

A large, leafy tree stands in the center of a grassy yard. In the background, a brick house is partially visible. To the right, there is a white fence and some garden equipment. The scene is bright and sunny.

Promoting Environmental Stewardship to Reduce Nutrient Losses from Lawn and Gardens

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H_2O

O_2

CO_2

Primary nutrients

N

P

K

Secondary nutrients

Ca

Mg

S

Micro-nutrients

B

Zn

Fe

Cu

Mn

Mo

Cl

A photograph of a pond heavily infested with green algae, likely a cyanobacteria bloom. The water is a thick, opaque green. In the background, a white wooden fence runs across the frame, with a dense line of trees behind it. The foreground shows some dry, brownish vegetation. The text "Nutrient Enriched Pond" is overlaid in the center-left of the image.

Nutrient Enriched Pond

Potential Problems

1. Unaware of the environmental consequences of our daily life
2. Mis-manage yard wastes
3. Not using soil test before fertilization
4. Improper and/or over use of lawn and garden fertilizers



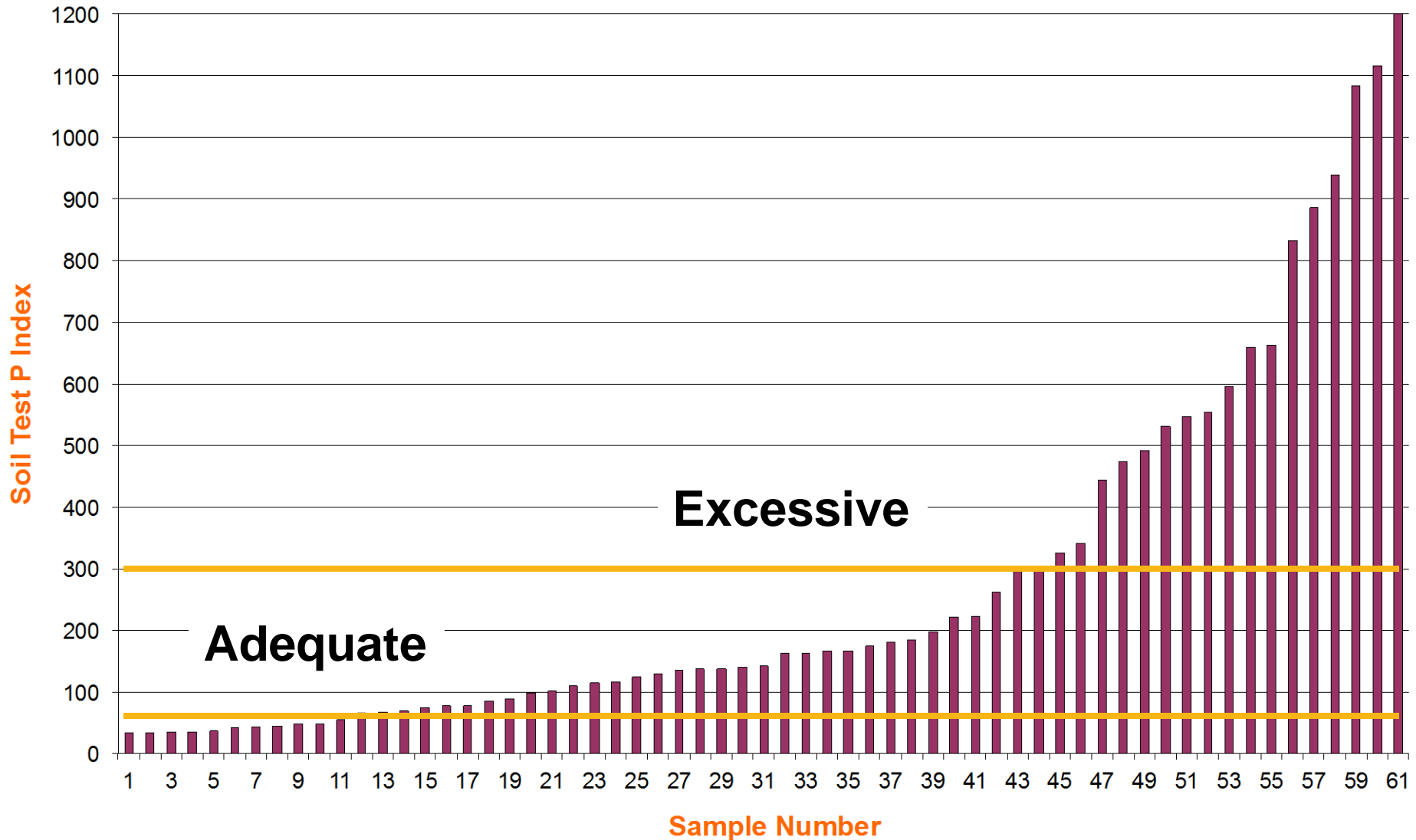
Using the Right Fertilizer

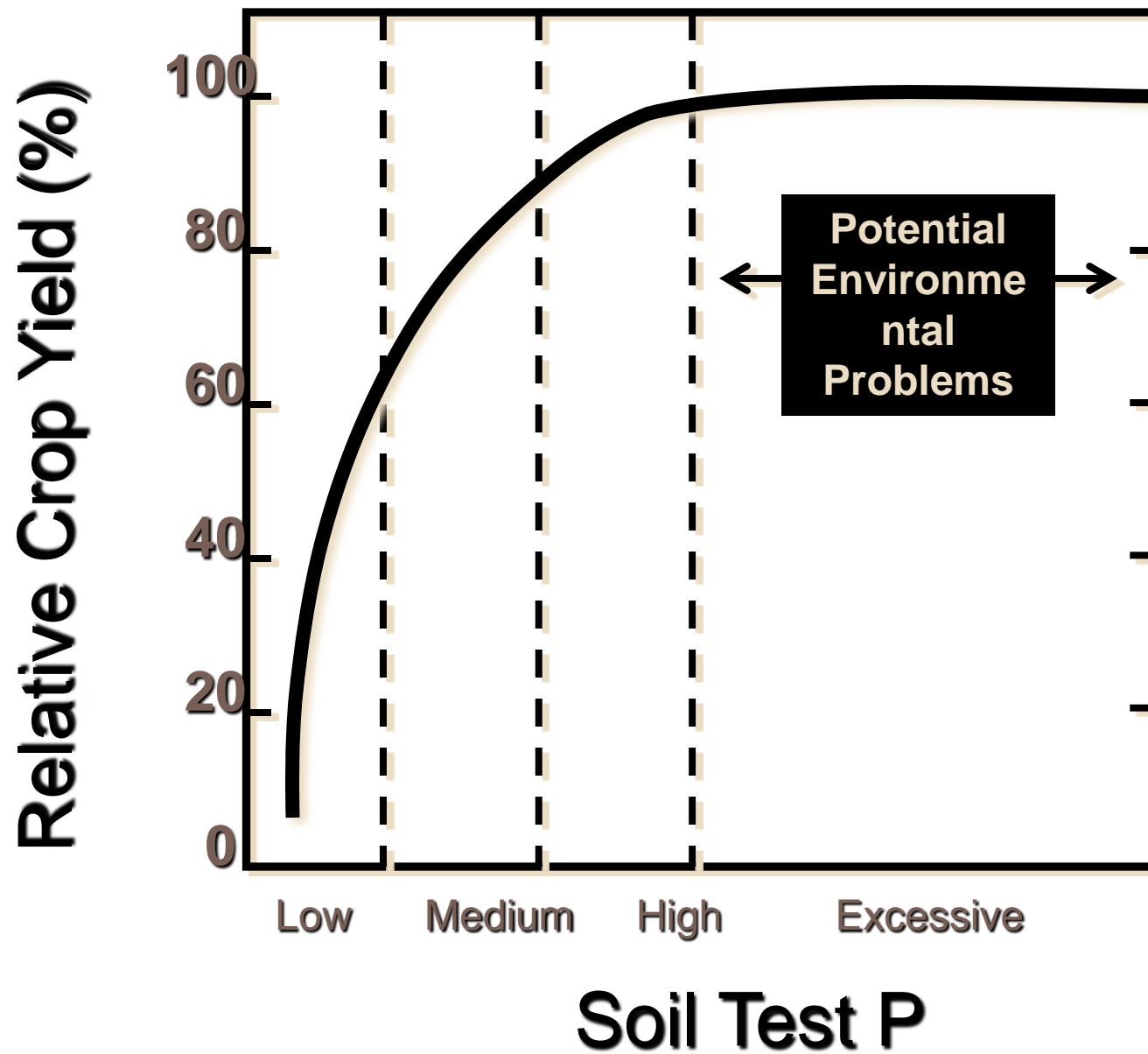
N – P₂O₅ – K₂O in %

- ❑ 10-20-10
- ❑ 19-19-19
- ❑ 3-17-17
- ❑ 29-3-4
- ❑ 31-0-4
- ❑ 46-0-0 (urea)
- ❑ 18-46-0
- ❑ 0-0-60



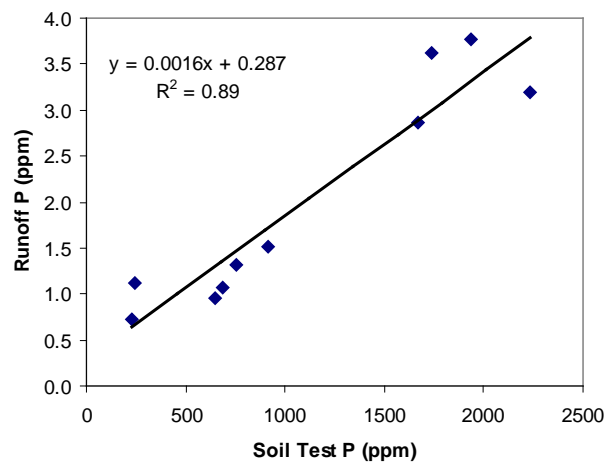
Soil Test P Distribution for One County







Runoff P vs. Soil Test P (Miami, OK)



**What can be done to
minimize nutrient losses
from non-agricultural
sites?**

Integrating Water Quality into Master Gardener Training is Effective



Understanding Nutrient Loss Process Using a Stream Model and Rainfall Simulator





**Reducing
Direct
Nutrient Loss**



Don't Bag It



Use a Mulching Lawn Mower

**Buffer Zone to trap nutrients
and grasses**





Recycling yard wastes



Soil Testing Gets It Right

**“We may have to
take this soil to a
fertility clinic”**



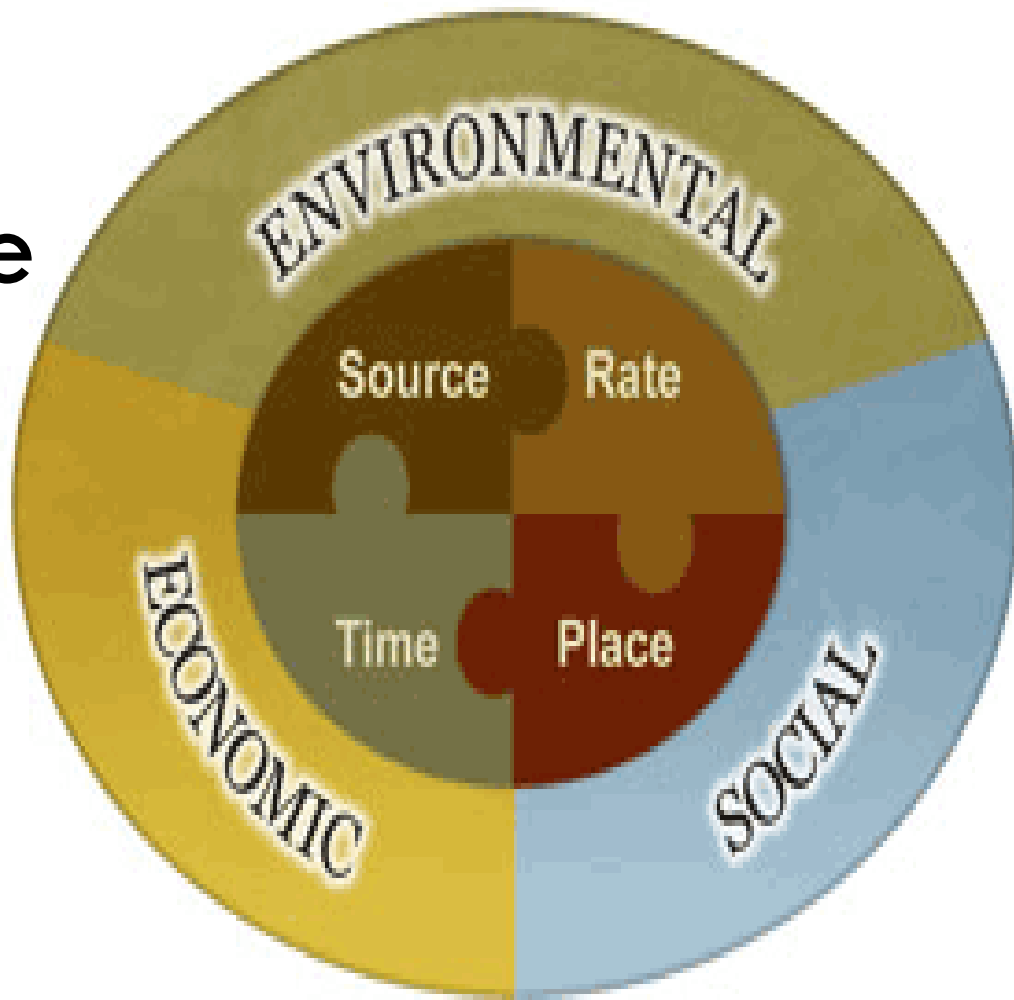
The 4 R's for Fertilizer Application

Right Source

Right Rate

Right Time

Right Place



Cover crops (green manure): retain nutrients, reduce erosion, fix N and add OM to soil

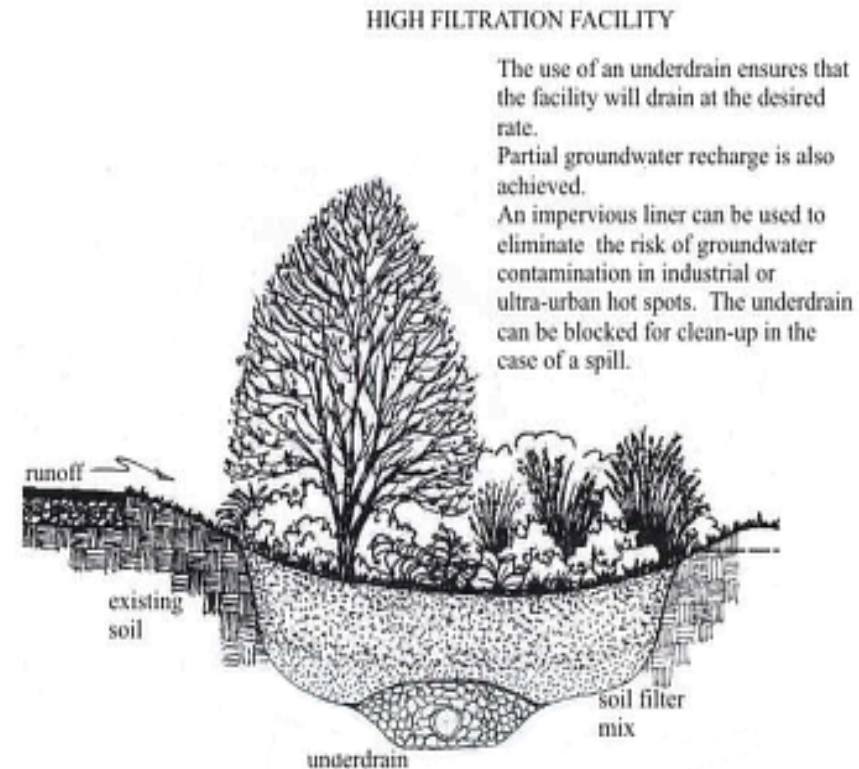


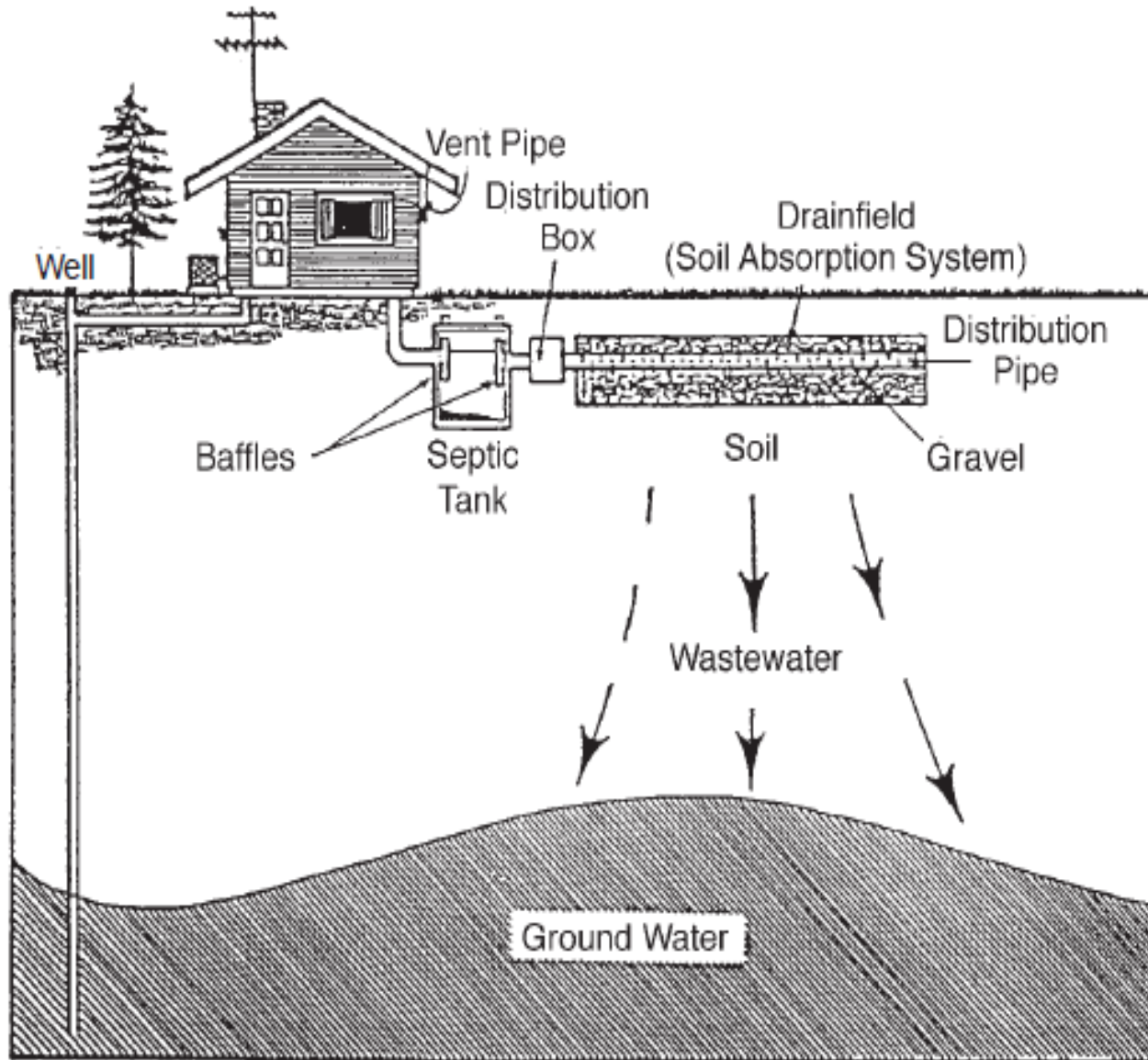
Rain Gardens



1. Filter storm water runoff before it enters waterways
2. Alleviate problems with flooding and drainage
3. Enhance the beauty of yards and communities
4. Provide habitat and food for wildlife like birds and butterflies

Bioretention removes pollutants through a variety of physical, biological, and chemical treatment processes.





**Reduce
nutrients
discharge
from on-
site
Waste
Water
Treatment
System**

Using soil profiling to determine SUITABILITY FOR ONSITE SEWAGE TREATMENT: hydraulic conductivity and soil depth



Summary

1. Improper use of lawn and garden fertilizers may contribute to pollution of surface and groundwater
2. Easy steps can be taken by homeowners and others to improve nutrient management in non-ag. landscapes
3. Education is the key to raise public awareness and understanding

