



Protecting Southwest Florida's unique natural environment and quality of life ... now and forever.

October 5, 2018

Sent via email

Danette Kinaszczuk and Rhonda Watkins  
Collier County Pollution Control  
2685 South Horseshoe Drive, Ste 103  
Naples, FL 34104

Re: Support of the Rainy Season Prohibition for Collier County

Ms. Kinaszczuk and Ms. Watkins:

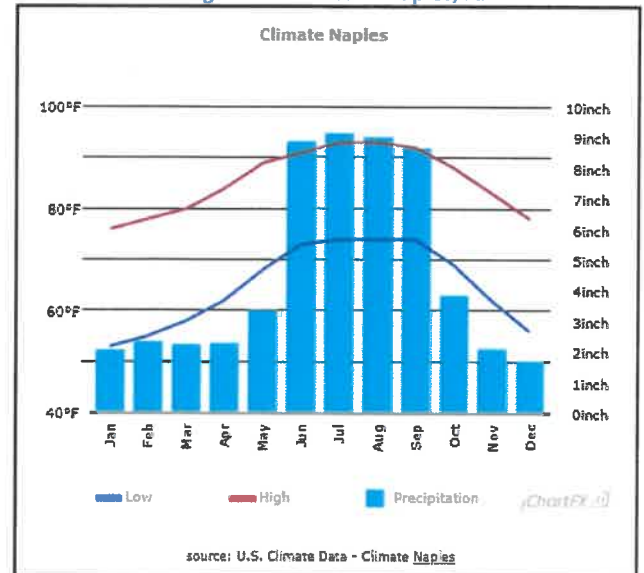
The Conservancy of Southwest Florida writes on behalf of over 6,000 supporting families regarding establishing a stricter fertilizer ordinance for Collier County. One of the major components of a strong ordinance is a calendar-based rainy season ban on the application of fertilizer to turf and/or landscape plants. Although we have several other suggestions for a strong fertilizer ordinance, this letter will focus solely on the summer-ban component.

**Leaching of nutrients from fertilizer application in rainy season**

The State Model Ordinance only prohibits fertilizing during major storm events, such as floods, hurricanes, tropical storms, or when rain fall is expected to be more than two inches.<sup>1</sup> However, there is evidence to support prohibiting fertilizer application during other times of the year—when rainy weather is likely and when day-to-day weather forecasts are difficult to predict.

A blackout period during the summer rainy season would address frequent rainstorms washing fertilizer into adjacent waterbodies during the typical rainy season. The rainy season in the Naples area is generally from June through September with 35.75 inches, or 64% of average annual rainfall falling

Figure 1: Climate in Naples, FL



<sup>1</sup> Department of Environmental Protection (DEP). January 2009. Florida-Friendly Landscape Guidance Models for Ordinances, Covenants, and Restrictions.



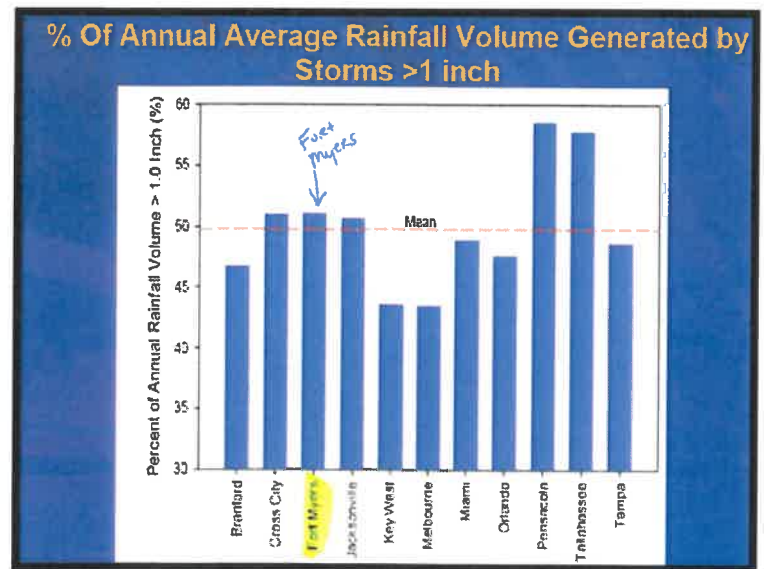
Conservancy of Southwest Florida has been awarded Charity Navigator's prestigious 4-Star top rating for good governance, sound fiscal management and commitment to accountability and transparency. Charity Navigator is America's largest and most respected independent evaluator of charities.

within this period (Figure 1).<sup>2</sup> DEP has stated that, of all places in Florida, the prohibition for rainy season application makes the most sense for southwest Florida, considering its fairly normal rain cycles.<sup>3</sup>

Soldat and Petrovic (2008) suggest nutrient losses are most likely when fertilizer is applied just before or during heavy rainfall.<sup>4</sup> The authors' data suggests that "runoff and leaching losses of phosphorus have been shown to be very high when runoff or drainage occurs shortly after a phosphorus fertilizer application, with up to 18% of the applied fertilizer being subject to loss".<sup>4</sup> This, along with several other studies<sup>5,6,7,8</sup>, demonstrates a correlation between nutrient leaching and excessive irrigation or rainfall, and the need to control fertilizer application during months with heavy rainfall. Wakida et al. (2004) suggest that Florida is particularly vulnerable to nitrate leaching due to its sandy soils, high water table elevation, and high precipitation rates during the summer months.<sup>9</sup>

Furthermore, limiting prohibitions to rainfall events greater than two inches, severely limits the ability to control runoff during the most common rain events. About half of southwest Florida's rain events contribute greater than an inch of rain to the landscape (Figure 2<sup>10</sup>), however only 3 to 5% of Florida's rain events exceed two inches<sup>11</sup>.

Figure 2: Annual Average Rainfall Volume by Florida Location



<sup>2</sup> U.S. Climate Data. Climate data for Naples, Longitude: -81.7158, Latitude: 26.1686; Average weather Naples, FL - 34104 - 1981-2010 Normals <https://www.usclimatedata.com/climate/naples/florida/united-states/usfl0338>. Accessed 1 Oct. 2018.

<sup>3</sup> Personal communication. October 13, 2009. Michael Thomas, DEP, phone.

<sup>4</sup> Soldat, D. and A. Petrovic 2008 The Fate and Transport of Phosphorus in Turfgrass Ecosystems. *Crop Science* 48:2051-2065.

<sup>5</sup> Bowman, D.C., C. T. Cherney, and T. W. Ruffy, Jr., 2002. Fate and transport of nitrogen applied to six warm-season turfgrasses. *Crop Science* 42:833-841.

<sup>6</sup> Morton, T. G. A. J. Gold, and W. M. Sullivan. 1988. Influence of overwatering and fertilization on nitrogen losses from home lawns. *J. Environmental. Quality*. 17:124-130.

<sup>7</sup> Cisar, J. L., G. H. Snyder, and P. Nkedi-Kizza. 1991. Maintaining quality turfgrass with minimal nitrogen leaching. Florida Cooperative Extension Service. Institute of Food and Agricultural Sciences. University of Florida.

<sup>8</sup> Erickson, J.E., D. M. Park, J. L. Cisar, G. H. Snyder, and A. L. Wright. 2010. Effects of sod type, irrigation, and fertilization on nitrate-nitrogen and orthophosphate-phosphorus leaching from newly established St. Augustine grass sod. *Crop Science* 50:1030-1036.

<sup>9</sup> Wakida, F. T. and Lerner, D. N. 2004. Non-agriculture sources of groundwater nitrate: a review and case study. *Water Research* 39: 3-16.

<sup>10</sup> Thomas. Department of Environmental Protection (DEP). Nonpoint Source Management Section Presents Florida's Urban BMPs: Homeowners, Landscaping, Golf, and the Future of Stormwater. Powerpoint.

<sup>11</sup> Department of Environmental Protection (DEP). 2008. Florida Friendly Best Management Practices for Protection of Water Resources by the Green Industries. pg 30.

Application of (urea) fertilizer followed by rainfall of an inch or greater within 8-12 hours may cause nitrogen to “move below the turfgrass root zone because of its non-ionic nature and be lost through leaching.”<sup>12</sup> Many sources, including studies from IFAS, can be utilized to support the prohibition for rainy season application. “Fertilization with N in the summer is not always desirable since this often encourages disease and insect problems.”<sup>13</sup>

Dr. Harvey Harper (2014) agrees that large rain events are difficult to predict, so including a blackout period helps mitigate for potential nutrient leaching.<sup>14</sup> One of Dr. Harper’s many studies details that 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.<sup>15</sup>

***Keeping the grass green with summer ban in place***

A major argument against the rainy season ban is the fear that without fertilizer in the summer, turf grass health will suffer. However, there is very little evidence to suggest this is a substantiated fear. Lawn care specialists have observed that turf grasses not fertilized during the summer months remain perfectly healthy, albeit sometimes not so green, but do not suffer ill effects.<sup>16</sup> Even so, there are other ways to maintain healthy lawns without the need for additional fertilizer application.

A black-out period is unlikely to effect the ability to fertilize during the active growing season, since that is often year-round in south Florida.<sup>17</sup> The science that has been cited by county staff seems to actually encourage fertilization in the summer rainy season. This is more applicable to other parts of the United States where there is a notable cold-weather season.<sup>18</sup> As IFAS has acknowledged, in south Florida the growing season may be all year round.<sup>17</sup>

Grass clippings outside of the buffer zone can be utilized to provide nutrients to turf during the rainy season application prohibition. Grass clippings are a significant source of nitrogen that will improve soil

<sup>12</sup> Department of Environmental Protection (DEP). 2008. Florida Friendly Best Management Practices for Protection of Water Resources by the Green Industries. pg. 26.

<sup>13</sup> Elliott, Harmon, and IFAS, 2007. General Recommendations for Fertilization of Turfgrasses on Florida Soils. Soil and Water Science Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Elliott and Harmon, 2014. Turfgrass Disease Management. SSPLP14.

<sup>14</sup> Harper, H. H. 2014. Florida Fertilizer Ordinances – The Good, the Bad, and the Ugly. FloridaStormwater Association 2014 Annual Conference. Powerpoint.

<sup>15</sup> Harper, H. H. and Baker. 2007. Evaluation of Current Stormwater Design Criteria within the State of Florida– Prepared for Florida Department of Environmental Protection - Environmental Research & Design, Inc.

<sup>16</sup> Environmental Protection Commission of Hillsborough County. 2010. Technical Support Document for Proposed Local Fertilizer Rule – Chapter 1-15.

<sup>17</sup> Trenholm, et al., 2014. St. Augustine for Florida Lawns. IFAS.; Trenholm, et al., 2017. St. Augustinegrass for Florida Lawns. IFAS.

<sup>18</sup> Hochman, G., T. Nell, J. Sartain, J. B. Unruh, C. Martinez, L. Trenholm, and J. Cisar. 2011. Urban Water Quality and Fertilizer Ordinances: Avoiding Unintended Consequences: A Review of the Scientific Literature. Department of Soil and Water Sciences, UF/IFAS Extension.

fertility over time and reduce the need for nitrogen fertilization by up to 50% without a decrease in turf grass quality.<sup>19</sup> Publications throughout the country provide evidence that up to one to two pounds of nitrogen per 1000 square feet can be provided back to lawns from decomposed grass clippings.<sup>20</sup> As you are aware, more grass clippings are produced in our rainy season than any other time of the year.

Irrigation of turf using reclaimed water can greatly reduce the need for fertilizer. Use of reclaimed water on a Collier County administrative grounds test plot showed that some sources of reclaimed water contain enough nitrogen not only to meet the landscape needs but also at rates that are higher than the state water quality standard indicating pollution-level concentrations.<sup>21</sup>

According to the Florida Yards and Neighborhoods Handbook, applying chelated iron or iron sulfate instead of nitrogen fertilizer is an easy way to green the lawn without increasing growth in the summer.<sup>22</sup>

Additionally, a slow-release fertilizer could be applied prior to the rainy season to provide steady nutritional aid during the black-out period. While many Florida-based companies have been making “summer-safe” blends for many years, in 2015, the Scotts company announced the availability of “Smarter Solutions for Cleaner Waterways Initiative” product that does not contain nitrogen or phosphorous for use on lawns in the summer rainy season, meaning that these safer products are readily available.<sup>23</sup>

### ***Case studies and state-wide examples of rainy season ban***

There are several case studies that help indicate the stricter fertilizer ordinances are effective. Lee County adopted a fertilizer ordinance in 2008 and it contains a four month wet season fertilizer ban. Researchers for the Lee County Hyacinth Control District conducted a study of nine stormwater ponds using data from “pre” (2004-2008) fertilizer ordinance and “post” (2009-2011) conditions. The results showed a statistically significant difference in the reduction of levels between pre- and post-ordinance in total phosphorus and chlorophyll a.<sup>24</sup> This suggests that the fertilizer ordinance may have had a positive effect on the reduction of nutrient concentrations in some storm water ponds, which may have contributed to the reduction of the relative abundance of planktonic algae.<sup>24</sup>

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<sup>19</sup> IFAS. 2006. Florida Yards and Neighborhoods Program Handbook.

<sup>20</sup> Rosen, C.J., Bierman, P.M., Eliason, R.D. 2008. Soil test interpretations and fertilizer management for lawns, turf, gardens, and landscape plants. University of Minnesota Extension Service Bulletin Revision of BU-01731-F.

<sup>21</sup> Cisar, J.L. 2011. Collier County Fertilizer Project. Final Report.

<sup>22</sup> The Florida Yards & Neighborhoods Handbook. 2009. Preventing Pollution. pg. 24.

<https://www.volusia.org/core/fileparse.php/4551/urlt/FO6.pdf>. Accessed on 1 Oct. 2018.

<sup>23</sup> Scotts Miracle-Grow. July 15, 2015. Scotts Launches New Florida-Friendly Lawn Supplement in Key Test Markets. Scotts Smarter Solutions for Cleaner Waterways Initiative Brings Lawn Response Nitrogen and Phosphorous Free Product to Florida.

<sup>24</sup> Lasso de la Vega, E. and J. Ryan. 2016. Analysis of nutrients and chlorophyll relative to the 2008 fertilizer ordinance in Lee County, Florida. Florida Scientist 79:125-131.

Another case study that demonstrates the effectiveness of a summer-ban comes from Charlotte Harbor National Estuary Program (CHNEP). Most jurisdictions within the CHNEP area had adopted an urban fertilizer ordinance with a rainy-season ban component by the end of 2008. The effect of the Southwest Florida urban fertilizer ordinances, adopted by municipalities between Pinellas and Lee Counties, was evaluated using the Charlotte Harbor Estuaries Volunteer Water Quality Monitoring Network. The data collection period for pre-ordinance assessment was April 2000 through March 2007; the data collection period for post-ordinance assessment was from April 2013 through March 2015.<sup>25</sup> Total phosphorus, total nitrogen and total Kjeldahl nitrogen all had a statistically significant decrease between pre- and post-adoption of all ordinances. Dr. Lisa Beever credits the reductions almost completely to the ordinances; no major expansion of central sewer systems occurred in the study area between the two time periods, and any storm-water projects to reduce runoff to the water bodies were too few and too dispersed to make much of a difference.<sup>26</sup>

Additionally, correspondence from Sarasota County officials documents the effectiveness of the fertilizer ordinance in their county. In a letter to Pinellas County Commissioners in 2009, Jon Thaxton of Sarasota County said that “after two years with the ordinance in place I am convinced that it is working well without any of the problems predicted by opponents of the ordinance”.<sup>27</sup> He goes on to state that even though there were predictions of a decline of turf health due to the rainy season ban, it appears by the two year mark there were no such occurrences. On contrary, a local landscape maintenance company, which has 10,000 customers in the region, claims to have followed every aspect of the stricter fertilizer ordinance and had “seen no adverse effects on their landscapes”.<sup>27</sup>

A study done in the Tampa Bay watershed (including Pinellas and Hillsborough County) looked at the linkage between human behavior and subsequent environmental response by investigating the effectiveness of fertilizer educational and ordinance interventions. The authors found that “water quality differences were apparent among communities where stricter fertilizer ordinances were enacted”.<sup>28</sup> The authors also identify the need for long-term studies (minimum 5-7 years, but preferably 10) to evaluate the effectiveness of the stricter ordinance and to definitely link the cause and effect relationship of the ordinance on water quality improvements.”<sup>28</sup>

Furthermore, it is difficult to parse out water quality improvements specific to one aspect of an ordinance, as strong fertilizer ordinances also contain other important elements that –together with a rainy season ban- help to protect water quality, such as capping the amount, timing, and location of fertilizer applications.

<sup>25</sup> Beever, L.B. 2016. 2014 Watershed summit: our vision in action. *Biological Sciences* 79: 58-68.

<sup>26</sup> Sarasota Herald-Tribune. 2014. Fertilizer on hiatus: Seasonal ban decreased pollution of regional waters. <https://www.questia.com/newspaper/1P2-38285598/fertilizer-on-hiatus> Accessed on 3 Oct. 2018.

<sup>27</sup> Letter from Jon Thaxton, Chair, Sarasota County Board of County Commissioners, October 26, 2009, Sarasota County Experiences with Fertilizer Regulation.

<sup>28</sup> Listopda, C., Souto, L., Bohlen, P. 2015. Tampa Bay residential stormwater evaluation final project report. Technical Report #02-15 of the Tampa Bay Estuary Program.

**Conclusion**

A summer rainy season ban is complimentary to education and enforcement efforts. This more stringent ordinance language, which has become the southwest Florida standard, can also assist with enhanced enforcement and implementation. For example, a calendar-based rainy season application period is easier to follow for both the professional applicator and the average homeowner than the State Model language which relies on metrological predictions of weather events (e.g. will there be over 2" of rain within the next 24-hours).

Prevention of pollutants into our waterways is the best way for the County to achieve cost savings. Once in the environment, it is difficult and costly to remove. The ordinance improvements would help protect water quality, improve enforcement opportunities, and can be done without reducing the County's efforts to educate citizens and applicators.

Please consider the Conservancy a resource in regards to fertilizer ordinances, as we have been very engaged in this issue for over ten years. We would be happy to continue meeting with County staff and other interested parties regarding these recommendations. Please contact me at (239) 262-0304 ext. 267 or [kellym@conservancy.org](mailto:kellym@conservancy.org) if you have any questions or would like to discuss further.

Sincerely,



Kelly McNab

Environmental Planning Specialist