NRM 485, Soil Biology

Fall 2020

Course description: Subject matter in this course will include lectures and discussions on soil as a habitat for living organisms, the major groups of organisms in the soil, the major biological processes that occur in the soil and their significance to soil productivity and environmental quality, and methodology for studying soil organisms and their processes.

The course will consist mostly of lectures by the instructor but there will also be some class discussion. Each student will be expected in all discussions.

Instructor: Mingchu Zhang
321

Synthesis and technical report for NRM 485

The purpose of the NRM 485 written synthesis paper is to give you a chance to research a topic in more detail than will done in class and to gain practice in synthesizing information from the class and the literature. The paper should be on a topic of interest to you and related to soil biology. I have included a list of example topics at the end of this file; you are **NOT** required to use a topic from the list. Papers will be graded on coverage of topic (i.e. adequate coverage without excess detail), accuracy of information presented, appropriateness of references, organization, ability to discuss the pertinent information from the literature and synthesize it into a coherent body of information, and quality of presentation (how well it is written, including spelling and grammar). A brief (1/2 page) topic description will be due on 30 January. I will use this to determine if your topic seems reasonable for a synthesis paper and if it is appropriate for this class. You should turn in a draft by 20 February. I will critique the draft, and then return it to you with comments and suggestions for improvement. The final paper will be due on 07 March.

The main purposes of the topic description are to help you focus on your topic early in the semester and to help me decide if your topic is appropriate for the class and if it doable. It should simply be a short description of what you plan to write you paper on. Some time should have been spent searching the literature prior to writing the topic description. At least three references should be included with the topic description.

The paper should **not exceed five pages** in length. **At least eight pertinent references** should be cited in the paper; **at least five of them must be from the peer reviewed literature**. Internet sources are acceptable, but must be credible. The internet can be a good source of information, but there is also a lot of bad information on the internet and much of it is unverifiable. I urge you to use care if you use it. **Wikipedia or You-tube are not a acceptable references for this class.** If you have trouble finding information, please feel free to contact me. My phone number is 474 7620, fax number is 474 7004, and e-mail address is

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Listing of Publications in Reference List (should be alphabetical)

The publication types listed below are the most commonly cited in papers in soil science and related fields. Many other types of publications exist. If you have questions about citation style, please see me.

Single author in journal:
Clay, D.E. 1997. Comparison of the difference and delta ^{15}nitrogen approaches for evaluating liquid ammonium nitrate utilization by maize. Communications in Soil Science and Plant Analysis 28:1151-1161

Multiple authors in journal:
Häkan, W., Arnebrant, K., Östrand, F., and Kårén, O. 1997. Uptake of ^{15}N-labeled alanine, ammonium, and nitrate in *Pinus sylvestris* L. ectomycorrhiza growing in forest soil treated with nitrogen, sulphur or lime. Plant and Soil 195:329-338**. Note: list all authors, do not use et al.**

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Suggested topics for term paper (NRM 485 Soil Biology)

1) Pesticide decomposition in soil (if you pick this topic, you should choose a specific pesticide or class of pesticides; otherwise the topic will be too broad).

2) Effect of heavy metals on soil microbial activity.

3) Effect of management practices (pick one, such as tillage, crop rotation, application of pesticides, many others) on soil microbial biomass and activity.

4) Effect of management practices (pick one, such as tillage, crop rotation, afforestation, others) on carbon sequestration in soil.

5) Microbial transformation of metals (you should pick a particular metal or class of related metals).

6) Biodegradation of organic contaminants in soil (if you choose a topic similar to this one, you will wa912 0 .7 6c0 gnlaroow myeb0 g(y)10(p)-5(icio)4(n)-3ge a par

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