

November/December 2015



Environmental Update



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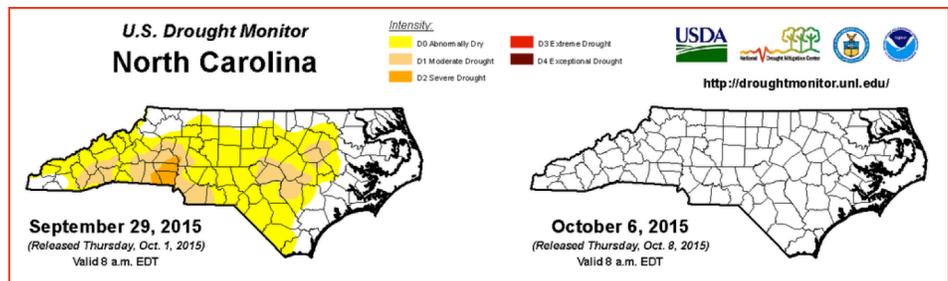
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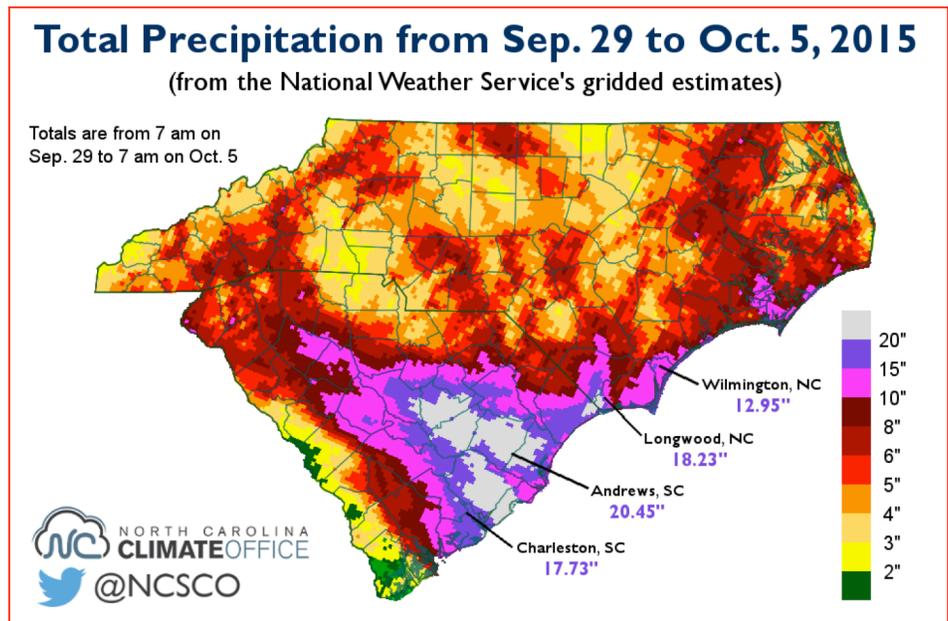
Wacky weather ...

Eastern NC had a toasty September, with temperatures ranging from the 2nd-9th warmest over the 121-year data record. The rainfall? Well, that was a bit of a wild ride. An unnamed storm took all of NC out of drought condition...and caused many areas to flood. According to the State Climate Office, the last time a 3-category improvement occurred in a single week happened in 1999, with Hurricane Floyd.



Source: NC State Climate Office

The map below shows just how much rain fell on the Carolinas between Sept. 29 and October 5, 2015.



Source: <http://climate.ncsu.edu/climateblog?id=156>



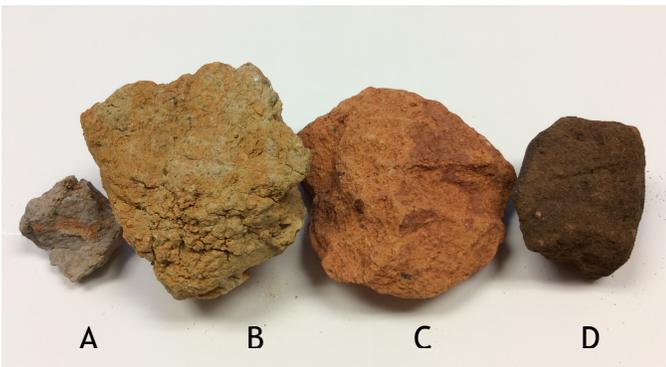
Yuck! Is it polluted? ...

“Yuck! Is it polluted?” is a frequent question when people see our ditches and waterways with fluffy orange growths, orange or red colors, or a surface sheen. Each of these conditions can occur through natural processes that depend on the presence of iron.



Natural sheen in ditch; Photo: D. Rashash, Oct. 2015

NC soils contain a lot of iron, which gives our soils varying shades of yellow, orange, and red. Examples of some of the varying soil colors are shown in the photo below.



Red & orange mean iron!, Photo: D. Rashash, Oct. 2015

In the photo, “A” has the least iron; “D” has the most. When oxygen is present in the soil, the iron is in the Fe^{+3} form. Fe^{+3} is not soluble and is firmly attached to its soil particle. When conditions are right - high water table, little oxygen, organic matter present as food, and active soil microbes - the iron is reduced to Fe^{+2} . This form of iron is

colorless and soluble; it is able to move with the surrounding water through the soil.

When the soluble Fe^{+2} reaches a ditch or waterway, bacteria in the water utilize it as an energy source. The microbial reaction combines the oxygen in the water with the Fe^{+2} to form iron oxide. Yep, rust! You can see this as staining on curbs, orange fluffy growths, orange or red water, or an oily sheen.

Color changes are not limited to small bodies of water. A local paddler took the photos below. The upper photo is from a section of Queens Creek that had an orange-tea color from iron oxide in the water. The lower photo is of Hawkins Creek, which was the more traditional deep transparent tea. It all depends on the iron moving in the soil, rainfall, and harmless bacterial reactions.



Queens Creek orange-tea, Photo: D. Toltzman, Sept. 2015



Hawkins Creek tea, Photo: D. Toltzman, Sept. 2015

Do the “stir test” ...

It is easy to determine if a sheen in the water is natural or from a gas or oil spill - do the “stir test”. Quite simply, take a stick and stir the sheen. If the sheen breaks apart into rough, irregular pieces, then it is natural. If it smoothly swirls back together, it is from a spill. The photo below shows a natural sheen in the water caused by the microbial decay of organic matter in soil.



Naturally caused sheen, Photo: D. Rashash, Oct. 2015

Two water-loving plants ...

You can always learn something new. This adage was reinforced during an August pond visit in Sampson County. There, two patches of obligate wetland plants were observed. One had yellow flowers and distinct wings along the length of the stem (*Ludwigia decurrens*, aka “wingstem water primrose”); the other had purple flowers (*Decodon verticillatus*, aka “water loosestrife” or “water willow”).

The *D. verticillatus* growth habit is similar to that of forsythia, with graceful arching branches and fuzzy blooms. The flowers of *D. verticillatus* just happen to be purple, rather than forsythia yellow. The NCSU website lists the plant as “infrequent” in occurrence. Although infrequent, it has a long history. In the 1700s, John Lawson identified it in North Carolina (<http://phytoneuron.net/2014Phytoneuron/94PhytoN-JohnLawson.pdf>).



Decodon verticillatus, Image source: http://www.ncwildflower.org/plant_galleries/details/decodon-verticillatus

Have you seen this plant? If yes, it would be good to get an idea of its current range here in southeastern NC. If you see it in the next year, please send a photo and brief location information to diana_rashash@ncsu.edu.

Congratulations Onslow County Master Gardeners! ...

This past May, Lisa Rayburn (Onslow Horticulture Agent), Diana Rashash (Area Specialized Agent - Water Quality & Waste Management), and the Onslow County Master Gardener volunteers went to the NC Natural Sciences Museum to see the *Dig It!* exhibit. It was a fitting trip - and exhibit - since the United Nations proclaimed 2015 as the International Year of Soil.

The Master Gardeners enjoyed seeing the state soil for each of our states, and noting the differences and similarities among them. In case you didn't know, Cecil is the state soil for North Carolina. It is a very intense red, which is caused by the presence of _____. Hint - the cause is discussed on the previous page!

The Master Gardener volunteers used the fieldtrip experience to create their own soil display for an educational exhibit at the Onslow County Fair. Their efforts netted them blue ribbons in two categories: education and soil conservation.

Way to go MGs!



Master Gardener soil display, Photo: T. Welch, Sept. 2015

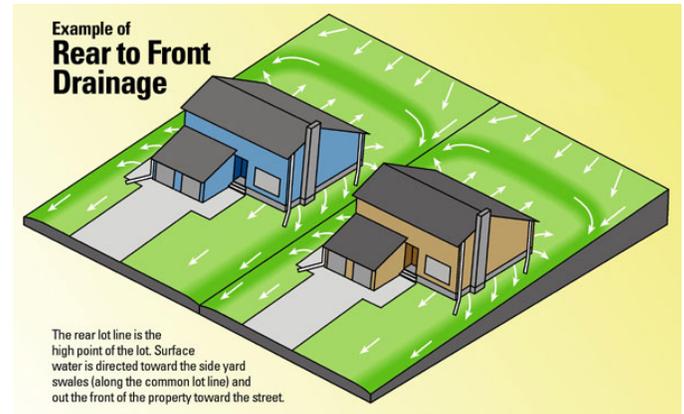
How did your yard survive the rains? ...

The big rain event did give folks an opportunity to see how their yard and drainage areas behaved. Wet conditions along drainage ways and property lines should be expected.

Problems come when the relatively lower areas along the back and sides are raised and made flatter. Then, water either moves more slowly or moves in the wrong direction. This is especially true when the lot is higher in the back and slopes toward the front. To keep water from going to the house, a swale (shallow depression) is installed to intercept the water and direct it around the home.

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If the swale is filled in, the water may no longer flow as desired. It is also important to keep water flowing freely through drainage easements. In NC, state statutes do not permit impeding the flow of water off of another person's property.



Source:
<http://www.winnipeg.ca/waterandwaste/drainageflooding/lotGrading/lotDrainage.stm>

Don't forget ...

Help save paper, postage, and your tax dollars! This newsletter and the annual reader survey are available online at:

<https://onslow.ces.ncsu.edu/environmental-update-newsletter/>

This is a new link to the site, so please update your bookmarks. Thank you to the folks who have completed the online survey for 2015! For those who have not yet done so, please do. The information is very important.