

The Research Program

Current Research:

- Investigation of surface runoff production due to urbanization and agricultural practices on field-sized watersheds.
- Development of methods to characterize and simulate short-time increment precipitation.
- Develop new concepts and management practices that will enhance the quality, productivity, and sustainability of soil and water resources.
- Develop guidelines for different grazing management systems.

Major Accomplishments:

- Development of no-till/conservation tillage practices that reduce runoff and erosion.
- Development of Coshocton wheel used worldwide for scientific sampling of surface water runoff.
- Understanding of macropore flow in the field and its impacts on nutrient and pesticide movement.
- Characterization of environmental impacts of coal surface mining.
- Evaluation of water quality under various pasture management schemes.

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ARS Mission

The Agricultural Research Service conducts research to develop and transfer solutions to agricultural problems of high national priority and provides information access and dissemination to:

- ensure high-quality, safe food and other agricultural products
- assess the nutritional needs of Americans
- sustain a competitive agricultural economy
- enhance the natural resource base and the environment, and
- provide economic opportunities for rural citizens, communities, and society as a whole

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United States Department of Agriculture
Agricultural Research Service
In cooperation with
OSU/Ohio Agricultural Research and
Development Center

North Appalachian Experimental Watershed

Coshocton, Ohio



***An Outdoor Laboratory for Land and
Water Management Research***

NAEW Mission

The NAEW develops innovative land use practices and tests their effects on soil, water, and air.

October 2010

Resource Overview

The NAEW Includes:

- 1,050 acres
- 11 large lysimeters for ground water studies
- 22 instrumented watersheds for runoff research
- meteorological station and network of recording rain gauges
- long-term, experimental field sites, and hydrology and water quality data

plus

- decades of data collection experience and data records
- state-of-the-art laboratory
- expansion capabilities

Experienced Personnel:

Ph.D. Soil Scientists, Ph.D. Engineer, and Technicians with decades of research experience in the areas of:

- Watershed Management
- Non-Point Source Pollution and Abatement
- Improved Agricultural Management Practices
- Watershed Instrumentation

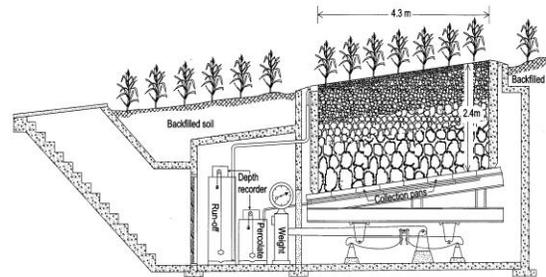
Experimental Watershed



Physical Setting

The NAEW is near Coshocton in east central Ohio, an unglaciated portion of the state with rolling uplands. Underlying bedrock includes sandstone, shale, limestone, clay, and coal. Soils are medium textured and range from well-drained with no impeding soil horizon to soils that have a clay horizon. Average annual rainfall is 37 inches.

Weighing Lysimeter for Ground Water Studies



H Flume and Coshocton Wheel for Measuring and Sampling Surface Water Runoff



History

The North Appalachian Experimental Watershed has always responded to the scientific research needs of the time. From soil erosion to hydrology to water quality concerns, the NAEW has always maintained its leadership at the cutting edge of field-based, environmental research.

The North Appalachian Experimental Watershed is one of only two hydrologic stations worldwide with over 60 years of continuous data collected from small watersheds and ground water lysimeters. The station was opened in the mid 1930s to address soil erosion problems of the time. The Coshocton site was selected because it represented land conditions prevalent in many states in the Appalachian Region. Offices, laboratories, and field research equipment were built by Works Progress Administration (WPA) and Civilian Conservation Corps (CCC) labor.

In 1954 the NAEW was transferred to the newly formed Agricultural Research Service. In the 1960's, environmental awareness began growing rapidly. Agriculture's contribution to pollution of the land, water, and air needed to be identified and corrective measures developed. In 1966, research was started on the NAEW watersheds to determine how insecticides moved from cropland into streams.

Studies of the movement of plant nutrients in surface and subsurface waters were begun soon afterwards. Factors such as crop rotations, tillage tools, fertilization levels, and pasture grazing schemes were shown to affect nutrient losses. Studies have been conducted in surface-mined areas to evaluate the effects of surface mining on surface and groundwater hydrology, water quality, and erosion.