

Rainwater Harvesting Education in Texas

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The population of the world is increasing rapidly. The demand for water for agriculture, landscapes and in-home use continues to rise. In much of the world and in the United States, the water resource is being mined instead of managed. The aquifers, streams and lakes are not keeping up with demand. Governments are now realizing importance of water for survival, growth and economically for their region. They realize that water conservation and alternative sources of water are going to have to be a part of future water budgets.

The technical improvements, materials available, the safety of rainwater for in-home and value of rainwater for outside use is advancing. Dispersing this information to clientele is often slow, possibly biased or influenced by those marketing their specific product. Installers do not have time to share their expertise with the general public and examples are not common enough for homeowners to feel comfortable enough to install a rainwater catchment system themselves. Education is the key to getting this technology adopted by the masses. The availability of good information on the internet and increasing number of experts in the field is helping the spread of this information, inspires its usage. Also many would like to install a basic system themselves for non-potable use. However, this information may be hard to understand, confusing or contradictory at times and there is a limited number of experts over the nation to rely on.

Cooperative Extension has been the outreach educational arm of the land grant university system for 100 years. There is a land grant university in each state in the United States. In Texas, Texas A&M University is that land grant university. The mission of Texas Cooperative Extension is *“to provide quality, relevant outreach and continuing education programs and services to the people of Texas.”* Their efforts have expanded over time to include volunteers to help disseminate that information to both youth and adults. This use of volunteers has expanded greatly over the United States in an effort to improve the lives of all citizens.

Texas Master Gardener <http://aggie-horticulture.tamu.edu/mastergd/index.htm> and Texas Master Naturalist <http://masternaturalist.tamu.edu/> volunteer organizations have been formed to help extension agents reach larger numbers of people. These “master” programs provide the volunteers with 40 to 60 hours of specialized training in horticulture or natural resources. In return they are required to give back time assisting the agent in setting up demonstrations, corresponding and teaching adults and youth and providing assistance to help the agents reach out to more people.

In the last few years specialized training programs have been added on top of the basic training to assist volunteers with interest in a specific area to gain additional training. These “specialists” in turn teach other volunteers and the citizens in their region on this specific subject. These have included plant propagation, earth kind landscaping and tree disease diagnosis.

In an effort to train Master Gardeners and Master Naturalists the basics of water conservation and rainwater harvesting, a specialized program in rainwater harvesting was started in 2006. The

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Master Gardener program focuses on basic rainwater capture and using it in the landscape and garden. The Master Naturalist program also includes watershed education and wildlife watering along with the basic education and landscape water usage.

The first program was conducted in Menard, Texas in June 2007. The schedule for the Master Gardener Program included:

Thursday, June 22, 2006

12:30 – 1:00 Registration and Distribution of Handouts and Supplies

1:00 Introduction

1:15 Rainwater Harvesting Basics

- Rainfall simulator
- Rainwater basic, collection systems, uses, nuts and bolts
- Water conservation in the home
- Teacher youth about rainwater harvesting

3:15

- Build a rain barrel from a trash can
- Materials for gutters, downspouts, filters, tanks, distribution
- Rainwater for wildlife and birds
- Rain garden basics

6:30 Tour Rainwater installations

- 10,000 gallons at Livestock Show Barn for Landscape
- 2 - 1,000 gallons at School for wildlife and drip irrigation
- 1,500 gallons for Greenhouse and Water Feature
- 1,500 gallons for Raised Bed Garden
- 16,500 gallons complete in-home system
- 1,500 gallons for Greenhouse
- 300 and 50 gallon containers for Wildlife and Bird Bath
- 20 gallon rain barrel for pets/wildlife/birds

Friday, June 23, 2006

8:00 Hands-on Installation of Collection System for Landscape/Wildlife/Bird Bath

10:30 Landscaping and Water Gardens With Rainwater In Mind

1:00 Water Quality and Water Testing

2:15 Developing and Using a Power Point to Teach Others

2:45 Course Wrap-Up

The course was first limited to 25 people and finally was closed at 50 with over 100 more desiring to attend the class. Observations made from this first course indicated that these volunteers wanted as much hands-on activities as possible. The class assisted in installing a 2,500 gallon galvanized tank which would collect water from a new library. Drip irrigation was also installed. Also at the library a rain garden was constructed to capture water from a porch of the building. Runoff went into a shallow, flat bottom pond that would catch a two inch rainfall event and have it infiltrated into the soil within 24 hours. Rainfall over that amount would overflow into an irrigation ditch. Another section of the library captured water using a “storm chamber.” This hollow chamber stores and gradually releases water into the surrounding landscape area and into the soil.

Participants received a CD of all presentations given, a rain barrel made from a plastic trash can and the first addition of the curriculum which included text broken into chapters and several

publications and brochures. The trained volunteers were then instructed on how to provide volunteers service in their local area and how to report those hours and contacts. In April 2007, those completing the required volunteer service will receive certificates, badges and pins indicating them as a Master Gardener “Rainwater Specialist”.

A second class was conducted in far South Texas in November 2006. A second version of the curriculum was developed to reflect more directly to the presentations and activities conducted. The third edition of the curriculum is being developed and the third class will be in Ft. Worth, Texas in February 2007.

The **Texas Master Naturalist program** stretched over 3 days and was advanced training for members during their annual conference. There are 30 chapters of Master Naturalists in Texas and the program is a partnership between Texas Parks and Wildlife Service and Texas Cooperative Extension. The volunteer program is geared more towards natural resource stewardship and the basic course work focuses on soil, water, geology, plants, animals, birds, reptiles etc. Volunteers assist in parks and botanical centers, in training youth, in setting up educational booths and demonstration sites, working with small acreage landowners and in teaching others about good natural resource stewardship.

The “Rain Steward’s” agenda included:

Friday October 20, 2006

- 2:00 Go over material and plans
- 2:15 “Where Does The Rainfall Go” - watershed management – using rainfall simulator – importance of land stewardship and water management
- 2:40 Capturing Water on the Land - land health, vegetation ID, indicators of erosion and how to fix them
- 3:40 Each participant constructs concrete wildlife water guzzler to take home
- 4:15 Storm Water Management - Land development and impact on streams and river: Tools to reduce storm water (construction damage, water quality impact, filter strips, gabions, wetlands, rain gardens, spreader dams, ponds, etc.)

Saturday

- 8:30 Basics of a rainwater capture system
- 9:05 Land health evaluation exercise and look at passive methods to capture water and reduce erosion and storm water (Concurrent sessions)
- 10:25 Capturing Water in the Landscape - Wildscaping and landscaping with waterconservation and wildlife in mind - Landscape design and plant selection to complement your ecosystem
- 11:20 Construct small paired watershed plot (2' x 5') , gabion, building filter strips, seeding, plant ID, grazing/mowing height, plant inventory/survey – in 4 concurrent sessions
- 1:00 Youth Education on watershed/wildlife water/Land Stewardship activities
- 1:45 Rainwater capture for wildlife - wildlife water requirements and systems
- 2:20 Build a water guzzler - roof, collection tank and watering device - Staff

Sunday

- 10:15 Construct rain barrel to take home
- 11:00 Evaluations, discuss volunteering, wrap-up
- 11:40 adjourn

The Master Naturalist class was limited to 25 people and the class filled up quickly. Participants built and took home rain barrels, a concrete wildlife waterer, CD, and the first edition of their "Rainwater Steward" binder. The class helped install a portable wildlife guzzler, 1500 gallon collection tank for a wildlife pond and drip irrigation and constructed paired watershed plots designed to illustrate the value of vegetation on the soil. These volunteers will be recognized with badges and certificates recognizing them as "Rainwater Stewards" in October 2007 if they complete their volunteer service

There are **four Master Gardener "Rainwater Specialist" and one Master Naturalist "Rainwater Steward" program planned for 2007**. Three will be in urban locations and the fourth back in Menard, Texas. Cities include Fort Worth, Waco and Houston. Registration fee will be \$200 for the course.

At the time of this writing, volunteer service has included: presentations to their chapter, garden clubs, schools, civic organizations and other groups. Collection systems have been set up at a number of government buildings, botanical gardens and other locations. Many have set up displays that have been used at local, regional and state events. Also many have constructed collection systems at their homes and shared their experiences with others. They have added rainwater capture to their local Master Gardener or Master Naturalist websites and in their supply of handouts. Pictures of the classes can be seen at:

<http://rainwaterharvesting.tamu.edu/images.html>