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To: North Bay Village Commission

RE: Scientific Support for Fertilizer Regulation

Does my area need a fertilizer ordinance? Yes!

Residential lawn fertilization is estimated to be the second largest source of household nitrogen in the US (Souto et al. 2019). Excess nutrients, such as nitrogen and phosphorous, that come in most fertilizers, can pollute waterways and cause environmental problems such as algae blooms. Algae blooms kill wildlife, are harmful to humans, smother seagrass, and turn our beautiful blue water green. Biscayne Bay is already starting to suffer from algae blooms and seagrass die-offs. Therefore, it's more critical now than ever to reduce land-based pollution. Reducing the use of residential fertilizer can improve our waterways and will help to keep Biscayne Bay blue!

In Florida, 85 municipalities and 32 counties have been passed fertilizer ordinances since 2007. Just over half of municipal ordinances include rainy season bans. Miami-Dade is one of the last regions without an ordinance.

Do fertilizer ordinances improve water quality?

While fertilizer application is only one of many nutrient inputs into waterways (others include septic tanks, sewage, pet waste, and more), fertilizer ordinances have been shown to be effective in reducing nutrient inputs. Several studies and municipalities have confirmed that land-based fertilizers are getting into the waterways (Tampa Bay Estuary Program 2008). Teasing out the factors that contribute to nutrients in the water is a complicated science, and much more work needs to be done. It can also take years of having an ordinance enacted to be able to see statistical trends.

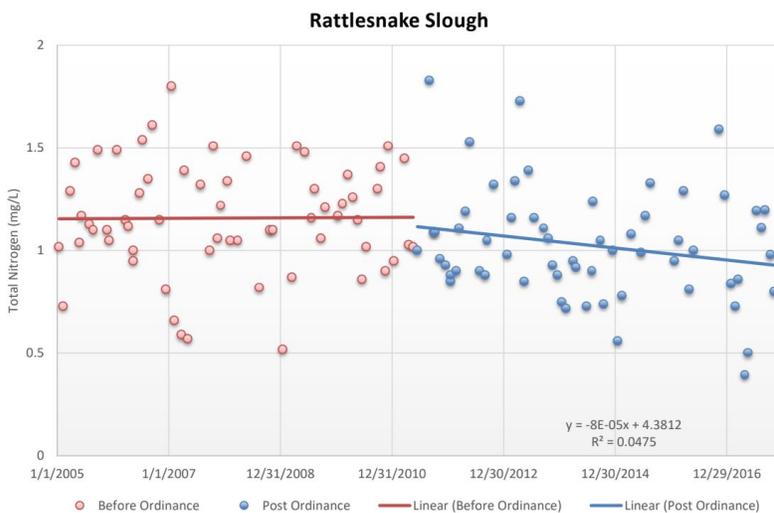
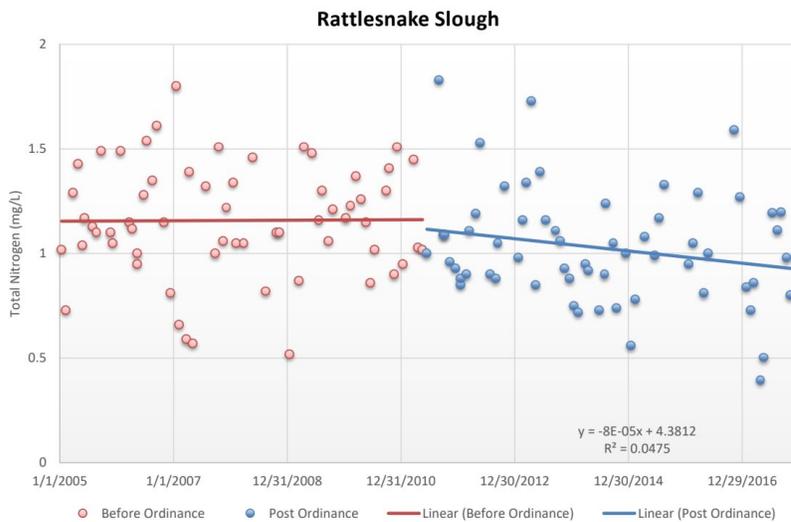
Here's what we know so far:

Pinellas County adopted the strictest fertilizer ordinance in the state in 2010, which included a summertime ban on sales of fertilizer. They have documented improved water quality and water clarity, which their County supervisor attributes, at least in part, to the strict ordinance and accompanying education program (Kelli Hammer Levy, Pinellas County, presentation for FSA 2017). Similarly, Manatee County documented significant water quality improvements after implementing a strict ordinance and a summer ban (but no sale ban) and presented the graphs below at a Commission meeting in March 2018 (see figures below). Lee County also undertook a study of nutrients and algae pre and post a strict fertilizer ordinance based on 2009-2011 conditions, showing a water quality improvement. These and other improvements have been credited almost entirely to the fertilizer ordinances (Beever 2016).

Fertilizer ordinances have worked in other places in the County, too. In the City of Ann Arbor, MI, a fertilizer ordinance was implemented and showed a 20% decrease in nutrient levels. (adapted from Souto et al. 2019, citing Lehman et al., 2009, 2011). Communities like Manatee County and HOA's have also reported cost savings from fertilizer use reduction and improved economic benefits from their waterways as a result of the ordinances (Manatee County March 2018 presentation, e.g.).

Manatee County Fertilizer Ordinance

Surface Water Quality Pre & Post-Ordinance



Why is a rainy season ban an important part of a fertilizer ordinance?

Summer in Florida, and especially in Miami-Dade, is very rainy. Therefore, fertilizer applied during the summer months is highly likely to runoff into waterways. This means wasted money spent on fertilizer and too much fertilizer pollution in our water. Unlike other areas of Florida, we have no dormant growing

season in Miami-Dade. That means that grass grows all year, so we can avoid fertilizer in the summer when it rains the most, while still enjoying green and healthy lawns.

While some people have suggested that there is no evidence that summer bans work to improve water quality, they still acknowledge that fertilizer runoff is the highest in the summer months with the most rainfall (UF-IFAS Publication SL 283).

Many of the studies cited in this publication are performed by turfgrass industry specialists who are optimizing for lawn care, not for water quality impacts. Many of the studies that show little to no runoff after fertilization are in research settings with only a low amount of allowed fertilizer was applied (e.g. Erickson et al 2001). Also, none of these studies were done in Miami-Dade, which has unique rainfall and temperatures and soil compositions from the rest of the state. One article by Dr. Trenholm (2010), also an author of UF-IFAS Publication SL 283, states specifically, “These results are based on North Florida conditions and do not apply to South Florida.”

Should we try a weak fertilizer ordinance as a first step?

We don’t recommend that as a positive step. Weak fertilizer ordinances, for example, those that do not include rainy season bans, have been shown not improve water quality, educate the public, or change behavior effectively.

Souto et al. 2019 collected residential awareness, knowledge and behavior data as well as stormwater and pond water nitrogen concentrations and loads in three counties where varying urban fertilizer ordinances were in place. The study found that in the county with the strictest fertilizer control ordinance, residents were more aware of the ordinance and they were applying fertilizer less frequently. In the county with the least restrictive ordinance, residents were applying fertilizer more frequently and nitrogen loads were higher.

The practical fact is that weak fertilizer ordinances without summer bans are very difficult to enforce. Merely recommending that landscapers and homeowners do not apply immediately before a storm, or only after testing, are impractical. In Miami-Dade during the rainy season, we have almost daily, high-volume rainstorms. Engineer Dr. Harvey Harper said, “there is no way to predict if heavy rainfall will occur during the next two days; if there is no reasonable way to predict if a heavy rainfall event will occur, then a blackout period would be significantly more effective”.

Both Charlotte and Martin counties updated/strengthened their ordinances after the adoption of initial weaker ordinances. Only Naples has repealed a strict fertilizer ordinance to go back to an ordinance with no summer ban. However, they are now in the process of re-implementing their strict ban because they found a weaker ban almost impossible to enforce, and they found that the rainy season bans worked. The City of Naples found that their 2008 stringent fertilizer ordinance was a “contributing factor for the decrease of Total Nitrogen trend observed in Naples Bay” (Cardo 2015).

Will my community have brown lawns because of a fertilizer ordinance?

No. Communities around Florida have implemented fertilizer ordinances, including summer bans, since 2007. Some early ordinances even banned the sale of fertilizer entirely in the rainy season. None of these communities have reported issues with lawn aesthetics or increased use of fertilizer at other times of the year. None of these communities have repealed or weakened their laws since their enactment. Lawn care specialists have concurred that lawns remain perfectly healthy without summer fertilization (Environmental Protection Commission of Hillsborough County. 2010. Technical Support Document for Proposed Local Fertilizer Rule – Chapter 1-15.) The Florida Yards and Neighborhoods Handbook suggests that applying chelated iron or iron sulfate (without nitrogen or phosphorous) will keep a lawn green and healthy. Rather, many communities have gone back and strengthened their ordinances after implementing weaker versions (e.g. Hillsborough, Naples in progress). Some opponents of fertilizer bans have asserted that bans will yield unhealthy grasses that actually leach more nutrients during the rest of the year. However, they provide no evidence to support the idea that summertime bans will result in unhealthy grasses that have high leaching rates. This also has not been reported to be an issue by any of the 45 municipalities that have passed summertime bans, stretching back to 2007.

Citations

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