

## Assistantships

The Department has a limited number of teaching assistantships\* available each year. Applicants with strong quantitative skills are especially desired. In addition, many of our graduate students secure a research assistantship during at least part of their graduate studies. Some work with their advisors to prepare a research proposal during their first year in the program and submit it successfully for funding.

## Research Assistantships Currently Available

### **Graduate Research Assistantship: MS Student on bio-char amendments to forest soils**

**Announcement:** We are seeking an MS student to evaluate the impacts of bio-char on forest production and belowground processes. Bio-char is a black carbon byproduct of the fast pyrolysis bioenergy conversion process. The MS project includes evaluating microbial responses of bio-char amendments.

Sustained forest biomass growth can be used to help meet energy independence goals. Removing forest biomass, such as logging residues, or thinning for hazard fuel reduction will improve forest health, reduce the risk of wildfires, and reduce the need for slash burning which releases pollutants including greenhouse gases. However, high nutrient content in the tops and limbs raise concerns over nutrient depletion potential. Such environmental risks must be acknowledged and mitigated as part of sustainable forest biomass production. Removals may be mitigated through bio-char amendments. Bio-char is available for site amendments as a byproduct of mobile pyrolysis units that are capable of converting biomass to a high-value bio-oil. For information, on recent demonstrations of such a portable pyrolysis unit by the Umpqua and Umatilla National Forests, the Rocky Mountain Research Station, University of Idaho and University of Montana see <http://www.fs.fed.us/r6/umpqua/projects/fast-pyrolysis/index.shtml>.

Bio-char is equivalent to charcoal found native in fire ecosystems and such black carbon is known to enhance soil physical, chemical and biological qualities with resulting improvement in plant productivity. Bio-char also has residence times exceeding thousands of years, suggesting incorporation of bio-char has important soil enhancement and carbon sequestration potential. Microbial population responses and resulting changes in microbial processes are critical to understanding the impact of biochar. Numerous questions remain regarding the response of these processes to biochar amendments in forest ecosystems.

The MS student will work on a USDA Forest Service funded project to consider site carbon and nutrient dynamics concerned with bio-char amendments. The stipend starts at \$17,000 per year and includes a tuition waiver. Fees are not included, but potential exists for additional funding, scholarships, and teaching assistantships within the Forest Resources Department and the University of Idaho. The successful candidate will be an MS student in the College of Natural Resources at the University of Idaho.

**Qualifications:** The MS candidate should be familiar with sampling and analyzing forest soil nutrient availability, and knowledgeable of above and belowground

processes controlling variation in productivity and soils throughout the Inland Northwest. Desirable background includes experience with forest bioenergy, including biochar production, forest soil microbial populations, mycorrhizae, nitrogen fixation, plant mineral nutrition, soils, and geology. Desire to conduct field work in managed forests and strong verbal and written communication skills are critical. Highly desired qualifications include experience with statistical analysis, plant and soil nutrient analysis, and publishing research results in refereed journals. Applicants must have an undergraduate degree in forest soils, geography, forest management, ecology, agronomy, biogeochemistry, or closely related field.

In addition, the candidate should be self-motivated, focused, and able to work independently and work as part of a multidisciplinary team. It will also be necessary to operate field vehicles, work in strenuous field conditions, and climb trees for sample collection.

**How to Apply:** To apply for this position, please email the following to Mark Coleman; [mcoleman@uidaho.edu](mailto:mcoleman@uidaho.edu): (1) your CV including GRE (and TOEFL scores where appropriate); (2) undergraduate transcripts; (3) a 1-2 page description of your research interests and career goals with a description of your technical and personal qualifications for this position; and, (4) contact information for three references. Inquiries are welcome.

**Application Deadline:** Applications should be submitted by 30 October 2009 and will be accepted until the position is filled.

**Starting Date:** Availability should be no later than January 2010. Funding is available to start work prior to that time.

[http://www.cnr.uidaho.edu/forres/Finan\\_Aid/assistantships.asp](http://www.cnr.uidaho.edu/forres/Finan_Aid/assistantships.asp)