

For further information, please contact:

Dr. Tim Volk (tavolk@esf.edu)  
(315) 470-6774

Dr. Larry Abrahamson (labrahamson@esf.edu)  
(315) 470-6777

or visit [www.esf.edu/willow](http://www.esf.edu/willow)

# The Willow Biomass Project



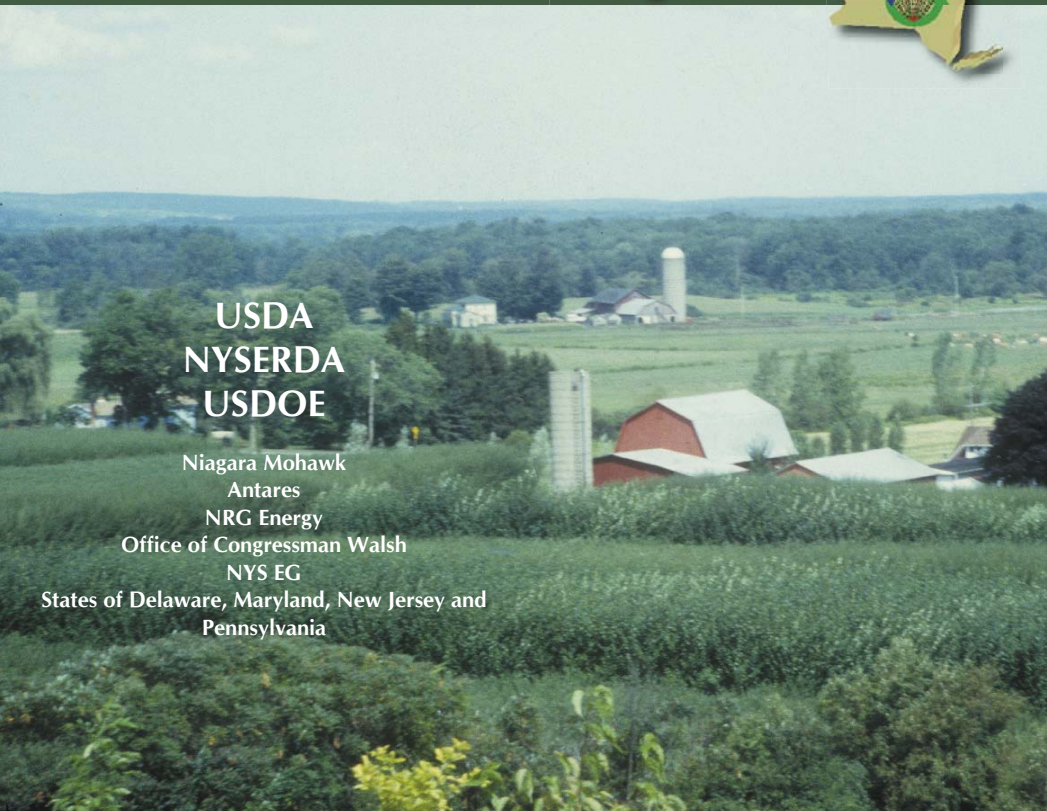
Willow biomass is an environmentally sound, locally produced, renewable source of energy and bioproducts.



Driven by concerns about global warming, air pollution, rural development and national security, research conducted by SUNY-ESF has reconnected the historic willow cultivation industry to central New York. For almost two decades SUNY-ESF has teamed up with over 20 organizations to facilitate the commercialization of willow crops and other woody biomass for bioenergy and bioproducts in the Northeast and Midwest United States.



Central New York was the center of willow cultivation in the early 1900's for the historic basket-making industry.



USDA  
NYSERDA  
USDOE

Niagara Mohawk  
Antares  
NRG Energy

Office of Congressman Walsh  
NYS EG

States of Delaware, Maryland, New Jersey and  
Pennsylvania



Benefiting the environment  
and rural development

Brochure text and design by Jennifer Mokos and Timothy Volk

## Why Willow?



Two-year-old willow shrubs

- Willows are easily propagated from unrooted cuttings.
- High yields can be obtained in a few years.
- Willow's genetic diversity and short breeding cycle can be utilized to produce improved varieties.
- Willows vigorously resprout after each harvest.
- The amount of heat in a dry ton of willow is similar to other hardwoods.
- An array of bark and foliage colors creates opportunities for visually stunning landscape designs.

## Producing Willow Biomass



Willow biomass crops increase habitat diversity. They are planted on open, agricultural land, not on cleared forest land.

A crop can be harvested six to seven times before replanting is required.

Willow cultivation uses significantly fewer pesticides than traditional agriculture.



## Creating Environmentally-friendly Products

Willow biomass products reduce the need for fossil fuels and petroleum products. Willow can be converted into a variety of sustainable environmentally-friendly resources, including:

- Heat and electricity by direct combustion, co-firing with coal, and gasification
- Biodegradable plastics and other polymers
- Biofuels



Willows produce 11-16 units of energy for every unit of fossil fuel that is used.



## Promoting Rural Development and the Environment

- Willow crops are carbon dioxide neutral which helps to reduce global warming.
- They reduce the need for fossil fuels for energy, chemicals, products, and fuels.
- Combustion of willow biomass releases fewer acid-rain producing compounds into the atmosphere
- Willow crops reduce soil erosion and nonpoint source pollution
- Willow crops generate income for local landowners and create jobs within the local community.



Bird density and diversity in willows is similar to natural shrub land and forests.

## Beyond Bioenergy & Bioproducts

Willow crops are ideal for a wide range of applications besides bioenergy and bioproducts:

- Riparian buffers - Natural barriers that prevent chemicals from entering streams, ponds, and lakes.
- Phytoremediation - Willows clean up toxins from contaminated sites.
- Living snowfences - Strategically planted willows trap drifting snow.
- Wastewater management - Willows filter contaminants from wastewater.



A single row of willows is an effective living snowfence.

