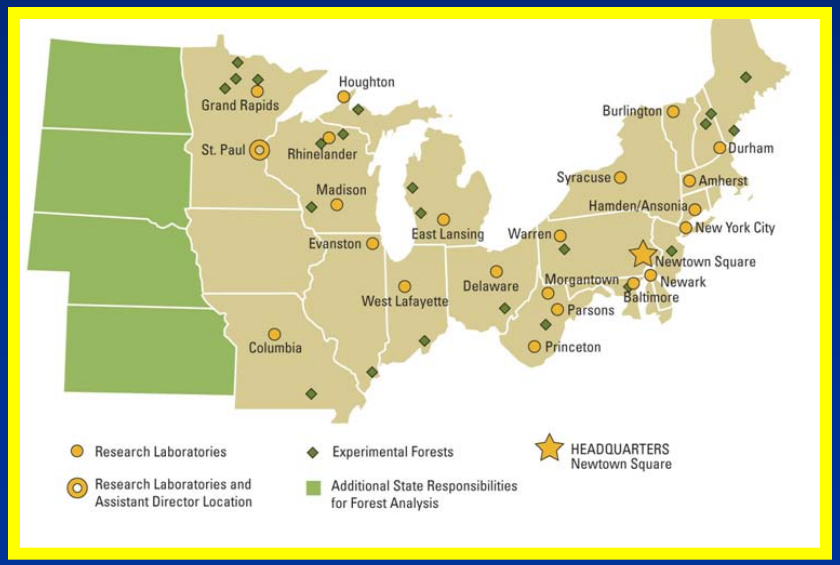
Northern Research Station Energy Highlights

Research Themes:

1) Forest Disturbance Processes
2) Providing Clean Air & Water
3) Sustaining Forests
4) Urban Natural Resource Stewardship
5) Natural Resources Inventory & Monitoring



Project Categories:

1) Management & production systems
2) Conversion technologies
3) Policy analysis

Energy from Native Forests

Assessing the environmental sustainability & capacity of forest-based biofuel feedstocks within the Lake States region J. Bradford, S. Fraver, R. Kolka, B. Palik + (Univ. WI, MN, MO)

Impacts of woody biomass harvesting on saproxylic communities, nutrient availability, & productivity in aspen ecosystems J. Bradford, S. Fraver, R. Kolka, B. Palik + (Univ. MN)

Wood energy developments in the Northeast J. Wiedenbeck, B. Adams + (PSU)

Developing biofuels in the Appalachians: what are the limits of sustainability? B. Adams, J. Wiedenbeck + (WVU)

Guidelines for integrating biomass marketing opportunities into restoration of degraded stands S. Stout + (PSU)

A full life-cycle carbon calculator for forest landowners & policy makers in the Northeast M. Twery

NED decision support systems for forest management for multiple values M. Twery

Characterizing lessons learned from federal biomass removal projects P. Jakes

Forest biomass & carbon estimation, information, & data delivery L. Heath

Changes in the Lake States pellet industry from 2005 to 2008 B. Luppold

Impacts of harvesting forest residues for bioenergy on nutrient cycling & community assemblages in northern hardwood forests
D. Donner, R. Zalesny + (UW, USGS, R9)

Soil carbon & nutrient cycling in northern hardwood forests
R. Zalesny, D. Donner + (UW, USGS, R9)

Energy from Tree Plantations

Influence of alternative biomass cropping systems on short-term ecosystem processes R. Kolka + (ISU)

Breeding & selecting poplar for biofuels, bioenergy, & bioproducts R. Zalesny + (ISU, MSU, Univ. WI, MN)

Biofuels, bioenergy, & bioproducts from short rotation woody crops R. Zalesny + (ISU, MSU, Univ. WI, MN)

Land-use, soil health, & water quality changes with woody energy crop production in Wisconsin & Minnesota R. Zalesny, D. Donner

Ecological assessments of bioenergy feedstocks from plantations & forests in the Midwest R. Zalesny + (ISU, MSU)

Carbon sequestration potential of poplar energy crops at regional scales R. Zalesny + (ISU, MSU)

High productivity & low recalcitrance poplar for biochemical conversion R. Zalesny + (FPL, ISU, MSU)

Sustainable production of woody energy crops with associated environmental benefits R. Zalesny

Development of technical innovations to reduce impacts of invasive species & enhance energy crop production R. Zalesny

Genetics & Energy Crop Production Team

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Our objective is to use the link between energy, climate, & tree genetics to:

1) develop fast-growing tree crops as energy feedstocks;
2) develop sustainable forest biomass removal strategies;
3) understand climate change effects on natural & plantation forests;
4) fill critical knowledge gaps in 1), 2), & 3).

- Short rotation woody crops for energy, fiber, & envmtl benefits
- Ecological sustainability of using forest residues for energy
- Carbon sequestration & climate change adaptation of conifers