QE procedure within the Horticulture and Agronomy Graduate Group (GGHA) at UC Davis

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1. **Purpose**

The primary purpose of the Qualifying Examination (QE) is to validate that the student is academically qualified to conceptualize a research topic, undertake scholarly research and successfully produce the dissertation required for a doctoral degree. The student must demonstrate that they are able to:

- think independently, creatively, and critically,
- clearly articulate a proposed research project and its scientific hypotheses, including ability to analyze strengths and weaknesses and place the value of the research in a broader context,
- demonstrate mastery of breadth and depth in a range of subject areas in and related to horticulture and agronomy, including the ability to synthesize (rather than memorize) broad concepts and detailed information,
  - depth of knowledge should be sufficient for professional work or to teach an advanced undergraduate course on the subject,

The following broad timeline is involved in scheduling a QE within GGHA:

1) the Guidance Committee and the student work together to select potential QE Committee members, as well as alternates for each member. This information should be included on the student's Guidance Committee Report (https://ggha.ucdavis.edu/Forms/GuidanceCommitteeReportForm.pdf) **during the fifth quarter meeting.**

2) the 5th quarter form should be forwarded to the program coordinator no later than 90 days prior to the anticipated date of examination (earlier is better). The program coordinator will then notify the GGHA Chair, who will e-mail the potential committee members, asking if they are willing to serve on the committee,

3) the QE date can be scheduled only after the student has completed all courses and other GGHA degree requirements (except dissertation) - however, the QE may be scheduled during a quarter in which the student is taking the final 1 or 2 courses in their program of study,

4) the QE must be scheduled early enough to enable the student to advance to candidacy by the end of the 9th quarter of residency (excluding summer terms),

5) the student must be in active status when taking any portion of the examination,

6) the Graduate Adviser will not sign the Advancement to Candidacy form until it can be verified that the student has passed the courses and thereby satisfied all program requirements,

7) schedule the QE at least 3 months ahead - it may be difficult to get all examiners on a schedule.
Advice for students preparing for their QE within GGHA

1. QE topics & choosing examiners

At the first quarter meeting, the PhD student’s Guidance Committee, in consultation with the student, will select four topics for the QE. One of these topics must be a cropping system, and any of the three remaining specialization topics must not be too closely related to the other two. Together with your guidance committee you should select courses that will help you prepare for a QE in these topic areas. Remember that your depth of knowledge should be sufficient for professional work or to teach an advanced undergraduate course on the subject.

Start discussing potential QE committee members with your guidance committee at the third quarter meeting and finalize your list of committee members (and alternate members) at the 5th quarter meeting. Before you finalize your list, discuss the following with your guidance committee and fellow students (!).

- Who would be a good chair? The chair will ensure proper procedure and generally serve as your advocate. They usually do not have their own question topic, but will likely ask general and clarifying questions at several points during the exam, generally based upon things you say or related to other committee members questions. Ideally this would be someone with experience in conducting QE’s within GGHA and someone you feel comfortable with.
- If possible, talk to the intended chair and committee members prior to listing them as your QE committee member and consider whether you have a good rapport with the potential examiners. Do you feel that they are interested in your area and will help you improve your research/overall understanding of the topic area and field?
- Talk to other students about their experiences with the proposed examiners on their QE exams.

2. Know your examiners

The members of your QE committee will determine if you are ready to advance to candidacy. Learn about their background and research interests. Take a class with them if possible. What topics do your examiners write about? What are their publications? What current research projects are they involved in?

After you have thoroughly researched your committee members and have verified they are suitable and applicable for your committee, you should meet with them. Try to meet with them in person at least once before the exam, preferably twice, as this will let you get to know their style of questions and their personality. Prepare a short description of your research (3-5 mins max.). When you meet with them ask the following questions:

- What is their philosophy towards the examination? What types of questions do they usually ask?
- What are some general topics students should know for this field of specialization?
• Is there a particular topic area they definitely will cover during the examination? 
• What are some suggested readings you highly recommend to prepare for the exam within X months time limit? 
• What are some tips you think would be helpful to help me prepare for the exam?

Talk to fellow graduate students about their QE experiences, especially those who have had the same committee members.

Practice your QE with fellow students and lab colleagues.

This information will help put you at ease with your examiners and can help you anticipate possible questions they may ask. *Think of the QE as an exchange of information with your senior colleagues rather than a test.*

A meeting to discuss the above with each committee member is highly recommended. If you have problems contacting your QE committee members, keep trying and/or ask your major professor for help in contacting their colleague.

3. **Prepare early and systematically**

What to study varies according to your program and research field, but some strategies apply to all students. Organize the topics you will study from general to specific as this is often how your exam questions will progress, and it is the best way to re-learn material.

Ideally, you should begin your systematic studying three to four months in advance. However, do not stress if you only have a couple months. As long as you are systematic in your preparation, you will be in good shape.

The QE will cover areas much broader than your research proposal. Review the basics of your field. You can achieve this by reviewing your past lower division courses. You can use old notes, textbooks, exams and lab write ups. Focus on the main themes and concepts. You may think that you have forgotten everything, but it will begin to come back to you.

Review the specifics of each topic. This means reviewing the material covered in any of your upper division or graduate level courses. Again, focus on the major themes and concepts for each of your four selected areas of focus. However, if there are details that relate to your research or your field of study, study those as well.

4. **Think about the “why” of your research**

Prepare and practice your dissertation research proposal. This includes a thorough literature review, research objectives and hypotheses, methodology, and expected results and impact. *Discuss your dissertation research ideas with your major professor and others frequently and ask for feedback.* Your major professor knows the strengths and weaknesses of your research (after all you are in their lab because they are “the” expert) and help you learn discuss weaknesses without devaluing the strength of the research. They will also know the most recent literature and discussions in your field. *Any questions that your committee has about your*
research proposal you should be able to respond to with confidence and you should practice that with your major professor.

Review recent journals. As the date of your qualifying exam approaches, be sure to read the latest editions of the most important research journals in your field and subfield. Your committee members often read these same journals and they may draw some of their questions from recent articles.

A great strategy for practicing your dissertation research proposal presentation is to explain your research to fellow students and lab colleagues. Begin with those in your department, because they will be able to give you scientifically based critiques.

The greatest test of your ability to clearly explain your research is to present it to people outside of your field of study. This could include your friends in and outside of academia, and family members. The more you talk about your research and answer questions, the more prepared and confident you will be for your QE.

5. Prepare your "how I came to be here" speech.

Your committee may start the exam by asking some general questions such as, “Where do you see yourself 5 and 10 years from now?” or “Why did you decide to get your PhD?”, or “Why did you choose your topic of study?” There is no wrong answer to these questions. This gives you a chance to tell the committee about yourself, perhaps things they never knew before. You also should think of this speech as a platform for you to plant seeds for further questions from your committee members later in the exam. Information you provide may prompt additional questions from them, so be sure to mention only things you would be happy to discuss further.

6. Prepare for anticipated questions.

After you review the general and specific topics in your field, interview and meet with your committee members, and prepare your research proposal, you will have covered all of the potential topics in play for your QE. Now, you should begin to generate anticipated questions and develop answers for them. Discuss these questions and answers with the people helping you prepare for your QE (e.g., major professor, lab mates, collaborators, other students, friends etc.)

7. Practice your QE exam in “mock” exam settings

It is strongly recommended that you arrange to have several practice Qualifying Exams, to allow practicing answering questions in an oral exam format. Enlist the help of your colleagues, fellow graduate students who have already passed their QE, or even friends or family. Present to them your “how I came to be here” speech and your research proposal. It is helpful to send them a draft of the research proposal ahead of time, and let them know the topic areas that will be covered on the test, so they can formulate some questions beforehand. Have them ask you several of your “anticipated questions” and any other questions they can think of.

During the practice exam, you should present the research proposal to the practice QE committee; one of them should keep time, so you will know if you need to adjust the length of the presentation. Ask them for critiques on your speech, volume and body language… anything
you could work on before your oral exam. Try to conduct your practice exam in the same room you will hold your QE to become comfortable in the location.

Encourage the participants to ask any possible question they can think of, no matter how random it might be – this will help you practice how you will respond to off-the-wall questions. Create a response plan. Ask to repeat or clarify the question if needed. Take a few moments to think about it. Restate the question out loud so you can make sure you understood the question as it was asked. Then go for it! You are prepared to answer. Using a black or white board is a good way to organize your thoughts. Students have done this online effectively as well.

How will you respond to questions you do not know? It is inevitable that you will be asked a question or two and not know the answer. Prepare ahead how you will answer those when asked. These questions are designed to test how you think about a problem. Do not try to “fake” or “bluff” an answer. It is best to be honest and say you don't know or are not sure. Some possible ways to phrase you answer include:

- “I am not sure what the answer is, but if I was to make a hypothesis based on my knowledge it would be….”
- “I don't have that information at this time. However, I would obtain that information from…”
- “That is a good question and I am not sure about the answer. However, I would find the answer by…”

8. Reduce your stress

If you have prepared systematically, you are in great shape and should be confident you are well prepared to succeed in your qualifying examination. If your stress levels are severe, seek additional resources.

Schedule your exam at a time and location convenient for you. Talk to your committee several months in advance about scheduling a time, and they may be more flexible in accommodating your needs.

9. Make a plan for the week before

Reconfirm the date, time, and location of the QE with all your committee members. This way you can touch base one last time before the big day.

Visit the exam room and check that the keys fit, the lighting and any equipment are all functional and ready to go.

Some people recommend that students try to relax and not study the day before the exam. Doing last minute studying tends to make some people more nervous because they might panic over things they may suddenly realize they should be more prepared for. If that is the case it is likely too late to effectively catch up on these things and it will just make them more nervous.

10. Have an exam-day plan

Ensure you have reliable transportation to the exam location and account for unforeseen delays.
If online, make sure you have reliable wifi, camera and microphone.

Bring some water - you're going to do lots of talking. You are not expected to bring refreshments for the committee.

Arrive at the exam room before your exam is scheduled to begin. Open the door, turn on the lights, and set up any audiovisual equipment you may need.

11. **During your exam**

Know the time constraints of the exam. Use your watch and pace yourself accordingly.

Speak slowly and clearly – use the whiteboard or blackboard to help organize your thoughts.

Do not cut off your examiners when they are speaking or discussing a topic – join in the discussion if you can.

Tell the chair if you need a break or just a few minutes to gather your thoughts – the chair is there to help you.

Answer the questions directly and avoid tangents.
Advice for mentors helping prepare their students

- It is the mentor’s responsibility to guide the student to succeed and pass their QE.
- Talk to your students about the QE exam and your experience with the various faculty involved (you likely have served on past QE’s with them).
- Explain the exam procedure and what the committee will be looking for.
- Make it clear that every committee member wants the student to do well and that the QE is an opportunity to have the uninterrupted attention of five faculty thinking about the student’s favorite research topic.
- Help the student develop a study timeline.
- Ask regularly if you can help with preparation - e.g., research proposal critique (you cannot edit, but you can comment!), practice exams, recent literature etc.
- Practice discussing recent literature in lab meetings and encourage your student to actively discuss the implications with you.
- Have students discuss their research ideas/findings spontaneously in lab meetings (without preparation) – ask “why” for every assumption they make.
- Ask your student to explain why they think their research is important for the field and/or society (not just because that is the grant proposal you wrote).
- Encourage your student to present their proposal in other forums than your lab meeting for feedback, i.e., organized seminars or larger research group meetings (e.g., FROGS, weed science group, etc.).
- Give your student space and time to prepare for their exam.
- Discuss best time for student to schedule QE relative to their other commitments to class and research.
**Advice for QE committee:**

1. **General advice**

The chair and the committee members are responsible for ensuring that the exam is administered in a fair manner and is sufficiently rigorous to validate that the student is academically qualified to conceptualize a research topic, undertake scholarly research and successfully produce the dissertation required for a doctoral degree. QE exams must:

**1. Be interactive.** The examiners must be able to ask questions, hear the answers, and then follow up with additional questions or comments in response to the student's initial reply. Committee members, individually and collectively, must be able to engage in a discourse with the candidate on topics relevant to the candidate’s area of competence.

**2. Make it a group activity.** In addition to the ability to follow up to one's own questions, it is also very important for all examiners to hear all of the questions and all of the student’s responses, plus have the ability to interject alternate follow-up questions. The collective wisdom of a group is generally greater than that of an individual. Further, having other examiners present serves to moderate the group, to ensure that one examiner does not ask questions that are either trivial or too difficult, and that any one examiner is neither too friendly nor too aggressive. Thus, to optimize the examination process and evaluation of the candidate, the committee as a whole must collectively: 1) experience the discourse with a candidate; 2) evaluate the candidate’s performance; 3) determine the length and content of the examination; and 4) moderate the demeanor of the candidate and the members of the committee.

**3. Be broadly structured.** Based on the candidate’s past academic, research, and scholarly record and the performance on the examination, the candidate must broadly demonstrate sufficient competence in selected disciplinary areas, which must go beyond the limited area of scholarship associated with a dissertation topic. Further, the candidate must demonstrate the capability for integration and utilization of knowledge and skills that are critical for independent and creative research, thereby qualifying them for advancement to the research-intensive phase of doctoral education.

2. **Specific advice:**

Be aware of your area of examination – this varies per QE – and confirm with the Chair prior to the start of the QE.

Read the proposal thoroughly – consider what questions you can ask to help the student improve their research.

Read through the qualifying exam rules.

Talk to the QE chair if you are not sure about some of the rules.

Try to put the student at ease by asking some broad and/or basic questions first.
Construct your questions to evaluate the student's ability to think independently, creatively, and critically – this may include asking questions you do not know the answer to either.

Be aware that the student may be nervous and that while a bit of lighthearted humor can help ease nerves for some students, for others it can easily be misunderstood and add to the stress the student is experiencing. Please be mindful and as supportive as possible.

3. **Role of the Chair of the QE**

The primary responsibilities of the Chair of the QE are to facilitate the work of the committee and to ensure that the examination is conducted fairly. Prior to the examination, the Chair shall meet with the student to discuss scheduling, procedures, format, general content, etc., and shall provide the student with clear guidelines on these matters. At the start of the exam, the Chair also shall discuss the procedures, format, general content, and evaluation expectations with the members of the committee. At the start of the examination, the Chair should attempt to put the student at ease so that they can focus on the content of the examination.

The Chair will ensure that the examination conforms to the approved format and general norms of the GGHA as described further down, and that the examination addresses both breadth and depth of knowledge. During the examination, the Chair must ensure that the QE adheres to the expected schedule and that breaks are taken if needed. Following the examination, the Chair should facilitate the discussion among the committee members, ensure that the committee makes every reasonable effort to reach a unanimous conclusion, lead the committee in informing the student of the result and file the committee report with Graduate Studies.

The Qualifying Examination can be a stressful experience for the student, especially in the case of a ‘Not Pass’ or ‘Fail’ result. Consider whether the student might benefit from consultation with other faculty and staff advisors or with a mental health professional (530-752-2349); see Mental Health and Counseling Services.

4. **Questions/Concerns**

If the chair or committee members have questions or concerns prior to or after the Qualifying Exam, contact the GGHA Senior Academic Advisor at Graduate Studies.

If after reviewing the Qualifying Exam regulations, questions remain during exam proceedings, immediately contact the Graduate Studies office during business hours, (530)-752-0650, to discuss the situation with a Senior Academic Advisor.
Norms as commonly practiced within GGHA Modified from https://grad.ucdavis.edu/resources/faculty-and-staff-resources/qualifying-exam-regulations

1. Committee Membership

a) The qualifying examination committee shall include five members; the majority of the members shall be members of the Horticulture and Agronomy graduate program.
b) The Chair of the QE committee shall be a member of GGHA. The intended Chair or Co-Chair of the Dissertation Committee (commonly known as the Major Professor) cannot be a member of the QE committee.
c) No fewer than three members of the QE committee shall be voting members of the Academic Senate of University of California (includes Professors, Lecturers with Security of Employment).
d) At least one member should be external to the GGHA.
e) The Chair and members of the examination committee should be chosen to avoid any real or perceived conflict of interest. E.g., there should not be more than one person from any given research group and none of the committee members should be a member of the same research group as the student.

2. General procedure

a) The Qualifying Examination shall include an oral examination of approximately 3 hours in length, with only the student and entire committee present, and the decision-making process immediately following. Within the GGHA the QE follows the following general procedure:
b) The student will submit a research proposal to committee members at least two weeks prior to the oral examination date. Concepts within the research proposal should be discussed with others, such as the student's major professor and peers, but the writing of the proposal should be solely the student's work (i.e., no editorial assistance is allowed). The purpose of the dissertation proposal is to concisely introduce, describe and justify the proposed research. The scope and format of the proposal should be similar to that of a formal application for funding (e.g., application for a doctoral fellowship). The student is expected to show mastery in scientific writing, in the critical analysis of preliminary data, and in the synthesis of information derived from the relevant literature. The dissertation research proposal (single-spaced, 12 or 11 pt font size, 1 in. margins) should be logically organized and should not exceed 6-7 pages, excluding figures and references.
c) It is the responsibility of all committee members to be in attendance for the entire qualifying examination. Unanticipated or unavoidable absence will be explained in detail by the Chair in the report on the outcome of the examination, and a specific plan for completion of the examination within 72 hours by all members of the committee will be detailed.
   a. In the event that the Chair is absent, the remaining members of the committee shall suspend the examination after waiting a reasonable time, and after attempting to contact the Chair. In this case, the Chair will report the results as ‘No Exam’ and explain the circumstances in detail. The examination shall then be
a. Pass: The committee unanimously decides the student passed the examination and is prepared to continue towards the doctoral degree and advance to candidacy. No conditions or additional requirements may accompany this decision.

b. Not Pass: The committee unanimously decides the student did not pass part or all of the exam and must address deficiencies through reexamination. In the case of a
‘Not Pass’ decision, the chair of the committee must inform the student verbally and in writing, with a copy sent to Graduate Studies along with the exam report, assessing the student’s performance on each subject area covered during the examination. The statement must specify if the committee will re-examine the student on all topics or only on those not passed in the first exam. The committee determines and identifies the format of the second attempt (an oral examination, a rewriting of the proposal, writing additional papers, retaking the entire exam), the details (i.e., time to present, length of paper, etc.) and provides the student a detailed timeline.

c. **Fail:** The committee unanimously decides the student failed the examination, and the deficiencies were so substantial that the student may not continue towards the doctoral degree. A unanimous fail on either the first or second exam is a recommendation of the student’s disqualification from the degree objective. In the case of a 'Fail' decision, the chair must notify the student verbally and in writing, with a copy sent to Graduate Studies along with the exam report, assessing the student’s performance and deficiencies in the examination. If for a first exam, the statement should explain why reexamination is not recommended by the QE committee.

i) If a unanimous decision takes the form of “Not Pass” or “Fail”, the Chair of the QE committee must include in its report a specific statement, agreed to by all members of the committee, explaining its decision and must inform the student of its decision. Technically, a unanimous committee is making a recommendation to the Administrative Committee of the Graduate Council; however, the Administrative Committee has delegated authority for making a decision to a unanimous committee. The decision of a unanimous committee may be changed only for cause, e.g. procedural error or probable bias, or in details of the conditions attached to a "Not Pass" decision.

j) If, after due deliberation, it becomes evident that the committee cannot reach a unanimous decision, the Chair shall inform the student that the committee is divided. Chairs of divided committees shall be especially careful to inform the student that: (i) the majority and minority are making recommendations; (ii) that the recommendations will be subject to further review; and (iii) that the Administrative Committee of the Graduate Council will make the decision as to future action. The Chair shall also notify the Dean of Graduate Studies that the Committee is divided and shall forward to the Dean separate written reports from the majority and minority of the committee with their specific evaluations of the student's performance on the examination and recommendations for further action by the Administrative Committee. The Dean will forward information from the committee to the Administrative Committee for review and final decision (GC1998-01 (rev.07)). The Administrative Committee may, at its discretion, request individual statements from members of the examining committee and will consider a written statement from the student if one is submitted. While the deliberations of the examining committee are confidential, student records, such as written reports from committee members, are by law available to the student.
k) Only one retake of the qualifying examination is allowed. After a second examination, a vote of “Not Pass” is unacceptable; only “Pass” or “Fail” is recognized. In the case of a decision of ‘Fail’, the student will be notified verbally, and the report form must be submitted to Graduate Studies along with written evaluation of the student’s performance and deficiencies of the second examination.

l) In all cases, the Chair of the examining committee is responsible for reporting the result and supplying other information to the Graduate Council as required by this policy statement. Qualifying Examination reports must be filed within 72 hours of the completion of the examination. The Dean of Graduate Studies shall inform the student in writing of the outcome of the exam. Report forms should be returned to the student’s Senior Academic Advisor at Graduate Studies by the QE Chair or the Program Coordinator (not the student). Any report other than ‘Pass’ must be accompanied by additional documentation. All decisions must be communicated to the student immediately following committee deliberation.

m) Graduate Council recognizes that students with disabilities may need appropriate accommodations in order not to be disadvantaged when taking the Qualifying Examination. Requests for reasonable accommodations must be made well in advance of the date of the first sitting for the QE (not less than 1 month and preferably 2 months). Students must initiate such requests through the Student Disability Center (http://sdc.ucdavis.edu). When accommodations are deemed appropriate by the SDC, they must preserve the essential characteristics of the QE as described above.