



UNIVERSITY OF KENTUCKY COOPERATIVE EXTENSION PARTNERSHIPS FOR WATERSHED MANAGEMENT

DR. AMANDA GUMBERT
EXTENSION SPECIALIST FOR WATER QUALITY

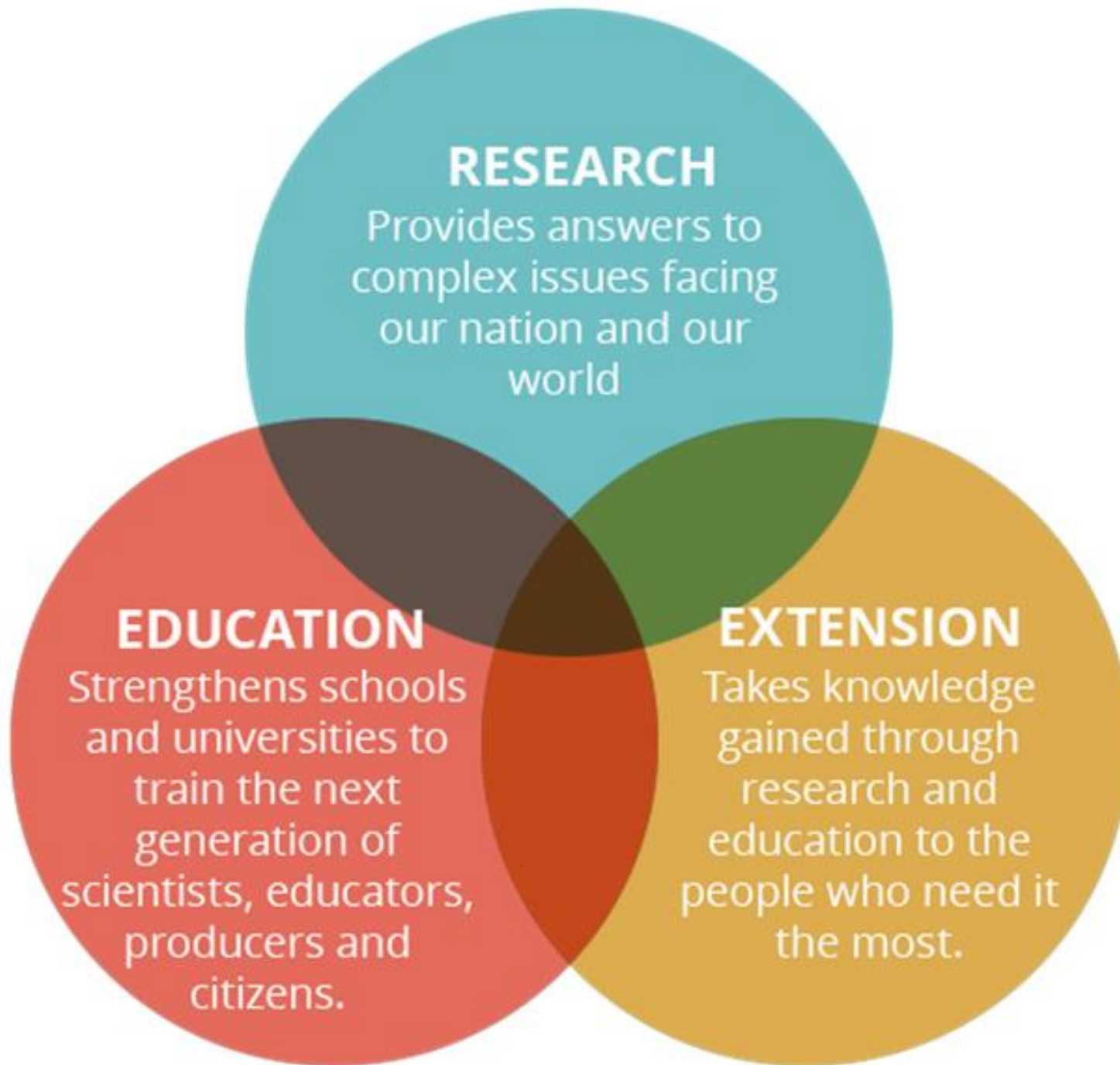


OVERVIEW

- The Land-Grant mission/history
- Cooperative Extension structure and programs
- Relevant services and resources for watershed projects
- How to work with Extension



University of Kentucky
College of Agriculture,
Food and Environment
Cooperative Extension Service



THE LAND-GRANT UNIVERSITY MISSIONS

HISTORY OF LAND-GRANTS

- Education
 - 1862 – Morrill Act (established land-grant universities)
 - 1890 – Second Morrill Act (added black institutions)
 - 1994 – Equity in Educational Land-Grant Statues Act (added tribal colleges)
- Research
 - 1897 – Hatch Act (added Ag Experiment Stations)
- Application/Outreach
 - 1914 – Smith-Lever Act (created Cooperative Extension Service)

COOPERATIVE EXTENSION



KENTUCKY COOPERATIVE EXTENSION

Mission

The Kentucky Cooperative Extension Service serves as a link between the counties of the Commonwealth and the State's land grant universities to help people improve their lives through an educational process focusing on their issues and needs.

- 120 offices
- Areas of programming
 - Ag and Natural Resources
 - Livestock, crops, forestry, horticulture
 - Family and Consumer Sciences
 - 4-H Youth Development
 - Natural Resources content area, environmental camps
 - Community and Economic Development
 - Fine Arts

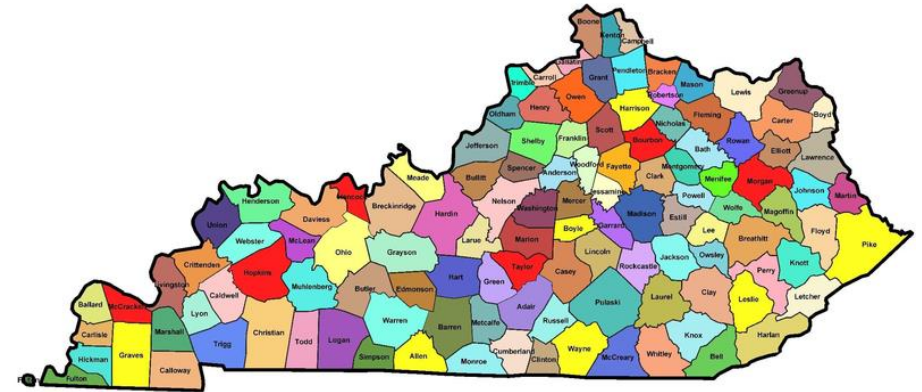


Image source: https://en.wikipedia.org/wiki/File:KENTUCKY_COUNTIES.png



STAFF STRUCTURE

- County Extension Agents (serve only the assigned county, cover many topics)
 - At least two per county (ANR, FCS)
 - Additional agents when county funds allow
- State staff (serve entire state, focus on one topic)
 - Extension Specialists
 - Extension Associates



EXTENSION RESOURCES



ID-211

Kentucky Nutrient Management Planning Guidelines (KyNMP)
Steve Higgins and Eder Schmitt, Biosystems and Agricultural Engineering and Amanda Gumbert, Agriculture Extension Programs

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COOPERATIVE EXTENSION SERVICE - UNIVERSITY OF KENTUCKY COLLEGE OF AGRICULTURE, LEXINGTON, KY 40546

HEMV 501

Home & Environment

Septic System Maintenance
 Brad D. Lee, Plant and Soil Sciences

After purchasing a new or existing home, most homeowners probably do not expect to pay several thousand dollars to provide adequate waste disposal. But that's what frequently happens to many new homeowners due to failed septic systems. Backyard seepage, toilets that won't flush, bathtubs that won't drain, and showers from contaminated drinking water are a few of the problems related to these failures, not to mention the frustration of high repair costs. This publication provides homeowners with a basic introduction to septic systems by explaining how septic systems function and suggesting ways to better maintain systems and increase their longevity.

In this Publication

- How a Septic System Works
- Maintenance Tips for a Healthier Septic System
- Caring for Your System
- Be Careful about What Goes Down the Drain

How a Septic System Works

Traditional septic systems (Figure 1) are made up of three main parts:

- The septic tank
- The distribution box and pipe network
- The absorption field

Wastewater is directed to the tank once it leaves the home. In the tank, the solids in the wastewater separate from the liquid effluent over a period of about 24 to 48 hours. Greases and fats in the wastewater are lighter and tend to float to the top of the tank, forming a scum layer. The heavier wastewater particles settle to the bottom, forming a layer of sludge in between the sludge and scum.

Fig. 1. Top view of a conventional septic system, the most common septic system in the U.S. (Dharmon KATZ)

UK **AG**
 Agriculture and Natural Resources • Family and Consumer Sciences • 4-H Youth Development • Community and Economic Development

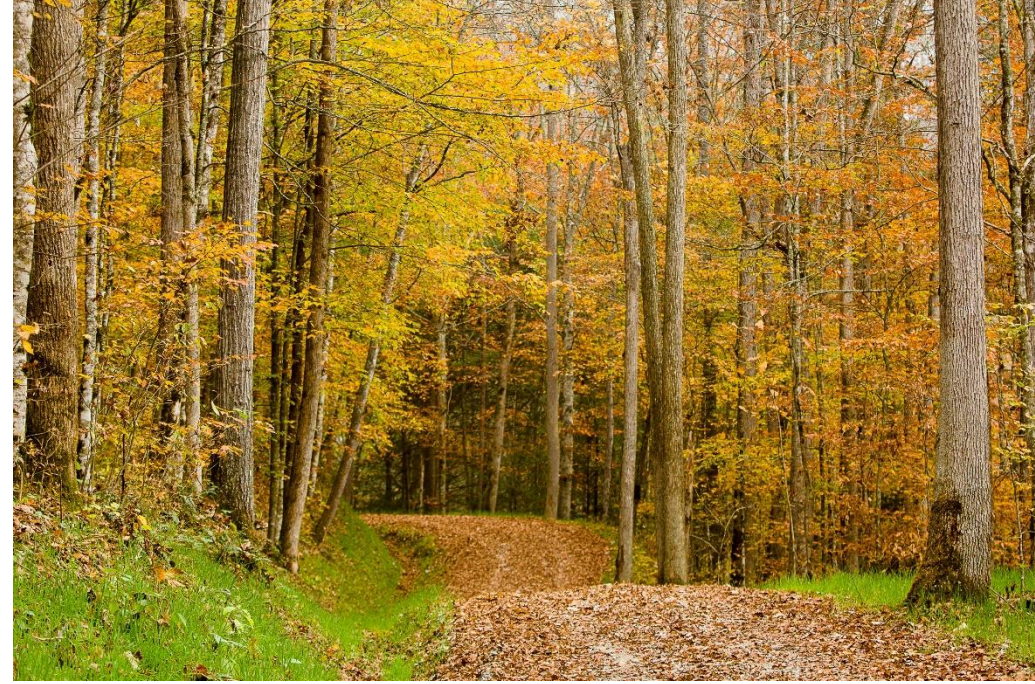
SERVICES

- Soil Testing
 - Information to help determine lime and fertilizer needs
 - Contact local Extension office for sample collection bags, details
- Animal Waste Testing
 - Information to help develop nutrient management plans
 - Contact local Extension office for sample collection details
- Water Testing
 - Only for irrigation water
- Community Development
 - Facilitation of community planning/development, contentious issues
 - Contact local Extension office for referral to specialist



FACILITIES

- County offices (meeting space)
- Ag Experiment Station
 - Central Kentucky farms
 - North Farm (Lexington)
 - C. Oran Little Research Center (Woodford Co.)
 - Eden Shale Farm (Owen Co.)
 - Horticulture Research Farm (Lexington)
 - Robinson Center for Appalachian Resource Sustainability (Quicksand)
 - Robinson Forest
 - Wood Utilization Center
 - Research and Education Center at Princeton
 - Grain and Forages Center of Excellence



KY AG WATER QUALITY PLAN RESOURCES



The header of the website features the University of Kentucky logo on the left, followed by the text "Biosystems & Agricultural Engineering" and "College of Engineering" and "College of Agriculture, Food and Environment". On the right, there is a search icon and the text "myUK". Below this is a dark blue navigation bar with the text "Biosystems & Agricultural Engineering" in white. Underneath the navigation bar is a horizontal menu with the following items: HOME, UNDERGRADUATE, GRADUATE, RESEARCH, EXTENSION, ABOUT, and PEOPLE.

<https://www.uky.edu/bae/awqp>



This site contains a planning tool to be used by landowners to assess their operation and identify best management practices to be included in their individual plan. After identifying the best management practices, landowners/land users implement these practices on their land. Assistance to implement the plan can be obtained by contacting your local Conservation District Office or your local Cooperative Extension Service Office.

- Producer's Workbook
- State Agriculture Water Quality Plan
- Nutrient Management Planning
- Calculators & Tools
- Plans & Drawings
- More Resources



[View the Kentucky Agriculture Water Quality Act Brochure](#)

[View the Kentucky Agriculture Water Quality Act Fact Sheet](#)

Kentucky Agricultural Water Quality Act
• What is it?

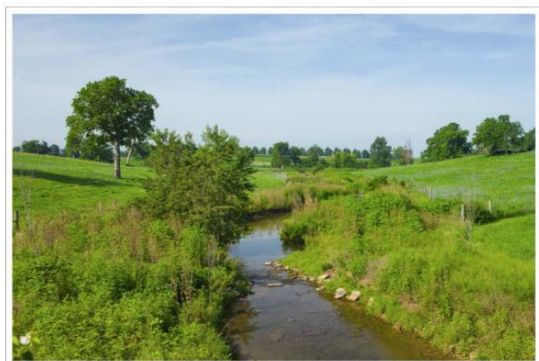


Date

Farm Name

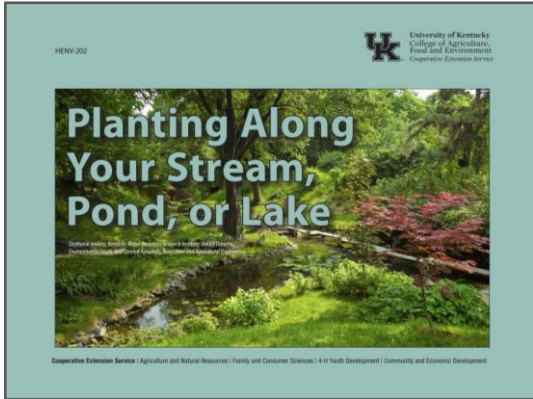
FSA#

Kentucky Agriculture Water Quality Plan Producer Workbook



A video thumbnail showing a rural landscape with a white picket fence, a blue barn, and green trees under a blue sky. The text "Kentucky Agriculture Water Quality Plan Producer Workbook" is overlaid in white.

10/31/2016 [Reset Form](#)



College Catalog

- HOME
- AREA
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- DEPARTMENT
- GOOGLE CLICKS
- MULTI-PART PUBLICATIONS
- RECENTLY PUBLISHED
- SERIES
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Search

Search

Departmental Catalog

- AGRICULTURAL ECONOMICS
- ANIMAL AND FOOD SCIENCES
- BIOSYSTEMS AND AGRICULTURAL ENGINEERING
- ENRI PUBLICATIONS
- ENTOMOLOGY
- FAMILY AND CONSUMER SCIENCES
- FORESTRY AND NATURAL RESOURCES
- 4-H YOUTH DEVELOPMENT
- HORTICULTURE

Online Publication Catalog

Peer-reviewed titles

Choose any of the links in the left-hand column to get started.

College Catalog

The links in this category allow you to filter the entire catalog in various ways. The **recently published** page is a good place to start. It includes the last two years' worth of titles.

Departmental Catalog

Subject matter departments maintain catalogs of titles as well. The links in this category will take you to departmentally-managed pages.

<http://www2.ca.uky.edu/agcomm/pubs.asp>

AGN 120 University of Kentucky College of Agriculture, Food and Environment Cooperative Extension Service

Rainwater Harvesting for Livestock Production Systems

Steve Higgins and Lou Hines, Extension and Agricultural Engineering

Introduction

Absorbent, clean drinking water is essential for livestock. Stocking water sources recommended by veterinarians to the water themselves, city water for the livestock. City water distribution systems are often expensive to install and have a recurring surge charge. In some instances, city water is unavailable due to farming operations. Rainwater harvesting involves the collection of rainfall from roof-top or land-based catchment systems for storage and distribution as needed.

Collecting rainwater from a catchment area is a low cost, high-quality alternative water source that can supplement traditional water distribution systems and improve the environmental quality of farming operations. Rainwater harvesting involves the collection of rainfall from roof-top or land-based catchment systems for storage and distribution as needed (Figure 1). Capturing rainfall has the added benefit of improving water quality by reducing sediment and runoff. Strategically installed rainwater harvesting systems can be used to divert stormwater around sensitive areas of the farm where runoff water is present, thus reducing the potential for nutrient and pathogen delivery to nearby waterways. Rainwater harvesting and stormwater management techniques can also reduce the volume of water that must be managed in legal stormwater management systems by diverting rain water away from runoff pits and ditches.

Planning and Construction

The design of a rainwater harvesting system can be as simple as one basin, a complicated system is not needed for harvesting rainwater. A basic design consists of a catchment area, distribution lines, storage, and a target. Figure 2. Optimization of the system is accomplished by matching the size of the catchment area to the amount of rainfall available for harvest. Simple planning techniques allow distribution of water from the catchment area to the storage structure and the target.

Basic storage structures use the most expensive component of the system. Storage structures in rainwater harvesting systems may include tanks, cisterns, ponds, basins, or a variety of other options. The storage volume can be equal

Figure 1. Rainwater harvesting for livestock production involves the collection of rainfall from roof-top or land-based catchment systems for storage and distribution as needed. Figure by Dennis Stanger.

Figure 2. A basic design consists of a catchment area, distribution, storage, and target. Figure by Dennis Stanger.

Cooperative Extension Service | Agriculture and Natural Resources | Family and Consumer Sciences | 4-H Youth Development | Community and Economic Development



Many urban homeowners are not sure what to do about the stream in their backyard. Who owns it? How can I take care of it? What plants are good for my streambanks? These common questions lead to some confusing answers. This website is designed to help homeowners to backyard streams appreciate this resource, protect personal property, and improve water quality and habitat.



Interested in becoming a Certified Backyard Stream Steward? This online course is comprised of 12 modules designed to help homeowners understand how to protect and manage their backyard streams. Learn how fundamental stream processes are related to channel shape, how stormwater impacts stream ecosystems, why stream beds and banks erode, what methods can protect and restore stream ecosystems, what permits are required to restore streams, how land use influences streams, and how to begin a watershed assessment.

Interested? Register to Become a Certified Backyard Stream Steward!

Interested in learning more but not ready for the online course? Use the links below to access relevant publications and webinars.

Have questions or comments about backyard streams? Please reach out to Amanda Gumbert, Ph.D. (amanda.gumbert@uky.edu) and Carmen Agouridis, Ph.D., P.E., M.P.P. (carmen.agouridis@uky.edu).



ID-242



Central Kentucky Backyard Stream Guide

Amanda Gumbert, Agricultural Programs, Carmen Agouridis, Biosystems and Agricultural Engineering, and Chris Sass, Landscape Architecture



Cooperative Extension Service | Agriculture and Natural Resources | Family and Consumer Sciences | 4-H Youth Development | Community and Economic Development

PUBLICATIONS
ONLINE COURSE
WORKSHOPS

WWW.UKY.EDU/BAE/BACKYARDSTREAMS



- Account
- Dashboard
- Courses
- Calendar
- Inbox
- Commons
- Help

- Home**
- Announcements
- Modules
- Syllabus
- Grades
- Assignments
- Discussions
- Quizzes
- Outcomes
- People
- Pages
- Files
- Conferences
- Collaborations
- Settings

Backyard Streams Program

Edit

Many urban homeowners are not sure what to do about the stream in their backyard. Who owns it? How can I take care of it? What plants are good for my streambanks? These common questions can lead to some confusing answers. This course is designed to help homeowners with backyard streams appreciate this resource, protect personal property, and improve water quality and habitat.



- Import from Commons
- Choose Home Page
- View Course Stream
- Course Setup Checklist
- New Announcement
- Student View
- View Course Analytics

Coming Up [View Calendar](#)
Nothing for the next week

Welcome to the Backyard Streams Program!

Welcome to the University of Kentucky Cooperative Extension Service's Backyard Streams program. This program is comprised of 12 online modules that are designed to help homeowners understand how to protect and manage their backyard streams. After successfully completing each module, you will become a Certified Backyard Stream Steward.

To learn more about our Backyard Stream program, visit www.uky.edu/bae/backyardstreams .

UNIVERSITY OF KENTUCKY

KYH2O

A podcast about all things water in Kentucky.

Hosted by: Drs. Carmen Agouridis and Amanda Gumbert

Produced by: Brian Volland

www.uky.edu/bae/kyh2o

WATER PODCAST

<https://kyh2o.podbean.com/>

HOW TO WORK WITH EXTENSION

- Contact county agents early in the process
- Maintain open communication with agents
- Ask how you can collaborate
 - Can you integrate your project into an existing program?
 - Master Gardeners
 - Master Cattlemen
 - KY Woodland Owners Short Course
 - Can you offer a 4-H class?
 - Can your project help reach a new audience?
- Reach out to state specialists
 - But always make a local contact



LEARN MORE ON THE WEB

- Publications
 - Search <http://www2.ca.uky.edu/agcomm/pubs.asp>
- Videos
 - UK Watershed Protection and Restoration (YouTube channel)
 - Ag Water Quality Act producer videos
 - Stream restoration videos
- Podcast
 - <https://kyh2o.podbean.com/>

CONTACT INFO



University of Kentucky
College of Agriculture,
Food and Environment
Cooperative Extension Service

Find your local Cooperative
Extension Service Office:

<http://extension.ca.uky.edu/county>



Amanda Gumbert
(amanda.gumbert@uky.edu)

UK personal page:

<https://anr.ca.uky.edu/person/amanda-gumbert-phd>