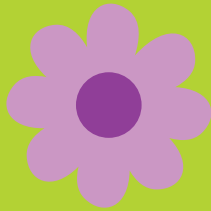
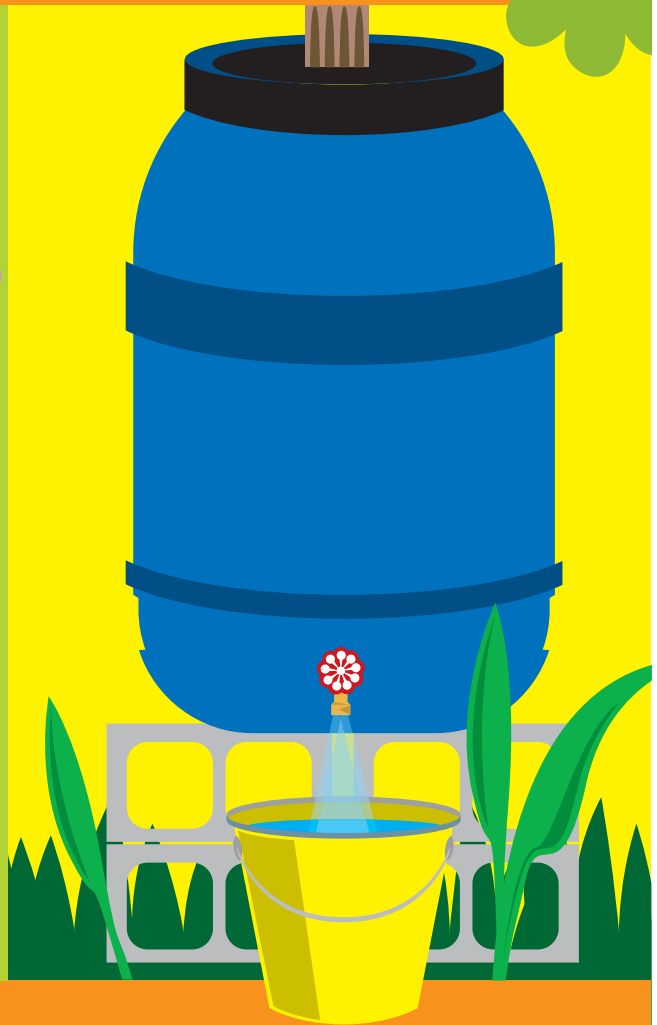


REDUCE STORMWATER RUNOFF



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LANDSCAPING PRINCIPLES FOR FLORIDA-FRIENDLY YARDS

<http://www.epa.gov/watertrain/>



REDUCE STORMWATER RUNOFF

Since the formation of the EPA and the passage of the Clean Water Act, great strides have been made toward maintaining and restoring water quality throughout the United States. This has been accomplished through regulating **point sources** of pollution, such as smokestacks and sewage discharge. But a more diffuse source of pollution — **nonpoint source (NPS) pollution** — threatens Florida's ecosystems.

Many of Florida's water resources are especially susceptible to pollution because of our unique geology and climate. Floridians obtain most of their drinking water from ground water supplies. Ground water often lies near the surface, covered by porous limestone and sandy soils, both of which allow water to infiltrate rapidly. Dissolved pollutants reach ground water through a process called leaching. These impurities affect the quality of our drinking water. Heavy rainfall, typical during Florida's rainy season, is a major cause of leaching and **stormwater runoff**. Surface waters in Florida such as lakes, streams, rivers and estuaries are very sensitive to even small amounts of pollution.

FYN Glossary Box



Point source pollution: water pollution that results from water discharges into receiving waters from easily identifiable points; common point sources of pollution are discharges from factories and municipal sewage treatment plants

Nonpoint source (NPS) pollution: NPS pollution cannot be pinpointed to a single source. Over time, pollutants from our everyday activities accumulate on the land. Examples of NPS pollutants include gasoline, fertilizer, pesticides and even soil. NPS pollution is a problem when rainfall or heavy irrigation carries sediments and dissolved chemicals to waterways in stormwater runoff and by leaching or percolating through soil

Stormwater runoff: water that runs off impervious or water-saturated surfaces, transporting sediments and dissolved chemicals into nearby waters



A healthy, properly maintained lawn absorbs stormwater runoff, protecting Florida's natural waters. If stormwater runoff is not absorbed and contains unused nitrogen and phosphorus from fertilizers, when these chemicals enter natural waterways, they can fuel abundant algal blooms that smother natural vegetation, deplete oxygen and possibly kill fish. These nutrients, if applied improperly, can cause invasive weeds to flourish, changing Florida's natural plant communities. More alarming, potentially harmful substances, such as common household pesticides and fertilizers, are leaching into our water supply. These materials damage aquatic life and harm people, too. These substances that are washed from and through soil in stormwater runoff form NPS pollution.

Following FYN landscaping guidelines will reduce nonpoint sources of pollution. A properly designed and managed landscape can help slow down and filter stormwater runoff.

Making Every Raindrop Count

One of the basic concepts of a Florida-Friendly Yard is that rain that falls in your yard should soak into your yard. After all, rainfall is an excellent water source for your landscape, and reducing runoff protects waterways. Retaining rainfall long enough for it to percolate through soil is challenging in neighborhoods built on compacted fill soils. Consider these practical tips for reducing the amount of rainfall that runs off your yard.

- n Downspouts. If your roof has rain gutters, aim the downspouts at a porous surface so water can soak into soil. Be sure water doesn't pool next to buildings.

Helpful hint: If you decide to landscape the area where downspouts drain, choose plants adapted to wet/dry extremes.

- n Earth Shaping. Incorporate attractive, functional earth shaping into your landscape. Swales (small dips in the ground) and berms (raised earthen areas) can help divert runoff that would otherwise rush from your yard. A densely growing turfgrass or groundcover



purchased istock photo image

Downspout directed into the yard.

<http://www.dep.state.fl.us/water/nonpoint/index.htm>



proves especially useful to capture rainwater, filter nutrients, recharge ground water and reduce soil erosion.

In a waterfront yard with a seawall, use a berm and swale combination to reduce stormwater runoff. Add a maintenance-free zone of native wetland plants to a berm or swale to make your yard more waterfront-friendly.

Helpful hint: Minor alterations to the lay of the land won't require permits or engineers, but any major earthwork should have a professional touch and will require regulatory review. Also, check with your local Florida DEP office before making any changes to shorelines.

- n Rain Barrels and Cisterns. These ancient technologies are making a comeback as water shortages prompt homeowners to save and use rain that falls on their properties. Large plastic rain barrels are now available at some home and garden stores. FYN also offers rain barrel workshops in some counties where you can learn to build your own. The barrel has a hole in the top where a roof downspout can fit snugly. A valve near the bottom allows you to fill a watering can or connect a hose.

Barrels are great for hand watering, and they are not mosquito breeding grounds if the downspout fits tightly. If your barrel is open at the top, use *Bacillus thuringiensis* (Bt) products (often sold in a donut form) to kill mosquito larvae in an environmentally safe way. If you happen to have algae take root in your rain barrel, treat the water with submersible bacterial packets sold in pond supply stores. A rain



Photo by: Chris Claus

Connect a rainbarrel to a swimming pool to replace water.



Photo by: Jim Phillips

Rain barrels reduce water pollution by reducing stormwater runoff.



barrel is not unsightly, but a four foot shrub easily shields it from view.

A cistern also catches rain, but requires more engineering and greater storage capacity than a rain barrel. Water from a roof is collected, filtered and stored in a container made of concrete, metal, wood, fiberglass or plastic. Water travels from the cistern upon demand by either gravity feed or pump action.

Helpful hint: Currently in Florida, water obtained from a cistern is only for non-potable uses, such as landscape watering. In other words: Do not drink it! Before building a cistern, check with local authorities to make sure that it is not against the law in your area.

- n Porous Surfaces. Whenever possible, use bricks, gravel, turf block, mulch, pervious concrete or other porous materials for walkways, driveways or patios. These materials allow rainwater to seep into the ground, helping to filter pollutants and reducing the amount of runoff from your yard. In some cases these porous materials may even cost less to install than typical paving materials.

Helpful hint: A cost comparison of some pervious surfaces can be found in Table 5 (see page 96).

Photo by: Mark Shelby



Cistern collects rain for nonpotable uses.

Photo by: UF/IFAS



Recycled railroad ties, bricks and gravel make a unique footpath capable of absorbing rainwater.

Photo by: UF/IFAS



The combination of turf growing between flagstone withstands foot traffic and absorbs rainwater.



Table 5. Comparison of Surfaces for a 15'x30' Driveway (450 sq. ft)

Material	Depth	Relative Cost*
Melaleuca Mulch	2"	\$
Municipal Waste Mulch	2"	\$
Recycled Yard Waste	2"	FREE
Compost	2"	\$
Washed Shell	2"	\$
Gravel	2"	\$\$
Recycled Tire mulch	1.5"	\$\$
Red Mulch	2"	\$
Lime rock	2"	\$
River Rock	2"	\$\$
Pine Bark	2"	\$
Concrete (plain)	4"	\$\$\$\$
Concrete (stamped)	4"	\$\$\$\$\$
Asphalt	1.5"	\$\$\$-\$\$\$\$

* \$=<\$200 total cost; \$\$=\$200-499; \$\$\$=\$500-999; \$\$\$\$=\$1000-2999; \$\$\$\$\$=>\$3000

