

**School of Natural Resources**  
**Agroforestry Specialization Requirements - M.S**  
**Program of Study**

Note: A student does not have to declare a specialization. If a student wishes a recognized specialization to appear on his/her transcript, the following requirements must be met for the Agroforestry Specialization:

**Content and Format of the Program**

Education goals and objectives:

1. To provide students with a learning environment with an emphasis on the development of an understanding of the role of woody plants in crop production systems;
2. To recognize students who have attained an advanced knowledge of agroforestry sciences and the ecological implications of woody plants in the agroecosystems;
3. To support interactions and cooperation among the community of scientists and students working on agroforestry issues

Courses offered in specialization:

Courses to comprise the student's program of study are determined by the Supervisory Committee in accordance with the requirements for the Masters Degree as specified by the School of Natural Resource Sciences and the Graduate Studies Bulletin (e.g., for M.S., Option I, 30 hrs, 20-24 hrs of course work, 6-10 hrs thesis - at least ½ of course work must be in major subject; at least 8 hours in courses open only to graduate students). For the purposes of this specialization courses in the 5 areas described below will be considered as part of the major.

Guidelines or accreditations for this program? None.

Requirements for students in specialization

1. A minimum of 21 graduate credit hours in agroforestry and sustainable agriculture courses approved by student's supervisory committee

Required (9 hours):

NRES 817 Agroforestry Systems in Sustainable Agriculture

AGRO/NRES 835 Agroecology

NRES 808: Microclimate: The Biological Environment

Electives (12 hours from two of the following areas)

Area 1 - Production agriculture

Area 2 - Quantitative & statistical methods

Area 3 - Ecological systems

Area 4 - Economics, law and policy

Area 5 - Environmental systems, impacts and issues

2. Biometry 801 Statistical Methods in Research (or equivalent) is required of all

students.

3. Thesis research topic in Agroforestry
4. The chair of the student's supervisory committee must be a SNRS faculty member (includes adjunct and courtesy) with an interest in agroforestry.

Successful completion of the requirement will be indicated on the student's final transcript as "Natural Resource Sciences with a specialization in Agroforestry"

### **General Governance Procedures**

Faculty will assist in the selection of graduate applicants wishing to specialize in agroforestry using the following guidelines:

1. The student must meet the SNRS minimum admission requirements.
2. A suitable faculty advisor in agroforestry must be identified.
3. In addition to the SNRS minimum admission requirements, the student should have an appropriate background in one of the following: agriculture, agronomy, animal science, biology, ecology, forestry, horticulture or wildlife. Students with different backgrounds are welcome but must recognize that additional undergraduate course work will most likely be required.
4. Approval of the thesis topic must have the concurrence of the supervisory committee.
5. The student will formally declare the agroforestry specialization upon filing the Memorandum of Courses (MOC). The specialization will be noted on the Memorandum of Course work and must be approved by the student's supervisory committee and the SNRS Graduate Committee.

### **Availability of Resources and Funding**

No additional resources are necessary to make this program viable.

### **Impact on Existing Academic Community**

The proposed specialization in agroforestry grew out of discussions of the agroforestry team organized in 1991. While team members have changed over the past 7 years, the overall goals of the agroforestry team remain basically unchanged:

- 1) to identify and quantify the benefits of including woody plants in temperate agricultural systems;
- 2) to promote the benefits of the adoption of agroforestry practices by agricultural producers; and
- 3) to provide students with a high level of expertise in the practices of agroforestry.

The specialization in agroforestry was included in the original proposal of the School of Natural Resource Sciences and is consistent with and in direct support of the intent of the M.S. degree name change, as approved by the former FFWL faculty in May 1998 and later approved by the APC, UNL Graduate Council, and others. It seeks to *"to create better name recognition for prospective students, employers of our graduates, and Ph.D. programs for*

*those students who continue their graduate education.*” In addition, this specialization is consistent with the overall academic mission of the SNRS and is a major link with the more production oriented programs within IANR. Finally this specialization will contribute to a better understanding and appreciation of the interconnectedness between ecological principles, the production of food and fiber and the conservation of our natural resources.

The specialization was approved by the SNRS's graduate committee on March 30, 1999 and the curriculum committee on April 16, 1999. The SNRS faculty approved the specialization on April 27, 1999.

Note: Alternative graduate level courses may be included in a student's program if recommended by the supervisory committee and approved by the SNRS Graduate Committee.

#### Area 1- Production Agriculture

AGRO/NRES 803 Fundamentals of Crop Physiology  
AGRO/NRES 804 Field Crop Physiology  
AGRO/NRES 807 Plant Water Relations  
AGRO 822 Advanced Weed Science  
AGRO 855 Soil Chemistry and Mineralogy  
AGRO 904 Physiology of Grain Yield  
AGRO 966 Soil Fertility  
HORT/NRES 809 Horticulture Crop Physiology  
HORT/NRES 849 Woody Plant Growth and Development  
HORT/NRES 909 Crop Response to Environment

#### Area 2 - Quantitative and Statistical Methods

AGRO 806 Techniques in Crop Physiology  
NRES 869 Bio-Atmospheric Instrumentation  
NRES 906 Crop Growth and Yield Modeling  
BIOM 802 Experimental Design  
BIOM 810 Survey of Multivariate Techniques in Biometry  
BIOM 901 Multiple Regression Analysis  
BIOM 902 Advanced Experimental Design  
BIOS 856 Mathematical Models in Biology  
GEOG/NRES 812 Introduction to Geographic Information Systems  
GEOG/NRES 818 Remote Sensing I - Photographic Sensors  
GEOG 819 Remote Sensing II - Non-Photographic Sensors  
GEOG 820 Remote Sensing III - Digital Image Analysis  
GEOG 822 Advanced Techniques in Geographic Information Systems

#### Area 3 - Ecological Systems

NRES 810 Landscape Ecology  
NRES 823 Integrated Resources Management  
NRES 824 Forest Ecology  
NRES 850 Biology of Wildlife Populations  
NRES 858 Conservation Biology  
BIOS/NRES 854 Population and Community Ecology  
BIOS/NRES 959 Advanced Community Ecology  
ENTO 806 Insect Ecology

Area 4 - Economics, Law and Policy

AECN 832 Economics of Agricultural Production

AECN 856 Environmental Law

AECN 857 Water and Natural Resources Law

AECN 865 Resource and Environmental Economics II

AECN 868 Advanced Resources and Environmental Economics

CRPL 800 Introduction to Planning

CRPL 913 Planning and the Natural Environment

Area 5 - Environmental Systems, Impacts and Issues

AGRO 820 Herbicide Technology

AGRO 821 Herbicide Mode of Action

NRES 850 Climate and Society

AGRO/NRES 875 Water Quality Strategy

NRES 907 Agricultural Climatology