**BIOL 416 Terrestrial Ecosystems Agroecosystem Ecology Group Seminar assignment**

**The 3 most relevant course learning outcomes related to this exercise are that by the end of the course the student should be able to:**

1. Formulate clear, original, challenging, and concise thematic questions from study reading material that are likely to lead to focussed and intellectually probing seminar group discussions, student-led seminar topics, and short essay/media presentations
2. Synthesize, evaluate, and critique the potential solutions to meeting future local and global food quantity and quality demands
3. Present a stimulating, informative and creative seminar on a fundamental issue connecting agroecosystem ecology and global food supply/demand

This exercise is aimed at familiarizing you with how to access, synthesize and present both general and primary scientific information on an issue in agroecosystem ecology that is relevant in the context of the overall course question: ***What are likely to be the most effective agroecosystem management practices to meet future global food demands in terms of not just quantity but also quality?***

Working in groups (2-3 people), you will prepare and deliver a seminar to address an issue such as:

* Biodiversity’s role in agricultural sustainability, and meeting future global food demand
* Farm nutrient inputs, outputs, and internal cycling – the potential for useful terrestrial ecosystem ecology insights to improve agriculture
* Enhancing global food supply to meet future demand (e.g. see Foley 2011)
* Organic versus conventional agriculture – Pros and Cons
* Newly emerging techniques for food production (biotechnology, hydroponics, chemical innovations, lab-based food culturing systems, vertical farming... urban agriculture....)
* Food quality in relation to human wellbeing and social health
* Agricultural food production waste losses – problems and solutions
* Soil deterioration due to agriculture – the potential for useful terrestrial ecosystem ecology insights
* Dietary choice and agricultural implications: The meat issue
* ??? - make your own choice, but please consult with Paul to get initial feedback

Having chosen a focal agroecology issue, the most critical part of the whole exercise, and the key to a successful seminar, is to identify a clear and specific focus question that you and your partners would like to address. You will need to be creative and think carefully about your focus question. **Ask yourself, what is the most interesting question you can ask in relation to your chosen agroecosystem ecology issue.** Seminar questions should be constructed so that they will lead to focused, intelligent discussion that will move the seminar convenors and the audience toward some potential answer, or toward a more refined perspective on the issue/theme, or toward an even more refined question. Expect to make several iterations of your seminar question as you read about the agroecosystem issue and develop your thinking and understanding of it. In many ways, formulating a good, clear, concise, challenging and original question is the most difficult part of the whole exercise, but it is also the most interesting and creative part, and once achieved, should make for a very effective seminar. As you prepare, I am happy to meet with each group to help you refine your question. Please allow plenty of time (e.g. a week) for this part of the exercise. **Here are a few sample Qs from a previous course to help stimulate your thinking:**

* Food losses and food waste: What practical changes can you make on a day-to-day basis to be less part of the problem and more part of the solution?
* What would it take to make permaculture part of the solution to our global food crisis?
* How can the often-demonized GMOs be a significant part of the sustainable solution to feeding our predicted global population in 2050?
* *Note some great issues have been raised in the submitted student questions for Paul’s seminars, and also no doubt some will arise during the field trips. Be open-minded, and choose some topic you are passionate about!*

Your ultimate goal as seminar convenors is to excite interest in your chosen agroecosystem ecology issue so that your audience will be fully engaged and keen to discuss ideas you raise, and therefore that they will leave the seminar afterwards with a much better understanding of the specific seminar question you have focused on, and how it relates to the overall agroecosystem ecology issue you have chosen.

**Learning Objectives:**

1. Consult the general literature and devise an original and challenging seminar question that addresses some aspect of your chosen agroecosystem issue.

2. Search the primary scientific literature for a significant example, 'case study', review, or conceptual framework related to your agroecosystem issue, that you will ask your audience to read before your seminar.

3. Identify and evaluate the unique contribution of that research to addressing your seminar focus question.

4. Critically assess that agroecosystem ecology research (positive and negative aspects).

5. Interpret the study’s conclusions in the broader context of understanding the chosen agroecosystem issue.

6. Develop oral presentation skills, particularly discussion leadership.

**Seminar Exercise:**

Consult the scientific literature and synthesize the current status of your chosen agroecosystem ecology issue so that you can formulate an interesting and original seminar focus question. You should find the high quality very relevant publications listed on the course **References list- subsection ‘Agroecosystem and Global Food Demand papers**’ (and the citations in those papers) particularly useful as a starting point in reviewing the literature on your chosen issue. Formulate the wording of your focus question so that you can use your literature research and seminar to make some progress toward answering it. Search the primary science literature (i.e. sources that present or utilize original research data) for a relevant agroecosystem ecology paper that you will use as an example or ‘case study’ or ‘review’/new conceptual framework to address that issue. Note that your seminar question should have a much broader focus than the individual paper. In other words, the paper will not provide a comprehensive answer to your question, but will contribute to moving us toward an answer. You are encouraged to use evidence from other readings to supplement the seminar paper, and the review papers in the Reference list referred to above should be particularly helpful.

Make an oral presentation with slides aimed at stimulating ideas and debate. This will total no more than 12 minutes if it was an uninterrupted conventional talk, but it will be designed with multiple question-and-answer/discussion sections interspersed throughout to last the whole class session. One useful strategy to achieve the interactive discussion is to structure your presentation with not just the main focus question but with 2-3 well thought-out probing sub-questions interspersed throughout the presentation. For example, a sub-question could be directly related to the paper you chose, or to a concept you discuss in your introduction, or to a topic within your ‘focal question’ that you’d like to spark discussion around. They can also be more abstract and deliberately promote a small debate or other interactive activity that relates to your focal question and topic.

The presentation should be suitable for an interested public audience, and should include the following headings (which can be divided or shared among group members):

a) The agroecosystem ecology issue: Introduction covering the broad issue, the scientific concepts and/or conceptual frameworks underlying the issue, and its historical context. Having supplied the background, present your seminar question - Make sure to write it up very clearly in your title page, and on the whiteboard before beginning. Explain why you chose that particular question.

b) Research paper introduction: Introduce the primary research study that you are using as an example or ‘case study’ or ‘review’/new conceptual framework to address that issue. Make sure to specifically refer back to concepts presented in the initial course seminars where appropriate. Describe the study's focus by identifying and articulating the specific research questions that you think *were* ***actually*** *addressed* most effectively in the paper. This section is a particularly good opportunity to demonstrate original, creative, critical thinking.

c) Research paper results: Present a brief summary of those study results that are most relevant to addressing your seminar focus question (e.g. perhaps 1-3 of the core graphs or tables – no more). Remember that your audience have already read the paper, and that your available time is short – keep this section concise and very centered on your seminar focus question.

d) Research paper assessment: Critical assessment of the study's main results and conclusions that are relevant to your seminar question. Think like a scientist – What are the strengths and weaknesses of the study (i.e. positive and negative aspects), and what are the critical assumptions underlying the study’s data collection and/or data interpretation? This section is a particularly good opportunity to demonstrate original, creative, critical thinking. Note that if you choose a ‘review’ paper (rather than a primary (i.e. more data-rich) paper, you will still need to make a clear effort to evaluate its science.

e) Conclusions: Finish your seminar by summarizing your conclusions on the focus question you have posed. Be sure to include a synopsis of what you have learnt from your audience during the seminar as well. Providing a set of 2-3 ‘take home’ messages is particularly effective. The ultimate goal of the latter is to not simply to summarize the main points, but instead to leave your audience with some clear, challenging, novel insights on the topic that they may ruminate on afterwards, and even discuss later with friends and family.

Offer some evaluation of the chosen research study's contribution to advancing our understanding of the overall agroecosystem ecology issue. If appropriate, be sure to outline how the chosen study points to potential solutions to the associated issue. Finally, consider offering some conclusions on the future importance and development of your chosen agroecosystem issue within the broader context of the course theme question (***What are likely to be the most effective agroecosystem management practices to meet future global food demands in terms of not just quantity but also quality?***). This section is also a particularly good opportunity to demonstrate original, creative, critical thinking.

**Seminar convenors:**

Note that the main objective of this exercise is the process of synthesizing information on an issue, and critically evaluating a primary research source from the scientific literature. You are not expected to understand (or present) the fine detail of the results and data analyses from your chosen primary research paper. Concentrate on the main points and big issues that are most relevant to your seminar focus question. Use the **research** **paper as a ‘spring-board’ to help you address your seminar focus question**. The more interactive and discussion-based the seminar is, the better.

Seminar convenors will be graded as a group (50% of the total mark) according to the following criteria:

i) **quality of the seminar question** – clarity, focus, intellectually stimulating, creativity

ii) **development of that question** during the seminar using evidence from the chosen reading, and other sources

iii) **presentation structure and clarity**

iv) **synopsis** at the end of the seminar

Individual seminar convenors will be graded separately (50% of the total mark) on each of their presentations according to the following criteria:

v) **evidence of independent critical thinking and original ideas** (e.g. identifying the study's main results and conclusions that are relevant to your seminar question; critiquing those results and conclusions; relating them to your seminar focus question)

vi) **enthusiasm and originality in presentation**

vi) **audience engagement and discussion leadership**

Note the above very carefully - They tell you what I am looking for!

The overall question and possible readings that you are considering using for your seminar should be sent to me in time (at least 10 days prior to your seminar) so that we can schedule a meeting with each group pairing where I can assess the question and the possible papers and provide feedback. To help you prepare, and to make the meeting most effective, please see ‘Guidelines for preparing for your seminar discussion meeting’ onQ and on the website. The earlier you send your preparation materials to me, the more feedback I will be able to provide. If you are having difficulties, please contact me. Finally, note that I am very keen to support individual approaches in this course, so if you have other suggestions of how or even what material you would like to do your seminar (e.g. role plays, debate, mind maps, infographics, artwork [as long as it acts as a synopsis] …), please contact me for support/assistance.

**Seminar participants:**

The success of this course as a learning instrument will largely depend on the quality of the discussions in each seminar. The main objective is to encourage the thinking processes of identifying and assessing some of the major cutting-edge issues in agroecology that fit within the course thematic question. Initiation and participation in the discussions following each seminar is a critically important part of the learning process in this course. Please read the research paper circulated prior to each seminar, and submit a single discussion idea or question relating to the agroecology issue in general, or to the chosen research paper, or some combination of the two.

For the student seminars, the primary focus of the student participant’s submitted questions should on the hard science, and they may in addition contextualise that science at a broader level. For assistance, please consult the separate document entitled Guidelines for developing good seminar questions posted on the webpage and onQ. Your question should be submitted in Microsoft Word format to the convenors via the Course ONEDRIVE **before** the associated seminar begins – late questions will not be accepted. The questions will subsequently be graded by the convenors and the course instructor on the basis of their quality (i.e. perceptiveness/depth of thinking, originality, and relevance).

**Final task for the seminar convenors:**

After you have both given your seminar, you will have 1 week to mark the audience’s written questions.  I will circulate a spreadsheet in which you can enter the marks (out of 10) and then send to me.  Remember that the questions must have been submitted prior to the seminar, and should be marked on the basis of their quality (i.e. perceptiveness/depth of thinking, originality, and relevance).

In addition to learning how to assess and grade each other’s work, the second goal of this task is for you to learn from the ideas and questions your audience have provided to you.  Accordingly, please reflect on each of the question submissions, and write in any useful comments or responses that you think the questioner will benefit from (as ‘comments’ in the Review tab).

Finally, please consult with each other and agree your choice of the best two questions out of all the ones you got...and indicate your selection (1st, 2nd) on the marks spreadsheet when you send the questions all back to me – within a week of your seminar please.

**Important Dates:**

* Pick seminar partners and topics **as soon as possible** (first come, first served for specific dates – see schedule of possibilities from Wed Oct 25th- Wed Nov 15th on the course website, and on the sign-up sheet on the ONEDRIVE). But there’s no mad rush - I am providing you with this information early so that you can have sufficient time to identify topics and find like-minded colleagues interested in joining you.
* Seminar Presentation on your day (25% of final course mark)
* Seminar Questions (by seminar attendees). **Send to convenors** **before** each seminar(each question contributes to 20% of final course mark)
* Graded Seminar Questions **(by seminar conveners)** due ONE WEEK after your seminar