

How can the Community become involved?

All are welcome at the Nexus. The site is located at the Watauga County landfill and is open for the public by appointment to come by and see the technologies at work:

The Nexus site is located beyond the recycling center at the top of the hill.

591 Landfill Road, Boone, NC 28607

Community Gardening Opportunities:

The Nexus project is open to community involvement. We have space for growing, a heated greenhouse to raise starts in, and several innovative soil amendments to boost the fertility of your home garden. Some of the offerings from the Nexus include:

- Biochar soil amendment
- Raised bed plots
- Heated Greenhouse space
- Compost



Contact Us

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Collaborators:

- Blue Ridge Women In Agriculture
- Springhouse Farm
- Against the Grain Farm

Sponsors:



THE NEXUS:
INTEGRATED
SUSTAINABLE
ENERGY FOR
ENHANCING FARM
PRODUCTIVITY

*Growing crops and
communities*

About the Nexus



The Nexus is an Appalachian State University research project committed to improving the profitability of farming in the High Country and enriching the local community through the application of biomass management, renewable energy, value-added byproducts and season extension. This mission is supported by three major activities, which are:

- Faculty & Student-led research
- Community outreach
- Technology transfer

Through these activities we hope to make a sustainable difference in the lives of those who live in the High Country, and the students who study there.

On-going researches at the Nexus:

- Biochar with anaerobic digestion: enhancing crops
- Demonstrating syngas production from bioenergy crops
- Promoting biomass greenhouse heating systems
- Biomass greenhouse heating systems for season extension

- ***Sustainable Technologies:***

Sustainable technology seeks to tailor the choice and application of technology to the needs of the user and his or her community and environment. For the Nexus, that means designing low-cost, user-friendly technologies that help farmers turn their organic farm waste (manure, wood & crop scraps, etc.) into valuable soil amendments like compost and biochar as well as energy to heat a greenhouse!

Technologies at the Nexus (current and future):

- Solar Photovoltaics with battery storage
- Solar Thermal Collectors
- Thermal heat storage
- Biochar kiln (2nd generation is under construction)
- Root zone heating system
- Anaerobic digester
- Compost Heating system

**THE
NEXUS
PROJECT**

Pilot system at local farms

The Nexus research team installed pilot systems at two local cooperative farms: Against the Grain (ATG) farm and Springhouse farm. They have been operating the system since early 2018.

The pilot system includes a biochar kiln, solar thermal collector, food dehydrator, and water tank (heat storage). The heat from the biochar kiln and solar collector is collected and stored in the water tank and is radiated to the crops on the benches through ¼" PE tubing installed under the benches (Root Zone Heating system).

- **Root zone heating** usually allows the operator to have a lower nighttime setting temperature by **5 to 10 degF**, which results in overall energy cost savings.
- Biochar produced from the kiln is known as useful soil amendment due to its unique ability to increase water and nutrient retention.
- During the warm season when heating is not needed, the collected heat will be used to dry food in the food dehydrator.

