the period May 2001 to November 2002.

EVA is an independent institution formed under the auspices of the Danish Ministry of Education. It develops and highlights improvements in the quality of education and is a national repository of expertise in the field of educational evaluation.

The evaluation is a pilot project and the first of its kind conducted by EVA reflecting the fact that experiences with international comparative programme evaluations within higher education currently are very limited. Accordingly, one aim of the evaluation has been to develop a comprehensive and operational methodological framework for international comparative evaluations. Further to this, the initiation of the evaluation should be viewed in the context of the recent developments at European level, which identify the need to seriously try out and implement the ambitions of the Bologna process concerning transparency and comparability of qualifications in higher education.

EVA expects the report to stimulate the involved institutions to further improve the quality of their teaching and learning in the field of agricultural science and hope that the methodological framework presented in the report will be useful for other agencies that plan to conduct international comparative evaluations.

Christian Thune
Executive Director

This report presents the results of an international comparative evaluation of BSc programmes within the field of agricultural science conducted by The Danish Evaluation Institute (EVA) in cooperation with an international panel of experts within the field of agricultural science. The evaluation includes programmes offered in Denmark, Germany, Ireland and The Netherlands.

1.1 Background to the evaluation

The initiation of the evaluation was primarily motivated by recent political developments within higher education taking place at European level. The European perspective on the quality of higher education has, since 1999, been strongly influenced by the process of follow-up to the Bologna declaration of that year. The six objectives of the Bologna declaration and the follow-up process emphasise the need for more comparability and transparency of quality within higher education. The initiation of the evaluation was a response to these general objectives and not least the specific objective of promoting European cooperation in quality assurance with a view to developing comparable criteria and methodologies. Similarly, the focus of the evaluation reflects the content of central parts of the Bologna declaration and the process of follow-up.

1.2 Objectives of the evaluation

The evaluation has served two distinct purposes. Firstly, to support the development of a common framework for international comparative evaluations and, secondly, to provide the participating institutions with significant reporting on the quality of their BSc programme(s) within the field of agricultural science.

More specifically, the objectives of the evaluation have been: to develop and test a common methodological framework and common quality criteria for comparative international evaluations within higher education programmes; to establish mechanisms for continuous quality improvement and cooperation between the institutions participating in the evaluation; and, finally, to stimulate discussion between countries about what constitutes good quality within higher education.

1.3 Organisation of the evaluation

The Terms of Reference presented in Annex A constitute the framework for the evaluation. A team of evaluation officers from EVA is responsible for the methodological aspects of the evaluation, while a panel of international experts appointed by EVA is responsible for the academic quality of the evaluation including the recommendations to the participating institutions presented in this report.

The members of the panel of international experts (the panel) are:

- Dep. Dir. General Tove Blytt Holmen (Chairperson), Network Norway Council and former registrar at the Agricultural University of Norway
- Director Orla Grøn Pedersen, The National Committee for Pig Production, and The Danish Bacon and Meat Council
- Professor John Robinson, Professor of Animal Reproduction, Scottish Agricultural College, Aberdeen
- Ir. Peter van der Schans, Former President of Wageningen University and Research Centre and former President of the Association of Dutch Universities
- Professor Harald von Witzke, Professor of Agricultural Economics, Humboldt University, Berlin

A further presentation of the members of the panel is provided in Annex B.

The team of evaluation officers from EVA comprises Evaluation Officer Anette Dørge Jessen and Evaluation Officer Signe Ploug Hansen (Project Coordinator).

The panel and the team of evaluation officers have met for three one day meetings in the period from April to August 2002 and have further conducted a two-day site visit at each of the universities participating in the evaluation in April 2002. The fact that only one of the site visits and only one of the three meetings of the panel and the team of evaluation officers were conducted without the complete panel participating, is impressive and illustrates the strong commitment of the individual members of the panel.

The complete time frame for the evaluation is presented in Annex C.

1.4 Documentation material

Two types of documentation form the basis for the assessment of the programmes included in the evaluation: self-assessment reports and site visits.

1.4.1 Self-assessment

Each of the institutions participating in the evaluation has conducted a self-assessment and documented the results in a self-assessment report. The self-assessment reports contain both descriptions and assessments of the status of the programmes under evaluation in relation to the focus areas of the evaluation. The self-assessment groups have generally included at least one representative from each of the relevant stakeholder groups at programme level, including management, teaching staff, students and administrative staff.

To facilitate and structure the self-assessment process, and the subsequent comparative assessment, each institution was provided with an identical self-assessment guide. The guide contained a number of questions related to each of the focus areas of the evaluation as well as a number of general questions concerning the programmes. The questions in the guide were formulated in such a way that the answers to them would provide the panel with the necessary information for assessing the programmes against the criteria presented in Annex D. The main focus was on information of a qualitative nature, and the institutions were only asked to provide a limited amount of quantitative data.

1.4.2 Site visits

After receiving the self-assessment reports the panel conducted two-day site visits at each of the participating institutions. All the site visits were structured in a similar way, in accordance with the standard programme presented in Annex E. The site visits have provided the panel with an opportunity to ask the institutions to elaborate on unclear and less substantiated sections of the self-assessment reports. At the same time, the site visits have served to validate the information provided in the self-assessment report.

To ensure that the site visits functioned as a useful supplement to the self-assessment reports, institution specific interview guides were prepared and used at the site visits. Accordingly, the content of the guides differed, reflecting the differences in the content and quality of the self-assessment reports.

Each visit comprised a number of separate interviews with different groups of stakeholders, who are in one way or another engaged with the programme(s) under evaluation. The purpose of conducting separate interviews with different groups of stakeholders was to validate the content of the self-assessment reports. In other words, the interviews were used to clarify the opinions, perspectives, etc. of the different stakeholders in relation to the information provided in the self-assessment report.

Despite variations in the self-assessment reports, the process by which they were prepared and the organisation and carrying out of the site visits, the panel considers that the two forms of documentation material have complemented each other. This has, in the view of the panel, enabled a comprehensive assessment of the quality of the programmes included in the evaluation in terms of the selected focus areas of core competencies, quality assurance mechanisms and internationalisation.

1.5 Participating institutions

The evaluation includes BSc programmes in the field of agricultural science offered by The Royal Veterinary and Agricultural University (Denmark), University of Hohenheim (Germany), University College Dublin (Ireland) and Wageningen University (The Netherlands). The following sections present the central characteristics of these institutions in terms of the type and scope of programmes they offer, which of these are encompassed by the evaluation and the admission requirements. The sections also briefly present the alternative existing possibilities in the four countries for studying higher education programmes in agriculture.

1.5.1 The Royal Veterinary and Agricultural University (KVL)

KVL is the only university in Denmark offering programmes within agricultural science. At the same time, it is a specialised university in the sense that it only offers programmes within the fields of veterinary and agricultural science.

In total KVL offers seven BSc Programmes. This evaluation covers the BSc programme in agricultural science. In recent years, the student intake of this programme has accounted for approximately 25 % of the yearly intake of the university.

All applicants with an examination pass at upper secondary level are accepted provided they have graduated with certain levels in mathematics, physics and chemistry, all of which are provided through optional courses at upper secondary level.

Four technical/agricultural colleges in Denmark also provide a higher education programme in agriculture. Graduates from this programme obtain the title Agricultural Technologist, and the nominal duration of the programme is two years.

1.5.2 University College Dublin (UCD)

UCD is the only university in The Republic of Ireland offering a degree in agricultural science. In addition, UCD offers a programme in veterinary medicine and a number of programmes within the social sciences and humanities.

This evaluation covers the BSc programme in agricultural science with particular focus on three of the nine specialisation options within the programme, namely, Animal Science (AS), Animal and Crop Production (ACP) and Agribusiness and Rural Development (ARD). The yearly intake of the programme in agricultural science accounts for 6 % of the yearly intake to all programmes offered by UCD.

The “Leaving certificate”, which is taken after 13 years of school, is the general entry requirement. Furthermore there are subject requirements including Irish, English, a third language, mathematics, one laboratory science subject and one other recognised subject.

In The Republic of Ireland, higher education programmes in agriculture are also offered at four Institutes of Technology/Agricultural Colleges. Graduates from these institutions acquire a certificate or a diploma in agriculture after two to three years of study.

1.5.3 University of Hohenheim (UH)

UH is only one among nine German universities offering a programme in agricultural science. Apart from the BSc programme in agricultural science, UH offers programmes in Biology, Food Technology, Nutrition Science, Agricultural Biology and programmes within the fields of Economics and Social Sciences. Besides a Bachelor programme in Business Informatics, the BSc in agricultural science is the only bachelor programme offered at UH. All other programmes still follow the traditional German structure of 4 - 5 year diploma degree programmes.

This evaluation covers the BSc programme in agricultural science with particular focus on three of the five specialisation options within the programme, namely, Animal Science (AS), Crop Science (CS) and Agricultural Economics (AE). In recent years, the annual student intake for the programme in agricultural science has accounted for less than 9 % of the total yearly intake of UH.

Applicants to the programme must have the Abitur examination which is a university entrance qualification, normally acquired after completing 13 years of school. The programme does not have specific supplementary entry requirements beyond the national admission requirements for university studies.

Several colleges in Germany also offer higher education programmes in agriculture. Graduates from these institutions acquire a professional degree in agriculture and the nominal duration of the programmes is three years.

1.5.4 Wageningen University (WU)

WU is the only university in The Netherlands offering agricultural science related BSc programmes.

WU is a specialised university in the sense that it mainly offers agricultural science related programmes. In total, it offers 14 BSc programmes of which the BSc programmes in Animal Science (AS), Crop Science (CS) and Biology (BIO) are covered by this evaluation. Together these account for 26 % of the yearly intake of students at WU.

The admission requirements for the three programmes are a pre-university education diploma with the subjects chemistry and mathematics or physics, or at least one year of professional education from an agricultural college. The acquisition of these normally requires 13-14 years of schooling.

In The Netherlands, several professional colleges also offer higher education programmes in agricultural science. The nominal duration of these programmes is 4 years and the graduates obtain a professional bachelor degree in agricultural science.

1.6 Recent developments within the agricultural sector

This section briefly describes recent changes and developments within the agricultural sector, at both a European and global level. In turn, this provides the context in which recent changes in the content of agricultural science programmes should be understood.

Generally, at the four institutions participating in the evaluation, there has been a shift from a production-oriented approach towards a life science approach in terms of the content and understanding of the subject of agricultural science.

The background for this tendency mainly relates to the following developments:

- Extended number of new sciences into the field of agricultural science
- Continued decline in the economic importance of agricultural production in Europe and a growing importance of new areas such as food safety, human health related to food and agriculture, and the environmental and natural resource dimensions of agricultural production;

- Globalisation of agriculture, including growing international trade, mobility of labour and capital;
- Rapidly expanding world demand for food in the next decades through a considerable population growth in mainly third world countries, which creates the need for productivity growth;
- Demand and need for new approaches to teaching and learning at higher education institutions, involving life-long learning, distance education, and computer based interactive teaching and learning (due to globalisation).

The panel recognises to a varying extent these developments as driving forces in the universities' efforts to provide attractive and beneficial studies to meet the changing needs of both students and society.

1.7 Content of the report

The report is divided in two parts. Part one presents the assessments of the programmes included in the evaluation and the recommendations to the participating institutions. Part two presents the methodological framework and outcome of the evaluation.

Chapter 2 contains a summary of the main conclusions derived from the assessment of the programmes and presents the main recommendations provided by the panel.

Chapters 3 to 6 contain the substantial comparative analysis of the strengths and weaknesses of the programmes in relation to the focus areas of the evaluation and provide the institutions with recommendations for improvement of existing practices.

In chapter 7, an overview of all the recommendations provided to each of the institutions is presented.

Part two begins with chapter 8 by summarising the methodological outcome of the evaluation.

In chapter 9, the motivation for the initiation of the evaluation is explained, whereas chapter 10 presents the objectives, organisation and process of the evaluation.

Chapter 11 provides an overview of the strategic and practical choices made in the process of defining the scope of the evaluation.

The process of formulating the criteria applied in the evaluation is presented in chapter 12, and in chapter 13 an assessment of the criteria is put forward.

Finally, chapter 14 includes a presentation of the methodological lessons learned from the conduction of the evaluation.

Introduction

The first part of the report presents a cross-border comparative evaluation of agricultural science related BSc programmes offered at the Royal Veterinary and Agricultural University (KVL), Denmark, University College Dublin (UCD), Ireland, University of Hohenheim (UH), Germany and Wageningen University (WU), the Netherlands.

The comparative assessment of the programmes has focused on the following three selected areas: (i) core competencies; (ii) quality assurance mechanisms; (iii) internationalisation. The selection of the three focus areas has been highly motivated by the Bologna process, which emphasises the need for more comparability and transparency within higher education. Accordingly, the international panel of expert responsible for the conclusions and recommendations of the report has been invited to focus on assessing the programmes in the context of the Bologna declaration to which the Ministers of Education of all four countries have committed themselves.

The programmes have been reviewed against a common set of quality criteria, associated with each of the three focus areas mentioned above. A further issue has been whether relevant goals have been formulated and disseminated, and the extent to which consistency between the goals and the content of the programmes exists. The panel of experts has striven to identify good practices among the institutions to be used as inspiration to the other institutions when developing the quality of their respective programme(s).

Overall conclusion

The overall conclusion of the evaluation is that the institutions possess different comparative strengths and weaknesses. The strengths and weaknesses relate to different areas. Therefore, the institutions are provided with an opportunity to learn from each other. However, the institutions also share common strengths and weaknesses. The four institutions are all strong on production sciences (animal and crop sciences) while compulsory courses in the fields of economics and social sciences are not being emphasised sufficiently at any of the institutions.

Main conclusions and recommendations

Core competencies

The extent to which the institutions have formulated independent educational goals for the BSc programme(s), including goals for the desired core competencies of their graduates, varies considerably across the institutions.

UH stands out here as the institution with a clear and independent overall educational goal for its BSc programme. The goal does not, however, include goals for the desired core competencies, but such goals have been formulated for the individual modules within the programme.

At WU, overall educational goals for the BSc level programmes offered are not yet formulated, but WU expects to formulate these in connection with the formal implementation of the bachelor/master structure in the autumn of 2002. WU has, however, already made an attempt to formulate a comprehensive set of goals for core competencies for BSc graduates, though these are not yet publicly available and are only known to the management and a minority of the teaching staff.

Despite the fact that the BSc programmes have been in place for several years, neither UCD nor KVL have formulated a comprehensive set of independent educational goals for their BSc programmes. However, UCD has come some way in formulating goals for the desired core competencies of its graduates, and the combined curriculum of the BSc and MSc programme at KVL provides some indication of the desired qualifications of the BSc graduates.

There are differences in the stages of development across the four institutions regarding the definition of goals for the desired core competencies of their BSc graduates. They have all formulated general or specific goals relating to both *professional* and *methodological* qualifications. The extent to which these goals are supported by programme content and methods of teaching and learning differs, however, considerably.

The large number of compulsory courses in basic and applied sciences in the programmes offered at WU, UCD and UH, supports the achievement of the goals for professional qualifications. It is, however, an open question whether KVL can ensure that its graduates achieve the desired professional qualifications, as none of the courses that lead to agricultural science related qualifications are compulsory. Which particular professional qualifications the graduates possess thus depend entirely on the students' selection of courses and the extent to which the students comply with the system of recommended prerequisites.

A special concern is the substantial amount of overlap of courses, which seems to be characterising the programmes of all four institutions. This situation influences the level of progression and cohesion of the programme content.

In relation to methodological qualifications, KVL and WU are the institutions at which the content of the programmes most strongly supports the achievement of the goals relating to the methodological qualifications of the graduates. The limited extent of methods of teaching and learning employed by UCD and UH questions whether they are able to realise the methodological qualification goals of their BSc graduates.

Reflecting these conclusions, the main recommendations related to core competencies include the following:

- All four institutions should formulate a comprehensive set of independent educational goals for the BSc programme(s), including realistic goals for the desired core competencies of the BSc graduates. These goals should specify the desired subject-area related (professional) skills and competencies as well as the desired generic (methodological) skills and competencies of the graduates. They should also specify whether the programme includes both a theoretical and practical dimension, and dimensions of both depth and breadth.
- All four institutions should endeavour to ensure consistency between programme content and goals for core competencies. As for the provision of professional qualifications, this implies that KVL should consider including compulsory applied science courses to ensure that the students obtain a coherent set of professional core qualifications within agricultural science. The implication is also that all the institutions should ensure a high level of coordination between basic science and applied science courses and promote integration of the different types of courses in order to increase the cohesion and progression of the programmes. As for the provision of methodological qualifications, the commitment of both UCD and UH to increase focus on developing the desired methodological qualifications is positive. The institutions should do so by implementing more varied forms of teaching and learning, including cooperative and communicative forms and by offering more method-oriented courses.

Quality assurance mechanisms

The evaluation concludes that the extent to which strategies, goals and procedures for quality assurance are established and implemented in practice varies greatly among the institutions. This situation seems to be derived mainly from the existence of a legal framework for quality assurance in the four countries. This may explain why quality assurance at UH is a more critical issue compared to the other three institutions. While legal frameworks are already established - and have

been for several years - in the Netherlands, Denmark and Ireland, a legal system for quality assurance has only recently been established in Germany.

Of the four institutions WU stands out as the university with the most advanced and developed approach to quality assurance that is institutionalised to an extent, which is beyond comparison with the situation at the three other institutions. This could be due to the fact that, for the last 15 years, WU has been governed by a system of self-evaluation and visitation applied by the Dutch government and VSNU. WU has systematised its various procedures for quality assurance and documented these in a handbook for educational quality, covering goals and procedures for programme evaluations, peer reviews, course evaluations and alumni surveys.

In the case of UCD, the evaluation concludes that UCD, as a result of the requirements laid out in the University Act of 1997, has established an effective procedure for international programme evaluations.

Neither KVL nor UH have established procedures for, or formerly conducted, internal programme evaluations.

Course evaluations are obligatory in the cases of WU and KVL, while they are conducted on a voluntary basis at UCD and UH, which implies that it is up to the individual teacher to decide upon. WU has developed a comprehensive and coherent framework for course evaluations, which includes a standardised questionnaire together with effective and transparent follow-up procedures. Despite the obligatory nature of the course evaluation system at KVL, the student participation rate is less than 50 %. This situation probably relates to insufficient follow-up procedures which, in turn, counteracts student motivation to participate. The voluntary system at UCD and UH implies that course evaluations are conducted sporadically and unsystematically.

Reflecting these conclusions, the main recommendations related to quality assurance mechanisms include that:

- KVL, UH and UCD consider formulating overall goals and procedures for systematic quality assurance.
- Procedures for internal programme evaluations are established and documented at UH and KVL in line with those applied at WU and UCD.
- UH and UCD introduce obligatory course evaluations in line with the framework applied at WU, which includes a standardised questionnaire, effective follow-up procedures and a high degree of transparency through an extended procedure for dissemination and documentation of evaluation

results. Furthermore, KVL should critically evaluate its current system for course evaluations in order to reap the benefit of the system and to increase the student participation rate.

Internationalisation

At all the institutions, written goals for internationalisation exist. Across institutions, however, these goals differ considerably in terms of comprehensiveness and reflection and expression in practice. At KVL a comprehensive and coherent strategy was developed and adopted in 2000 covering the period 2000-2004, and at WU an action plan for internationalisation from 1999 exists which focuses on distinct elements in WU's international work. UCD and UH have so far not developed separate strategies for internationalisation, but goals for internationalisation exist and are reflected in other documents. In the case of UCD, the goals are incorporated in the faculty development plan, and at UH the goals are incorporated in the structure and development plans for the two faculties of agricultural science. The goals and strategies formulated by KVL and WU are largely consistent with the applied criteria and are concerned with student exchange and international cooperation. The quality and coherent nature of the strategy applied at KVL is impressive.

Procedures for and participation in student exchange programmes exist to a different degree at all four institutions. Student exchanges mainly take place within the framework of established initiatives such as the EU Socrates, Erasmus, Leonardo and Tempus programmes.

While the number of exchange students on the MSc programmes at WU is relatively high (25 %), there are few exchange students attending at BSc level. The generally low numbers of students at WU taking part of their studies abroad can be attributed to the fact that the ECTS is not yet applied, which complicates the recognition of courses taken abroad. An almost equally low level of exchange activity exists at UH where only a handful of the 60 students who started the BSc programme in the fall of 1999 have participated in an international student exchange programme. At UCD the number of exchange students is relatively higher (but still generally low) despite a recent fall in the number of incoming and outgoing students over the last few years. In this context it should be noted that the majority of outgoing students use the exchange programmes to fulfil the Practical Work Experience (PWE) component, which is the only component taken abroad for which UCD gives credit. KVL stands out as the institution with the highest number of students attending an exchange programme at BSc level with an average of 40 % of all students having participated in an exchange programme.

Reflecting these conclusions, the main recommendations related to internationalisation include that:

- UH and UCD further develop their perspectives on internationalisation, for instance by formulating a strategy for internationalisation. In this context UCD should consider broadening its international perspective to include aspects relating to international cooperation, networking and joint study programmes.
- WU, UH and UCD take action to promote international student exchange at BSc level. In the case of UCD, it should enter into closer cooperation with other European universities with a view to increasing participation in European exchange programmes. This will occur via participation in joint programmes and through the development of common curricula as the basis for courses taken abroad. In the case of WU, the Dutch credit system should be replaced with the ECTS, as the sole credit system.

The recommendations outlined in this summary represent the main recommendations of the evaluation. A complete set of recommendations is presented in chapters three to six of the report, and an overview of the recommendations is provided in chapter seven.

3.1 Student characteristics

3.1.1 Intake

The figures for the yearly intake shown in table 1 indicate that the programmes included in the evaluation differ in terms of the number of students entering the programmes each year and in terms of how the intake has developed over the years. When interpreting the numbers, however, it should be noted that the figures for the different institutions are not directly compatible. One reason is that WU does not have a programme labelled “agricultural science” but a number of specialised programmes within the field of agricultural science. Secondly, the yearly intake for the programmes of the different universities takes place at different times of the year. Thirdly, UH has a biannual intake, implying that 75 % of annual incoming students to the agricultural science programme start in the winter semester (October) and the remaining 25 % in the summer semester (April).

Table 1
Annual number of incoming students in the academic years 1998/99-2001/02

	KVL	UCD	UH	WU			Total
				AS	CS	Bio	
1998/1999	155	208	124*	98	35	73	206
1999/2000	128	195	107	85	35	82	202
2000/2001	104	201	105	75	31	69	175
2001/2002	101	198	107	79	21	88	188

* Intake figure for the former diploma programme in agricultural science

In spite of these factors, the table reveals that the accumulated intake into the three programmes of WU and the intake figures for the UCD programme are at a similar level, and at least in recent

years, almost twice as high as the intake to the UH and KVL programmes. While the figures reveal that the (accumulated) intake has been relatively stable over the last few years at WU, UCD and UH, they display a dramatic decline at KVL.

KVL is concerned about this decline of approximately 1/3 and has, over recent years, taken a number of initiatives to try and reverse the trend. One example is a recently conducted survey involving high school students focusing, among other things, on their knowledge and opinion of the university. Another initiative is the establishment of an Agricultural Science Committee with the task of reviewing the structure and content of the present programme.

Although the figures do not show a decline in the programme intake at UH for the three years that the BSc programme has existed, the impression gained from the site visit is that UH is also concerned about the number of applicants. As a matter of fact, UH has recently established a new position for a public relations manager with a view to increasing the number of applicants.

In the case of WU, the steady decline in the number of applicants for the crop science programme is worrying the university management. WU experiences that crop science still attracts international MSc students but not students coming directly from secondary school. The programme management expresses that, despite fluctuations over recent years, the biology programme is the one experiencing the largest increase in the number of applicants. The relatively high number of applicants to the animal science programme, compared with crop science, is perceived to reflect the link between animal science and the very popular veterinary science, which has high admission requirements.

UCD is the only one of the institutions that is not presently concerned about the level of applications. The intake has been stable over the years, and UCD is experiencing a remarkable increase in the number of applicants. The number of applicants for 2002 is 19 % higher than in 2001, including students who wish to be transferred from the technical colleges. UCD did experience a decline for some years and was worried about the development. The concern resulted in the implementation of a strategy whereby the faculty is allowing direct applications to the specialisations instead of the common entry to the agricultural programme. The programme management interprets the remarkable increase in the number of applicants for 2002 as an indication of the success of this strategy.

3.1.2 Average age of incoming students

As table 2 illustrates, the average age of the incoming students to the agricultural science (related) programmes differs across the institutions.

Table 2
Average age of incoming students

KVL	UCD	UH	WU
22,9	17,8	20,4*	19,0**

* Estimate based on data on age of graduating students

** Average of the programmes in animal science, crop science and biology

The average ages of the incoming students of UCD and KVL represent the two ends of the spectrum, with a difference of five years, whereas the average age of the incoming students of UH and WU lie towards the lower middle end of the spectrum.

The differences in the average age of incoming students at the institutions does not appear to have an impact on how the institutions perceive the problem of heterogeneity of student knowledge levels with regard to relevant basic sciences. All the institutions except WU report that heterogeneity in this sense is a factor that they have to cope with, and one which they find challenging.

3.1.3 Choices of specialisation

Students at WU enter directly into specialised programmes, whereas students specialise after the first and second year at UCD and UH respectively. At KVL no formal fields of specialisation exist, but a rough division of the students can be made by considering under which department they have decided to write their BSc thesis.

There are both similarities and differences between the four institutions in terms of the relative popularity of animal science and crop science. At UCD and UH, animal and crop production and crop science respectively are the most popular fields of specialisation, measured in terms of the share of students' choice of specialisation. In the case of UCD, the relative popularity of animal and crop production is much more pronounced than in the case of the crop science specialisation of UH. In contrast, crop science is the least popular programme among the three included from WU. The department alliances of the students at KVL reveal no discernible differences in the number of students specialising in crop science and animal science respectively.

3.1.4 Drop out

The percentage of students who drop out of the programmes varies widely. Both KVL and WU have high drop out rates. In contrast, the drop out rate at UCD is very low. UH does not have figures for the drop out rate in the new BSc programme and can only report that 22 of the 84

students who started in the winter semester 1999/2000 have either not yet completed their first two years of basic studies or dropped out. The students interviewed during the site visit at UH interpreted the dropouts as an indication that some students found the basic science levels too demanding.

The high drop out rates at both KVL (30-40 %) and WU (20-30 %) are seen as reflecting a few different facts. Firstly, many students have had these programmes as a second priority in their university application. If these students later get the possibility to shift to their first priority programme, most of them are likely to do so. Secondly there are students who, once they have commenced, discover they prefer to study (or do) something else. More specifically, WU explains the relatively higher drop out rate for the animal science and the biology programme with the view that these programmes do not always meet the expectations of the students, or that students find some of the courses too difficult, boring or irrelevant. Although the drop out rate at WU is high, the impression from the site visit is that the drop out rate at WU is lower than those of other technical universities in the Netherlands. Similarly, the high drop out rate for the programme at KVL resembles both the drop out rates of other programmes at KVL and those of many other programmes offered by Danish universities.

According to both WU and KVL a significant number of those who drop out of the agricultural science (related) programme(s) are likely to choose to commence another programme offered by the university. This implies that the number of students who actually drop out of the university is in fact lower than the percentages presented above. The panel, however, finds it important to stress that both actual dropouts and shifts from one programme to another are resource consuming.

At UCD the dropout rate is remarkably low. The average is only 2,5 % and the dropouts mainly occur during the first year of the programme. The university management maintains the low drop out rate is a result of the faculty procedure for contacting students who are absent from courses. In practice, UCD has employed an academic whose main area of responsibility is liaison with the first year students.

3.1.5 Further choices of the graduates

The institutions vary significantly in terms of the number of BSc graduates who continue studying – or who are expected to do so – and in the number entering the labour market directly upon completion of their BSc studies. There may be several reasons for this, but in the opinion of the panel, an important one is the fact the bachelor/master structure is a more recent innovation in some of the countries in which the programmes are offered than in others.

As mentioned earlier in the report, the bachelor/master structure is a new phenomenon at both WU and UH. Although WU has been trying out this new structure for a few years, the formal implementation of the structure is the autumn of 2002. At UH, the structure was formally implemented in the winter semester 1999. At KVL, the bachelor/master structure has been in place since 1993, whereas it is the long established structure at UCD. It is not surprising, therefore, that the percentage of the BSc graduates from UCD who enter the labour market is much higher than the actual or expected percentage from the other three institutions. The fact that the programme at UCD lasts four years, enabling the inclusion of more labour market training than with the three-year programmes, may also be part of the explanation.

Moreover, the majority of the BSc graduates from UCD enter directly into the labour market. The percentages vary according to the specialisation and have generally decreased over the last decade. Nevertheless, on average 58 % of those who graduated in 1998-2000 with one of the specialisations included in this evaluation have gone directly into the labour market. Almost all of these found employment within 6 months of graduation. Of the remaining 42 %, almost all have continued with a master, a higher postgraduate diploma or research.

At KVL, the postgraduate figures are quite different. Here the experience is that approximately 90 % of the BSc graduates continue with the MSc in agricultural science offered by KVL. Another 5 % continue with another MSc programme offered by KVL. KVL does not keep a record of whether the remaining 5 % leave the university to study a master degree at another university or to seek employment on the basis of their BSc degree.

Since WU has not yet educated BSc graduates and UH has only educated a limited number, neither have figures for the number of students who continue with a master programme or enter the labour market on the basis of their BSc degree. Nevertheless, the expectation expressed by both institutions is that most students will continue with the MSc level of the BSc programme they have graduated from. The interviews with students at both site visits support this expectation. In relation to UH it should, however, be mentioned that the legal regulations applying to the programme stipulates that only students with grades above average can be admitted to the master programmes.

3.1.6 Recommendations for student characteristics

The panel shares KVL's concern about the dramatic decline in the number of applicants to its programme and supports KVL's commitment to analyse the reasons for the situation, and to investigate ways of dealing with it. Considering the notable decline in the number of applicants to the WU crop science programme, the panel recommends that WU also takes the initiative to analyse the reasons for this decline and investigates ways to deal with the situation.

The panel is impressed by the rise in the number of applicants to UCD and recommends that KVL and WU initiate a close contact with UCD with a view to gaining inspiration for possible initiatives that may increase the number of applications to their programmes, assuming this is what they are aiming for. Having stated that, the panel is aware of the more extensive role of the agricultural sector in Ireland, compared to Denmark and The Netherlands, and believes that its possible impact on the number of applicants should not be underestimated.

Although the extent to which the institutions emphasise active recruitment of students has not been systematically investigated, the impression of the panel is that only UH has implemented a strategy for active recruitment of students. The panel supports the initiative of UH to create a position for a public relations manager and recommends that KVL and WU, who express concern about declining numbers of applicants, consider implementing a similar initiative.

The panel is impressed by the very low dropout rate at UCD. Although there are likely to be several reasons for this, compared with WU and KVL, the panel believes that the focus on active support to first year students (cf. section 3.1.4) is an important factor. It therefore recommends KVL and WU to analyse when, and in which form, support to students is most needed and to adjust their student counselling systems accordingly. The panel also recommends that KVL and WU analyse and record the reasons behind the relatively high drop out rates. For instance, do the students drop out to study another programme or to start work, and what are their explanations for making this choice?

3.2 Programme goals

3.2.1 Existence and documentation

The existence and documentation of programme goals are essential for several reasons. Goals provide prospective students with a more informed basis for their choice of study and support the aim of transparency. Explicitly formulated goals also provide teaching staff with terms of reference for designing content and selecting teaching methods for the different courses. Furthermore, operational goals facilitate assessment of the extent to which goals are met.

The documentation material reveals that all four institutions are aware of the importance of goal formulation and are committed to focus on this area. Despite general agreement on the importance of goals, the extent to which the four institutions have formulated goals for their BSc programme(s), including their scope and relationship to sub-goals and strategic goals, varies widely.

UH stands out as the institution with a clear and independent overall educational goal for its BSc programme. The overall goal is expressed in the examination and study regulations, in the curriculum description and in the university guide as follows: "The objective of the Bachelor degree program is to offer broadly based, scientifically as well as practically oriented training in Agricultural Sciences".

More specific goals for the programme as a whole, and for its specialisations, do not exist but the self-assessment report of UH gives the impression that UH recognises the importance of formulating such goals.

At WU, overall educational goals for the BSc level of the programmes offered are not yet formulated. The impression gained from the site visit is that such goals will shortly be formulated in connection with the formal implementation of the bachelor/master structure in the autumn of 2002. The goals that exist at present refer to the traditional five-year programmes offered at WU and are presented in the study handbook. These are very comprehensive in the sense that they comprise a description of the overall goals of the programme, as well as specific goals for the desired core competencies of the graduates. WU expects that the goals for the master level will resemble the present ones for the five-year programmes. WU sees a challenge lying in the formulation of independent goals for the BSc level.

Despite the fact that they have had BSc programmes for a very long time, neither UCD nor KVL have formulated a comprehensive set of independent educational goals for their BSc programmes.

At UCD, the Faculty of Agriculture has formulated an overall educational goal but it applies to both the undergraduate, postgraduate and continuing education programmes offered by the faculty. This goal is expressed in the faculty development plan 2001-2004. At the level of the individual specialisations, educational goals have been formulated for the animal science specialisation. These are presented in the faculty information brochure, intended as information for prospective students. Corresponding formulations of educational goals for the other specialisations are not available.

At KVL overall educational goals for the BSc programme have not been formulated, but the combined study regulations for the BSc and MSc programme provide some indication of the desired capabilities of the BSc graduates. The explanation for the lack of independent goals for the BSc programme given by KVL is that the goals for the BSc programme are a subset of the goals for the MSc programme.

3.2.2 Information and discussion

The extent to which students, staff and other stakeholders are involved in the discussion of educational goals and are generally informed about the goals also varies among the institutions.

In the case of UH, the documents in which the overall programme goals are presented are all publicly available and widely used by students and teaching staff. During and after the implementation of the new programme structure, the overall goals have been discussed on several occasions at teaching staff and management level. At present, a more formal discussion of the goals is taking place as part of an evaluation required by the Ministry to which the University belongs. These discussions take place primarily within the joint commission of the two agricultural faculties at UH: the "Gemeinsame Kommission". This commission consists of representatives from the teaching staff, students and administration.

At WU, the board of the Educational Institute of Life Science, which consists of both teaching staff and student representatives, determines the goals of the programmes. As soon as a programme is determined, teaching staff and students, etc. are informed through brochures and via the Internet.

The combined study regulations for the BSc and MSc programme, which constitutes the legal basis for the two programme levels at KVL, is easily accessible in both a written and an electronic version. The programme goals are evaluated once a year by the programme management. In the case of major amendments to the programme discussion of the goals takes place at both programme management and university management levels. At each of these levels, the discussion takes place in committees comprising teachers and students.

The faculty development plan of UCD, in which the goals are presented, is a strategy paper which is redrafted every four years. The current plan has been distributed to all staff within the faculty and has been prepared by a number of staff working groups under the direction of the faculty executive committee. The plan was the subject of a number of general staff meetings, and all members of staff have had an opportunity to contribute to its development. Neither students or other stakeholders were directly involved in the process, and the plan is not available to students or other stakeholders.

3.2.3 Content of goals

None of the goal formulations of the four institutions specify the intended mix of theoretical and practical orientation, or the intended balance between the depth and breadth of programme content.

As opposed to the other institutions, the overall goal of UH does, however, express that the programme has both a theoretical and practical orientation.

3.2.4 Recommendations for programme goals

As expressed in section 3.2.1, explicit goal formulations are essential. In the view of the panel, programme goals must specify both the desired subject-area related skills and competencies and the desired generic skills and competencies of the graduates. The panel supports the commitment of all the institutions to focus on goal formulation and recommends they specify the desired type of skills and competencies outlined above. When formulating the overall educational goals, the panel recommends the format of the ones developed by UH (cf. section 3.2.1) be used as a means of inspiration.

More specifically the panel supports WU's commitment to and current movements towards formulating independent educational goals for the new BSc programmes. The panel is critical of the fact that neither UCD nor KVL have formulated independent goals for their BSc programme in agricultural science despite the fact that their BSc programmes have existed for a very long time. The panel recommends both KVL and UCD to give the formulation of independent educational goals for their BSc programme a high priority.

The panel accepts the view of the institutions that the goals should not necessarily include specifications of the intended mix of theoretical and practical orientation and the intended balance between depth and breadth of the programme content. It does however recommend that the goals specify whether the programme includes a theoretical as well as a practical orientation and whether it has dimensions of both depth and breadth.

At both UCD and UH where the specialisations form an important part of the programme, the panel recommends that independent educational goals for all the specialisations are formulated. The format of the goals for the specialisation in animal science formulated by UCD may be used as inspiration in this regard.

In terms of how and where the goals are discussed and how different stakeholders are informed about the goals, the impression of the panel is that both WU, KVL and UH have appropriate procedures. The panel's impression of UCD is, however, that discussion and information concerning goals only involves programme management and part of the teaching staff. The panel therefore recommends UCD to involve all relevant stakeholders, including students, in the preparation of the goals.

3.3 Programme structure and content

3.3.1 General structure and content

There are both similarities and differences between the institutions in terms of the nominal duration of the programmes, as well as in terms of the programme structure, composition and weighting of different study elements.

Length and structure

At WU, UH and KVL the nominal duration of the BSc programmes is three years, whereas the nominal duration at UCD is four years.

At both UCD and KVL, each study year comprises a number of courses or other study elements, which are examined at the end of the term or the study year. In contrast, UH and WU have a structure where each of the three years consists of a number of study periods with concentrated study modules that are examined upon completion. At present, UCD is also considering introducing a similar structure.

Common content

The programme at UH is the one where the largest proportion of the content is common to all students entering the agricultural science programme. The first two years consist exclusively of common compulsory courses and are considered basic studies focusing on developing student knowledge within the basic sciences, as well as within each of the specialisations available under agricultural science, i.e. crop science, animal science, soil science, agricultural engineering and agricultural economics. The content of the third year depends on the choice of specialisation. Within each of the specialisations, about 50 % of the credits are obtained from common compulsory courses.

At UCD, the agricultural science students also experience a large proportion of common programme content. The content of the first year is common for all faculty students and comprises compulsory courses, mainly in the basic sciences. The content of the following years depends on the choice of specialisation, but students of the three specialisations included in the evaluation also have 50 % of the second year courses in common, and quite a few other compulsory courses are shared by the students of two of the three specialisations. Within each of the specialisations, 83-90 % of the credits are obtained from compulsory courses.

Compared to UH and UCD, KVL represents the other end of the spectrum in terms of how much of the programme content all the students of the agricultural science programme have in com-

mon. The compulsory courses, primarily basic science courses, which amount to 20 % of the total amount of credits, are all placed within the first two years of the programme, and these are the only courses that all the students of the agricultural science programme have in common.

At WU, students of the three programmes included in the evaluation share 75 % of the first year course content. The common courses are primarily basic science related courses. Of the applied science courses, only one course - in ecology - is common to the students of all the three programmes. A few other courses are shared by the students of two of the three programmes, but the large majority of the applied science courses are programme specific.

Annex F provides a list of the compulsory applied science courses (for UH modules) offered in one or more of the programmes or specialisations included in the evaluation.

The documentation material gathered under the evaluation reveals that the content of the programmes at UH and WU have not yet changed dramatically with the introduction of the new programme structure. At WU the content of the new BSc programmes resembles the content of the first three years of the old five-year programmes. Although the bachelor/master structure is new, the previous five-year programmes were structured in a similar way, comprising three years of foundation studies followed by two years of more specialised, in depth studies. Thus the implementation of the new structure has not (yet) led to any radical changes in the content of the programmes at BSc level, apart from the introduction of a BSc final project. Similarly, at UH, about two thirds of the content of the first two years resembles the content of the first two years of the former four year diploma programme.

3.3.2 Balance between different study elements

Table 3 illustrates that the inclusion and weighting of different study elements, measured in percentage of credits obtained from the different elements, varies from one institution to another.

Table 3
Percentage of credits obtained from different study elements

	KVL	UCD			UH	WU		
		ACP	AS	ARD		AS	CS	Bio
Compulsory courses	20	76	88	82	84	69	69	59
Elective courses	57-65	8	6	8	13	13	16	16
Semi-compulsory study elements*	5-13	-	-	-	-	6	6	19
BSc thesis/major project	10	-	-	2	3	11	8	6
Practical training	**	17	7	8	***	-	-	-

* *Semi-compulsory study elements refer to study elements of which students must choose one of two or more elements being offered. The specialisation options are not included in this definition.*

** *Students can choose to do practical training, for which they may obtain up to 15 ECTS credits (8 % of the total credits).*

*** *The programme also includes 26 weeks of compulsory but not credited internship (20 % of the workload)*

Compulsory, elective and semi-compulsory courses/study elements

All the programmes comprise both compulsory and elective courses. At WU and KVL the programmes also include some semi-compulsory study elements. At WU these comprise clusters of courses that the students must choose from. At KVL the semi-compulsory study elements are represented by two projects, one of which each student has to choose.

BSc thesis

At WU, UH and KVL, the students complete their BSc studies with a BSc thesis. At UCD, only the ARD specialisation includes a BSc major project. The scope of the BSc thesis/major project differs between the institutions and, in the case of WU, also between the different programmes. Whereas WU and KVL devote 6-11 % of the total BSc credits to the BSc thesis, UH and UCD only devote 2-3 %.

Practical training

UCD is the only institution among the four that includes practical training as a compulsory part of the programme for which students obtain credits. The students of each of the specialisations have to go through a compulsory PWE period during the third year of the four-year programme. The duration of the training varies from 6 months in the ARD and AS specialisations to 9 months in the ACP specialisation.

At UH, the students must also go through a total of 6 months of practical training (internship) but credits are not allocated to this. The internship may be subdivided in three parts and can be completed before the students enter the programme, in vacation periods or in a period where students take a break in their studies. The practical training typically takes place on farms and in other enterprises related to agriculture, etc.

At KVL, practical training is not a compulsory element, but the students may choose to do some practical training and can obtain credits for this. Practical training can be placed during the study course, but it is also possible to obtain credits for practical training completed prior to admittance to the programme, and clear procedures exist for the approval of different forms of practical training.

The documentation gathered for the evaluation reveals that there is a high level of appreciation of the practical training among the students at both UCD and UH.

Balance between compulsory and elective courses/study elements

Whereas WU, UCD and UH strongly emphasise compulsory courses and other compulsory elements, the opposite occurs at KVL at present. Whereas compulsory and semi-compulsory study elements amount to 74-92 % of the programme content at WU, UCD and UH, the compulsory and semi-compulsory study elements at KVL amount to a maximum of 43 %.

The weighting of compulsory courses contra electives differs even more.

At UCD the courses available as electives have been reduced through the introduction of new compulsory courses. AS and ACP students find the opportunity, the quality and the quantity of electives more than adequate, but AS students find that they lack enough information to make informed choices. In contrast, ARD students find the number of elective courses unsatisfactory.

At KVL, where most of the programme content is determined by the students' choice of elective courses, there is a general belief that this freedom to select the courses they want is primarily a positive aspect. The experience of KVL is that the students make sensible choices, and that the system provides considerable motivation for them to sharpen their own profiles through structuring their course choices with regard to desired future employment. Nevertheless, the site visit revealed that KVL is currently discussing the possibility of increasing the amount of compulsory study elements in the programme.

Since the elective courses at both UH and WU are placed towards the end of the new BSc programmes - which WU has not yet experienced, and UH to only a limited extent - it is still too early to assess their appropriateness. According to the self-assessment report, however, the students at UH are critical about the extensive emphasis on compulsory courses, as this decreases the attractiveness of the programme. The argument for the emphasis on compulsory courses presented in the self-assessment report is that this is the only way to ensure that the graduates possess the desired and necessary qualifications for entering the labour market.

3.3.3 Progression and cohesion

Progression

As indicated in section 3.3.1, all the programmes are characterised by offering basic science related courses at the beginning, followed by courses in the more applied sciences. The applied science courses have knowledge of the basic sciences as prerequisites. In this sense they are all characterised by progression. In general, the students interviewed during the site visits confirmed that progression exists.

The only concern of the panel relating to progression in the sense described above is the reported consequences of the biannual intake at UH. Students at the site visit stressed that since the basic science courses of level one are taught in the winter semester those students starting in the summer semester are forced to take basic science courses of level two first and then take the basic science courses of level one afterwards.

In terms of progression in the more applied science courses, the panel is critical about the extent to which this is actually achieved at KVL. In order to ensure progression in its programme, which is characterised by elective courses, KVL uses a system of recommended prerequisites. This system implies that each of the elective courses has recommended prerequisites in terms of other courses, which students must have taken in order to obtain the full benefit from the course. In this way the choices of the students are in principle steered. However, as the wording indicates, the prerequisites are not compulsory and it is thus left to the individual student to decide whether they want to follow the recommendations or not.

Moreover, the impression gained from the site visit at KVL is that this system is not working well enough to ensure progression. Although KVL has expressed that the vast majority of students follow the system, in particular the interviews with students have made the panel aware that the recommended prerequisites are only partially followed. According to the students interviewed, the main reason why students do not always follow the recommendations is that they experience that some courses simply have so many recommended prerequisites that there is insufficient time to follow all the courses that provide these. Despite the fact that the study committee evaluates the

appropriateness of the prerequisites when evaluating the courses, another reason put forward by some students for not always following the system of recommended prerequisites is that they have experienced that the recommended prerequisites are sometimes unnecessary.

Cohesion

Some lack of cohesion of the programme content seems to be a critical issue at all four institutions.

The comments by the students at UCD have given the impression that three phenomena exist, which in the view of the panel hinder cohesion in the programme content. Firstly, the students generally expressed that they experienced overlap between courses. Secondly, AS students reported some lack of cross-references, or links, between courses dealing with similar issues, and ARD students experienced too many courses pointing in different directions in the third and fourth year. Finally, the site visit gave the panel the impression that the main factor impeding cohesion of the programme content is lack of coordination between the basic science and applied science courses. At the site visit, the programme management expressed awareness that some lack of cohesion exists, mainly in the first and second years, due to limited coordination between the courses provided by different faculties, and of the challenge to overcome this problem.

At UH, the students interviewed expressed the view that they have experienced overlap between some of the basic science courses. During the site visit, the university management also highlighted overlap between different modules as being a problem in the programme. The programme management is aware of the problem of overlap between courses. At the site visit, optimism was expressed that the merging of the two agriculture faculties at UH, which is to take place soon, will reduce the overlap and generally increase the cohesion of the programme, due to anticipated closer communication and cooperation between teaching staff.

Concerning KVL, the panel believes that the system of recommended prerequisites could ensure cohesion, but only if it works as intended. At present, it is not functioning well enough to ensure cohesion. The extent to which students experience a coherent set of courses depends on the course choices they make. The impression that some students do not always follow the system of recommended prerequisites as they have experienced that the prerequisites are unnecessary, suggests, however, that the course coordination, particularly between the basic science and applied science courses, is insufficient.

At WU, the students interviewed expressed the view that they had experienced overlap between a few courses, but they did not regard this as a major concern. Still, even here, the level of coordina-

tion between the basic science and applied science courses is, in the view of the panel, not fully convincing.

It should be noted that the lack of coordination not only has a negative effect on the level of cohesion of the programmes but also on the level of progression.

3.3.4 Breadth and depth

The majority of the students at KVL, WU and UH continue - or are expected to continue - studying after the completion of the BSc level, and a quite remarkable (and increasing) percentage of the students at UCD do the same (cf. section 3.1.5). Seen in this light, and considering the broadness of agricultural science compared to other fields of science, it is not surprising that the programmes generally focus more on breadth, rather than depth. Nevertheless, the panel can identify some differences in the way the programmes attempt to achieve balance between the conflicting dimensions of breadth and depth. There are also differences in perceptions of the adequacy of the present balance between these two dimensions.

At WU, the students enter directly into specialised programmes within agricultural science. The general impression is that the depth dimension is thus more strongly represented in the programmes of WU than those of UCD and UH.

Despite the early specialisation of the students at UCD and the four-year duration of the programme, the documentation material gives the impression that the programme content is still focused much more on breadth than depth. This seems to be particularly true for the specialisations in AS and ACP, whereas the specialisation in ARD appears to be more depth oriented in the third and fourth year compared with other specialisations. One explanation provided is that the extensive focus on compulsory courses limits the possibility for students to choose to study areas of interest at a more advanced level than that of the compulsory part of their study.

Both breadth and depth appear to characterise the programme offered by UH. Whereas the first two years focus on breadth, the final year, where students specialise within a specific area of agricultural science, provides the opportunity for more in-depth study.

At KVL, the balance between the dimensions of breadth and depth is up to the individual students. Depending on their individual choice of courses, and the composition of these, they may either graduate with a broad knowledge base, or an in-depth knowledge of one or more area(s) of interest within the broad definition of agricultural science employed by KVL.

The inclusion of a BSc thesis at WU, KVL and UH is, in the opinion of the panel, an element which strengthens the depth dimension of the programmes offered by these institutions.

Opinions about the present balance between the two dimensions of breadth and depth vary among the institutions. Students of UH and UCD, who are the ones experiencing the largest share of compulsory courses, are those who are most critical about the balance between depth and breadth. They suggest there is too much emphasis on breadth at the expense of depth and opportunities to study more areas of particular interest at a more advanced level. The critique from the students of UH must, however, be seen in the light that none of the students interviewed during the site visit had experienced the final part of the new BSc programme in which the elective and more specialised courses are offered.

In contrast to the students at UCD and UH, the students interviewed at WU expressed the view that they consider their programmes have a good balance between breadth and depth. They experience that breadth is weighted more than depth but also find they have sufficient possibilities for studying subjects at a more advanced level.

3.3.5 Recommendations for programme structure and content

For a study focusing on applied science, such as a BSc in agricultural science, the panel generally recommends that practical training should be an integral part of the programme. The universities themselves should decide how much practical training the programme should include, but the panel recommends that KVL and WU include practical training as a compulsory element, similar to UCD and UH.

UH is recommended to find a solution to the problem that students starting in the summer semester have to start with higher level basic science courses and then proceed with basic science courses at a lower level.

In order to increase the cohesion and progression of the programmes, all the institutions are recommended to ensure a high level of coordination between basic science and applied science courses and to promote integration of the different types of courses.

The panel finds KVL's system of recommended prerequisites interesting but, in order to ensure progression and cohesion, it needs to be more disciplined. The panel therefore recommends KVL to assess the adequacy of the system. One initiative that should be taken is an analysis of the extent to which the students follow the recommendations.

Moreover, the panel recommends KVL to reflect upon the costs and implications of having a structure where the students are free to decide the programme content. For instance, the costs arising from the fact that some students make course choices that they regret later in their studies. Students at the site visit commented that this often resulted in a prolongation of their studies, since they later realise that they (also) have to take other courses in order to obtain a preferred and coherent profile. Furthermore, the elective system requires a comprehensive system for student advice. The present student counselling system at KVL appears to be working well but, based on the impression from the site visit, the panel is sceptical about its ability to provide adequate guidance to the students to ensure the efficient functioning of the elective system.

Finally, UCD and UH are recommended to reconsider the current balance between the depth and breadth of programme content. When doing so, the panel recommends that they consider whether greater emphasis on a BSc thesis would provide the students with a better opportunity to satisfy their desire to study particular areas of interest in more depth.

4.1 Goals for core competencies

4.1.1 Character and availability

The way in which the institutions have formulated goals for the desired core competencies of their graduates, the content of these goals and their availability varies between the institutions. Although none of the institutions have formulated a comprehensive set of publicly available goals, some have clearly been more concerned with this issue than others.

WU is the only institution, which has attempted to formulate a comprehensive set of goals for the desired core competencies of the graduates of the BSc programmes included in the evaluation. These goals comprise a number of specific aims for both professional and methodological qualifications at programme level and at the level of the specialisations within each of the programmes.

An example of WU's goals for professional qualifications of the animal science programme is: "Graduates have knowledge of biology of domesticated animals and know how biological features and mechanisms in animal production are used in order to arrive at an optimal and responsible production of food stuffs and other useful products". In relation to methodological qualifications, examples of goals for the animal science programme are: "The graduate has learned to present scientific information both orally and in a written form and has developed good negotiation skills and the ability to participate in constructive meetings".

WU's goals for the desired core competencies at BSc level are, however, not (yet) publicly available and it appears from the site visit that the goals are known only to the management and a minority of the teaching staff.

UCD has also come some way in formulating goals for the desired core competencies of its graduates. A number of different faculty reports and documents contain information on the desired professional as well as methodological qualifications of the graduates. It should be noted, how-

ever, that the public availability of the reports and documents is limited, and that students are generally not aware of the existence of objectives concerning core competencies.

In the case of UH, a coherent set of programme goals for the desired core competencies does not exist, but comprehensive goals have been formulated for each of the modules that the programme consists of. These goals focus almost exclusively on the desired professional qualifications of the graduates whereas the desired methodological qualifications are generally not explicitly stated. As part of the overall objective of the programme it is, however, stated that "the BSc graduates have acquired the methodological skills to be able to work in various vocational fields." The module goals are publicly available in a paper and an electronic version of the "lehrkartei" which is widely known and used by both students and teaching staff.

As described earlier, the combined study regulations of the BSc and MSc programme at KVL provide some indication of the desired capabilities of the BSc graduates. These formulations may also be regarded as KVL's goals for the desired core competencies of its BSc graduates. Though very broad in nature, these goals are directed towards both professional and methodological qualifications, but without actually specifying the desired type of professional and methodological qualifications. From the self-assessment report, as well as the interviews during the site visit, the panel has noted that the only identifiable goal KVL has for its BSc programme is to prepare the students for studying an MSc. The competencies required to be able to do so are, however, not explicitly stated.

4.1.2 Inclusion of needs and requirements of the labour market

The extent to which the four institutions have formulated their goals for the desired core competencies of the graduates while taking account of the needs and requirements of the labour market reflects the different labour market conditions for BSc graduates in the four countries - or at least the different expectations of the labour market conditions that will meet graduates.

Whereas the labour market in Ireland has traditionally employed bachelor degree graduates and continues to do so, graduates with a bachelor degree are either not (yet) demanded or not yet experienced by the labour market in the three other countries. Accordingly, it is not surprising that UCD appears as the institution among the four that is most concerned about having programme goals and content, which reflect the needs and requirements of the labour market.

Also, UH has placed considerable emphasis on educating BSc graduates who are ready for entering the labour market. Although the goals for the desired core competencies have so far primarily been developed with reference to the goals of the former diploma degree, the achievement of these goals is presumed to give the graduates good opportunities on the labour market. Com-

pared to WU, which has also just recently commenced the implementation of the bachelor/master structure, the different expectations as to whether the labour market will accept BSc graduates are striking. Although UH maintains a relatively strong focus on delivering BSc students who can fulfil the needs and requirements of the labour market, the preparation for further studies still seems to be at least as important.

The expectations of management, teaching staff and students at WU are that the labour market is not yet ready for graduates with only a bachelor degree. Only BSc graduates in crop science are expected to be in demand on the labour market - at least in a short-term perspective. Reflecting this, WU presented the content of the BSc programme in crop science to employers at the time of the preliminary introduction of the bachelor/master structure at WU. The same initiative was not taken for the biology and animal science programmes, but WU expresses that it intends to discuss with employer organisations what skills the BSc graduates should possess in order to be able to get a job based exclusively on their BSc degree. In practice, the primary goal is to prepare the students for studying the MSc programme. This impression is supported by the fact that WU in its self-assessment report and during the site visit, expressed that the aim of the BSc, and not least the BSc final project, will be to make sure that students have attained the necessary skills to continue with the MSc programme. Moreover, the goals for core competencies have not been formulated to reflect the needs and requirements of the labour market.

KVL has not used the potential demand and requirements of the labour market as a point of reference for the formulation of goals for the desired core competencies of its BSc graduates. Since the experience of KVL is that BSc graduates are not in demand on the labour market, KVL expresses that it has not been able to take direct account of the labour market when formulating BSc programme goals and content.

4.1.3 Achievement

When assessing goals for core competencies, it is not only important to focus on the form in which they exist, their content and availability, but also on whether they are achievable, and indeed achieved. Two of the factors that influence achievability, are the nominal duration of the programme and the initial knowledge level of the students.

One way of assessing whether goals are actually achieved – and thus considered as realistic – is to carry out surveys among recent graduates, focusing on the extent to which they see themselves as possessing the intended core competencies. If the tradition is that a significant number of BSc graduates from a particular programme secure employment based exclusively on their BSc degree, surveys among their employers are also an option.

UCD has recently attempted to assess whether its graduates possess the intended core competencies. In a survey of employers, conducted in relation to a national evaluation, employers were asked to rank the different core competencies that the faculty expected its graduates to possess. The conclusion was that there is a high level of satisfaction regarding the extent to which the graduates possess the desired core competencies. The view of the panel is that the employer survey provides a strong indication that the goals are realistically achievable within the nominal duration of the programme.

The documentation material from the other three institutions does not provide similar evidence of having attempted to assess whether goals are realistic. In the case of KVL, the explanation may unfortunately be that the lack of specified goals for the desired core competencies of the graduates hinders the possibility to assess whether or not goals are met. In the case of WU and UH, it may be explained by the fact that the bachelor degree has only recently been introduced.

Looking at the specified goals for the desired core competencies of the BSc graduates formulated by WU, the impression of the panel is that they resemble the goals for the MSc level to an extent which makes them hard to achieve within the nominal duration of the BSc programmes.

Considering the very general nature of the goals for the desired core competencies of the graduates of KVL, the panel does not find it possible to provide a meaningful assessment of the extent to which the achievement of them is realistic within the nominal duration of the programme. The same applies to UH where programme goals for the desired core competencies of the BSc graduates do not yet exist.

As mentioned in the beginning of this section the initial level of the students is a factor which, along with the nominal duration of the programme, influences the extent to which goals for desired core competencies of graduates are achievable. As described in section 3.1.2, all the institutions except WU have reported an extensive heterogeneity in the initial basic science level of the students. Rather than letting this situation influence the goals and content of the programmes offered, UH and KVL attempt to adapt to this situation by offering preparatory courses for the incoming students.

4.1.4 Consistency between goals and degree title

The graduates from both WU, UH and KVL obtain the title BSc with no further specification of the field of science in which they hold a degree, whereas the graduates from UCD obtain the title BAgrSc. In the future, the titles of the graduates from UCD will also include the specialisation they have chosen, eg. BAgrSc (animal science). Independently of whether the degree title is specific or not, the panel finds it important that the content of the goals reflects the fact that the graduates

possess not only basic science qualifications but also professional qualifications within the field of agricultural science. The assessment of how consistent the goals for the desired core competencies are with the degree title reflects this consideration.

The goals for the desired core competencies of the graduates of the three programmes at WU, as well as the module goals of UH, are clearly reflected in their respective degree titles. These goal formulations all contain several goals for professional qualifications that are relevant, considering the specific programme title to which they belong. KVL's single goal for the professional qualifications of its BSc graduates, and the draft set of goals formulated by UCD, also clearly correlate with the degree titles.

4.1.5 Recommendations for goals for core competencies

Though only WU has attempted to formulate a comprehensive set of programme goals for the desired core competencies of its BSc graduates, the site visits have provided the panel with the impression that both UCD and UH now recognise the importance of a comprehensive set of goals for core competencies and are committed to their formulation. The panel supports this commitment and recommends that KVL also commits itself to formulating a more comprehensive and independent set of goals for the desired core competencies of its BSc graduates. Even if the primary goal continues to be that of producing BSc graduates who are prepared to continue with a master programme, there is a need to specify the kind of core competencies that commencement and completion of a master programme requires.

The panel recommends UCD, UH and KVL to consider the format of the set of goals formulated by WU as inspiration towards formulating their own set of comprehensive goals. Furthermore, the panel recommends that the goals are formulated and developed through discussions with the relevant internal stakeholders, including teaching staff and students.

It is important that the goals are also widely disseminated. In this way the goals become an integral part of the programmes, which is likely to strengthen common commitment to achieve them. More apparent goals would also facilitate continuous monitoring of the extent to which they are achieved.

The impression of the panel is that both UCD and UH have traditionally directed focus towards the desired professional qualifications of their BSc graduates. Seen in this light, the panel recommends that specific attention is given to the discussion and formulation of goals for the desired methodological qualifications of the BSc graduates, such as ambitions in relation to presentation and communication skills, etc.

For UCD, the desired key competencies of the BSc graduates, which have been identified in the preparation of the present faculty development plan, appear relevant, and the panel supports UCD in the belief that these provide a good starting point for the formulation of a comprehensive set of goals for the desired core competencies of the graduates, including methodological qualifications.

Considering the high level of ambition of the goals for the desired core competencies of its BSc graduates, the panel recommends WU to consider a revision of these goals, based on reflections of what can realistically be achieved considering the nominal duration of the programmes. The panel is positive about the fact that the university, as well as the programme management, are aware of the descriptors for the different academic levels prepared by VSNU and recommends that these descriptors are used as a frame of reference when reformulating the goals for desired core competencies to be gained from the new BSc/MSc programmes.

The site visits to KVL and UH have given the panel the impression that some of the students would prefer to enter the labour market based on their BSc degree, and that one of the reasons why they (expect to) continue studying beyond this level is that they do not feel sufficiently qualified to enter the labour market. Considering this fact and the agreement among the European Ministers of education that bachelor programmes must produce graduates with a qualification level that is relevant to the labour market (cf. section 9.2), the panel is critical of KVL for not having given priority to an aim of delivering BSc graduates who are ready for entering the labour market. Accordingly, the panel recommends KVL to formulate goals for its programme that reflect the (potential) needs and requirements of the labour market. Correspondingly, the panel recommends WU to follow up on its intention to discuss the labour market options for its BSc graduates with the employer organisations and recommends that it uses these discussions as a frame of reference when revising the goals for core competencies.

The panel is positive about the decision by UH and KVL to offer preparatory courses for those applicants who do not possess the recommended or required knowledge within the relevant basic sciences. By doing so, they are able to reduce the heterogeneity of the first year students, which could otherwise have a negative impact on the achievement of the goals for desired core competencies. The panel, therefore, recommends UCD to introduce preparatory courses, too.

4.2 Content related to core competence

4.2.1 Basic science related courses

In all the programmes, the professional qualification in agricultural science is underpinned by compulsory courses in the basic science (related) disciplines of mathematics, statistics and chemistry. The number of credits obtained from these courses varies as illustrated in table 4. At WU, the students also have a compulsory course in cell biology and one in genetics, at UCD, in biology and experimental physics, and at UH, in physics and agricultural meteorology. The credits allocated to these courses are presented in table 4.

Table 4
Compulsory basic science related courses and number of credits obtained (ECTS)

	KVL	UCD	UH	WU
Mathematics	6	10		App. 5,7
Statistics	9	6	6	App. 5,7
Chemistry	15	12	12	App. 5,7
(Cell) Biology	-	10	9	App. 5,7
Physics	-	10	6	-
Genetics	-	-	-	App. 5,7
Total ECTS	30	48	33	App 28

The course/module information material from all of the institutions includes some form of description of the content and educational goals of the different courses/modules. It appears, therefore, to be clearly formulated as to which basic science disciplines underpin the qualification in agricultural science.

Nevertheless, the panel is concerned by feedback from the site visits, in particular the visits to UCD and KVL, that many students are surprised about the strong emphasis on courses in the basic sciences during the first year. Some students at KVL even saw the strong emphasis on chemistry as a major reason for some of the dropouts among first year students.

Although the students interviewed at KVL and UCD have been the ones most critical about the weighting of the basic science related courses, the self-assessment report of WU reveals that students there are also critical about the same issue. Moreover, the following has been expressed: "students find that in addition to the foundation courses, other courses should be available early

in the study which explore the interest of the student in more detail and which are therefore seen as more motivating.”

Neither the self-assessment report nor the interviews held during the site visit have revealed any notable concern among students at UH about the weighting of basic science related courses.

4.2.2 Provision of professional qualifications

As described in the previous section, the qualifications in the basic science disciplines are obtained through compulsory courses at all four institutions. At WU, UCD and UH, where 75-90 % of the programme content is compulsory (cf. section 3.3.2), the qualifications within the chosen field of agricultural science are also obtained through compulsory courses.

In contrast, at KVL none of the courses that lead to agricultural science related qualifications are compulsory. Which professional qualifications the graduates possess are thus entirely dependent upon the course choices they have made during the course of their studies and the extent to which they comply with the system of recommended prerequisites. The students may choose from about 150 courses. About 60 of these are designed for, and exclusively offered to, agricultural science students, whereas the remaining ones are also offered to students studying other programmes at KVL.

Table 5 presents a grouping of all the compulsory applied science courses/modules offered by one or more of the institutions (cf. annex F). The table shows which professional qualifications students obtain within the subjects of the different groups of courses. For UCD and UH, the courses common to all students of a particular programme and the courses of the individual specialisations within the programme are included. The "not applicable" (n. /a.) for KVL reflects the fact that KVL does not include compulsory courses in applied sciences in its programme of agricultural science.

Table 5
Professional qualifications obtained through compulsory applied science courses

	KVL	UCD			UH			WU		
		AS	ACP	ARD	AS	CS	AE	AS	CS	BIO
Groups of Animal Science re- lated courses:										
Animal Nutrition and Husbandry		X	X	X	X	X	X	X		X
Animal Reproduction	n. /a.	X	X		X	X	X	X		X
Animal Physiology		X	X		X	X	X	X	X	X
Health and Hygiene		X			X	X	X	X		
Groups of Crop Science related courses:										
Physiology of Plant growth			X		X	X	X		X	X
Nutrition and Husbandry of Plants	n. /a.	X	X	X	X	X	X		X	
Group of combined animal and crop science related courses	n. /a.	X	X	X	X	X	X	X	X	X
Groups of Agribusiness /Agricultural economics related courses:										
Microeconomics		X	X	X	X	X	X	X	X	
Macroeconomics		X	X	X	X	X	X			
Agricultural economics	n. /a.	X	X	X	X	X	X			
Group of general social science related courses				X	X	X	X	X	X	X

When the individual applied science courses are grouped, as in table 5, it becomes apparent that the AS students of UCD, UH and WU all obtain qualifications within the same areas of animal science through compulsory courses. Similarly, the table illustrates that CS/ACP students from the three institutions all obtain qualifications within the same areas of crop science.

The table also illustrates the breadth of the professional qualifications that the students of the three institutions obtain through the compulsory courses. This is illustrated by the fact that the students of each of the specialisations of UCD and UH and each of the AS and CS programmes of WU obtain qualifications within several groups of courses beyond their field of specialisation. Con-

sidering that a large share of the course content at UCD and UH is common to all the agricultural science students, it is not surprising that the students of these institutions generally obtain qualifications within a broader range of agricultural science related areas than those of WU who specialise from the beginning of their course of studies. Although the programmes of UCD, UH and WU include one or more compulsory courses within economics related courses and /or general social science related ones, the impression of the panel is that compulsory courses within the social sciences are generally not given a high priority by the institutions.

In summary, the table illustrates that there are both similarities and differences across the programmes and specialisations in terms of which professional qualifications the graduates obtain through compulsory courses.

4.2.3 Provision of methodological qualifications

The extent to which the programme content encourages the development of problem solving capability, the ability to work both independently and in (multidisciplinary) teams and the development of communication and presentation skills differs among the institutions.

Generally, KVL stands out as the institution, which has the strongest focus on developing such methodological qualifications through its course content. The inclusion of a course in methods of project based learning worth 6 ECTS, as one of the few compulsory courses offered at KVL, is one clear indicator of this. Another is the fact that students are expected to use the skills they have acquired through this course in the completion of either a 9 ECTS project in scientific theory and methods or a 24 ECTS theme project. In both cases, students work in groups and deal with multidisciplinary problems. The completion of the projects requires oral as well as written communication skills. Furthermore, the compulsory BSc thesis (18 ECTS), in which the students also have to practise their methodological skills, is an important exercise in this context. Since the remaining part of the programme content consists of elective courses, the extent to which the students acquire other methodological skills depends on their individual course choices.

Like KVL, WU's emphasis on the BSc thesis is, in the view of the panel, an important element contributing to the development of the methodological skills of the students. WU provides only a few compulsory courses focusing on developing the methodological skills of the students, but elective courses focusing on strengthening student presentation skills are provided. However, the impression from the site visit is that there is consensus that focus on oral presentation skills needs to be increased.

At UCD, only a few courses within each of the specialisations have the primary goal of developing the methodological skills of the graduates. This is particularly the case for the specialisations in AS

and ACP. That the development of the methodological skills of the graduates is limited is indicated both by the results of recent surveys among students and employers as conducted by UCD and the interviews conducted by the panel during the site visit. In general, the opinion of students is that more focus should be placed on the development of their methodological skills. In particular, they express a need for more work on communication, IT and interpersonal skills. Reflecting the fact that the ARD specialisation has a stronger focus on methodological skills, the AS and ACP students are generally more critical about the lack of opportunities to develop their methodological skills. The surveys among employers reveal that they are generally critical about the level of the interpersonal, communication and IT skills of the graduates.

At UH, the focus on developing methodological skills also appears to be weak. Presentation skills are taught as part of the compulsory course in Presentation Technique (1,5 ECTS), but although students also train their presentation skills in other courses no other compulsory courses include an explicit methodological element. Though a BSc thesis has to be written in all specialisations, the scope of it is limited (4,5 ECTS).

4.2.4 Methods of teaching and learning

Although specific method oriented courses are an important means to develop the methodological skills of the students, the panel considers that methods of teaching and learning are at least as important in this respect.

Compared to UH and UCD, KVL and WU place a strong emphasis on different forms of teaching and learning that support active participation of the students. The panel believes this is important and that the active participation of the students is a prerequisite for the successful development of their methodological qualifications.

At both KVL and WU, a substantial part of the courses include problem-based learning in the sense that the students work on cases in which current issues are dealt with. The students often work on these cases in groups. In total problem based learning accounts for 25 % of the study load at WU. Particularly at KVL, the groups are often multidisciplinary in the sense that they are composed of students from different programmes.

In contrast, the documentation material gives the impression that the traditional lecturing style of teaching is the primary teaching method employed by UH and UCD, apart from some deviation in the ARD specialisation at UCD.

UCD is clearly concerned about current forms of teaching. To illustrate this, the faculty management has committed itself to conduct a major review of the teaching and learning methods used

in all specialisations and courses on offer within the faculty. This project also comprises a decision to specify the aims/learning objectives of each of the methods being used.

In its self-assessment report, UH also expresses awareness that the dominant method of teaching is lecture-style teaching, and that the use of other methods of teaching and learning must be increased.

In summary, the documentation material gives the impression that KVL and WU are the two institutions where methods of teaching are most varied and where the weighting of different methods is most balanced. Accordingly, they are the institutions where the development of methodological skills is best supported by the composition of methods of teaching and learning.

4.2.5 Consistency between content and goals

Although there are differences in the ways the four institutions have formulated goal sets for the desired core competencies of their BSc graduates, they have all formulated some general or specific (draft) goals related to both professional and methodological qualifications.

The extent to which these goals are supported by the content of the programmes and by the methods of teaching and learning differs considerably.

The inclusion of a variety of compulsory courses in both basic sciences and relevant applied sciences, as part of the programme content at WU, UCD and UH, supports the achievement of the goals relating to the professional qualifications of the graduates at these institutions.

In contrast, the panel is doubtful whether KVL can ensure that its graduates possess the required professional qualifications within agricultural science, as only the basic science courses are compulsory.

However, KVL is the institution at which the content of the programme most strongly supports the achievement of the goals relating to the methodological qualifications of the graduates. The reason for this is that the students, as described previously, have to complete a significant number of compulsory study elements that have the primary purpose of developing methodological skills. Additionally, achievement of the desired methodological skills is supported by variation in teaching and learning methods, and not least by the priority given to active student participation. The latter also applies to WU.

Considering the limited extent to which programme content and the methods of teaching and learning at UCD and UH support the development of methodological skills, the panel is sceptical

about their ability to realise the goals for the methodological qualifications of their graduates. At present, they may only be able to achieve these goals if the students obtain the qualifications through the extensive periods of compulsory practical training.

4.2.6 Recommendations for content related to core competencies

As mentioned in section 4.2.1, the panel is concerned about the dissatisfaction with the weighting of the basic science related courses in the first year, as expressed by students, particularly during the site visits to KVL and UCD. The panel thus supports the commitment of the agricultural science committee at KVL to reconsider the extensive emphasis on chemistry in the first year of the programme and recommends KVL to follow up on this. Similarly, the panel supports the decision by UCD to establish a teaching committee with the responsibility to submit proposals for the revision of the first year of the programme. The panel recommends that this committee focuses, in particular, on the relevance of the current basic science courses for those students who choose to specialise in ARD.

The panel also recommends UCD, KVL and WU to ensure that first year students become aware of the reasons behind the emphasis on basic science disciplines in the initial part of the programme. One way of doing so would be to increase integration between the basic science courses and the applied science courses to be taught later on.

Moreover, the panel recommends UCD, KVL and WU to reflect upon the adequacy of the existing balance between courses in the basic sciences and the more applied ones.

In relation to professional qualifications, the panel is critical of the fact that there are no compulsory applied science courses at KVL. Though the experience of KVL is that most students choose courses relevant to obtaining a degree in agricultural science, the university cannot ensure that the BSc graduates actually possess appropriate qualifications within the core areas of agricultural science. Similarly, it cannot ensure that the students come out with a coherent profile, supported by a correspondingly coherent set of core competencies. The panel, therefore, recommends KVL to include compulsory applied science courses to ensure that the students obtain a coherent set of core qualifications within agricultural science. In this respect the panel perceives the ideas for the revision of the programme of the Agricultural Science Committee as a move in the right direction.

As for the provision of methodological qualifications, the panel supports the commitment of both UCD and UH to increase focus on developing the desired methodological qualifications of the students. The panel recommends that they do so by implementing varied forms of teaching and learning, including more cooperative and communicative forms and by offering more method oriented courses. A specific recommendation to UCD in this respect is to offer a course in com-

munication to the AS and ACP students earlier in the course of their studies. Both UCD and UH are also recommended to consider whether a stronger emphasis on a BSc thesis would be an effective means to ensure that the students obtain methodological qualifications.

Finally, it is the impression of the panel that WU and UH still have to focus on adjusting the content of their programmes to the new programme structure.

Based on the assessments and recommendations provided above, the panel generally recommends that all the institutions commit themselves to discuss how different study elements and different methods of teaching and learning, including methods of examination, should be weighted and placed in order to ensure the desired core competencies of the BSc graduates. The impression of the panel is that the institutions are aware of the significance of both teaching and examination methods, but at the same time the impression is that development in relation to these methods is generally too limited.

5 Quality Assurance Mechanisms

5.1 Overall framework

5.1.1 Strategy, goals and procedures

The extent to which strategies, goals and procedures for quality assurance are established and implemented in practice varies greatly between the institutions and depends on the existence of a legal framework for quality assurance in the four countries.

The situation regarding quality assurance at UH invites criticism. The problem is broadly recognised throughout the institution and by the various groups interviewed. The university management and the faculty management fully acknowledge that systematic quality assurance is not playing a significant role in the running of the programmes. Presently, quality assurance at UH has focused narrowly on procedures for the career development of professors, and quality has primarily been evaluated on the basis of scientific excellence and has, therefore, only indirectly been concerned with the quality of teaching. This seems, however, likely to change in the near future due to a newly established legal framework in Germany, which requires systematic programme evaluations as a condition of offering programmes. To implement this framework, a newly founded evaluation agency (EVALAG) has been given the mandate to externally evaluate study programmes at the universities in the Länder of Baden-Wuerttemberg to which UH belongs. In the self-assessment report, a number of goals for quality assurance are listed, but these goals are not officially or commonly agreed goals. The goals reflect a vision that UH could strive to reach in the future, and they relate to the establishment of mechanisms for the assessment of the quality of teachers, teaching, study programmes and the provision of systematic feedback from students through an obligatory course evaluation procedure.

Legal frameworks are already established and have been implemented for several years in the three other countries. Although the content of the legal frameworks differs, there is no doubt that the existence of such frameworks has influenced the awareness of quality assurance as an instrument for improving the quality of teaching and education.

Of the four institutions, WU stands out as the university with the most advanced and developed approach to quality assurance, not least in relation to course evaluations. Quality development and quality assurance are institutionalised at WU to a degree, which is beyond comparison with the situation at the three other institutions. This could be due to the fact that for the last 15 years, WU has been governed by a system of self-evaluation and visitation as applied by the Dutch Government and VSNU. The VSNU procedures require that programmes are evaluated at regular intervals and at least every five years. Internally at WU, an attempt to systematise the various procedures for quality assurance has recently been completed and has resulted in a draft "Handbook for Educational Quality". The handbook includes goals and procedures for the various types of quality assurance activities covering programme evaluations, peer reviews, course evaluations and alumni surveys. The handbook is still in the process of being approved.

In the case of UCD, quality assurance is a more recent phenomenon and was introduced with the University Act of 1997. The act requires regular evaluations which, in any event, must occur not less than once every 10 years. UCD has, in accordance with the act, established a procedure for quality assurance (mainly including a procedure for self-assessment) at departmental, faculty and programme levels. The procedures are documented in the comprehensive "guidelines for self-assessment, review and follow-up" (QA/QI) from 2001. While the procedures mainly address quality assurance at institutional (faculty and departmental) and programme levels, course evaluations are generally given very little attention at UCD. The guidelines include a goal for quality assurance, which is specifically related to the content of the QA/QI process. The goal is formulated thus: "to develop and foster a quality culture in all activities in the university". In addition to the above-mentioned activities, UCD also applies external examinations, which are intended to ensure that programme examinations are in accordance with the goals laid down in the ministerial orders and curricula. Further to this, UCD has also recently introduced a benchmarking system for the promotion of teachers, which in the view of the panel can become a valuable tool for ensuring teaching quality.

At KVL, the procedure for quality assurance is for instance reflected in KVL's university performance contract with the Ministry of Education for 2001-2004 and relates to a system of course evaluation and the external examination institution. The latter is only applied at UCD and KVL. Additionally, EVA's rules and regulations for evaluation from 1999 applies to KVL. While the programme of landscape architecture (1998) and the veterinary study programme (1999) offered at KVL were evaluated by the former Evaluation Centre, this is the first time that the programme of agricultural science is being externally evaluated. In the self-assessment report, KVL's goal for quality assurance is stated as, "to ensure the quality, development and appropriateness of the programmes in relation to the labour market and in relation to continuing education for students

who want to progress to an MSc programme". The goal is however not reflected in any official documents, including the university performance contract.

5.1.2 Recommendations for strategies, goals and procedures

Formulated goals for quality assurance do not appear at all institutions. WU is the only institution, which has established a coherent set of goals for the various activities associated to its strategy (procedures/handbook) for quality assurance. UCD has established goals, which specifically relate to the QA/QI process. Neither UH nor KVL have officially formulated goals for quality assurance.

Apart from WU, none of the institutions have established a coherent framework for quality assurance, which includes a broad range of quality assurance activities, e.g. programme evaluation, course evaluation, alumni survey etc. However, this does not imply that specific activities are not applied and conducted. Generally, course evaluations are the preferred instruments across the four institutions, though these are not obligatory in all cases. Procedures for programme evaluations exist only at WU and UCD.

Following on from the above, the panel recommends that KVL, UH and UCD consider formulating overall goals and procedures for systematic quality assurance, with a view to producing a coherent "package" of quality assurance mechanisms. A good starting point for UH could be the goals that are reflected in the self-assessment report.

Recommendations relating to specific types of quality assurance mechanisms are provided in the following sections that deal with the various elements of a quality assurance system, in accordance with the applied criteria.

5.2 Content

5.2.1 Programme evaluations

Evaluation of an entire programme is not applied as an instrument for quality assurance at all four institutions. Only UCD and WU have established and documented procedures for programme evaluations. In both cases, internal programme evaluations are integrated with the procedure for external evaluation initiatives, arising from external (governmental) requirements. In contrast to course evaluations, programme evaluations provide the opportunity for assessing the objectives and content of the programme as a whole, including the internal coherence of the various elements (courses, modules, etc.) included in the programme.

At UCD, the Faculty of Agriculture as a whole and the Department of Animal Science were assessed in 2000 as part of the newly established quality assurance system (see above). Both evaluations (assessments) included a self-assessment report and a peer review group report. The remaining two specialisations (ARD and ACP) are, according to the current schedule, due to be assessed in 2002/2003. The "guidelines for self-assessment, review and follow-up" build on the intention in the University Act and are characterised by a considerable degree of self-assessment and follow-up. The faculty development plan 2001-2004 is an outcome of the recommendations contained in the two reports mentioned above.

As part of the VSNU evaluation system, all programmes at WU have been internally evaluated. As regards the three programmes, these were evaluated in 2002 (biology) and in 1999 (animal science and crop science). The procedures for programme evaluations are documented in the newly developed handbook for quality assurance, as mentioned previously.

Neither UH nor KVL have established procedures for, or formerly conducted, evaluations at programme level. However, during the site visit, KVL highlighted the current procedure of the study committee, which includes an annual revision of curriculum and course descriptions as a means of evaluating the programme as a whole. The panel is, however, not convinced that this procedure is sufficient due to its limited scope and internal nature.

According to the self-assessment report, UH expects to develop and formalise procedures for programme evaluations concurrently with the implementation of the new legal framework.

5.2.2 Course evaluations

Course evaluations in this context are those evaluations conducted by students during or upon completion of the courses.

Course evaluations are obligatory in the cases of WU and KVL, while they are conducted on a voluntary basis at UCD and UH, which implies that it is up to the individual teacher to decide to whether to evaluate a course.

WU has developed a comprehensive and coherent framework for course evaluation, which includes a standardised questionnaire and effective follow-up procedures. The implementation of the system is characterised by a high student participation rate. The format and content of the questionnaire are being discussed regularly with teachers, students and the coordinators of the educational institutions, and have resulted in several revisions. During the site visit, it became clear that students are in favour of the course evaluation format, while some teachers are more reluctant. The students explained their enthusiasm with the fact that course content, teaching meth-

ods, etc., actually are changed and improved as a result of the evaluations. Furthermore, the high degree of transparency and documentation of evaluation results are additional factors contributing to the apparent success of the course evaluation system. The critical attitude expressed by some teachers relates to the application of a standard questionnaire and the limitations this imposes for providing more content-specific replies. The standard questionnaire includes, in the view of the panel, all relevant aspects for course evaluation including course design, teaching methods, pedagogical performance of the teachers, use of written materials and course content, including overlap with other courses.

The panel's assessment of the obligatory course evaluation system applied at KVL is more mixed. The applied standard questionnaire generally meets the requirement for a course evaluation form, although aspects relating to teaching methods and pedagogical performance could be highlighted more. The major problem, however, relates to insufficient follow-up procedures, which counteract student motivation to participate. Accordingly, the student participation rate is less than 50 %, which the panel assesses as remarkably low, considering the obligatory nature of the system.

The voluntary system applied at UCD implies that course evaluations are conducted sporadically and without the use of a standardised form.

At UH, course evaluations are also applied on a voluntary basis and, according to the self-assessment report, the proportion of courses evaluated amounts to only 20 %. It is uncertain if, and when, an obligatory course evaluation system will be introduced at UH.

The extent of course evaluations at UCD is even lower than at UH. Students are generally not aware of the existence of course evaluations, apart from those students who attend the ARD specialisation, where course evaluations are conducted more regularly. It is the overall impression of the panel that course evaluations have not been given adequate attention across the three specialisations, also at faculty (management) level. The faculty management recognises the problem and has announced that obligatory course evaluations will be introduced.

5.2.3 Recommendations for content

Programme evaluations

In order to ensure that programme goals, including goals for core competencies and the internal coherence of the programme are systematically assessed, the panel recommends that procedures for internal programme evaluations are established. In connection with this, the panel supports the commitment expressed by UH at the site visit to develop a system and procedure for internal programme evaluations in line with those established at UCD and WU. The panel encourages KVL to consider a similar initiative.

Course evaluations

The panel recommends that KVL critically evaluates its current system for course evaluations in order to reap more benefit from the system and, in turn, to increase the student participation rate.

Further to this, the panel recommends UH and UCD to introduce obligatory course evaluations incorporating the whole cycle, from design of questionnaires to the process of follow-up on evaluation results. The framework applied at WU is recommended as a model and includes a standardised (but nevertheless "dynamic") questionnaire, effective follow-up procedures and a high degree of transparency through an extended procedure for dissemination and documentation of evaluation results.

5.3 Structure

5.3.1 Placement of responsibility

The main content of this section reflects the fact that the quality assurance mechanisms applied at the institutions mainly refer to procedures for course evaluations. The focus of this section is, therefore, on the placement of responsibilities for course evaluations.

The educational institutions and the central office (department of education and student affairs) at WU jointly share the responsibility for course evaluations. The roles and responsibilities are clearly divided between the two bodies. The educational institutions are responsible for the actual implementation of the evaluations, whereas the central office is responsible for the formulation and distribution of the questionnaire and the data processing of the responses. The responsibility for follow-up on course evaluations is described in one of the sections below. The responsibility for internal programme evaluations rests with the central office and the educational committees.

In the case of UCD, the responsibility for course evaluation is not clearly defined but the practical implementation rests with the individual teachers. In terms of internal programme evaluations (QA/QI), the system is more developed and the responsibility is clearly placed with the Quality Assurance Office.

At UH, the responsibility for course evaluation officially lies with the Dean of Study who chairs the study commission. The study commission reports to the newly established joint commission (comprising the two faculties), which has overall responsibility for quality development at faculty level. However, the impression from the site visit is that, in practical terms, the responsibility for quality assurance is not clearly addressed.

At KVL, the responsibility for course evaluations lies with the education committee at department level and deals with the distribution, collection and analysis of the questionnaires. However, the responsibility for the annual revision of programme content and course descriptions is placed with the study committee as mentioned previously. In principle, the study committee has the power to call in all course evaluation questionnaires and to take action, if required. However, the impression from the site visit is that this rarely happens and that course evaluations are mainly handled and discussed at departmental level between students and teachers. A stronger involvement of the study committee would, in the view of the panel, improve the actual use of evaluation results as an instrument for quality improvement. This issue is further described in the last section of this chapter concerning follow-up.

5.3.2 Fora for discussion of quality

At all four institutions, fora exist where students and teachers are represented with the mandate to discuss matters related to the quality of the programme, the individual courses and teaching. These fora are termed differently at the four institutions and include the study committee at KVL, the faculty curriculum committee at UCD, the study commission at UH and the educational committee and the educational institutes at WU.

None of the institutions have, however, an official forum where management, teachers and students meet on a regular basis to discuss quality matters related to the programmes offered (vision days, staff seminars, etc). This does not mean that informal discussions about programme quality are not taking place between the groups mentioned, but these are not happening on a systematic and regular basis, just as the results are not documented.

5.3.3 Recommendations for structure

Placement of responsibility

The panel recommends that UCD and UH, with the intended introduction of a system of compulsory course evaluation, clearly define the placement of responsibility, including the responsibility for follow-up of evaluation results.

The panel further recommends that KVL considers strengthening the involvement of the study committee in relation to quality assurance. A more specific recommendation for this is provided in section 5.5.5.

Fora for discussion on quality

The panel recommends that all four institutions consider establishing formalised discussion fora for programme quality, with the participation of teachers, management and students.

5.4 Process

5.4.1 Feedback from employers and professional associations

The extent to which the institutions collect systematic feedback from the labour market is surprisingly low but does, however, vary between the institutions. As described earlier in the report (section 4.1.2), the extent to which the needs and requirements of the labour market are taken into consideration depends on the different labour market conditions for BSc graduates in the four countries.

The panel has, however, noted that none of the institutions have established a systematic procedure for regular feedback from the labour market at programme level. This does not mean that feedback is not provided on other occasions.

UCD is most advanced in this area and is also the institution which has the strongest incentive to absorb labour market feedback, due to the relatively high degree of employment of BSc graduates in Ireland.

At KVL, the agricultural science committee comprises representatives from the labour market and professional associations. The committee has enabled relevant stakeholders, including employers and representatives from professional associations, to participate in discussions with the committee and to provide input concerning changes needed in the curriculum.

In the cases of UH and WU, the documentation material does not provide examples of feedback from employers, which could be due to the recent establishment of the BSc level these two institutions. It should, however, be noted that UH has previously attempted to invite representatives from the labour market in connection with the formulation of the BSc programme in 1999. Furthermore, UH has established a career-centre to strengthen its relations with the labour market.

5.4.2 Feedback from graduates

Feedback from graduates does exist to a greater or lesser extent at the institutions. However, it would be an overstatement to claim that systematic procedures exist at all four institutions.

WU is probably the institution that applies the most systematic approach. Every five years, the "Association of WU-alumni" submits questionnaires to all graduates. The survey focuses on the relationship between the qualifications obtained during the study and actual employment. The procedure for the survey is described in the handbook for educational quality, as previously men-

tioned. The results of the surveys are published in a general report. The surveys have recently focused on collecting feedback from graduates of the former five-year programmes.

UCD does not apply a systematic approach, but occasionally collects feedback from graduates. Feedback from graduates was included in the QA/QI evaluation process. Additionally, the AS specialisation has conducted some telephone and written interviews with postgraduate students. The ARD specialisation has used more informal feedback. The efforts are initiated locally at programme level and are not coordinated at central level (faculty level). The results are generally not documented. However, in the case of the AS specialisation the results were documented in connection to the QA/QI evaluation of the specialisation conducted in 2000.

Considering that only a minority of students leave KVL with a BSc degree, no follow-up efforts are made in this area. However, the agricultural committee under KVL has conducted a comprehensive alumni survey in 2001, concerning MSc graduates. The results of the survey are intended to be incorporated in the on-going revision of the curriculum for the programme of agricultural science.

UH has so far not initiated any activities in this area, as the first enrolments of BSc students have not yet completed their study. The extent to which UH collects input from graduates at MSc level is not included in the documentation material for this evaluation. Recently, UH has taken an initiative to establish an alumni association but it is still too early to foresee the actual impact of this.

5.4.3 Recommendations for process

The panel recommends that the institutions consider establishing mechanisms to ensure systematic and regular feedback from the labour market as well as from graduates, as part of a systematic quality assurance system.

The panel emphasises the importance of feedback mechanisms to ensure that goals and programme(s) content are consistent with labour market requirements and realistic with respect to study duration. This recommendation is relevant for those institutions with established BSc programmes as well as for those that are in the process of establishing them. While the approach applied at WU could work as a model for others, the panel also recommends that WU considers extending the model to include BSc graduates in the future.

5.5 Results and follow-up on results

5.5.1 Documentation and dissemination of results

WU has an extended and highly transparent procedure for documentation and dissemination of evaluation results. The results of course evaluations are (obligated to be) published on the intranet and disseminated through four distinct bodies: the chair of the department offering the course; the education coordinator of the programme; the educational institute concerned; and the educational committee which is equally represented by teachers and students. The results of course evaluations are documented and summarised in the "Annual Quality Report", available internally as well as externally.

At KVL, teachers prepare reports based on the results of the course evaluation, which they submit to the education committee. Furthermore, teachers are given the option to insert the result of the course evaluation on the home page, in the standard box available for each course. The documentation material does not include information on the extent to which the teachers use this option.

At UCD and UH, there is no tradition for publishing the results of course evaluations. However, at UH the results are documented in a report, but the report is only available for the teacher of the course, the study commission and the relevant Dean.

Programme evaluations are documented in the cases where these exist (UCD and WU). At UCD, the results of the QA/QI evaluation process are documented in the Faculty Development Plan. At WU the programme evaluations are documented and disseminated in accordance with the VSNU procedures.

5.5.2 Impact on course content

The degree to which course evaluations (and programme evaluations) play a role in the ongoing revision and amendment of the content of the courses depends on the way results are processed. While the interviews with programme management and teachers conducted during the site visits have left the panel with the impression that changes in course content are often based on the results of course evaluations, the students were more sceptical about the use and impact of course evaluations.

The exception here is WU where students are being explicitly informed about the changes that are made, or are going to be made, as a result of the individual course evaluations. This is, in the view of the panel, the main reason for the high motivation and commitment of students to participate in course evaluation, and for the apparent trust in the system as indicated by the students.

In contrast, at KVL, the link between evaluation results and revisions is not clearly established. The reports containing evaluation results are submitted to the education committee, but not automatically to the study committee, which deals with the annual revisions of course descriptions and curriculum. The panel considers it unfortunate that course and curriculum revisions apparently are made independently of the evaluation submissions made by students concerning the quality of the teaching.

5.5.3 Procedures for feedback on results to students and others

The degree to which procedures for feedback on evaluation results exist varies considerably among the institutions. This section is concerned with the existence of feedback on course evaluations.

WU adopts the most extensive procedure for feedback on course evaluation results. In addition to the highly transparent procedure for documentation and dissemination of evaluation results, the results are the subject of an oral discussion between the relevant teacher and the responsible education coordinator. In the case of repeatedly poor evaluation results, the relevant teacher is encouraged to attend training from the education support group. Students are informed through a verbal orientation, conducted by the responsible teacher.

KVL also has a procedure for feedback to students. Based on the written questionnaire, an oral evaluation is conducted by the relevant teacher at the end of the course in order to discuss the results of the written evaluation. A formal procedure for the provision of feedback to the teacher from the management does not exist.

At UH, evaluation results are generally not disseminated or discussed among the relevant groups, including management, teachers and students. At UCD, evaluation results are usually discussed among staff members teaching the appropriate programmes but not among students.

5.5.4 Responsibility for follow-up

A formal assignment of responsibility for follow-up on course evaluations exists at all four institutions. However, following the findings reflected in this chapter, the actual impact of follow-up is limited in most cases. The assignment of responsibility for follow-up on internal programme evaluations is, in the two cases where this exists, clearly placed.

At KVL, the formal responsibility for follow-up rests with the study committee. As mentioned earlier, however, evaluation results are not submitted to the study committee, but to the education committee.

At UH the Dean and the Study Dean are formally responsible for follow-up. However, as the self-assessment report critically states, follow-up is rarely happening due to the existence of limited incentives for improvements, and the lack of sanctions if expected improvements are not made. The site visit generally confirmed this rather critical viewpoint.

At UCD, the head of department, under which the specialisations are offered, is formally responsible for follow-up on course evaluation results. Considering the limited implementation of course evaluations and the general lack of dissemination of evaluation results, the panel is sceptical about the actual impact of this structure. In contrast to the system for course evaluations, the guidelines for the QA/QI process are highly developed. Follow up procedures comprise a significant and integral part of the guidelines for the QA/QI processes. The faculty development plan draws heavily on the results of the faculty evaluation, and the results of the evaluation of the AS specialisation are incorporated in the departmental development plan. The responsibility for this rests with the faculty management and the head of department respectively.

At WU, the educational committee is responsible for following up the results of course evaluations. As mentioned earlier, course evaluation results are widely submitted, and disseminated to various parties, including the education committee. The responsibility for follow-up on internal programme evaluations rests with the chair of the relevant department.

5.5.5 Recommendations for results and follow-up on results

The following recommendations refer exclusively to the system of course evaluation.

The panel recommends that UH and UCD improve their procedures for documentation, dissemination and follow-up on evaluation results as part of the introduction of an obligatory course evaluation system. The success of the system applied at WU is, in the view of the panel, related to its high degree of transparency and effective follow-up mechanisms.

The panel further recommends that KVL critically reviews the function of its current organisational structure in relation to quality assurance with the aim of ensuring that evaluation results are explicitly taken account of in the annual revision of curricula and course descriptions.

6.1 Strategy and goals

6.1.1 Existence and content

At all institutions, written goals for internationalisation exist. However, the comprehensiveness and extent to which the goals are explicitly reflected and expressed vary considerably.

At KVL, a comprehensive and coherent strategy for the period 2000-2004 was developed and adopted in 2000. The strategy contains overall goals for internationalisation and specific, tangible goals and actions for the various activities within KVL, including research, education, student exchange, international cooperation (networking), management and organisation. The strategy was formulated at institutional level and is thus a common strategy for all programmes offered at KVL.

At WU, an action plan for internationalisation from 1999 exists, and this focuses on distinct elements in WU's international work. The content of the action plan relates to international student exchange, international cooperation and international study programmes.

UCD and UH have not developed separate strategies for internationalisation, but goals for internationalisation exist and are reflected in other documents. At UCD, the goals for internationalisation are incorporated in the Faculty Development Plan. At UH, the goals are incorporated in the "structure and development plans" for the two faculties of agricultural science.

The content of goals and plans for internationalisation reflected in UCD's faculty plan refer exclusively to required actions for student exchange programmes.

The internationalisation elements incorporated in UH's development plan are among other things concerned with the adoption of a BSc structure, the introduction of a modular system and the application of ECTS.

6.1.2 Internationalisation reflected in programme goals

With the exception of KVL, none of the institutions have formulated programme goals which explicitly reflect an international dimension. This does not, however, exclude the possibility that internationalisation is an implicit part of the content of the goals.

The reflection of an international dimension in programme goals can also, in the view of the panel, relate to the extent to which distinct and separate goals for MSc and BSc programmes exist. As previously stressed in the report, the Bologna declaration suggests the adoption of a system essentially based on two main cycles. Accordingly, the completion of the first-degree cycle should not only provide access to the MSc programme, but should also lead to qualifications that are relevant for the European labour market.

UCD and UH have come far in this respect, as they have both developed separate goals for their BSc programmes. The BSc goals have existed for a long time at UCD, while they were recently developed and adopted at UH along with the introduction of the BSc programme in 1999.

Neither WU nor KVL have developed separate goals for BSc level programmes. However, as mentioned in section 3.2.1, BSc goals will be formulated as part of the formal implementation of the BSc/MSc structure in the autumn of 2002 at WU. Despite the fact that the BSc structure was formally introduced almost ten years ago at KVL, separate programme goals for the BSc programme do not exist.

6.1.3 Recommendations for strategy and goals

Both KVL and WU have formulated goals and strategies (action plans) that are largely consistent with the applied criteria. The goals are concerned with student exchange and international cooperation.

The panel is impressed by the quality and coherence of the strategy applied at KVL and considers this strategy as a solid and workable instrument for strengthening internationalisation. However, the panel is, at the same time, concerned that neither KVL or WU seem to recognise the BSc degree as an independent degree, qualifying students for the labour market, which is in conflict with the intention of the Bologna declaration. In this context, the panel recommends that these two institutions analyse the implication of their position towards the BSc programme in the light of European development and the Bologna process.

The panel recommends UH and UCD to further develop their perspectives on internationalisation, for instance by formulating a strategy for internationalisation.

The goals and action plans for internationalisation applied at UCD are limited and focus exclusively on student exchange programmes. In view of this, the panel also recommends that UCD considers broadening its perspective towards internationalisation to include aspects related to international cooperation, networking and joint study programmes.

The panel has noticed that only KVL has included international teaching staff exchange as part of its strategy for internationalisation. The panel, therefore, recommends the three other institutions to consider including teaching staff exchange in their plans and documents for international activities.

6.2 Programme content

6.2.1 The international dimension in programme content

The internationalisation of programme content is understood here as being the application of an international dimension in the programme content and curriculum. The extent to which an international dimension is reflected varies among the institutions. It is, however, common to all programmes (institutions) that the international dimension is more strongly reflected at MSc level than at BSc level.

Internationalisation at UCD is reflected in two courses provided during the first common year. These are agricultural economics 1 and agricultural science. During the specialisation period (year 2-4), internationalisation is weighted differently in the three specialisations included in this evaluation. The ARD specialisation has undoubtedly the strongest degree of internationalisation, due to the international profile of the specialisation (commercialisation and international competition). The majority of the courses offered under the ARD specialisation reflect a European or global dimension, especially the courses agricultural policy, agricultural marketing and trade and rural development (development study). For the ACP and AS specialisations, the international dimension is primarily implemented through the PWE, which 30-40 % of the students choose to take abroad. The international dimension is not integrated in the actual content and curriculum, as in the case of ARD.

At UH, the international dimension is reflected in three of the compulsory modules. Considering the total extent of the programme (30 modules of which 25 are compulsory), the panel is not impressed by the degree of internationalisation in programme content.

The international dimension in programme content at KVL is not assured by the (few) compulsory courses at BSc level. However, a substantial proportion of the elective courses do contain an inter-

national dimension, both European as well as a global. The courses offered at KVL, which include an international dimension, are often developed and offered as part of the existing exchange programmes and cooperative agreements with European and Nordic partner institutions (Socrates and Nordplus programmes).

According to the self-assessment report, WU maintains that its programme content generally reflects a global dimension. There are three types of courses offered at WU, and one of them clearly has an international dimension. The three types of courses are 1) courses where universal principles are taught, 2) courses with a regional perspective, and 3) courses with a content restricted to one region of the Netherlands.

6.2.2 Updating of programme content

At WU, UH and KVL, the content and range of courses have gradually changed to encompass the broader field of life sciences. This implies a refocusing of agricultural science towards issues such as sustainable agriculture, biotechnology, food security etc., as a response to global challenges concerning food deficit, growing environmental problems etc. While UH is concerned with these changes, the actual impact on programme content at BSc level has been limited. Changes in course content have mainly occurred at MSc level, while the BSc courses continue to be mainly directed towards the basic disciplines (especially during the first two common years). UH does, however, provide some modules at BSc level which reflect the life science approach, including a compulsory module in agricultural ecology and elective courses in biotechnology and organic farming which is offered in the last year of the BSc programme.

The application of a life science approach at WU is well implemented at BSc level, where a considerable number of the compulsory courses reflect the changes. This includes courses in biodiversity, pest management, chemistry and mathematics in a life science perspective.

A similar development has taken place at KVL but, due to the large number of electives, it is difficult to assess actual implementation at BSc level, as this is dependent upon student choices.

UCD stands out here as the institution that still maintains a clear profile on agricultural science. The range of compulsory courses represents the traditional and production-oriented disciplines of agricultural sciences within the three specialisations. However, in the third year, a minor course on the fundamentals of biotechnology (valid for 2 credit points) is offered. In the fourth year a course in environmental issues in agriculture is offered in the AS specialisation (valid for 4 credits).

The table below illustrates how the life science approach is weighted differently by the institutions, in terms of the number of compulsory courses applying a life science approach that are offered at

BSc level and their value in ECTS. The specification does not include KVL, as none of its compulsory courses offered at BSc level apply a life science approach.

Table 6
Compulsory courses offered at BSc level applying a life science approach

	KVL	UCD	UH	WU
Fundamentals of biotechnology offered under the ACP specialisation	N/A	2 ECTS		
Environmental issues in agriculture offered under the AS specialisation		4 ECTS		
Agricultural ecology			6 ECTS	
Biodiversity				5,7 ECTS
Chemistry for life science				5,7 ECTS
Mathematics for life science				5,7 ECTS
Pest management				5,7 ECTS
Total		2-4 ECTS	6 ECTS	22,9 ECTS

6.2.3 Availability of study materials and courses in English

With the exception of WU, key study materials such as study handbooks and course descriptions are available in English at the institutions. WU is in process of preparing study materials in English for the MSc programme, which should be available from September 2002.

At UH none of the compulsory modules are currently taught in English at BSc level. Two elective courses at BSc level are taught in English and include courses in precision farming and precision livestock farming. At MSc level a small number of courses/modules are offered in English, and often as part of a separate international programme such as the programme of tropical agriculture which is targeted toward students from developing countries.

At WU courses are not taught in English due to the restrictions laid out in the Dutch law implying that teaching should be taught in Dutch unless the origin of the students demands teaching in another language.

20 BSc level courses are offered in English at KVL and are aimed at both Danish and international students. While the strategy for internationalisation includes an explicit goal for the introduction

of English as the primary language for the MSc programme, a similar goal has not been set for the BSc programme.

All courses and study materials at UCD are for understandable reasons provided in English. In addition, UCD offers courses that allow students to learn another European language.

6.2.4 Recommendations for programme content

The level of internationalisation, measured in terms of programme content and curriculum, is generally not high at BSc level. This is in contrast to MSc level where internationalisation is strongly reflected in programme content. The panel generally agrees with this prioritisation.

However, having stated the above, the panel recognises that the Euro league cooperation in which KVL, UH and WU are actively involved (see section 6.3.1) already addresses this issue through the development of joint programmes. The panel supports this development towards facilitating the promotion of international student exchange.

The panel further supports WU's production of relevant study materials for the BSc programmes in English. The study material will hopefully be available by autumn 2002 when the BSc level is formally introduced.

6.3 International cooperation and student/staff exchange

6.3.1 Participation in international cooperation

Participation in international cooperation mainly concerns two types of cooperation:

- 1) Strategic cooperation and networking with other European agricultural universities concerning the development of structural relationships, joint programmes and curriculum development.
- 2) World-wide cooperation with universities to develop student exchange programmes

While all four institutions participate in international student exchange programmes, only WU, UH and KVL are involved in strategic cooperations and networks with other agricultural universities in Europe. In a Nordic context, KVL is engaged in "The Nordic Forestry and Agricultural University Cooperation" (NOVA), which involves agricultural universities in Norway, Sweden, Finland, Iceland and Denmark. At European level KVL, WU and UH are partners in the so-called Euro league, which is presented as a strategic platform for developing structural relationships and joint programmes and curricula. The cooperation was started in 2001 on a Dutch initiative. In addition to WU, UH and KVL, the members of the Euro League include University of Aberdeen (Scotland), University "für Bodenkultur" Vienna (Austria) and the agricultural university in Uppsala (Sweden). UCD does

not participate in the Euro league cooperation, as it was never invited to. In Europe, UCD has traditionally cooperated with agricultural universities in Great Britain.

The number of partnerships with universities globally also differs among the institutions. UH has, in quantitative terms, the most extensive cooperation network, including collaborative agreements with more than 90 universities in 55 countries. It is followed by KVL which collaborates with 130 universities worldwide. UCD and WU have a much more limited level of international collaboration. In this connection, it should be noted that the documentation material does not provide information on the nature and quality of the partnerships, and the panel is, therefore, not in a position to assess their substance and quality.

6.3.2 Student exchange programmes

Procedures for, and participation in, student exchange programmes exist at all four institutions in differing intensities and at different levels.

Student exchanges mainly take place within the framework of established programmes, such as the EU Socrates, Erasmus, Leonardo and Tempus programmes. Additionally, KVL is involved in the Nordplus programme, involving the mobility of students and teachers within Nordic countries, and has furthermore formalised cooperation and exchange programmes with institutions in the USA, Australia, Canada and New Zealand. UCD has established student exchange agreements with universities in USA.

While the numbers of MSc students on exchange programmes at WU is relatively high (25 %), there are only few similar BSc students (incoming or outgoing). The panel assesses the generally low level of student exchange at WU to be a result of the fact that the ECTS is not yet applied, which complicates the recognition of courses taken abroad. The panel also ascribes the high proportion of compulsory courses at UCD as a possible constraint on international student exchange.

An almost similar low number is found at UH where only a handful of the 60 students who started the BSc programme in the fall of 1999 have taken part in an international student exchange programme. However it should be noted that some students from UH have also conducted their compulsory internship, or parts hereof, abroad.

At UCD, the numbers are higher despite the recent fall in the number of incoming and outgoing students, which has taken place during the last few years. The annual average number of outgoing students from the three specialisations included in this evaluation is about 40. In this context, it should be noted that the majority of outgoing students use the exchange programmes to fulfil the

PWE component which (apart from a few courses offered under the Erasmus programmes) is the only component taken abroad for which UCD gives credits.

KVL stands out at the institution with the highest level of students attending an exchange programme at BSc level. On average, 40 % of all students from the programme of agricultural science have participated in an international student exchange programme.

6.3.3 Staff exchange programmes

The extent of staff exchange is generally low at the institutions. UCD and KVL encourage teachers to participate in staff exchange programmes by providing the opportunity for sabbaticals. Regardless of this, the panel has recognised that the interest from teachers to teach or conduct research abroad is not significant.

6.3.4 Application of European Credit Transfer System (ECTS)

ECTS as the single credit system is applied at UCD, UH and KVL. The management of the faculty for agricultural science at UCD is concerned about current structural issues and inflexible requirements for the specialisations which, in its opinion, inhibits the development of a modular system and the transfer of credit from other institutions.

WU applies its own Dutch credit system, but nevertheless has a system for conversion of Dutch credits into ECTS when required.

6.3.5 Procedures for transfer of credits

Clear procedures for transfer of credits exist at all four institutions. However, in the case of UCD, the procedure for use of course credits other than PWE taken abroad has yet to be put into operation and tested.

6.3.6 Recommendations for cooperation and student/staff exchange

International cooperation

WU is fully committed to the work of the Euro league and is one of the driving institutions in the cooperation. At the same time, the panel has noticed that WU is lagging behind in other areas of internationalisation. This statement mainly refers to the lack of courses provided in English, the current lack of study materials in English and the fact that the ECTS is not applied as the credit system in WU. Though the panel fully recognises the positive perspectives in the Euro league cooperation, the panel is also convinced that this should not hinder WU in taking its own initiatives.

The panel believes that UCD could benefit from a closer cooperation with other European universities. This may contribute to an increase in the extent of participation in European exchange pro-

grammes through membership of joint programmes and through the development of common curricula as the basis for recognition of courses taken abroad.

Student exchange

The panel recommends that WU and UH take action to promote international student exchange at BSc level.

ECTS and implementation of a modular structure

The panel fully supports the concern of the faculty management at UCD concerning current structural issues, which inhibit the development of a modular system, and recommends that the university management takes action on this issue with a view to facilitating increased international student mobility.

The panel recommends that WU replaces the Dutch credit system with the ECTS as the sole credit system. This could be done alongside the introduction of the BSc level.

7 Overview of Recommendations

This chapter lists the recommendations provided by the panel of experts to each of the four institutions. The structure of this chapter follows the overall structure of this part of the report and, for each of the institutions, the recommendations are divided into four sections: (i) general programme issues; (ii) core competencies; (iii) quality assurance mechanisms; and (iv) internationalisation. The motivation and context for the recommendations are provided in chapters 3 to 6.

7.1 The Royal Veterinary and Agricultural University (KVL)

7.1.1 Recommendations for general programme issues

In relation to student characteristics, programme goals, structure and content, the panel makes the following recommendations to KVL:

- Analyse the reasons for the decline in the number of applicants to the agricultural science programme and investigate ways to deal with the situation, for instance by looking at the initiatives taken by UCD and UH.
- Analyse and keep records of the reasons for the relatively high dropout rates and analyse when and in which form support to students is most needed and adjust the student counselling system accordingly.
- Formulate independent educational goals for the BSc programme. The goals should specify both the desired subject-area related skills and competencies and the desired generic skills and competencies of the graduates. The goals should also specify the theoretical as well as practical orientation of the programme and give an indication of its depth and breadth. When formulating the overall educational goals, the panel recommends the form of the one formulated by UH is used as a means for inspiration.
- Include practical training as a compulsory part of the programme.
- Ensure a high level of coordination between basic science and applied science courses and promote integration of the different types of courses.

- Assess the adequacy of the system of recommended prerequisites, including an analysis of the extent to which students follow the recommendations. KVL should also reflect upon the costs and implications of having a structure where students are free to decide the programme content.

7.1.2 Recommendations for core competencies

In relation to goals for core competencies and content related to core competencies, the panel recommends KVL to:

- Commit itself to formulate a comprehensive and independent set of goals for the desired core competencies of its BSc graduates. The format of the goals formulated by WU can be used as inspiration. The goals should be formulated and developed through discussions with relevant internal stakeholders, including teaching staff and students, and then be widely disseminated.
- Formulate goals, which reflect the (potential) needs and requirements of the labour market.
- Follow-up on the commitment of the Agricultural Science Committee to reconsider the extensive emphasis on chemistry in the first year of the programme and generally ensure that first year students become aware of the reasons behind the emphasis on basic science disciplines in the initial part of the programme. KVL should also reflect upon the adequacy of the existing balance between courses in the basic sciences and the more applied ones.
- Include compulsory applied science courses to ensure that the students obtain a coherent set of professional qualifications within agricultural science.
- Discuss how different study elements and different methods of teaching and learning including methods of examination should be weighted and placed in order to ensure the desired core competencies of the BSc graduates.

7.1.3 Recommendations for quality assurance mechanisms

In relation to the overall framework for quality assurance, the content, structure and process of quality assurance and follow-up on quality assurance, the panel recommends KVL to:

- Consider formulating overall goals and procedures for systematic quality assurance with a view to producing a coherent “package” of quality assurance mechanisms.
- Consider developing a system and procedure for internal programme evaluations in line with those established at UCD and WU.
- Critically evaluate its current system for course evaluations in order to reap more benefit from the system and to increase the student participation rate. Furthermore, KVL should consider strengthening the involvement of the study committee in relation to quality assurance to ensure that

evaluation results become an explicit part of the annual review of curricula and course descriptions.

- Consider establishing mechanisms to ensure systematic and regular feedback from both the labour market and from graduates as part of a systematic quality assurance system.
- Consider establishing formalised fora for discussing programme quality involving management, teachers and students.

7.1.4 Recommendations for internationalisation

In relation to strategy and goals for internationalisation, including international dimensions in programme content, international cooperation and student/staff exchanges, the panel recommends that KVL:

- In the light of the European development and the Bologna process, analyses the implications of not recognising the BSc degree as an independent degree, which qualifies students for the labour market.
- Continue its involvement in the Euro league cooperation in order to promote international student exchange.

7.2 University College Dublin (UCD)

7.2.1 Recommendations for general programme issues

In relation to programme goals, structure and content, the panel makes the following recommendations to UCD:

- Formulate independent educational goals for the BSc programme. The goals should specify both the desired subject-area related skills and competencies, and the desired generic skills and competencies of the graduates. The goals should also specify the theoretical as well as practical orientation of the programme and give an indication of its depth and breadth. When formulating the overall educational goals, the panel recommends the form of the one formulated by UH is used as a means for inspiration. Goals should also be formulated for each of the specialisations. The format of the ones formulated for the animal science specialisation may be used as inspiration in this regard.
- Engage all relevant stakeholders, including students, in the preparation of the goals.
- Ensure a high level of coordination between basic science and applied science courses and promote integration of the different types of courses.

- Reconsider the current balance between the depth and breadth of programme content. With regard to this, UCD should consider whether an inclusion of a compulsory BSc thesis in all its specialisations would provide the students with a better opportunity to fulfil their desire to study particular areas of interest in more depth.

7.2.2 Recommendations for core competencies

In relation to goals for core competencies and content related to core competencies, the panel makes the following recommendations to UCD:

- Follow-up on the commitment to formulate a comprehensive set of goals for core competencies and consider the format of the set of goals formulated by WU as a means of inspiration. The goals should be formulated and developed through discussions with relevant internal stakeholders, including teaching staff and students, and then widely disseminated.
- Devote specific attention to the discussion and formulation of goals for the desired methodological qualifications of the BSc graduates. The panel supports UCD in its belief that the desired methodological qualifications identified during the preparation of the present faculty development plan provide a good starting point.
- Introduce preparatory courses in line with those offered at UH and KVL.
- Establish, as planned, a teaching committee with the responsibility of submitting a proposal for the revision of the first year of the programme and that the committee focuses particularly on the relevance of the current basic science courses for students specialising in ARD. UCD should also ensure that first year students become aware of the reasons behind the emphasis on basic science disciplines in the initial part of the programme. Furthermore UCD should reflect upon the adequacy of the existing balance between courses in the basic sciences and the more applied ones.
- Follow-up on the commitment to increase focus on developing the desired methodological qualifications of the students. This should be done by implementing more varied forms of teaching and learning, including cooperative and communicative forms, and by offering more method-oriented courses. Specifically, a course in communication should be offered to the AS and ACP students earlier in the course of their studies.
- Discuss how different study elements and different methods of teaching and learning including methods of examination should be weighted and placed in order to ensure the desired core competencies of the BSc graduates.

7.2.3 Recommendations for quality assurance mechanisms

In relation to the overall framework for quality assurance, the content, structure and process of quality assurance and follow-up on quality assurance, the panel recommends UCD to:

- Consider formulating overall goals and procedures for systematic quality assurance with a view to producing a coherent “package” of quality assurance mechanisms.
- Introduce an obligatory and to some extent standardised course evaluation system, involving the whole cycle from design of questionnaires to procedures for follow-up on evaluation results. The framework applied at WU is recommended as a model and includes a standardised (but nevertheless “dynamic”) questionnaire, effective follow-up procedures and a high degree of transparency through an extended procedure for dissemination and documentation of evaluation results. Furthermore, UCD should clearly define the allocation of responsibility for course evaluations, including the responsibility for follow-up.
- Consider establishing mechanisms to ensure systematic and regular feedback from the labour market and from graduates, as part of a systematic quality assurance system.
- Consider establishing formalised fora for discussing programme quality, involving management, teachers and students.

7.2.4 Recommendations for internationalisation

In relation to strategy and goals for internationalisation, including international dimensions in programme content, international cooperation and student/staff exchanges, the panel recommends that UCD:

- Further develop its perspectives for internationalisation, e.g. by formulating a strategy for internationalisation.
- Considers broadening its policy towards internationalisation to include aspects related to international cooperation, networking, joint study programmes and teaching staff exchange.

7.3 University of Hohenheim (UH)

7.3.1 Recommendations for general programme issues

In relation to programme goals, structure and content, the panel makes the following recommendations to UH:

- Include a specification of the desired subject-area related skills and competencies and the desired generic skills and competencies of the graduates in its programme goals. UH should also further specify the theoretical as well as practical orientation of the programme and indicate its depth and breadth. Furthermore, UH should formulate independent goals for the specialisations. The format

of the goals for the specialisation in animal science formulated by UCD may be used as inspiration in this regard.

- Find a solution to the problem that students starting in the summer semester have to start with higher level basic science courses and then proceed with basic science courses at a lower level.
- Ensure a high level of coordination between basic science and applied science courses and promote integration of the different types of courses.
- Reconsider the current balance between depth and breadth of programme content. In connection with this, UH should consider whether a stronger emphasis on the BSc thesis would provide the students with a better opportunity to satisfy their desire to study particular areas of interest in more depth.

7.3.2 Recommendations on core competencies

In relation to goals for core competencies and content related to core competencies, the panel recommends UH to:

- Follow-up on the commitment to formulate goals for core competencies and use the format of the goals formulated by WU as a source of inspiration. Furthermore, goals should be formulated and developed through discussions with relevant internal stakeholders, including teaching staff and students, and the results should be widely disseminated.
- Devote specific attention to the discussion and formulation of goals for the desired methodological qualifications of the BSc graduates.
- Follow-up on the commitment to increase focus on developing desired methodological qualifications of students. This should be done by implementing more varied forms of teaching and learning, including more cooperative and communicative forms, and by offering more method-oriented courses.
- Focus on adjusting programme content towards the new programme structure.
- Discuss how different study elements and different methods of teaching and learning including methods of examination should be weighted and placed in order to ensure the desired core competencies of the BSc graduates

7.3.3 Recommendations for quality assurance mechanisms

In relation to the overall framework for quality assurance, the content, structure and process of quality assurance and follow-up on quality assurance, the panel recommends UH to:

- Consider formulating overall goals and procedures for systematic quality assurance with a view to producing a coherent “package” of quality assurance mechanisms. A good starting point could be the goals reflected in the self-assessment report of UH.
- Introduce an obligatory course evaluation system, encompassing the whole cycle from design of questionnaires to the process of follow-up on evaluation results. The framework applied at WU is recommended as a model and includes a standardised (but nevertheless “dynamic”) questionnaire, effective follow-up procedures and a high degree of transparency through an extended procedure for dissemination and documentation of evaluation results. Furthermore, UH should clearly define the allocation of responsibility for course evaluations, including the responsibility for follow-up.
- Consider establishing mechanisms to ensure systematic and regular feedback from the labour market and graduates, as part of a systematic quality assurance system. In this context, the panel supports the recent initiatives taken by UH in establishing a career-centre to strengthen relations with the labour market and an alumni association for graduates.
- Consider establishing formalised fora for discussing programme quality, involving management, teachers and students.

7.3.4 Recommendations on internationalisation

In relation to strategy and goals for internationalisation, including international dimensions in programme content, international cooperation and student/staff exchanges, the panel recommends that UH:

- Further develops its perspectives for internationalisation by formulating a written strategy for internationalisation.
- Continues its involvement in the Euro league cooperation in order to facilitate the promotion of international student exchange. In this context, UH should take actions to promote international student exchange at BSc level.

7.4 Wageningen University (WU)

7.4.1 Recommendations for general programme issues

In relation to student characteristics, programme goals, structure and content, the panel makes the following recommendations to WU:

- Analyse the reasons for the decline in the number of applicants to the crop science programme and investigate ways of dealing with the situation; for instance by considering the initiatives taken by UCD and UH.
- Analyse and keep records of the reasons for the relatively high dropout rates and analyse when and in which form support to students is most needed and adjust the student counselling system accordingly.
- Follow-up on the commitment to, and current shift towards, formulating independent educational goals for the new BSc programmes. The goals should specify both the desired subject-area related skills and competencies and the desired generic skills and competencies of the graduates. The goals should also specify the theoretical as well as practical orientation of the programmes and give an indication of the depth and breadth. When formulating the overall educational goals, the panel recommends the form of the one formulated by UH is used as a means of inspiration.
- Introduce practical training as a compulsory part of the programmes.
- Ensure a high level of coordination between basic science and applied science courses and promote integration of the different types of courses.

7.4.2 Recommendations for core competencies

In relation to goals for core competencies and content related to core competencies, the panel makes the following recommendations to WU:

- Revise the goals for core competencies, based on reflections of what may realistically be achieved considering the nominal duration of the programmes, and adopt the VSNU descriptors as a frame of reference when reformulating the goals. Furthermore, the panel recommends that WU ensures that the formulated goals are widely disseminated.
- Follow-up on the intention to discuss with employer organisations what skills the BSc graduates should possess in order to be able to get a job based exclusively on their BSc degree and use these discussions as a frame of reference when revising the goals for core competencies.
- Ensure that first year students become aware of the reasons behind the emphasis on basic science disciplines in the initial part of the programmes. WU should also reflect upon the adequacy of the existing balance between courses in the basic sciences and the more applied ones.
- Focus on adjusting programme content towards the new programme structure.
- Discuss how different study elements and different methods of teaching and learning including methods of examination should be weighted and placed in order to ensure the desired core competencies of the BSc graduates.

7.4.3 Recommendations for quality assurance mechanisms

In relation to the overall framework for quality assurance, the content, structure and process of quality assurance and follow-up on quality assurance, the panel recommends that WU:

- Considers extending the current system of alumni surveys to include BSc graduates in the future.
- Considers establishing formalised fora for discussing programme quality, involving management, teachers and students.

7.4.4 Recommendations for internationalisation

In relation to strategy and goals for internationalisation, including international dimensions in programme content, international cooperation and student/staff exchanges, the panel recommends WU to:

- Analyse the implications of not recognising the BSc degree as an independent degree qualifying students for the labour market in the light of European development and the Bologna process.
- Consider including teaching staff exchange in the strategy for internationalisation.
- Continue the involvement in the Euro league cooperation in order to facilitate the promotion of international student exchange. WU should also take action to promote international student exchange at BSc level.
- Produce relevant study materials in English. The study material should ideally be available in autumn 2002 when the BSc programmes are formally introduced.
- Replace the Dutch credit system with the ECTS as the sole credit system. This should be done alongside the introduction of the BSc level.

Introduction

The second part of the report describes the background and the methodological framework and outcome of the evaluation. In relation to the background and the methodological framework it includes a presentation of the motivation for the initiation of the evaluation, the objectives, organisation and process of the evaluation, the strategic and practical choices made in the process of defining the scope of the evaluation and the process of the formulation of the criteria applied in the evaluation. In relation to the methodological outcome it includes the assessment of the criteria and method applied by the institutions participating in the evaluation and the international panel of experts responsible for the conclusions and recommendations of the evaluation. It also includes a presentation of the lessons learned from the evaluation.

This summary focuses on the lessons learned which are relevant in the perspective of future improvement.

Overall lessons learned

The evaluation model and the focused approach applied in the evaluation have generally functioned well and have proved to be useful for handling the complexity that international comparative evaluations are inevitably faced with. Still there is a need for improvement of the criteria if they are to be applied in other international comparative evaluations within the field of higher education. In particular the terminology related to the criteria for core competencies has led to some misinterpretations and a revision of definitions and terminology in this respect would therefore be required prior to an application of the criteria in future international comparative evaluations.

Main lessons learned*The composition of the panel of experts*

The participation of national experts in the international panel of experts has ensured that the panel has possessed the necessary knowledge about the programmes being evaluated and the cultural, organisational and political framework in which they exist. At the same time the choice to

appoint a chairperson who is not only independent of the institutions being evaluated, but also from another country to these, has contributed to a fully independent assessment.

The choice and role of the participating institutions

The non-Danish institutions were selected in accordance with the requirements that they should have a record of commitment to the internationalisation of higher education, be motivated to participate in the evaluation and be able to appoint representatives from all relevant group of stakeholder who where able and willing to communicate in English. These requirements have appeared to be relevant and sufficient for the selection of the institutions. The involvement of the institutions in central parts of the process of the evaluation has had a positive impact on the level of commitment of the institutions and the quality of the criteria applied.

The character of the self-assessment guides and the interview guides

The fact that the self-assessment guides have been identical has generally ensured that the information provided by each of the institutions has been presented in a similar and consistent way, facilitating a comparison between them and an identification of best (better) practises. The comparability of the information could, however, have been increased by the provision of a stricter format for the self-assessment report than just an overall page limit.

The use of strict and institution-specific interview guides has proved to be a useful tool, provided that the length of the individual interviews is carefully taken into account when deciding upon the number and type of questions to be posed.

The diversity of the programmes and their implementation status

The diversity of the content of the programmes has required a generic and general (more than content specific) dimension of the applied criteria. A positive aspect of this is that the nature of the criteria facilitates the use of them in relation to other evaluations of programmes within higher education. An adverse aspect is that the criteria do not provide the framework for a comparative content-specific assessment of the programmes.

The different status of bachelor programme implementation in the four countries has meant that those institutions with "new" bachelor programmes may benefit from the experiences of those, which have implemented the two-cycle system over a longer period. However, the different status of bachelor programme implementation in the four countries has also reduced the degree of comparability between the four institutions.

The focused approach in terms of level and scope

The focus on one cycle has supported the strategic relevance of the evaluation in the light of on-going European development within higher education. The focus on one level and the overall focused approach applied in the evaluation have also provided a concise analysis of the programmes involved.

Furthermore the experience of the evaluation is that the focused approach has provided more time to consider in depth than otherwise would have been the case, given a broader evaluation scope. It has also ensured the provision of focused documentation material, and thus provided a report that contains strict analysis, assessments and recommendations. Finally it has been time saving for all parties involved, not least for those involved in the self-assessment process. The adverse implication of the focused approach is, however, that the evaluation can only present a less than complete picture of the qualities of the individual institutions, compared with an evaluation covering a broader range of aspects.

It can be argued that the geographical coverage of the evaluation has been too narrow. In this context it can be questioned whether the evaluation reflects a “true” European perspective or only reflects the perspective of northern European higher education institutions.

The formulation and application of common criteria

Even a thorough discussion of criteria before they are applied in practice cannot ensure that they are fully understandable and consistent. It is thus important to ensure a process of criteria formulation that includes an even more critical assessment of the structuring, understandability, clarity, precision and consistency of the criteria. To minimise the risk of different interpretations it is recommended that the criteria and/or the self-assessment guide are supported by an explanatory document including a glossary and precise definitions and interpretations of key terms.

The criteria have exclusively focused on the bachelor level, which does not have the same status and history in all the four countries in which the programmes included in the evaluation are offered. This has meant that particularly the criteria related to core competencies were perceived more relevant by some institutions than by others.

The application of common criteria has facilitated the intended comparative perspective of the evaluation, provided a transparent and conspicuous basis for the assessment of the programmes included in the evaluation and ensured that the programmes have been assessed on equal grounds. Furthermore, it has provided an opportunity to identify best (better) practices.

Although the criteria developed and tested in the evaluation are of course not directly applicable to other evaluations, they do provide a relevant frame of reference for others engaged in international comparative evaluations.

9 Background to the Evaluation

9.1 Motivation

A number of factors have motivated EVA to conduct an international comparative evaluation of programmes within higher education. It has been a recurrent element in the Danish debate on quality assurance that an international dimension should be further strengthened. It is especially in the media and in the political debate that the need for international comparisons of Danish higher education has been stressed. The view of EVA is that the introduction of credible methodologies and procedures should be the first step in this direction. This present project should be seen in this context and, at the same time, in the context of recent developments at European level. There is an obvious need to initiate evaluation projects that seriously set out to try and implement the ambitions of the Bologna process in terms of transparency and comparability of qualifications in higher education. Until now, the number of attempts to conduct such evaluations has been limited.

Furthermore, EVA's motivation for initiating an evaluation, which applies predefined criteria, should be understood in the context of the increasing international interest for, and use of, criteria based evaluations. This refers especially to accreditation, where predefined criteria are an essential part of the method. While the present evaluation cannot, and has never intended to, be considered as accreditation (the evaluation will by no means result in an "approval"/"non approval" of the programmes involved), EVA has nevertheless responded to a need for the gathering of experiences with criteria based evaluation methods, including the strengths, weaknesses and opportunities associated to this type of evaluation.

9.2 Bologna and Prague

The European perspective on the quality of higher education has since 1999 been strongly influenced by the process of follow-up to the Bologna Declaration of that year, signed by 29 European Ministers of Education. In signing this declaration, the Ministers agreed to coordinate their policies to achieve a number of objectives, which they consider to be of primary relevance in order to establish the European area of higher education and to promote a European system of higher edu-

cation worldwide. The objectives are to be achieved over the short term and, in any event, within the first decade of the third millennium. The six specific objectives agreed upon are as follows:

- Adoption of a system of easily readable and comparable degrees, also through the implementation of the Diploma Supplement, in order to promote European citizens' employability and the international competitiveness of the European higher education system.
- Adoption of a system essentially based on two main cycles: undergraduate and graduate. Access to the second cycle shall require successful completion of first cycle studies, lasting a minimum of three years. The degree awarded after the first cycle shall also be relevant to the European labour market as an appropriate level of qualification. The second cycle should lead to the master and/or doctorate degree, as in many European countries.
- Establishment of a system of credits - such as in the ECTS system - as a proper means of promoting the most widespread student mobility. Credits could also be acquired in non-higher education contexts, including lifelong learning, provided they are recognised by the receiving Universities concerned.
- Promotion of mobility by overcoming obstacles to the effective exercise of free movement with particular attention to the following: For students, access to study and training opportunities and to related services. For teachers, researchers and administrative staff, recognition and valorisation of periods spent in a European context researching, teaching and training, without prejudicing their statutory rights.
- Promotion of European co-operation in quality assurance with a view to developing comparable criteria and methodologies.
- Promotion of the necessary European dimensions in higher education, particularly with regards to curricula development, inter-institutional co-operation, mobility schemes and integrated programmes of study, training and research.

At the follow-up meeting in Prague on May 19th 2001 the Ministers reaffirmed their commitment to the agreements reached in Bologna 1999. The Prague meeting led to further emphasis on the importance of "adopting common cornerstones of qualifications, supported by a credit system, such as the ECTS or one that is ECTS-compatible, providing both transferability and accumulation functions". The Ministers represented at the Prague meeting also "called upon the higher education sector to increase the development of modules, courses and curricula at all levels with "European" content, orientation or organisation."

In summary, recent developments at a European level underline the need for more comparability and transparency of quality in higher education. The comparative perspective of EVA's international evaluation is a response to these general objectives and not least the specific objective of

"promotion of European co-operation in quality assurance with a view to developing comparable criteria and methodologies". Similarly, the focus of the evaluation and the content of the criteria, which will be described in more detail in chapters 11 and 12, reflect the specific content of several of the objectives of the Bologna Declaration and the Prague meeting.

9.3 Previous international evaluations

The last decade has witnessed increased cooperation between European universities and European evaluation agencies. Among other things, this has fostered some attempts to conduct cross border evaluations within the area of higher education.

The most comprehensive example of this is the wide-ranging European pilot project conducted in 1994/1995. Seventeen countries, the fifteen EU members plus Norway and Iceland, were involved in this project in which a total of 46 programmes within higher education were evaluated simultaneously. The main purpose of the project was to test a common methodology for programme evaluations, which would at the same time be suitable for national adaptations. The broad subject areas included in the evaluation were engineering sciences, communication & information sciences and art & design and covered two to four programmes from each of the participating countries.

An international research project initiated by CHEPS (Center for Higher Education Policy Studies) and conducted by researchers from The Netherlands, Germany and the UK is another example of an international evaluation. In this project from 1991/1992, ten programmes of economics from the three countries mentioned above were evaluated. The project was primarily oriented towards methodological development. More specifically, the aim was to develop a valid, reliable and effective methodology for comparing educational quality across the systems of higher education in a number of European countries. The method applied consisted of collection and analysis of different materials concerning the different programmes and an assessment by a panel of experts based on the collected and analysed material. The panel included experts within the field of economics and representatives from employers of graduates in economics. They all came from the countries in which the programmes were offered, but were independent of the programmes.

A third example of a previous international evaluation is that of electrical engineering programmes in Belgium, The Netherlands, Switzerland, Sweden and Germany, initiated by the Dutch Quality Assurance Agency, VSNU, and conducted in 1991/1992. The purpose of this project was to reach a mutual understanding and recognition of diplomas from the chosen programmes of the countries involved. The method applied was a model in which an international committee formulated a number of minimum requirements for the programmes. Based on a spectrum of documentation material covering written material about the programmes and site visits, the programmes were

evaluated against the minimum requirements. The committee comprised representatives from each of the different programmes as well as a chairman and vice-chairman who were independent of the programmes involved.

Finally, a recent cross border evaluation of physics programmes should also be mentioned. This evaluation, conducted in 2000/2001, involved five programmes from four universities located in three different countries. Four national/regional quality assurance agencies were involved in the conduction of the evaluation. The aim of the project was to compare the programmes and to analyse whether students received equivalent qualifications. The method applied for the evaluation drew heavily on the lessons learned from the earlier evaluation of engineering programmes mentioned above. The overall approach, with an international committee responsible for formulating minimum requirements and conducting the site visits, resembled the one used in the evaluation of engineering programmes. However, the principles behind the composition of the international committee differed. In the physics evaluation it was decided that the committee members should all be independent of the participating institutions.

The aims and foci of the international evaluations mentioned above differ from those of this evaluation. Nevertheless, some of the methodological lessons learned from these projects have been used as reference points in the initial phase of the planning and carrying out of the evaluation. The evaluation model applied by EVA will be described in the following chapter.

10 Evaluation Model and Process

10.1 Aims and objectives

In accordance with the terms of reference (annex A), the evaluation has had two distinct aims:

1. To support the development of a common framework for international comparative evaluations.
2. To provide the participating institutions with a comprehensive report on the quality of their programme(s) within the field of agricultural science.

Specifically, the objectives of the evaluation were formulated to:

- develop and test a common methodological framework and common quality criteria for comparative international evaluations of programmes within higher education;
- establish mechanisms for continuous quality improvement and cooperation between participating institutions;
- stimulate international discussions about what constitutes good quality within higher education.

The first objective refers to the organisation of the evaluation, the documentation gathered and the process of carrying out the evaluation. This will be described and assessed in the following sections of this chapter. This objective also refers to the development and application of the set of criteria, which has formed the basis for the international comparative analysis. The process by which the criteria were developed is described in chapter 12, whereas the assessment of the set of criteria applied in the evaluation is presented in chapter 13. From a methodological perspective the main outcome of the evaluation comprises the methodological lessons learned, which are presented in chapter 14.

The result of the international analysis is reflected in part one of the report and is considered as the main outcome of the evaluation for the participating institutions. Part one thus fulfils the aim of providing the participating institutions with a comprehensive report on the quality of their agricultural science programme(s).

The second objective, concerning the establishment of mechanisms for quality improvement, is also achieved through the making of a considerable number of recommendations, derived from the comparative analysis.

Whereas the first and second objectives focus on delivering specific products, the third objective, concerning stimulation of discussions about quality, focuses on the process. The formal evaluation process and the elements included in the evaluation have only to a limited extent contributed to the fulfilment of this objective. In fact, the third objective refers to a desired “spin-off” effect, which is expected to arise from, and be facilitated by, the intended follow-up to the report.

10.2 Organisation and documentation

In accordance with EVA’s usual procedure, a team of evaluation officers from EVA has been responsible for the practical and methodological planning and implementation of the evaluation, while a panel of experts - in this case international experts - has been responsible for the academic quality of the evaluation, including the assessments, conclusions and recommendations presented in part one of this report. The individual members of the international panel of experts are all independent of the institutions being evaluated.

Two forms of documentation constitute reference points for the evaluation: the self-assessment reports and the site visits.

Each of the institutions participating in the evaluation has carried out a self-assessment and documented the results in a self-assessment report. The self-assessment reports contain both descriptions and assessments of the present status of the programmes under evaluation and observations concerning the focus areas of the evaluation.

After receiving the self-assessment reports, the panel of experts visited each of the participating institutions. The site visits have provided the panel with an opportunity to ask the institutions to elaborate unclear and less substantiated sections of the self-assessment reports. At the same time, they enabled validation of the information provided in the self-assessment report.

Based on the documentation material from the institutions, the panel has assessed the extent to which each of them complies with the criteria used in the evaluation. Whenever relevant, the recommendations following the assessments have included a “best/better practice perspective” in the sense that the panel recommends that the good practice(s) of one or more institution(s) in one

area of operation is adopted by the others as a frame of reference when implementing the recommended changes.

10.3 Process

Planning and initiation

In the initial stage of the evaluation, a team of evaluation officers from EVA was established, which then conducted a preliminary study. This study primarily comprised an analysis of prior European attempts to conduct international evaluations and the recent political developments concerning higher education at European level. It also included meetings with the Danish institution participating in the evaluation, where the general objectives and relevant focus areas of the evaluation were discussed. The selected focus areas, and the reflections concerning their selection, are presented in chapter 11.

Based on the preliminary study, the terms of reference for the evaluation were formulated and approved by EVA's board in May 2001. At this time, invitations to participate in the evaluation were also submitted to the selected institutions. The procedure for the selection of institutions to participate is described in chapter 11.

As a follow-up to the written invitations, an information meeting with each of the institutions was held in June 2001. At these meetings, the institutions were given the opportunity to comment on the framework of the evaluation and to suggest changes to the planned evaluation procedure.

Composition of panel of experts

By the end of August 2001 all the institutions had committed themselves to participate in the evaluation and were then asked to propose relevant national experts from the field of agricultural science who were independent of all the institutions participating in the evaluation. Based on the proposals received from the institutions, EVA approached and appointed those experts who appeared suitable for inclusion in the panel, taking account its desired composition. In addition to including experts with different qualifications within agricultural science, EVA also considered it relevant to include a representative from a typical employer of graduates in agricultural science. The chairperson of the panel was chosen exclusively by EVA based on the primary criteria that this expert had to be independent of the institutions involved in the evaluation and be from another country to those in which the programmes included in the evaluation are based. In view of the strong focus on methodological development, EVA also found it relevant to appoint a chairperson with extensive expertise within evaluation and quality assurance methods.

The decision to invite the institutions to propose relevant, national/regional experts for the panel of experts, who should also be independent of the institutions included in the evaluation, rested on a few different considerations.

The decision to include national experts, rather than experts from other countries than those in which the programmes are offered, reflected a belief that this would be the best way to ensure that the panel possessed sufficient knowledge about the programmes being evaluated and the cultural, organisational and political frameworks in which they exist.

The principle that the experts had to be independent of the institutions being evaluated is in line with the general practice of EVA and relates to the aim of ensuring that the panel is external to these institutions.

Providing the institutions with the opportunity to submit proposals for relevant experts served the purpose of ensuring that the panel comprised experts who were respected and considered relevant by the institutions.

The role of the institutions

The institutions were included in the process of the formulation of the evaluation criteria. Moreover, the draft criteria prepared by EVA in cooperation with the chairperson of the expert panel were discussed at a meeting with participants from each of the institutions and the team of evaluation officers from EVA in October 2001. The process of criteria formulation is described in detail in chapter 12.

As indicated above, the institutions were invited to play an active role in the initial stages of the evaluation. In encouraging active participation of institutions, the aim has been to enhance their commitment and, not least, the usefulness and relevance of the process and outcome of the evaluation, as seen from the perspective of the institutions.

Self-assessment guide and process

Based on the revised set of criteria, EVA prepared a self-assessment guide in cooperation with the chairperson of the expert panel. It was decided to submit an identical guide to all the institutions in order to ensure that the information provided from each of the participating programmes would be presented in a similar and consistent way, thus facilitating the comparison across the institutions and an identification of best (better) practices.

The questions in the guide were formulated in such a way that the responses would provide the panel with the necessary information for assessing the programmes in relation to the criteria. At the same time, they were formulated in such a way that the answers would require both descriptions of, and reflections on existing practises. The large majority of the questions required the institutions to provide qualitative data, whereas only a few questions required the provision of quantitative data.

The questions were grouped into the three focus areas of core competencies, quality assurance mechanisms and internationalisation and marked with an explicit reference to the criterion from which they were derived. The guide also contained a number of overall questions about the wider educational goals of the programmes, their structure and content, as well as questions relating to students characteristics, such as figures for intake and drop-out.

In addition to the questions, the guide contained an introductory part, describing the purpose of the self-assessment process, the recommended composition of the self-assessment group, etc.

The self-assessment guide was submitted to the institutions by mid December 2001, and the self-assessment reports had to be returned by mid March 2002. The guide and the self-assessment process was explained and discussed at meetings between the team of evaluation officers and the self-assessment group of each of the institutions. These meetings were placed within the last three weeks of January 2002, which implied that, in practice, the institutions conducted their self-assessment in one and a half to two months.

Site visits and interview guides

In April 2002 the panel of experts and the team of evaluation officers conducted a two-day site visit to each of the institutions.

To ensure that the site visits functioned as a useful supplement to the self-assessment reports, institution specific interview guides were prepared and used at the site visits. Accordingly, the content of the guides differed, reflecting the differences in the content and quality of the self-assessment reports.

Each visit comprised a number of separate interviews with the different groups of stakeholders who, in one way or another, were engaged with the programme(s) included in the evaluation. The purpose of conducting separate interviews with different stakeholder groups was to validate the

content of the self-assessment reports. In other words, the interviews were used as a means to get a clear picture of the opinions, perspectives, etc. of the different stakeholders, in relation to the information provided in the self-assessment report. The institutions were instructed by letter to avoid overlap of participants in the different interviews, unless this was unavoidable due to the organisational structures relating to the programme. Finally, they were instructed to ensure random selection of the student representatives.

Reporting

The draft report prepared in May-June 2002 was submitted to the institutions for comments in September 2002 and then finalised for publication in November 2002.

11 Definition of Evaluation Scope

This chapter aims to provide an overview of both the strategic and practical decisions made in the evaluation process concerning the selection of programme(s) and institutions; the definition of selected programme(s); and the selection and definition of the three focus areas.

11.1 Selection of programme(s) and institutions

The selection of programme type was initially motivated by the interest expressed by KVL in having its programme in agricultural science evaluated by EVA. As mentioned in part one, KVL's programme in agricultural science has never before been externally evaluated.

In order to ensure a proper and reliable comparative analysis, EVA decided that at least three, but preferably four, institutions should be included. In addition to the overall desire to obtain a certain geographical coverage, other requirements have formed the basis for the selection of institutions. These were:

1. The institutions should have a record of commitment to the internationalisation of higher education.
2. The institutions should be expected to be motivated to participate in the evaluation and, accordingly, to allocate the necessary time and human resources involved primarily in the self-assessment process and in the follow-up to the evaluation.
3. The institutions should be able to appoint representatives from all relevant groups of stakeholders who are able and willing to communicate in English.

Following these overall requirements, KVL provided specific recommendations for the selection of two of the foreign institutions with which KVL already collaborates concerning student exchange, development of joint programmes and other internationally oriented activities. These institutions are UH and WU. To broaden the perspective, and to avoid a situation where the evaluation only benefited those institutions already forming partnerships, EVA decided to invite UCD, which has not yet participated in joint initiatives with other agricultural universities in Europe to the same

extent. Furthermore, the fact that the bachelor/master structure is long established at UCD, in contrast to the three other institutions, supported the choice of UCD.

11.2 Definition of programme in agricultural science

The scope of the evaluation, as laid out in the terms of reference, is broadly defined as “programmes of agricultural sciences”. At the time these terms of reference were prepared, the participating institutions had not been selected. This explains why EVA, at this early stage, preferred to formulate the scope of the evaluation as openly as possible.

However, after the selection of the four institutions, it became clear that a further focus and definition of programmes of agricultural sciences were needed. The differences and variety in the content of the programmes underlined the need for clarifying the exact level and scope of each programme in order to facilitate the development of a common methodological framework and common quality criteria for use in a comparative analysis.

The definition and delimitation of the programme have been done in relation to level (degree) and content.

11.2.1 Level

As mentioned in chapter 9, the Bologna process was one motivating factor for the initiation of the evaluation. As previously described, one important element of the Bologna declaration is the application of a transparent system of qualifications in higher education that is based on two cycles (bachelor and master). In this context EVA decided to focus on the bachelor level, to support an assessment of the extent to which the BSc programmes of agricultural science are comparable in the four countries.

Additionally, the bachelor level was selected due to a number of other concerns:

- As the BSc is a “basic education”, agreement among the four institutions on common quality criteria was assumed to be easily achievable. An agreement on common criteria for the MSc programme(s) would presumably have been more complicated to obtain, due to the large degree of specialisation at MSc level.
- Despite the many differences in content, the programmes are generally structured similarly, comprising a core of compulsory courses supplemented by electives. Some degree of specialisation and a mixture of scientific and practical orientation are other common characteristics shared among the programmes at BSc level. However, the balance between compulsory and elective courses varies from programme to programme, just as the distributions between spe-

cialisation and generalisation, and practical and theoretical orientation are weighted differently.

- It was anticipated that focusing on one level would allow a more in-depth and concise analysis of the programmes than otherwise would have been possible.

11.2.2 Content

The programmes and specialisations offered by the four institutions are interpreted differently and vary in terms of numbers and content. Therefore, it was essential to clarify which programmes and specialisations should be included in the evaluation. The rationale for selecting only a few of the broad range of programmes and specialisation options was additionally based on considerations of:

- Limiting the time and resources required for the institutions to conduct the self assessment
- Minimising the risk that the evaluation ended with assessing and comparing “apples and oranges”

While KVL, UCD and UH all offer programmes termed “agricultural science”, agricultural science does not exist as a separate programme at WU. However, WU offers programmes within the field of agricultural science, which are similar to the specialisations offered by the three other universities under their programmes of agricultural science, for instance, animal science and crop science.

Another significant difference is the separation between “programme” and “specialisation”. The most significant difference is illustrated in the cases of UCD and KVL. At UCD the programme of agricultural science is broadly defined and includes, for example, forestry, horticulture and landscape as specialisations, whereas these are identified as separate programmes at KVL. To further complicate the issue, it should be noted that KVL does not operate with formal fields of specialisation but is structured around departments, within which students are able to specialise during their BSc thesis work. However, in order to establish a common basis for the selection of programmes and specialisations, EVA allowed itself to categorise the relevant departments of KVL into either animal science or crop science “specialisations”.

The separation of programme and specialisation is illustrated in the figure on the next page, where the grey areas illustrate BSc programmes (for UH diploma programmes except the agricultural science programme) and the white areas are specialisations.

KVL	UCD	UH	WU
Agricultural Science	Agricultural Science	Agricultural Science	
<ul style="list-style-type: none"> - Animal Science - Crop Science 	<ul style="list-style-type: none"> Animal Science - Animal & Crop Production - Agribusiness & Rural Dev. - Agriculture & environmental Science - Engineering Technology - Food Science - Forestry - Horticultural Science - Landscape Horticulture 	<ul style="list-style-type: none"> - Animal Science - Crop Science - Agricultural Economics - Agricultural Engineering - Soil Science 	<ul style="list-style-type: none"> Animal Science Crop Science Biology Technology & Environmental mgt. Environmental Science Soil water & Atmosphere Biotechnology Int. Dev. Studies Food Technology Molecular Science Business and Consumer Sciences Landscape Architecture Forestry Food Sciences
<ul style="list-style-type: none"> Horticulture Agricultural Economics Forestry Landscape Architecture Biotechnology Food Science & Tech. 		<ul style="list-style-type: none"> Food Chemistry Food Technology Food Sciences Agricultural Biology Agricultural Economics 	

Following analysis of the variation in definitions of programmes of agricultural science, EVA decided, in consultation with the four universities, to include the programmes and “specialisations” presented in the figure on the next page. As it appears from the figure, the core subjects of agricultural science selected for this evaluation are animal and crop science/production, which are offered at all four institutions.

KVL	UCD	UH	WU
“Specialisations” offered under the programme of Agricultural Science	Programme options (specialisations) offered under Agricultural Science	Specialisations offered under the programme of Agricultural Science	Programmes
Animal Science	Animal Science	Animal Science	Animal Science
Crop Science	Animal and Crop Production Agribusiness and Rural Development	Crop Science Agricultural Economics	Crop Science Biology

11.3 Selection and definition of focus areas

11.3.1 Selection of focus areas

As a pilot project with a strong methodological focus, it was decided to limit the scope of the evaluation by focusing on only a few aspects of the programmes. This is in contrast to EVA’s national evaluations, which usually cover a broader range of aspects, related to teaching and learning.

This decision was also based on conclusions drawn from some of the previous international evaluations described in section 9.3, stressing the importance of limiting the number of focus areas when conducting evaluations across different educational cultures.

However, it should also be stressed, that focus on just a few areas has its limitations too. A narrow range of focus implies that the evaluation is not able to provide a complete picture of the qualities of the individual institutions that otherwise would be detected with an evaluation covering a broader range of aspects.

The three areas of focus, and the content of the quality criteria associated to each of these, have been strongly inspired and motivated by the Bologna declaration and the process of follow up.

The emphasis in the Bologna process, on adoption of common cornerstones of qualifications, has influenced the selection of core competencies. The aim has been to support an assessment of whether common cornerstones of qualifications exist or are to be adopted at bachelor level within the programmes of agricultural sciences in the four countries.

The selection of quality assurance mechanisms as a focus area was also strongly motivated by the Bologna process, which calls for the promotion of a European co-operation with the aim of establishing comparable criteria and methodologies for quality assurance.

Finally, the selection of internationalisation as the third and final focus area was driven not by one, but a number of elements in the Bologna declaration, which include: (i) the establishment of a credit system (ECTS) as a mean to promote student mobility; (ii) promotion of opportunities for students and teaching staff to study, train and conduct research abroad; and (iii) the development of comparable programme content to ensure that the degree awarded after the first cycle is relevant to a European labour market (and not just oriented towards a national labour market).

11.3.2 Definition of focus areas

To ensure a certain uniformity in the understanding of the three focus areas, these were defined according to the following terminology definitions:

Core competencies

Core competencies refer to the primary professional and methodological qualifications that the BSc programmes in agricultural science aim to provide. Professional qualifications include command of basic disciplines and approaches in agricultural science. Methodological qualifications include: capacities for critical thinking and problem-solving; the ability to work in (multidisciplinary) teams as well as independently; communicative and presentation skills.

Quality assurance mechanisms

Quality assurance mechanisms refer to the availability of procedures for systematic internal assessments of the programme as a whole, parts of the programme and individual courses. In connection with this, assessment methods, dissemination of, and follow-up on, evaluation results are included.

Internationalisation

Internationalisation refers to the degree of internationalisation in programme content; international cooperation, and the level and scope of international exchange of students and teaching staff.

These definitions formed the starting point for the formulation of the specific criteria and were the subject of discussions between EVA and the institutions.

12.1 Formulation of criteria

In national evaluations of educational programmes in Denmark, as well as elsewhere, quality is often assessed in terms of the extent to which the individual programmes achieve their own goals and comply with the legal regulations under which they operate. An approach commonly referred to as the “fitness for purpose” approach.

The goals of the programmes participating in the international evaluation, and the legal frameworks under which they operate, differ. Consequently, the use of the traditional fitness for purpose approach for each programme would not have enabled the intended comparative assessment of how the programmes fulfil common, identical goals. To ensure the comparative dimension, the application of pre-defined criteria was required in order to establish a common framework.

The criteria were formulated with reference to a number of different sources. As previously mentioned the objectives of the Bologna declaration and the agreements reached at the Prague meeting have constituted one important reference point for the formulation of specific criteria. Other important sources for the formulation of criteria were existing international evaluation models using common quality criteria, and the criteria used in the recent international comparative evaluations named in chapter 9. Finally, the formulation has also rested upon the experience and knowledge EVA has gained from the implementation of numerous evaluations of higher education programmes and from the formulation and use of criteria in the assessment of private education programmes.

The criteria for core competencies focus on the formulation of goals, their relevance to, and consistency with programme content, and the extent to which they were developed with regard to the needs and demands of the labour market. Furthermore, the criteria concern the actual content of the programmes in terms of professional and methodological content.

The criteria related to the area of quality assurance mechanisms were primarily formulated to provide a basis for analysis of the comparability of the strategies, systems and procedures for quality assurance at the four institutions.

Finally, the criteria for internationalisation correspond almost directly with the objectives of the Bologna Declaration. This implies that a substantial part of the criteria concentrate on the opportunities for, and extent of, international student and staff exchange, the application of ECTS and the existence of procedures for credit transfer.

Although criteria formulation benefited greatly from the many different sources and earlier experiences, it was nevertheless vital to take into account the specific conditions which characterise an international comparative evaluation. Firstly, there are considerable differences between educational cultures, national traditions and regulatory systems within which the individual programmes operate. Secondly, the aim of developing a methodology for international comparative evaluations implied an obligation to ensure that the criteria formulations were sufficiently flexible to allow them to be replicated in other international evaluations of programmes with a comparative perspective. Thirdly, the variation in programme content, as previously described, represented a significant challenge to the development of commonly relevant criteria that would also provide space for the expression of individual priorities and qualities.

To overcome these obstacles, and to assure a high level of common applicability and relevance, EVA developed a framework for criteria formulation.

12.2 Criteria requirements

The character and content of the draft set of criteria have been driven by the following requirements:

- *Breadth*: To ensure the criteria respect specific national traditions, concerns and priorities, and do not hinder diversity, the criteria must be formulated broadly enough to allow for variations.
- *Uniformity*: The criteria should be the same for all the programmes participating in the evaluation. This ensures that the programmes are assessed on an equal basis, that the assessments are transparent and that a comparative perspective is enabled.
- *Reference to level*: In order to operate with one set of criteria, this set has to be formulated with reference to the BSc as a single level, irrespective of the variations in the nominal duration.

- *Precision*: The criteria must be precise enough to allow an assessment of how they are fulfilled by the individual programmes.
- *Internal consistency*: The set of criteria must be internally coherent.
- *Topicality*: The criteria must reflect present objectives and developments within the area of higher education in Europe

An almost identical set of criteria has been applied in the criteria assessment conducted by the institutions as part of the self-assessment process. The results of this assessment are presented in the next chapter.

13 Criteria and Method Assessment

13.1 Assessment made by the institutions

As part of the self-assessment process, the institutions were asked to critically assess the quality of the criteria used in the evaluation. Furthermore, the quality of the criteria was discussed at the site visits. The institutions were specifically asked to assess whether the criteria were:

- Understandable and clearly formulated
- Relevant, considering present goals and developments within the programme
- Adequate in terms of areas covered
- Internally consistent
- Precise enough to allow for a proper assessment

The purpose of asking the institutions to critically assess the criteria used in the evaluation relates to the purpose of testing common quality criteria. Therefore, the following sections concentrate on the points of criticism raised by the institutions, whereas the more positive feedback is omitted. It should be noted that the assessments made by the institutions refer mainly to the questions posed in the self-assessment guide, rather than the criteria as such. The direct link between these questions and the criteria does, however, imply that the assessment also applies to the criteria.

The following sections represent a summary of the assessments provided by the institutions in relation to the five parameters listed above.

13.1.1 Understandable and clearly formulated

Some of the institutions experienced that the terminology used for some of the questions was confusing, and that some of the questions were unclear. The suggested improvements were the provision of an explanatory document, to include a glossary, precise definitions and interpretations of key terms. Some of the general terms, which the institutions requested definitions for, were "strategy", "goals" and "objectives". Also, the generally used distinction between management and teaching staff appeared artificial to some institutions, since those individuals who represent the programme management are also often members of the teaching staff. One institution also

found that the lack of a definition of "management" led to some confusion about whether it referred to the political or administrative management.

Furthermore, one institution felt that the definition of core competencies and the differentiation between professional and methodological qualifications were helpful, but that a differentiation between competencies and qualifications was lacking. The same institution also needed a definition of the term "internationalisation of programme content".

13.1.2 Relevant

The points raised here related mainly to the nature of the questions. One institution felt that there should have been some more critical or challenging questions. Some questions were found to be somewhat superficial, with the wording being benevolent rather than provocative. It was argued that this would make it easy to avoid giving a critical assessment. Similarly, another institution found that the questions focused exclusively on present goals, etc., and thus no questions were directed towards future development.

However, another institution felt that the focus on the programme level (rather than a more institutional focus) was valuable. This institution found the self-assessment exercise quite valuable in further re-focusing its programme, and while the institution found the descriptive part to be easy, it found the assessment part more difficult.

Two institutions felt that it would have been more relevant (in addition) to focus on the master level of the programmes in order to obtain a more comprehensive picture of the programmes offered by the institutions.

13.1.3 Adequate in terms of areas covered

The institutions assessment of the adequacy of the criteria related primarily to the focused approach of the evaluation described in chapter 11, rather than the adequacy of the criteria themselves.

While there was general satisfaction with the areas covered, the institutions also felt that other areas should have been included. One area mentioned by all institutions was the characteristics and quality of teaching staff. Other areas mentioned included the economic, political and organisational aspects of the programmes; average study duration; number of contact hours per week; examination system; services provided to the students; student profiles and job situations/opportunities.

In relation to the criteria, one institution felt that the criteria for assessment of quality should be more strongly built around the perspectives of: (i) the providers; (ii) the clients; (iii) government and (iv) society. This institution suggested that the dimensions of *programme or curriculum, education process, provision, the institution and the results* could be a useful structure around which to consider amendments to the assessment criteria.

13.1.4 Internally consistent

The institutions experienced a substantial amount of overlap in the questions raised within each of the focus areas. In most cases, these overlaps were experienced where one multidimensional criterion had been reformulated into not just one, but a number of questions to make sure that all aspects of the criterion would be covered in the self-assessment reports. One institution also experienced that the generally used distinction between goals and content, and the division of questions accordingly, resulted in some overlap. Secondly, it was felt that this division sometimes appeared too artificial.

The institutions also experienced some overlap between questions raised in different chapters of the self-assessment guide. Although this critique is not directed towards the set of criteria used in the evaluation, it is still important to mention. Besides questions related to each of the focus areas, the self-assessment guide included a number of general questions related to some central characteristics of the programmes. These were not directly linked to the defined criteria but were included to facilitate a comparative description and assessment of central characteristics of the programmes. The idea was to provide a better understanding of each of the programmes included in the evaluation, as well as the similarities and differences between them. The institutions expressed the view that the inclusion of questions related to the general structure and content of the programmes resulted in an overlap with those questions asked in the chapter concerning core competencies.

Apart from overlap, some other comments relating to internal consistency were also raised. One institution felt that the focus on how methodological qualifications were supported by the methods of teaching and learning was useful but that the same question was lacking information on professional qualifications. Another felt that the inclusion of a question concerning the opportunities for teaching staff to conduct research abroad was confusing, considering the fact that research was deliberately excluded as an area of focus in the evaluation.

13.1.5 Precision

The comments relating to precision were mainly directed towards the format of the self-assessment guide and the self-assessment questions. One institution felt that it would have been helpful to have a space limit for (each) answer and that for some questions, it could have made

sense to ask for a list of advantages/strengths and disadvantages/weaknesses rather than a text answer. Another institution felt that the detailed questions implied a high level of precision, but at the expense of a more general view.

13.2 Assessment made by the panel of experts

As described previously in the report, the overall methodological framework for the evaluation was already developed at the time the panel of experts was appointed, apart from the chairperson who was appointed earlier than the other members. The methodological framework referred to here, mainly comprises the selection of the three focus areas and the development of the specific criteria associated to the focus areas. It is these two main elements that, in combination, have constituted the frame of reference for the comparative assessment of the programmes involved in the evaluation. Accordingly, EVA requested the panel during the last stage of the evaluation to assess the approach and criteria applied, following the panels' practical experience with the application of these in the evaluation.

The assessment made by the panel relates to: (i) areas covered by the evaluation; (ii) the quality of the criteria; (iii) the methodological considerations related to an international comparative evaluation, and (iv) the practical organisation of the site visits.

Set out below, is a brief summary of the essence of the panels' reflections and comments.

13.2.1 Areas covered by the evaluation

The panel generally agrees with the methodological advantages associated with the application of a focused approach in an evaluation with an international comparative perspective (see chapter 14, section 14.2.4).

However, the panel also stresses that a focused approach requires the availability and accessibility of information that is not automatically covered by the analysis of the selected programme areas. In this context the panel refers to information concerning the basic content of the programmes, organisational structures and the mechanisms and levels for financial allocations. This information is required in order to understand the context of the selected programme areas being evaluated, including the internal coherence of various programme areas. Access to this information has been assured in the evaluation through: (i) the panels' knowledge about the specific programmes being evaluated, including cultural, organisational and political frameworks in which they exist; (ii) documentation materials provided by the institutions in connection with the self assessment reports, including study handbooks, curricula, course descriptions and other central documents concerning the programmes in general.

A different but nevertheless associated issue raised by the panel is the relevance and adequacy of the focus areas covered by the evaluation and the specific criteria related to each of these. The panel fully agrees regarding the relevance of the three focus areas, not least due to the fact that the Bologna declaration and the process of follow-up (which influences the present and future development of higher education institutions) motivated the choice of these.

The panel has, however, highlighted three additional areas which, in its collective opinion, would have further strengthened the analysis of the quality of the programmes being evaluated.

Firstly, the panel emphasises that the evaluation could have benefited by including an assessment of the record of selected research activities conducted at the institutions. The justification for this being that the level and quality of research activities often indicate the academic quality of the programmes.

Secondly, the panel mentions teaching staff profiles and qualifications as an additional area. The institutions ability to recruit and maintain qualified teachers is, according to the panel, another significant indication of the quality of a specific programme.

Thirdly, the panel stresses that teaching and examination methods and other pedagogical aspects could have been emphasised more, to support the analysis of core competencies. However, in this regard it should be mentioned that one of the existing criteria already relates to the extent to which the composition of teaching methods supports the realisation of the methodological qualifications, but this could have been even more detailed.

13.2.2 The quality of the criteria

Based on the general as well as specific experience gained from this evaluation, the panel members accept the specific criteria associated with the three focus areas as relevant, adequate and appropriate as a foundation for a proper analysis.

In relation to the criteria for core competencies they do, however, support the view of some of the institutions that the definition of core competencies is not sufficiently precise. The view of the panel is that clearer definitions could be reached by distinguishing between: (i) subject-area related skills and competencies, which are crucial for any degree and are intimately related to a specific knowledge of a field of study; (ii) generic skills and competencies, which include the capacity to learn, the capacity for analysis and syntheses etc., which are common to all or most of the degrees.

In relation to the criteria applied to internationalisation, the panel has noticed that the criteria refer to the extent to which the institutions live up to the intentions of the Bologna declaration more than they refer to the quality of the internationalisation activities. Additionally, the panel has questioned the relevance of the criteria for internationalisation for a BSc programme. As the analysis shows, the general level of international student exchange at the four institutions is relatively low among BSc students, whereas the level is significantly higher at master level. It can be argued that the criteria related to international student exchange are not of crucial importance at bachelor level.

13.2.3 Methodological considerations

The panel confirmed the methodological considerations made by EVA regarding the framework for criteria formulation ("criteria requirements") and the specific conditions, which apply to an international comparative evaluation, as described in section 12.1.

The panel particularly emphasises the differences in educational cultures and national regulations as elements that need to be considered in the development of the method and the specific criteria. This concern was given a high priority by EVA in the formulation of the criteria and has been addressed through the formulation of broad and flexible criteria and the involvement of the institutions in the criteria formulation in order to ensure that the criteria respect specific national concerns and priorities.

One of the most significant national differences, relevant to this evaluation, is the different status of implementation of bachelor programmes in the four countries, including the extent to which these programmes are directed towards qualification for the labour market, or mainly exist to provide entry to a master programme. As it appears from the analysis in part one of the report, the variation in status of the bachelor programmes has been an essential factor to take account of in the analysis of the existence of formulated goals for the programmes, the character of the goals (the extent to which they reflect the needs and requirements of the labour market), the structure of the programmes and the strategies for internationalisation.

Another significant difference in national contexts, which the panel has paid attention to, is the difference in the legal regulation for quality assurance in the four countries. The comparative analysis in part one of the report shows that the extent to which strategies and procedures for quality assurance exist depends greatly on the existence of legal frameworks.

The panel emphasises the great variation in programme content, structure and terminology as a further methodological challenge that needs to be met when conducting a comparative analysis.

13.2.4 Practical organisation of the site visits

Generally the panel was very pleased with the local organisation of the site visits which enabled the panel to validate the content of the self-assessment reports and to collect additional information, if needed. The panel is especially impressed by the great extent of openness and hospitality with which the panel was met.

The panel stresses, however, the need for a more structured approach to group interviews conducted during the site visits. The panel experiences the repeating overlap in persons in the interviews as problematic for the total outcome of the interviews. Accordingly, the panel recommends EVA to be even stricter on this in the instructions to the institutions for future evaluations. On the same line, the panel suggests that the groups interviewed should not exceed more than eight persons and that more attention should be given to the actual representativeness of the groups.

This chapter provides reflections on the methodological lessons learned from the evaluation, which are perceived to be relevant for others who plan to conduct international comparative evaluations. The chapter focuses on whether the methodological choices related to the evaluation have fulfilled the intentions behind them. The methodological choices referred to include the choices relating to the evaluation process, evaluation approach and criteria development described in chapters 10 to 12.

14.1 The evaluation process

14.1.1 Selection and composition of international panel of experts

Experiences from previous international evaluations stress a number of advantages and disadvantages of appointing national experts, i.e. from the same countries as the institutions being evaluated. The experience of this evaluation is that the inclusion of national experts has been valuable. The advantages are mainly associated with the fact that the panel has possessed the expected knowledge about the programmes being evaluated and the cultural, organisational and political framework in which they exist, and the positive implications of this are described in section 13.2.1. and 13.2.3.

At the same time, the choice to appoint a chairperson who is not only independent of the institutions being evaluated, but also from another country to these, has among other things ensured a fully independent assessment. Finally, the fact that the chairperson possesses an extensive expertise within evaluation and quality assurance methods has ensured that issues important for the achievement of the methodological aim of the evaluation were also continuously addressed at the site visits as well as at the panel meetings.

14.1.2 The involvement of the institutions

Throughout the process of the evaluation, the institutions have also showed commitment to participate in the evaluation. An important explanation for this is probably that the institutions have participated on a voluntary basis. Yet the impression is that inclusion of the institutions in the process by giving them the opportunity to (i) comment upon the framework for the evaluation

and suggest changes to the planned process of the evaluation, (ii) participate in the formulation of the criteria and (iii) influence the composition of the panel has also had a positive impact on the level of commitment of the institutions.

Variations in the way the institutions have expressed satisfaction with the relevance and usefulness of the process of the evaluation and the content of the report exist. Yet, the conclusion to be drawn from the interviews at the site visits and the institutions' comments on the draft report is that the self-assessment process has been useful and relevant for the institutions and that the recommendations provided in the report are also considered useful.

14.1.3 Self-assessment process

Self-assessment guides

The fact that the self-assessment guides have been identical has generally ensured that the information provided by each of the institutions has been presented in a similar and consistent way, facilitating a comparison between them and an identification of best (better) practises. As one of the participating institutions suggested, the comparability of the information could, however, have been even further increased by the provision of a stricter format for the self-assessment report than just an overall page limit. For instance, a format including predefined space or word limits for the answers to each of the focus areas and ready-made tables for insertion of required quantitative data.

Presentation meetings

The meeting between the self-assessment groups and the team of evaluation officers from EVA during the initial stage of the self-assessment process was held early in the process. However, none of the institutions had come far in the self-assessment process at that time and, as a natural consequence of this, only few questions were raised. At the site visits, the self-assessment groups expressed that uncertainty about the interpretation of some of the questions and terms included in the self-assessment guide had come up at a later stage in the self-assessment process – questions which they would have liked to discuss with the team of evaluation officers through a meeting later in the self-assessment process.

Although a later meeting could have facilitated more discussion and clarification of questions and the terminology used, it might not have functioned so well as a motivating factor for the early initiation of the process. Considering the timeframe for the self-assessment, an early initiation was perceived as necessary to ensure that the institutions provided comprehensive self-assessment reports covering not only description of existing practises but also substantial reflections on these. Although there are variations in how reflective the self-assessment reports are, it is assumed that

the early initiation of the self-assessment process has led to more reflective reports than would otherwise have been the case.

Timeframe

In relation to the timeframe, it should be stressed that the two and a half months provided for the self-assessment process was adequate. As one institution pointed out, more time would have meant less focus on the assessment. On the other hand, with less time it would have been too pressured due to other responsibilities of members of the self-assessment group.

Although another institution stated that it found the time too limited for self-reflection and broad participation of different stakeholders, the impression is that the explanation for this feedback lies mainly in the fact that the institution had other important administrative tasks to solve in the same time period the self-assessment took place.

14.1.4 Organisation of site visits and the use of interview guides

Organisation of site-visits

The organisation of the site visits, with separate interviews with different groups of stakeholders, served the intended purpose of validating the content of the self-assessment reports by providing the panel with a clear picture of the opinions and perspectives etc. of the different stakeholders.

The importance of this is illustrated by that fact that the site visits revealed some remarkable differences in the ways the different stakeholders agreed with descriptions and assessments provided in the self-assessment reports. This fact further illustrates the importance of using the visits as a means of getting a clear picture of how the self-assessment process had worked, including the writing of the report. Great insight was achieved by asking both the self-assessment group about the process, and each of the stakeholders being interviewed about the extent to which they had been involved in the process. This approach provided a clear picture of the extent to which stakeholders agreed with the information provided in the report.

Although it is the impression that an even tighter schedule would have made it possible to complete each of the site visits in one day, the inclusion of an extra half-day provided an opportunity to go into more depth on important issues. Moreover, a one-day visit would have implied that each of the interviews would have had to be shortened in order to allow for interviews with all the stakeholders. The experience from the site visit is, however, that an interview of less than 45 minutes cannot be recommended. Each of the site visits did comprise a few interviews of only half an hour's duration, and these were generally not as successful as the other interviews due to the extensive time pressure they implied. Secondly, a tighter schedule would not have given the panel the opportunity to prepare for the specific focus of the next interview. Thirdly the two day site visits provided the panel with the opportunity to conduct a meeting in the evening to sum up the

impressions from the first day and, thereby, ensure that the interviews of the second day were focused on particular issues which had not been sufficiently touched upon during the interviews of the first day.

Interview-guides

The use of the relatively strict interview guides, including a number of different questions for each of the groups of stakeholders being interviewed, counteracted the flow of the interviews somewhat and often meant insufficient time to follow up on answers. On the other hand, the use of the guide, and the fact that it was institution specific (cf. section 10.3), did ensure that the site visits functioned as a useful supplement to the self-assessment reports. This, in turn, facilitated the substantial comparative assessment of the programmes. Strict and institution specific interview guides are, therefore, recommended, provided that the length of the individual interviews are carefully taken into account when deciding upon the number and type of questions to be posed.

14.2 Evaluation approach

14.2.1 Selection of programmes

As described in section 11.1, the choice of the type of programme was not determined through any specific knowledge of the content of the programme of agriculture science, including its comparability with other programmes of agricultural sciences offered at European universities.

After reviewing the programmes of agricultural science offered at the four institutions selected for the evaluation, EVA realised the full extent of the diversity of the programmes in terms of content and structure. The diversity in programme content has, from a methodological perspective, provided some advantages. The main advantage relates to the diversity of the content of the programmes and has required a generic and general (more than content specific) dimension be included in the applied criteria. A positive aspect of this is that the nature of the criteria facilitates the replication of the criteria to other evaluation of programmes within higher education. An adverse aspect of it is that the criteria do not provide the framework for a comparative content-specific assessment of the programmes.

14.2.2 Selection of institutions and geographical coverage

As described in section 11.1, the non-Danish institutions were selected in accordance with a number of formal requirements. These requirements have appeared to be relevant and sufficient for the selection of institutions. As further described in section 11.1, one of the reasons for selecting UCD was the fact that it is not in partnership with the other institutions in the "euro league" co-operation. Though the inclusion of UCD has assured a broader perspective than otherwise would

have been assured, it can still be argued that the geographical coverage is too narrow. In this context it can be questioned whether the evaluation reflects a “true” European perspective or only reflects the perspective of northern European higher education institutions. The inclusion of southern European universities would, on the other hand, have required a greater focus on the different economic conditions and cultural traditions that influence the work of the universities being evaluated.

14.2.3 Selection of level

In selecting the bachelor level, a number of concerns were experienced and should be mentioned. Generally, the focus on one level was motivated by the emphasis in the Bologna declaration concerning the application of a transparent system of qualifications in higher education based on two cycles. In accordance with the overall background to the initiation of the evaluation, the focus on one cycle has, in the opinion of EVA, supported the strategic relevance of the evaluation in the light of ongoing European development within higher education.

Additional and more practically oriented arguments for the selection of the bachelor level are described in section 11.2.1, where the most important are:

- The fact that the bachelor programme is a basic education was assumed to facilitate agreement on common quality criteria among the involved institutions (in contrast to the master programme, in which there is a large degree of specialisation)
- Focus on one level was expected to provide a more in-depth and concise analysis of the programmes than otherwise would have been possible.

Concerning the first issue, the experience obtained from the criteria formulation process clearly proves that the institutions were very quickly able to reach an agreement on the draft criteria due to the general (and basic) nature of the bachelor level programmes. Viewed in this light, the focus on the bachelor level was a correct strategic choice.

Concerning the second issue, the focus on one level has, according to EVA’s best estimate, provided a concise analysis of the programmes involved. This is, however, not only due to the focus on level, but relates to the overall focused approach applied in the evaluation, which will be discussed in the next section.

The focus on the bachelor level has not only provided positive experiences, but has also had an adverse impact on the comparative analysis. This especially refers to the different status of the implementation of the bachelor level in the four countries, which is described in section 13.2.3. The fact that the bachelor level is newly established at UH, and still not fully applied at WU, has

reduced the degree of comparability between the four institutions. Nevertheless, it could be argued that those institutions with “new” bachelor programmes could benefit from the experiences of those, which have implemented the two-cycle system over a longer period.

14.2.4 Focused approach

As a pilot project with a strong methodological core, the evaluation has applied a focused approach through the selection of only three focus areas. The experiences during the application of this focused approach have generally been very positive and have provided the following opportunities for the evaluation:

- More time to consider in depth than otherwise would have been the case, given a broader evaluation scope
- Provision of focused documentation material and site visits, and thus
- Provision of a report that contains strict analysis, assessments and recommendations
- Time savings for all parties involved, not least for those involved in the self-assessment process.

Having commented on the above positive aspects associated with such a focused approach, it should also be mentioned that any focus implies that the evaluation can only present a less than complete picture of the qualities of the individual institutions, compared with an evaluation covering a broader range of aspects.

14.3 Criteria development

14.3.1 The process of criteria formulation

As concluded in section 14.1.2, the meeting to discuss criteria with participants from the institutions and EVA staff has most likely had a positive effect on the level of commitment of the institutions. The criteria meeting has also proved itself to be a relevant way to ensure that the criteria generally appeared relevant and understandable to the institutions. It must, however, be stressed that even a thorough discussion of the criteria before they are applied in practice cannot safeguard against later misinterpretations, or ensure that they are fully understandable and consistent.

In particular, and as described in section 13.1.1, the definitions of important terms led to discussions at the individual institutions during the carrying out of self-assessment, despite the fact that they were agreed upon at the earlier criteria meeting. Similarly, terms that were not supported by definitions led to different interpretations, which in turn had a negative impact on the comparability of the information provided in the self-assessment reports.

These experiences illustrate the importance of ensuring a process of criteria formulation that includes a critical assessment of the structuring, understandability, clarity, precision and consistency of the criteria. To minimise the risk of different interpretations it is recommended that the criteria and/or the self-assessment guide are supported by an explanatory document including a glossary and precise definitions and interpretations of key terms.

14.3.2 The application of common criteria

Generally, the application of common criteria has facilitated the intended comparative perspective of the evaluation, provided a transparent and conspicuous basis for the assessment of the programmes included in the evaluation and ensured that the programmes have been assessed on equal grounds. Furthermore, it has provided an opportunity to identify best (better) practices.

The application of common criteria has, however, also had other implications. The main implication experienced in this evaluation is associated with the fact that the criteria have exclusively focused on the bachelor level. As described in section 13.2.3, bachelor level programmes do not have the same status and history in all the four countries in which the programmes included in the evaluation are offered. As a consequence, particularly the criteria related to core competencies, were perceived more relevant by some institutions than by others. When formulating and applying common criteria across countries, this and other similar factors are very important to keep in mind.

14.3.3 The general applicability of the criteria

The conclusion to be reached from the application of the criteria developed for this evaluation and the assessment of the criteria provided by the institutions and the panel of experts is that the criteria developed and tested in this evaluation provide a relevant frame of reference for others engaged in international comparative evaluations. At the same time, it must be concluded that there is still a need for substantial improvement of the criteria if they are to form a general frame of reference for international comparative evaluations within the field of higher education. The assessments of the criteria provided by the institutions and the panel of experts involved in this evaluation may be used as a starting point for such an improvement.

Annex A: Terms of reference

Background

Since 1999, the European perspective on quality in higher education has been strongly influenced by the process of follow-up to the Bologna Declaration of that year. In the declaration, the EU Ministers of Education called for more comparability, transparency and visibility of quality in higher education. The last decade has witnessed increased cooperation between European universities and between European evaluation agencies. One major effort was the so-called European pilot project 1994-95, where 46 higher education institutions in 17 countries joined a common project in which programmes in engineering, and art and design were evaluated according to a shared methodological framework set up by a European steering group. However, very few attempts have been made to set up international evaluations with a comparative perspective.

Therefore, the Danish Evaluation Institute (EVA) decided, as part of its action plan 2001, to initiate an international comparative evaluation within higher education. The evaluation has the status of a pilot project, reflecting the fact that experience with international comparative programme evaluations within higher education is currently very limited. Consequently, no comprehensive method is available for application in an international comparative evaluation such as the one planned by EVA. However, in developing a relevant methodological framework for the pilot project, EVA aims to draw on the lessons learned from the few international evaluations which have been conducted over the last ten years, together with the substantial experience gained by the cycle of evaluations of higher education conducted by EVA's predecessor, The Danish Centre for Quality Assurance and Evaluation of Higher Education.

Scope of the Evaluation

The specific type of programme that has been selected for this international evaluation is agricultural science. This choice is based on the interest of The Royal Veterinary and Agricultural University of Denmark (KVL) in having its programme in agricultural science evaluated by EVA. Further-

more, programmes in agricultural science are, from a methodological viewpoint, appropriate to include in an international comparative evaluation because of basic similarities between countries concerning core elements of the curricula.

The evaluation will comprise two to four programmes in agricultural science. The selection of the non-Danish institutions, invited to participate in the evaluation, has been based on three basic criteria. Each of these criteria reflects experiences gained from earlier international evaluations. Coupled with practical and financial considerations, these criteria have been:

1. The institutions should have a record of commitment to the internationalisation of higher education.
2. The institutions should be expected to be motivated to participate in the evaluation and, accordingly, to allocate the necessary time and human resources necessary, primarily in the self-assessment process and in the follow-up to the evaluation.
3. The institutions should be able to appoint representatives from all relevant groups of stakeholders, and these must be willing and able to communicate in English.

The purpose of the Evaluation

The purpose of the evaluation is two-fold. The project will partly support the development of a common framework for international comparative evaluations and partly provide the participating institutions with a substantial report on the quality of their teaching and learning within the field of agricultural science.

Following on from the above, the specific objectives of the evaluation are to:

- Develop and test a common methodological framework and common quality criteria for comparative international evaluations of programmes within higher education.
- Stimulate discussions between countries about what constitutes good quality within higher education.
- Establish mechanisms for continuous quality improvement and cooperation between participating institutions.

Areas of focus

In its evaluations, EVA usually covers a broad range of aspects related to the programmes being evaluated. As a pilot project with a strong methodological focus, the international evaluation will only include a few aspects. This choice also reflects conclusions drawn from earlier international evaluations stressing the importance of limiting the focus when conducting evaluations across different educational cultures etc. Following this, and reflecting the purpose of the evaluation, three areas of focus will be chosen, namely:

1. Core competencies

The assessment will include the characteristics of methods related to competencies, including competencies specifically related to agricultural science and gained through the completion of a degree in agricultural science.

2. Learning and quality assurance mechanisms

The assessment will include three elements in this focus area: (i) the existence of mechanisms for quality assurance and monitoring of on-going activities; (ii) the existence of mechanisms and systems for documentation and dissemination of experiences and lessons learned; and (iii) the capacity to transform experiences and lessons learned into changed practices and strategies.

3. Internationalisation

The assessment will include three elements in this focus area: (i) the degree of internationalisation in terms of the content of the programme (ii) international cooperation, including among other things the level and scope of international exchange of students and staff; and (iii) existing procedures for exchanging best practices and quality benchmarks.

Organisation

A team of evaluation officers from EVA will be responsible for the practical and methodological planning and implementation of the evaluation, while a panel of international experts will be responsible for the professional quality of the evaluation. The specific tasks of the panel of experts mainly involve the formulation of common quality criteria and responsibility for making conclusions and recommendations based on the documentation from the institutions included in the evaluation. The composition of the panel of experts will reflect special expertise(s) related to the focus of the evaluation and will thus comprise persons with strong methodological skills as well as persons with expertise within the field of agricultural science. In the identification of panel members, EVA will also draw on recommendations provided by the participating institutions.

Evaluation method

The evaluation method includes a number of different elements generally used by EVA.

- 1) *Preliminary Study*: EVA conducts a preliminary study (desk study) to collect and review existing materials relating to the field of education (agricultural science) in the countries involved. Furthermore, EVA collects and studies the findings and methodological considerations of other international evaluations with a similar focus on comparative analyses. The preliminary study is terminated by the formulation of the terms of reference and the appointment of the panel of experts.

- 2) *Self-assessment*: The participating institutions (programmes) conduct a self-assessment, analysing and assessing own strengths and weaknesses in relation to the three selected focus areas (core competencies, learning and quality assurance mechanisms and internationalisation).
- 3) *Visits*: As part of the evaluation, the international evaluation panel will visit the participating institutions. The visits will be planned in cooperation with the institutions and will, together with the self-assessment reports, constitute a substantial part of the background documentation for the findings and conclusions of the evaluation.
- 4) *Reporting*: The analysis, assessment and recommendations of the evaluation will be documented in a report. A draft report will be sent to hearing at the institutions involved in the evaluation prior to completion of the final report. The final report will amount to approx. 120 pages and will be published.

In addition to these elements, the process will include the development of common quality criteria that will form the basis for the assessment of the programmes included in the evaluation.

Follow-up

The process for follow-up to the evaluation will be decided later, together with the institutions involved, but could possibly consist of an international conference focusing on the methodological as well as programme related outcome of the evaluation.

Annex B: Members of the panel of experts

Tove Blytt Holmen

Born:	04 May 1952, Norway
Position:	Deputy Director General, Quality Assurance and Development, Network Norway Council (NNR)*
Education:	
1971 – 1976	Cand.agric. dairy technology (equivalent to Master of Science in Dairy Technology) The Agricultural University of Norway (NLH)
1976	Pedagogy for scientific personnel teaching at universities, NLH
1978 – 1986	Ph.D. courses: Biochemistry, Protein Chemistry, Dairy Technology
1996	Further education course in politics and planning
Work experience:	
1977 – 1991	Various scientifically related positions, Institute of Food and Dairy Technology, NLH
1991 - 1994	Development and administration of Centre for Continuing Education, NLH
1994 - 1995	Head of Division, Ministry of Agriculture
1995 – 1998	Director of studies (registrar) and of continuing education, NLH
1998 -	Deputy Director General, Quality Assurance and Development, Network Norway Council (NNR) ¹
Positions of trust:	
1975 – 1994	Member of working groups, councils and faculty board concerning Agricultural University of Norway and related fields of work
1994 – 1995	Member of steering group for further education of farmers (representing Ministry of Agriculture)
1995 – 1997	Hotel and conference centre (Sem Gjestegård), Chairman of the Board
1999 -	ENQA, European Network of Quality Assurance in Higher Education, member of the steering group.

¹ Network Norway Council, NNR, is an advisory body to the Ministry of Education and Research in long term matters concerning higher education, and also the national agency for quality assurance of higher education.

Orla Grøn Pedersen

Date of birth:	4 December 1944
Career:	
1991-	Director, The Danish Bacon and Meat Council (DBMC) and Director of the National Committee for Pig Production.
	Member of the board of directors of the Danish Agricultural Advisory Centre.
1986 – 1999:	Head of the Department, DBMC
1978 – 1986:	Head of the Department, DBMC
1973 – 1978:	Advisor, DBMC
Professional experience:	
1986-	External examiner at the Royal Veterinary and Agricultural University
1991-	Secretary to the Research Committee of the Pig Industry and member of the Research Committee of the Danish Institute of Agricultural Sciences
2001-	Chairman of The Danish Pig Genome Partnership and Director of The Danish Pig Genome General Partnership. Member of the International Board of The Sino-Danish Pig Genome Consortium.
	Member of the National Committee on Animal Welfare, the Danish Ministry of Justice
	Member of the European Pig Selection and Production Association
Concurrent occupation:	
	Developed a new research and test programme, the Danish Applied Pig Research Scheme in 1973
	Papers to congresses and symposia in Europe, Australia and the United States
Educational background:	
	M.Sc., Agriculture, 1973 from the Royal Veterinary and Agricultural University.
	Specialist courses on animal science in Denmark and abroad.

John J. Robinson

Education:

1966 - The Queen's University, Belfast, Ph.d.
1963 - The Queen's University, Belfast, BAgr (First Class Hons)

Appointments:

1998 - present Professor of Animal Reproduction, Scottish Agricultural College (Aberdeen).
Senior Scientist, Animal Reproduction, Scottish Agricultural College (Aberdeen)
1994 - 1998 Applied Nutrition Department, RRI: 1968 Senior Scientific Officer; 1973 Principal Scientific Officer; 1983 Senior Principal Scientific Officer (Individual Merit)
1968 – 1994 Agricultural Research Council post, Department of Agriculture, Wye College, University of London
1967 - 1968 Research in sheep nutrition, Department of Crop and Animal Husbandry, Queen's University, Belfast.

John Robinson has served on several UK Government Advisory Committees and was a member of the 1982 European Society for Animal Production team that reported on Perspectives and Prospects for Livestock Production in Europe.

Committees and Professional Organisations:

Steering Committee of the Scottish Initiative for Foetal and Post Natal Development
Steering Committee of the Boyd Orr Research Centre
Editorial Board of the Journal of Animal Feed Sciences
Past President and now Honorary Life Member of the British Society of Animal Science.

Expertise:

Whole animal reproductive physiology and its associated technologies including semen cryopreservation, artificial insemination, *in vitro* embryo culture, embryo metabolism and embryo transfer. Research programmes on cervical function; the embryonic programming of foetal growth and development; and improvements in reproductive efficiency through nutrition spanning the science disciplines, thus optimising their scientific and practical value.

Peter van der Schans

Born:	16 May 1926, the Netherlands
Life experience:	
1999 -	Honorary President of Stoas
1991 – 1999	Chairman of the Foundation for Agrarian Educational Science and Teacher Training (Stoas)
	Degree certificate: Engineer (Master of Science Wageningen University)
1985 – 1991	Chairman of the Association of the 14 Dutch Universities (V.S.N.U.)
1978 – 1985	Chairman of the Board of the Agricultural University Wageningen
1964 - 1978	Managing director of (Primary, Secondary and Higher) Agricultural Education and Training in the Department of Agriculture, Nature and Food
1961 – 1964	Chief of the Inspection of Agricultural Education at the Ministry of Agriculture
1958 - 1961	Inspector of Agricultural Education at the Department of Agriculture
1955 - 1958	Civil Servant at the Ministry of Labour
1951 – 1955	Civil servant at the autonomous Foundation of Public Rights for Agriculture
1952	Degree Certificate: Dip.Ing.Agr. (MSc. Agricultural University Wageningen)
1945 - 1952	Student at the Agricultural University Wageningen
1926 - 1945	Living at family farm in the delta of the rivers Rhine and Meuse Primary and secondary education.
Some other passions in former days:	Chairman of the Dutch Foundation for Educational Research (S.V.O.) Vice-chairman of the Royal Netherlands Society for Agricultural Sciences Member of the Board of the Agricultural Centre I.A.C. Wageningen Member of the Board of the International Institute Aerospace Survey and Earth Sciences I.T.C. Enschede Chairman of the Association of Dutch horse-riding schools Chairman of the Dutch Jockey Club.

Harald von Witzke

Academic background:

- 1982 - Göttingen University, Germany, Dr. sc. agr. habil. (post doctoral degree), agricultural economics
- 1977 - Göttingen University, Germany, Dr. sc.agr. (Ph.D), agricultural economics
- 1974 Göttingen University, Germany, Dipl.-Ing. agr. (M. Sc.).

Professional experience:

- 1994 - Professor and Chair for International Agricultural Trade and Development, Humboldt University, Berlin, Germany
- 1991 – 1992 Director, Center for International Food and Agricultural Policy, University of Minnesota, St. Paul, MN, USA
- 1983 – 1994 Assistant Professor, Associate Professor, and Professor, Department of Agricultural and Applied Economics, University of Minnesota, St. Paul, MN, USA
- 1982 - 1983 Associate Professor (Privatdozent), Göttingen University, Germany
- 1974 – 1982 Research Fellow and Research Associate, Göttingen University, Germany.

Honorary appointments:

- 1998 Scientific Council, International Center for Business and Public Management, Olsztyn University, Olsztyn, Poland
- 1994 International Affiliate, Center for International Food and Agricultural Policy, University of Minnesota, St. Paul, MN, USA
- 1992 Adjunct Faculty, Hubert H. Humphrey Institute of Public Affairs, University of Minnesota, Minneapolis, MN, USA.

Areas of academic emphasis:

International Trade and Development
Public Choice, Game Theory, Institutional Economics.

Annex C: Timeframe

April 2002

2 nd :	First meeting of the international panel of experts: Introduction to the evaluation and preparation for site visits
10 th (evening):	Site visit preparation meeting in Wageningen
11-12 th :	Site visit at Wageningen University
15-16 th :	Site visit at University College Dublin
22-23 rd :	Site visit at University of Hohenheim
29-30 th :	Site visit at The Royal Veterinary and Agricultural University

May 2002

Preparation of the draft report

June 2002

18 th :	Second meeting of the panel of experts: Discussion of draft report
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June/July 2002

Preparation of the final draft report

August 2002

20 th :	Third meeting of the panel of experts: Discussion/approval of final draft report
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September 2002

The participating universities comment on the final draft report

October 2002

The final report is presented to EVA's Board for approval

November 2002

Publication of the report
EVA arranges a seminar based on the evaluation

Annex D: Criteria

Criteria for Core Competencies

A: Goals

- A1: The goals for core competencies of graduates are clearly formulated and publicly available.
- A2: The goals are consistent with the degree title,
- A3: The goals are realistic and achievable considering the nominal duration of the programme and initial level of the student,
- A4: The goals are formulated and developed considering the needs and requirements of the labour market,
- A5: The goals not only consist of aims for professional qualifications but also aims for methodological qualifications,
- A6: The goals specify the intended mixture of theoretical orientation and practical orientation as well as the intended balance between depth and breadth of the programme content,

B: Programme Content

General content

- B1: The content of the programme is clearly formulated and publicly available,
- B2: The content is designed in accordance with the goals for core competencies,
- B3: The composition of the courses and the curriculum are consistent with the goals for core competencies,

Professional content

- B4: It is clearly formulated which basic disciplines and approaches underpin the qualification in agricultural science,
- B5: The professional qualifications are achieved through compulsory subjects,
- B6: The programme is characterised by progression, in the sense that it comprises a coherent set of courses or other educational modules that enable students to learn the basics of agricultural science in the beginning and widen and deepen their experience in the upper level courses.
- B7: The content reflects breadth and depth in relation to agricultural science. Breadth means that the students develop fundamental knowledge of various approaches to agricultural science. Depth requires the study of at least one area at a more advanced level.

Methodological Content

B8: The methodological qualifications include:

- knowledge of methods to acquire new knowledge and realisation;
- knowledge of methods of continuous assurance and development of professional competencies;
- knowledge and experience of working independently and in (multidisciplinary) groups;
- Problem solving capacity;
- Oral as well as written communication and presentation skills.

B9: The composition of the methods of teaching and learning supports the realisation of the methodological qualifications.

Criteria for Quality Assurance Mechanisms

C: Strategy and Goals

C1: A strategy for quality assurance is formulated and available to teaching staff and students.

C2: Clearly formulated goals for quality assurance at programme and course level exist.

D: Structure

D1: The existence of an effective monitoring system to evaluate the programme as a whole, parts of the programme and the individual courses.

D2: Responsibility for quality assurance is clearly placed within the organisation.

D3: The existence of fora where management and teaching staff regularly discuss and develop improvements in programme quality.

D4: Procedures for following up internal evaluations exist.

E: Content and Process

E1: The objective(s) and content of the programme as a whole, parts of the programme and the individual courses are evaluated on a regular basis to ensure continuous updating and improvement of the programme and the individual course activities.

E2: Assessments of the internal coherence of the programme are included in the evaluations.

E3: Quality assurance activities are formulated to include a development perspective for improving and enhancing programme quality, including teaching.

E4: Course evaluations comprise various elements related to teaching, including content, organisation, teaching methods and outcome.

E5: Programme and course evaluations include the participation of relevant internal stakeholders (teachers, students etc.).

- E6: Systematic and regular feed back from external professional associations, employers and technical experts on the quality of the programme is encouraged.
- E7: Systematic feed back from graduates concerning their practical experience is encouraged.

F: Results and Follow-up on Results

- F1: Results of programme and course evaluations are documented and disseminated internally.
- F2: Based on evaluation results, the content of the programme, the individual courses and curriculum is updated on a regular and systematic basis.
- F3: Feedback on course evaluation results is provided to students.
- F4: Responsibility for follow-up on programme and course evaluations is clearly assigned.
- F5: The management prepares plans for follow-up on evaluation results.

Criteria for Internationalisation

G: Strategy and Goals

- G1: A strategy in relation to internationalisation is formulated, including strategies for international student and staff exchange and international cooperation.
- G2: The objectives of the programme reflect a degree of internationalisation.

H: Programme Content

- H1: The strategies for internationalisation are implemented at programme level and (where relevant) reflected as an international dimension in the programme content and curriculum.
- H2: The programme is updated in accordance with international trends.
- H3: Relevant materials for the programme and individual courses are available in English and other languages.
- H4: Courses in other languages than the national language are offered.

I: International Cooperation and Student and Staff Exchange

- I1: The programme forms part of international collaborations with other agricultural universities/programmes and other relevant institutions.
- I2: Systems to ensure student access to international study and training opportunities exist.
- I3: The programme facilitates and provides international contacts for students and teaching staff.
- I4: The programme offers opportunities for students to study abroad and for teaching staff to teach and conduct research activities abroad.
- I5: Adequate participation in international student exchange programme (ERASMUS etc.).
- I6: Mechanisms for international exchange of teaching staff exist.
- I7: The European Credit Transfer System is applied.

18: Clear procedures for transfer of credits for courses taken abroad exist.

19: Quality assurance mechanisms exist to ensure that out-going as well as in-coming students receive international courses which are adequate and appropriate in terms of quality and level.

Annex E: Standard Programme for Site Visit

Day 1

9.30 - 11.00: Meeting with the self-assessment group

11.00 - 11.45: Meeting with students (from first year)

11.45 - 12.30: Meeting with students (from second and third (and fourth) years)

12.30 - 13.30: Lunch break

13.30 - 14.30: Meeting with post-graduate students (master students)

14.30 - 16.00: Meeting with teaching staff from the relevant specialisation studies

16.00 - 17.00: Meeting with programme management (faculty level)

Day 2

9.00 - 9.30: Meeting with staff from the Quality Assurance Unit (if such exists)

9.30 - 10.00: Meeting with staff from the international office (if such exists)

10.00 – 11.00: Meeting with university management

11.00 – 12.00: Meeting with faculty board

12.00 – 13.00: Final meeting with programme management

Annex F: List of compulsory applied science courses/modules*

	KVL		UCD			UH			WU		
	AS	ACP	ARD	AS	CS	AE	AS	CS	Bio		
Animal science related courses											
<i>Group: <u>Animal Nutrition & Husbandry</u></i>											
Human and Animal Biology								X		X	
Introduction to animal sciences								X			
Applied animal biology								X			
Animal nutrition	X	X		X				X			
System approach in animal science								X			
Agricultural zoology		X	X	X	X	X					
Animal husbandry	X	X	X								
Principles of animal sciences				X	X	X					
Animal production				X							
Fish and fish production								X			
Fresh and processed meat products	X										
<i>Group: <u>Animal Reproduction</u></i>											
Evolution biology										X	
Lower Organisms										X	
Fertility and reproduction	X	X						X			
Animal Breeding	X	X		X				X			
<i>Group: <u>Animal Physiology</u></i>											
Behaviour and Hormones								X			
Adaptation Physiology								X			
Animal physiology	X	X		X	X	X					
Anatomical structure and function	X			X	X	X					
Anatomy and Physiology				X							

	KVL	UCD			UH			WU		Bio
	AS	ACP	ARD	AS	CS	AE	AS	CS		
<u>Group: Health and Hygiene</u>										
Veterinary Epidemiology and Economy								X		
Animal Parasitology	X									
Environmental and Animal Hygiene				X						
Food quality management								X		
Food microbiology	X									
Crop science related courses										
<u>Group: Physiology of Plant Growth</u>										
Structure and Physiology of plants		X			X			X	X	
Growth and development of Plants								X	X	
Plant and crop science								X		
Plant Biotechnology								X		
Plant Breeding		X			X			X		
Botany				X	X	X				
Principles of crop sciences				X	X	X				
<u>Group: Nutrition and Husbandry of Plants</u>										
Soil - plant relations								X		
Biology and control of pests		X						X		
Crop ecology					X			X		
Crop husbandry	X	X	X							
Soil science	X	X	X	X	X	X				
Crop protection		X			X					
Mineral Nutrition of Plants and Fertilisation					X					
Geology		X								

	KVL	UCD			UH	WU			Bio
	AS	ACP	ARD	AS	CS	AE	AS	CS	
Group: Combined animal and crop science related courses									
Biosystematics and Biodiversity								X	X
Flora and Fauna									X
Ecology		X		X	X	X	X	X	X
Agricultural science	X	X	X						
Agricultural and environmental Biology	X	X	X						
Agricultural chemistry	X	X	X						
Agricultural Microbiology	X	X	X						
Fundamentals of biotechnology	X	X							
Environmental issues in agriculture	X								
Principles of engineering	X	X		X	X	X			
Economics related courses									
Group:									
<u>Microeconomics</u>									
Analysis of Farm Management								X	X
Agribusiness	X	X	X						
Farm business	X	X	X						
Animal production enterprises	X								
Co-operatives			X						
Financial planning and control			X						
Operations and personal management			X						
Enterprise development			X						
Food and farm input marketing			X	X	X	X			
Taxation			X						
E-business			X						
Economics of an environmentally Compatible Plant and Animal Production							X		
Organisation, Management and marketing in the food sector							X		
Managing agricultural enterprises							X		

	KVL	UCD				UH			WU		
	AS	ACP	ARD	AS	CS	AE	AS	CS	Bio		
<i>Group:</i>											
<u>Macroeconomics</u>											
Agricultural policy	X	X	X	X	X	X					
Rural development			X								
Agricultural marketing and trade			X								
<i>Group:</i>											
<u>Agricultural economics</u>											
Agricultural economics	X	X	X	X	X	X					
National economics			X								

	KVL	UCD				UH			WU		
	AS	ACP	ARD	AS	CS	AE	AS	CS	Bio		
General social science related courses											
Business Law			X								
The role of science in society							X	X	X		
Principles of social sciences in Agriculture				X	X	X					
Food Security and Natural Resources						X					
Empirical social research						X					

* The list presents the course/module labels used by the participating institutions. Courses/modules with different labels may in practice have similar content and the list should therefore not be used to draw any definite conclusions about similarities and differences between the content of the different programmes/specialisations.

Annex G: List of abbreviations

ACP	Animal and Crop Production
AE	Agricultural Economics
ARD	Agribusiness and Rural Development
AS	Animal Science
BIO	Biology
BSc	Bachelor of Science
CHEPS	Center for Higher Education Policy Studies
CS	Crop Science
ECTS	European Credit Transfer System
EVA	Danish Evaluation Institute
EVALAG	Evaluation Länder Agency
KVL	The Royal Veterinary and Agricultural University
MSc	Master of Science
PWE	Professional Work Experience
QA	Quality Assurance
QI	Quality Improvement
VSNU	Association of Universities in the Netherlands
WU	Wageningen University
UCD	University College Dublin
UH	University of Hohenheim