REVIEW OF FERTILIZER- RELATED LITERATURE FOR HERNANDO COUNTY

SUMMARY REPORT FINAL

HERNANDO COUNTY

PROJECT NO.: 600888
DATE: MARCH 13, 2024

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1.0 EXECUTIVE SUMMARY

Increasing population growth and development in Florida is leading to nutrient enrichment and water quality impairment of aquatic ecosystems and places additional demand on Florida's limited groundwater resources. Impacts to water quality and water quantity can have significant impacts on tourism and ecology. With growing demands placed on water resources, protection of water quality is increasingly important and reducing excess landscape irrigation and fertilization provides an opportunity to conserve water quantity and protect water quality. A recent report from the suggests that reducing the amount of water used for landscape irrigation will be the single most effective strategy to reduce future water demand (1000 Friends of Florida, 2016). While turfgrass provides important social (e.g., recreation, and aesthetic) and environmental (e.g., reducing soil erosion) benefits, improvements in management practices can provide opportunities to reduce negative impacts to water resources from turfgrass maintenance.

WSP was contracted by Hernando County Utilities Department to conduct a review of current literature and policies on Florida landscape fertilizer practices. This information was used by Hernando County to help support a fertilizer ordinance that would be protective of groundwater. Literature includes a review of turfgrass fertilization, impacts to water quality, and landscaping recommendations in Florida. This information was obtained from peer-reviewed literature, outreach documents produced by the University of Florida's Institute of Food and Agricultural Sciences (IFAS), and other reports. The goal was to identify trends and gaps as well as recommendations and common fertilizer ordinance language for counties in Florida. WSP also developed presentation material and led workshops to provide outreach and education related to the economic and environmental costs of nutrient pollution in Florida. Additionally, WSP reviewed all publicly available county fertilizer ordinances within the State and drafted an ordinance for Hernando County to propose for implementation. On May 23, 2023, the Hernando County Board of County Commissioners voted to adopt this draft ordinance as a revision to the previous fertilizer ordinance under Chapter 28 of the County Code of Ordinances.

2.0 INTRODUCTION

As Florida's population grows and development continues, landscaping choices and management can impact water resources in a variety of ways. The protection of Florida's water resources is important to the state's economic and ecological well-being. In recent years, harmful algal blooms (HAB) in Florida waters have increasingly resulted in the closure of commercial shellfish beds, reduced tourism revenues, and human health impacts (Heil and Morgan, 2021). Nutrient runoff from nonpoint sources contributes not only to algae blooms, but also to anoxia and biodiversity loss in aquatic environments (Yang and Toor, 2016). In particular, the application of fertilizer to residential landscaping has been recognized as an important source of nitrogen ("N") and phosphorus ("P") pollution in urban areas (Souto et al., 2019; Yang and Toor, 2016; and Yang and Toor, 2017). Fertilizers are not necessarily the primary source of N pollution as demonstrated in Yang and Toor (2016, 2017) who reported that chemical N fertilizers can be secondary to atmospheric deposition. Nitrate, a biologically available source of N, is often increasingly present in stormwater runoff under conditions of higher rainfall amounts and longer durations (Jani et al., 2020). Krimsky et al. (2021) also noted that atmospheric deposition contributed N-based fertilizers contributed up to 44% of nitrate in lawn runoff. Nitrogen from fertilizer can also leach into groundwater, as demonstrated in a study of the Wekiva River Basin that found that residential fertilizer appeared to be a primary source of nitrate to groundwater (Tucker et al. 2014).

Reduction of fertilizer in the residential landscape is an opportunity to reduce nutrient loading to Florida's water resources. Florida has over 4 million acres of turfgrass with 75% in residential lawns (Nagata, 2003) providing important services, including recreation and aesthetics. Therefore, turfgrass management presents an opportunity to reduce environmental impacts.

WSP was contracted by the Hernando County Utilities Department (HCUD or "the County") to conduct a review of current literature and policies on Florida landscape fertilization practices. This report provides a summary of the literature pertinent to landscaping recommendations in Florida, an overview of all current fertilizer ordinances enforced by county governments within the state, and the ordinance drafted by WSP for the County. Public presentation and workshops materials developed by WSP are also included in **Appendix A**.

Much of the literature related to Florida landscape management and fertilization is published by the University of Florida Institute of Food and Agricultural Sciences (IFAS). In a 2019 survey on residential fertilizer behaviors, IFAS websites were reported as the most visited websites by people searching for fertilizer information (Uppercase Research, 2019). Additionally, work conducted by IFAS on behalf of the Florida Department of Environmental Protection (DEP WM 869 [FDEP, 2012]) titled, "Warm Season Turf Grass Nitrogen Rates and Irrigation BMP Verification" was used to inform the state's recommended fertilizer rates. While IFAS continues to conduct valuable studies and publish numerous recommendations regarding urban landscaping, the primary focus in many of these studies is on optimal plant health and aesthetics. In this literature review, we also examine the effects of landscape fertilizer on water resources.

3.0 LITERATURE REVIEW

Literature supporting different aspects of the proposed fertilizer restrictions is summarized below. Information is organized in the following subject areas: summer ban, winter ban, commercial applicators, slow-release nitrogen, exclusion zones, St. Augustine grass, social perspective, economic incentive, and impaired waters. Relevant information is summarized or directly quoted. Finally, there is a brief summary of how the information supports fertilizer restrictions.

3.1 SUMMER BAN (JUNE – SEPTEMBER)

UF/IFAS. 2009. Comments made at Pinellas County Board of County Commissioners Work Session on October 7, 2009, on the Tampa Bay Estuary Program model fertilizer ordinance.

- Utilize slow-release fertilizer products to meet nutrient needs and support growth of healthy vegetation through the growing months (May to October) but adhere to the fertilizer ban between June and September.
- UF/IFAS is concerned with increased leaching during times of reduced root growth and healthy turfgrass may require fertilization only during periods of active growth (May – October)
    - Allowing fertilizer application in May and (early) October will still allow at least two applications during the active growing season. Jerry Sartain's work titled *Comparative Influence of N Source on N Leaching and St. Augustine Grass Quality, Growth, and N Uptake* indicated that slow-release products are capable of meeting the nutritional needs of turf grasses through 6 months. If slow-release nitrogen (SRN) is used in the spring months, lawns should be adequately fertilized during the restricted period.
- While studies completed by UF/IFAS purport that leaching is minimal in healthy turfgrass, leaching is not eliminated and may be at sufficient concentrations to exceed surface water criteria. Furthermore, neither runoff nor groundwater recharge is addressed.

- **Summary:** *Use of SRN in spring can meet the nutrient requirements of turf without needing additional fertilizer applications in the summer.*

Shaddox, T.W. and J.B. Unruh. 2018. The Fate of Nitrogen Applied to Florida Turfgrass. ENH1282, UF/IFAS Extension.

- The authors state that of the N applied to turfgrass, the loss to nitrogen leaching and runoff from fertilized lawns ranges from <1% to 55% and <1%-7%, respectively.
- The movement of water through the soil has a profound influence on N leaching. Once any nutrient becomes soluble in the soil solution, that nutrient is subject to the movement of water. Therefore, it is crucial to minimize any movement of water beyond the turfgrass rootzone. Increased water movement may be a result of excessive irrigation or fluctuations in rainfall due to changing seasons, which may result in more water being applied to the soil than the soil can retain.
- **Summary:** *Higher precipitation can mobilize N and allow it to leave lawns via leaching or runoff. A summer (rainy season) ban would reduce the amount of N available to be mobilized to surface and ground waters.*

Jani J., Y.Y. Yang, M.G. Lusk, and G.S. Toor. 2020. Composition of nitrogen in urban residential stormwater runoff: Concentrations, loads, and source characterization of nitrate and organic nitrogen. PLoS ONE 15(2): e0229715. doi: 10.1371/journal.pone.0229715

- Jani et al. (2020) found that nitrate sources in water samples can shift from atmospheric deposition to inorganic N fertilizers under conditions of higher rainfall and longer saturation durations.
- **Summary:** *During higher rainfall (e.g., summer), fertilizers can be a primary source of N in stormwater runoff. A summer ban would reduce the amount of N available to be transported via stormwater runoff and ultimately to surface waters.*

Yang, Y.Y., Toor, G.S., 2017. Sources and mechanisms of nitrate and orthophosphate transport in urban stormwater runoff from residential catchments. Water Research. 112, 176-184

- The authors found that the main source of nitrate nitrogen in urban stormwater runoff was atmospheric deposition (range 35-64%), followed by chemical N fertilizers (range 1-39%).
- **Summary:** *This paper provides additional evidence of nutrient contribution from stormwater runoff. Higher volume of stormwater runoff during the rainy summer season can contribute higher fertilizer loading.*

Hochmuth, G., T. Nell, J. Sartain, B. Unruh, M. Dukes, C. Martinez, L. Trenholm, and J. Cisar. 2009. Unintended Consequences Associated with Certain Urban Turf and Landscape Ordinances. Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL.

- Fertilizer losses are most likely when fertilizer is applied just before or during heavy rainfall (Soldat and Petrovi, 2008). During the rainy season (June-Sept), heavy rainfalls are difficult to predict and risk of applying fertilizer that is washed away from application site is high.
- A summer fertilizer ban could be set to limit turfgrass fertilization for the entire 4-month summer growing period. Studies are underway to determine if there are fertilizers that could maintain healthy turf during the growing period when applied only at the beginning of the period.
- **Summary:** *Heavy rainfall, which is associated with higher likelihood of fertilizer loss, is more common during the summer. A summer ban would reduce this likelihood of fertilizer loss.*

Fertilizer Rule Staff Report following EPC Public Hearing of June 10, 2010; Memorandum from Richard Garrity dated July 9, 2010.

- Data demonstrate that summer rainfall patterns make it difficult for experts to determine in advance whether a specific location in the county will receive significant rains within the following 24 to 48 hours (all parties agree that fertilizers should NOT be applied immediately before a significant rain event). Given the inability to predict future storm patterns and rain totals, the most certain way to protect against run-off is to not allow fertilizing during this summer rainy season.
- **Summary:** *Higher precipitation can lead to higher fertilizer losses from lawns. Because summer rainfall is unpredictable, a summer fertilizer ban would reduce the amount of fertilizer lost due to applications conducted immediately prior to rainfall.*

Krimsky, L. S., Lusk, M. G., Abeels, H., & Seals, L. 2021. Sources and concentrations of nutrients in surface runoff from waterfront homes with different landscape practices. Science of The Total Environment, 750, 142320.

- Krimsky et al (2021) performed stable isotope study of nitrate from lawn runoff in Brevard County, FL in 2018 during the wet and dry seasons. This study found that during the dry season the likely average percent contribution of inorganic fertilizers to runoff N concentrations was 44.2% but dropped to 30.8% during the wet season, when a fertilizer ban was in place.
- **Summary:** *This study demonstrates how a summer ban may reduce the contribution of lawn fertilizer in runoff.*

de la Vega, E. L., & Ryan, J. (2016). Analysis of nutrients and chlorophyll relative to the 2008 fertilizer ordinance in Lee County, Florida. Florida Scientist, 125-131.

- Fertilizer applied to turfgrass can have impacts on water quality through runoff of the fertilizer itself or remobilization of the N stored in the soil. De la Vega & Ryan (2016) evaluated the potential impact that the implementation of the summer fertilizer restriction would have on nutrients in 9 stormwater ponds across Lee County, FL. Total phosphorus (TP), total nitrogen (TN), and chlorophyll-a (ChlA) were evaluated from before the ordinance was implemented (2004 to 2008) and after (2009-2013). They found that TP and ChlA were significantly reduced. Total nitrogen also decreased but not significantly.
- **Summary:** *This study also demonstrates how a summer ban reduces nutrients and chlorophyll-a in surface waters.*

Hillsborough County Environmental Services Division. 2010. Technical Support Document for Proposed Local Fertilizer Rule – Chapter 1-15.

- More frequent rains will increase the likelihood of higher levels of soil saturation, runoff, and leachate carrying nutrients to surface water and groundwater.
- The rationale for this provision to ban the application of N and P containing fertilizers during this 4-month period (termed “summer period” for purposes of this report) is that more frequent rains will increase the likelihood of higher levels of soil saturation, runoff, and leachate carrying nutrients to surface water and groundwater. This is reasonable, in that over 50% of annual rains occur during this summer period (SWFWMD, 2023).
- IFAS staff, as well as representatives from the landscaping industry, also express concerns that a 4-month time period may be too extreme and can result, over time, in lowered turf grass health and assimilation capabilities. One solution may be to apply slow-release fertilizer with 4 months of

effectiveness prior to the ban to provide to maintain the necessary amounts of nutrients during the growth period.

- For much of Florida, including the Tampa Bay region, summer is not the only growth period for turf grasses and landscape vegetation. Plants are also active in spring and fall. SWFWMD (2009) recognized that the prudent application of fertilizer bracketing the rainy season is a reasonable alternative to summer fertilization, stating:" do not apply fertilizer if heavy rainfall is forecast in the next 24 hours." and "fertilize only when the grass is actively growing. Spring and fall are the two key times for fertilizer application in Florida."
- **Summary:** *This document provides additional evidence that high-intensity summer rains to contribute to higher losses of nutrients from fertilized lawns into surface and ground waters. Across Florida, the majority of yearly rain falls during the months of June, July, August and September (SWFWMD, 2023).*

Shaddox, T. (2017). SL21/LH014: General recommendations for fertilization Of TURFGRASSES on Florida Soils. https://edis.ifas.ufl.edu/publication/LH014.

- In the example fertilization schedule, three fertilization maintenance levels are listed including: basic which will provide minimum quality turfgrass; moderate which will provide an intermediate quality turfgrass; and high which should produce an optimal quality turfgrass and not result in nitrogen leaching. Quality is described as color and growth characteristics. All these example plans call for the application of complete (contains nitrogen, phosphorus, and potassium) fertilizers before the summer wet season and then again in the fall (March and October for central FL).
- Fertilization with N in the summer is not always desirable as this can encourage disease and insect problems. The addition of iron (Fe) to many grasses provides the desirable dark green color but does not stimulate excessive grass growth which follows N fertilization.
- **Summary:** *The basic fertilizer plan could be incorporated with a summer ban to achieve a minimum quality turfgrass. A summer ban could still allow for sufficiently healthy turfgrass. Summer fertilization is not necessarily needed to maintain the desired turf appearance.*

Shaddox, T. W., Bryan Unruh, J., Trenholm, L. E., McGroary, P., & Cisar, J. L. (2016). Nitrogen rate required for acceptable St. Augustinegrass and associated nitrate leaching. Crop Science, 56(1), 439-451.

- The authors evaluated two levels of irrigation including high and low. The high irrigation rate doubled NO_3–N leaching compared to the low irrigation rate.
- The longer growing season of central Florida appears to require higher N requirements than in other states.
- All nitrogen fertilizer rates used were found to produce acceptable turfgrass quality.
- **Summary:** *The high irrigation scenario, which simulates high precipitation, increased N leaching. A summer ban may reduce N leaching while also allowing for sufficient quality turfgrass.*

Trenholm, L.E. Homeowner Best Management Practices for the Home Lawn. ENH979, UF/IFAS Extension.

- The authors found that it is important to wait until growth begins in the spring to fertilize. For north-central and central Florida, this occurs in early April. Additionally, the last fertilizer application should be around early October in the central Florida region.
- Fertilization with a long-term controlled release product at the end of May is preferred. The grass will receive low doses of nitrogen over a period of 3 to 4 months, depending on the product used. At the

beginning of the dry season in the fall, fertilizing again with a product that has a more soluble nitrogen component, such as sulfur-coated urea, can help support quality turfgrass.

- **Summary:** *Fertilizing only during the seasons of active growth and lower rainfall can help reduce fertilizer requirements in home lawns. Use of SRN can also help meet the nutrient requirements of turf without needing additional fertilizer applications in the summer.*

3.2 WINTER BAN (DECEMBER- MARCH)

Shaddox, T.W. and J.B. Unruh. 2018. The Fate of Nitrogen Applied to Florida Turfgrass. ENH1282, UF/IFAS Extension.

- Nitrogen application to turfgrasses is generally not needed in winter months due to the grasses entering a state of dormancy (or at least decreased growth). Alternatively, application during these months avoids most heavy rainfall events. However, if a rainfall event occurs before the turfgrass is able to begin consuming the N, it is at risk of leaching beyond the root zone. Therefore, application to dormant turfgrasses is not recommended.
- **Summary:** *In winter, turfgrass nutrient needs are reduced and fertilizer applications are not necessarily recommended. A winter ban not likely to negatively affect turfgrass.*

Smidt, S., D. Aviles, E. Belshe, A. Reisinger. 2022. Impacts of residential fertilizer ordinances on Florida lacustrine water quality. Limnology and Oceanography Letters. 7. 10.1002/lol2.10279.

- Fertilizer ordinances were found to favorably impact lacustrine water quality, and winter (dry season) fertilizer bans had the greatest effect across all water quality metrics. These results support the effectiveness of fertilizer ordinances across humid tropical and subtropical climate regions.
- **Summary:** *There are demonstrated positive water quality impacts by winter fertilizer bans in Florida lakes.*

3.2.1 COMMERCIAL APPLICATORS (NO ORDINANCE EXEMPTION)

Market Insight. 2009. Analysis of Focus Group Research: TBEP's Fertilizer Education Campaign. Report for the Tampa Bay Estuary Program.

- More than three-quarters of all respondents indicated their lawn had been treated with fertilizer in the past twelve months and, of these, almost half applied it via a lawn care service.
- **Summary:** *Exempting commercial applicators from the fertilizer restrictions could allow a majority of those applying fertilizer to be exempt from the restrictions, thereby minimizing the potential environmental gains.*

Uppercase, Inc (UC). 2021. Alachua County Environmental Protection Department Fertilizer 319 Campaign Evaluation Pretest and Posttest Survey Final Draft Report. March 2021.

- Regarding home lawn fertilizer application, 48% of respondents reported using a landscape professional while 52% reported applying the fertilizer themselves.
- **Summary:** *Exempting commercial applicators from the fertilizer restrictions would likely allow a large proportion of those applying fertilizer to be exempt from the restrictions, thereby minimizing the potential environmental gains.*

Hillsborough County Environmental Services Division. 2010. Technical Support Document for Proposed Local Fertilizer Rule – Chapter 1-15.

- A study conducted in the Wekiva River watershed (FDEP/SJRWMD 2010) suggests that commercial landscape/lawn care companies do contribute substantial amounts of N to surface waters.
- **Summary:** *Because of the potential for substantial applications, exempting commercial applicators could reduce the potential water quality improvements that could be achieved with a fertilizer ban.*

3.2.2 SLOW-RELEASE NITROGEN (SRN)

The Florida Friendly Best Management Practices for the Protection of Water Resources by the Green Industry (December 2008)

- Water-soluble N fertilizer has a high potential for leaching and should not be applied at a rate greater than 0.5lbs N/1000 square feet. In a normal application of 1lb N/1000 square feet, the use of a 30% controlled release product would result in an application of 0.7lbs of water-soluble N. This is inconsistent with the BMP manual which is the required training for all commercial applicators. However, adjusting to 50% slow-release N content would reduce the water-soluble N content to the recommended level.
- **Summary:** *SRN can be used to comply with the BMP standards.*

Sartain, J.B. (2007), General Recommendations for Fertilization of Turfgrasses on Florida Soils, IFAS Publication SL21

- "In light of potential environmental concerns, it is now recommended that no more than one half (0.5) pound of the nitrogen in the application be in the soluble form. Thus, in order to make an application of 1 pound of total nitrogen per 1000 square feet of turfgrass you would need to use a blended fertilizer product containing no more that 50% of the total N in soluble form with the rest of the nitrogen originating from a slow-release N source."
- The UF/IFAS Extension fertilizer recommendations for turfgrass, summarized by Sartain (2007), emphasize applications of SRN in the summer. The use of controlled-release fertilizer in the summer helps minimize the losses of N because only very small amounts of N are released from the fertilizer at any one time (typically based on temperature and moisture). These release schedules are in relationship with the plant growth rate.
- **Summary:** *SRN products can be used to develop fertilization plans that lessen potential environmental impacts.*

Drummond Carpenter, PLLC. 2021. Orange County TMDP BMAP Support: Nitrogen Modeling Assessment Technical Memorandum. Report for Orange County Environmental Protection Division.

- Fertilizers containing SRN can improve nutrient uptake and reduce nitrogen leaching compared to fertilizers with higher portions of readily available nitrogen. Simulated results found fertilizer containing 65% SRN reduced nitrate leaching to the water table by over 10% over the course of two years when compared to a fertilizer containing 0% SRN applied at the same rates and times.
- Fertilizer applied before high precipitation events is susceptible to leaching, particularly fertilizer containing lower amounts of SRN.
- **Summary:** *This study demonstrates that SRN is both beneficial to plants and lessens water quality impacts, thereby supporting the use of SRN fertilizer.*

Hillsborough County Environmental Services Division. 2010. Technical Support Document for Proposed Local Fertilizer Rule – Chapter 1-15.

- An excerpt from the document states, “The rate of absorption of slow-release, inorganic fertilizer into soil and plants is slower than traditional fertilizer. This allows a more even and complete uptake of nutrients and reduces the risk of leaching into surface water and groundwater.”
- Slow-release fertilizer also reduces the risk of overfertilizing and burning plants which provides a cost-benefit to citizens.
- **Summary:** *SRNs can be beneficial to plants, reduce environmental impacts, and save homeowners money and time.*

Shaddox, T.W. and J.B. Unruh. 2018. The Fate of Nitrogen Applied to Florida Turfgrass. ENH1282, UF/IFAS Extension.

- Slow-release N fertilizers can increase N uptake by as much as 300% compared with soluble N sources.
- A single application of slow-release N at a high rate may result in the same N uptake as soluble N applied as a split application. Therefore, slow-release N sources may be applied at higher rates than soluble N sources so long as the single application rate and total annual N applied do not exceed UF/IFAS recommendations.
- **Summary:** *SRN fertilizers can provide more nutrients to plants, demonstrating that SRNs support healthy turf. Application of SRN fertilizers can also be more time- and cost-efficient than soluble N fertilizers.*

3.3 EXCLUSION ZONES

UF/IFAS. 2015. Florida Yards and Neighborhoods Handbook.

- An excerpt from the handbook states, “It’s important to designate a ‘maintenance-free zone’ of at least 10 feet between your landscape and the riparian zone. This area helps to protect the water from runoff. Don’t mow, fertilize, or apply pesticides in the maintenance-free zone. Select plants that will do well without fertilization or irrigation after establishment.”
- **Summary:** *This document supports exclusion zones in residential landscapes to protect water quality.*

Hochmuth, G., Nell, T., Sartain, J., Unruh, J.B., Martinez, C., Trenholm, L., and Cisar, J. 2011. Urban Water Quality and Fertilizer Ordinances: Avoiding Unintended Consequences: A Review of the Scientific Literature. UF/IFAS SL283.

- Buffer strips are defined as healthy turf grass that can capture, filter, and reduce nutrient runoff. Buffer strips as small as 2 feet wide have reduced runoff, compared with no buffer strips. Dense turf vegetation reduces runoff by creating "tortuous pathways" that reduce runoff rate and thus enhance infiltration. Water can be filtered of its sediment and nutrient load by turf shoots and roots.
- Referenced studies from North Carolina show only one-half of residents remove fertilizer from impervious surfaces. This result shows that lack of knowledge about how to avoid misapplication of fertilizer may be a contributing factor to nutrient pollution via runoff, and more serious than properly fertilized lawns where lawn maintenance activities are consistent with BMPs.
- **Summary:** *This document demonstrates how exclusion zones and homeowner education can reduce runoff. Reduced runoff from residential turfgrass can protect water quality.*

Hillsborough County Environmental Services Division. 2010. Technical Support Document for Proposed Local Fertilizer Rule – Chapter 1-15.

- Document states that it is widely recognized by professional landscapers and researchers alike that maintaining a non-fertilized strip along water bodies is a good practice for protecting water quality. No-mow zones also help absorb nutrients present in runoff and add a margin for application error.
- **Summary:** *This document supports exclusion zones in residential landscapes to protect water quality.*

Sartain, J.B., Trenholm, L.T., Gilman, E.F., Obreza, T.A., and Toor, G. 2009. Frequently Asked Questions about Landscape Fertilization for Florida-Friendly Landscaping Ordinances. UF/IFAS ENH115.

- An excerpt from the document reads, "As recommended in the Green Industries BMP manual, the fertilizer-free zone for protection of water bodies is a minimum of either 3 or 10 feet, depending on soil type, slope, and type of fertilizer spreader. The minimum should be 3 feet when either a drop spreader, rotary spreader with deflector shield, or handheld hose sprayer is used. The minimum should be 10 feet when a rotary spreader without a deflector shield is used."
- These recommendations are not based on a specific scientific study but on "best informed judgment and anecdotal evidence of sharp contrasts typically observed between fertilized and unfertilized turfgrass."
- **Summary:** *While previous documents showed support for exclusion zones' ability to improve water quality, this document specifies that the size of exclusion zones can be designed based on site-specific conditions.*

3.4 INCOMPATIBILITY OF ST. AUGUSTINE GRASS

Barth, R. 2009. Letter from Palmer Ranch Master Property Owners Association Inc to Pinellas County Environmental Management Watershed Management Division. REF: Palmer Ranch Master Property Owners Association, Inc. Turf Management Strategies.

- Excess of nitrogen may prompt rapid growth of leaflets, or in the case of St. Augustine grass, the stolons over-thatch each other causing loss of root/soil contact and creating room for pests leading to the need for more fertilizer and pesticides.
- *Summary: Appropriate fertilization of St. Augustine grass is difficult to achieve and other turfgrasses can be used to achieve the turf appearance with less fertilizer use.*

3.5 SOCIAL PERSPECTIVES

Fraser, J.C., Bazuin, J.T., Band, L.E., and Grove, J.M. 2013. Covenants, cohesion, and community: The effects of neighborhood governance on lawn fertilization. Landscape and Urban Planning.

- Homeowner perceptions of attractive front yards are dependent on their neighbor's landscaping choice as well. It is believed that maintaining the landscapes in a similar fashion will help to maintain home values in the neighborhood. However, if there is diversity in a neighborhood's landscapes, then homeowners have access to a wider range of perspectives pertaining to their yards.
- This study found evidence that if a neighborhood was governed by a Homeowners' Association (HOA) there would be an increase in fertilizer use to maintain green, manicured lawns.
- **Summary:** *Residents in HOAs are more likely to use fertilizer. Future education campaigns should focus on HOA outreach.*

Market Insight. 2009. Analysis of Focus Group Research: TBEP's Fertilizer Education Campaign. Report for the Tampa Bay Estuary Program.

- Many homeowners believe that the best time to apply fertilizer is during the summer months, largely to, 1) reduce the risk of "burning" the lawn and, 2) allow the fertilizer to be "watered in" via the rain instead of irrigation water.
- **Summary:** *Because homeowners believe that summer is the best time to apply fertilizer, a stricter fertilizer ordinance should be accompanied by an education campaign to ensure the summer ban followed.*

Khachatryan, H., Rihn, A., Zhang, X., and Dukes, M. 2023. Toward Sustainable Urban Landscape Management: Floridians' Perceptions of Residential Landscapes and Their Maintenance Requirements. UF/IFAS FE1090.

- Reduced landscape inputs lead to lower maintenance costs and reduced likelihood of pollution.
- Florida-Friendly Landscapes are perceived as requiring the least maintenance.
- **Summary:** *Future education campaigns should promote landscapes that require less maintenance.*

Souto, L.A., C.M.C.S. Listopad, and P.J. Bohlen. 2019. Forging linkages between social drivers and ecological processes in the residential landscape. Landscape and Urban Planning: 185: 96-106.

- HOA residents apply more fertilizer than residents living in similar homes in non-HOA governed communities.
- Authors found less frequent fertilizer use and higher awareness of local fertilizer rules in the county with the strictest fertilizer ordinance. In the county with the least restrictive ordinance, residents were applying fertilizer more frequently and nitrogen loads were higher.
- **Summary:** *Stricter fertilizer ordinances are generally more effective but should be accompanied by an education campaign to ensure residents are aware of the ordinance and ensure they are fertilizing appropriately.*

3.6 ECONOMIC INCENTIVES

Barth, R. 2009. Letter from Palmer Ranch Master Property Owners Association Inc to Pinellas County Environmental Management Watershed Management Division. REF: Palmer Ranch Master Property Owners Association, Inc. Turf Management Strategies.

- Reduced costs associated with restricted fertilizer application include less fertilizer purchased, less frequent mowing, and lower replacement costs for turf.
- **Summary:** *Future education campaigns should publicize the cost and time savings associated with reduced fertilizer application.*

Hillsborough County Environmental Services Division. 2010. Technical Support Document for Proposed Local Fertilizer Rule – Chapter 1-15.

- Implementing practices to reduce the possible introduction of nutrients into surface waters during summer rainy periods appear to be less expensive than the comparatively high costs of degraded water resources.
- Individual homeowners can reduce their lawn care costs related to mowing, treating disease and pests, and irrigation by way of reducing the turfgrass' growth rate with lower N application rates.

- **Summary:** *Future education campaigns should publicize the homeowner cost and time savings associated with reduced fertilizer application as well as the water quality improvements associated with the stricter ordinance. The education campaign should also publicize that reduced fertilizer applications is a cost-effective way to improve water quality compared to more traditional infrastructure or restoration methods.*

3.7 JUSTIFICATION OF IMPAIRED WATER (REQUIRED FOR MORE STRINGENT ORDINANCE)

Tucker, W. A., Diblin, M. C., Mattson, R. A., Hicks, R. W., & Wang, Y. (2014). Nitrate in shallow groundwater associated with residential land use in Central Florida. Journal of Environmental Quality, 43(2), 639-646

- Through isotopic analysis of water collected in shallow groundwater wells, the highest nitrate concentrations (4.2 mg/L nitrate) were likely a result of nitrogen fertilizer leaching through the soil.
- **Summary:** *This study documents that fertilizer applications contribute to nitrate in groundwater.*

Tampa Bay Nitrogen Management Consortium Partnership for Progress 2020 TBE Nutrient Management Compliance Assessment and Results Summary

- TBEP scientists find the water quality decline is a direct result of increased nitrogen inputs into Tampa Bay, about 50% of which are from stormwater runoff.
- **Summary:** *This study attributes water quality decline in Tampa Bay to increased nitrogen, with a large proportion of the nitrogen entering the bay via runoff.*

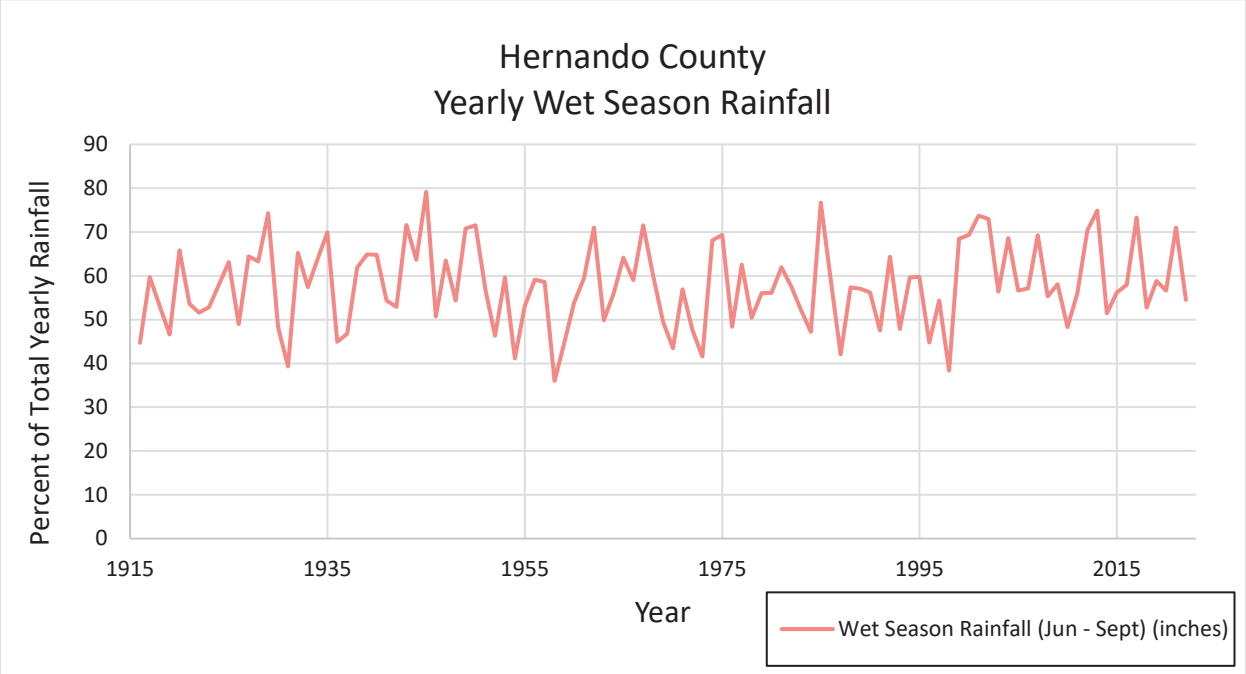
Smidt, S., D. Aviles, E. Belshe, A. Reisinger. 2022. Impacts of residential fertilizer ordinances on Florida lacustrine water quality. Limnology and Oceanography Letters. 7. 10.1002/lol2.10279.

- Modeling results indicated that fertilizer ordinances favorably impacted lacustrine water quality, but impacts were dependent on ordinance timing and water quality metrics.
- **Summary:** *Water quality improvements can be achieved as a result of fertilizer ordinances. Impaired waters can also benefit from reduced nutrient loadings following a reduction of fertilizer application.*

4.0 FERTILIZER SUMMARY

Fertilizer restrictions are well-supported in the literature, documenting fertilizer runoff impacting both surface and groundwaters (Tucker et al., 2014; Shaddox & Unruh, 2018). Both summer and winter bans have been shown to improve downstream water quality (Krimsky et al., 2021; de la Vega and Ryan, 2016; Smidt et al., 2022) while not being contraindicated for turf quality (UF/IFAS, 2009; Shaddox et al., 2016; Shaddox & Unruh, 2018). A summer ban is recommended for Hernando County due to the large proportion of rain that falls in Hernando County within the months of June, July, August, and September. Based on monthly rainfall for Hernando County, more than 50% of the total annual rainfall fell between June 1 and September 30 for 85 of the past 107 years (data from the National Oceanic and Atmospheric Administration [NOAA] and the Southwest Florida Water Management District [SWFWMD]) **(Figure 4.1).**

Figure 4.1. Percentage of Total Yearly Rainfall in Hernando County During Wet Season



Source: https://www.swfwmd.state.fl.us/resources/data-maps/rainfall-summary-data-region

4.1 FERTILIZER USE IN FLORIDA

4.1.1 CURRENT HERNANDO COUNTY FERTILIZER ORDINANCE

Prior to the most recent revision to the Hernando County fertilizer ordinance, the County's prohibited fertilization period only stretched from January 1st – March 31st, and commercial applicators were exempt from the prohibition altogether. The mandatory fertilizer-free zone surrounding waterbodies was only 10 feet, and there was no requirement for commercial businesses to post signage regarding the County ordinance.

Based on the results of the literature review and a review of fertilizer ordinances across all Florida counties, WSP drafted and submitted an amended fertilizer ordinance for Hernando County in early May 2023. This ordinance included extending the prohibited application period to include December 15th through March 15th and June 1st through September 30th. Slow-release nitrogen content requirements were also included in the draft ordinance because this form of fertilizer has been shown to be beneficial to plants while reducing leaching and loss to the environment (Drummond Carpenter, 2021). Exemptions for commercial applicators were removed, which will also be key in the success of the more restrictive ordinance's ability to improve water quality. Additional components that were incorporated into the draft ordinance prepared by WSP include extended exclusion zones, more detailed definitions of key terms and rules, and clarification of enforcement procedures. A more restrictive ordinance should be paired with an education campaign to ensure that residents are aware of the potential water quality improvements, cost savings, and time savings gained by applying less fertilizer.

On May 23rd, 2023, the Hernando County Board of County Commissioners voted to revise the County's existing fertilizer ordinance. Revisions included extending the prohibited period to December 15th – March 15th and June 1st – September 30th, during which time no fertilizers containing nitrogen or phosphorus may be applied to urban turf. Commercial applicators are no longer exempt from these prohibitions, and the length of the mandatory fertilizer-free zone surrounding wetlands and surface waters was extended to 25 feet. Additionally, any commercial business selling fertilizers within the County are required to post signage stating the restrictions during the prohibited time frames. Key definitions, enforcement policies, and details of certain exemptions were also included in the new ordinance. The finalized Hernando County fertilizer ordinance is included as **Appendix B**.

4.1.2 CURRENT COUNTY FERTILIZER ORDINANCES IN FLORIDA

With Hernando County's new restrictions, there are now 20 counties within the state that enforce seasonal fertilizer bans. There are also thirteen counties that rely solely on weather-based fertilizer restrictions, which prohibit application during selected weather warnings and are included in most other counties' prohibited application periods. For example, Collier County's only prohibited application period is defined as, *"the time period during which a Flood Watch or Warning, or a Tropical Storm Watch or Warning, or a Hurricane Watch or Warning is in effect for any portion of Collier County, issued by the National Weather Service, or if there is a 60% chance of 2 inches or greater of rain in a 24- hour period."*

All 20 counties also require nitrogen fertilizers to contain a minimum of 50% SRN, which is above the State of Florida's Rule 5E-1.003(2) requiring 30% minimum SRN content. A total of 27 counties requires a soil test showing phosphorus deficiency before phosphorus fertilizers can be applied to turfgrasses. Additionally, 12 counties include fertilizer-free exclusion zones greater than 10 ft in their ordinances. Several counties have special limitations on fertilizer use, such as annual total limits or special rates defined in their codes. **Table 4.1** describes the seasonal, weather-based, or fertilizer content restrictions across all counties within the state of Florida. **Table 4.2** describes the fertilizer-free exclusion and voluntary low-maintenance zones, applicability to commercial applicators, and any additional professional or commercial requirements related to fertilizer use across all counties.

Table 4.1. Summary of Current Fertilizer Ordinances by County (as of June 2023)

County	Summer Ban	Winter Ban	Weather-Based Ban	At Least 50% Slow-Release Nitrogen	Phosphorus Soil Test Required	Special Conditions
Alachua	X	X	X	X	X	
Brevard	X		X	X	X	
Broward						
Charlotte	X			X	X	
Citrus		X	X			Minimum 33% slow-release N content.
Collier			X	X	X	
Columbia			X		X	
Duval			X		X	
Escambia			X		X	
Gadsdsen			X		X	
Hendry			X		X	
Hernando	X	X	X			Minimum 30% slow-release N content. Signage describing fertilizer restrictions must be displayed at points-of-sale.
Hillsborough	X		X	X	X	
Indian River	X		X	X	X	
Lake	X		X	X		
Lee	X			X		Special P application rates defined.
Leon		X	X	X	X	
Manatee	X		X	X	X	
Marion						Minimum 30% slow-release N. Annual total N fertilizer limits depending on turf species. Annual total P fertilizer limit.
Martin	X		X	X	X	
Miami-Dade	X		X	X	X	
Monroe	X		X	X	X	Liquid fertilizer prohibited.
Orange	X		X	X	X	Minimum 65% slow-release N content.
Osceola			X		X	
Palm Beach			X		X	
Pasco			X		X	
Pinellas	X		X	X	X	Liquid fertilizers limited.

Continued...Table 4.1. Summary of Current Fertilizer Ordinances by County (as of June 2023)

County	Summer Ban	Winter Ban	Weather-Based Ban	At Least 50% Slow-Release Nitrogen	Phosphorus Soil Test Required	Special Conditions
Polk			X	X		Annual total N fertilizer limits depending on turf species.
Sarasota	X			X		Annual total P fertilizer limit.
Seminole	X		X	X	X	
St. Johns			X		X	Annual total N fertilizer limits depending on turf species.
St. Lucie	X		X	X	X	
Suwannee			X		X	
Volusia	X		X	X	X	
Wakulla			X		X	

Table 4.2. Summary of Current Additional Fertilizer Regulations by County (as of June 2023)

COUNTY	FERTILIZER FREE EXCLUSION ZONE (FT)	VOLUNTARY LOW MAINTENANCE ZONE (FT)	APPLIES TO COMMERCIAL & INSTITUTIONAL APPLICATORS	ADDITIONAL PROFESSIONAL/COMMERCIAL REQUIREMENTS
Alachua	10 (3 with deflector)	10	Yes	All establishments selling fertilizers must post signage provided by Alachua County. All commercial/institutional applicators must complete BMP training.
Brevard	15	15	Yes	All commercial applicator employees and supervisors are required to complete BMP training. Vehicle decal required.
Broward	Not specified	Not specified	Yes	Not specified
Charlotte	10 (3 with deflector)	6	Yes	All commercial applicators must complete BMP training. Vehicle decal required.
Citrus	25	10	No	All professional applicators (including golf courses) must complete BMP training.
Collier	10	10	Yes	All commercial and institutional applicators are required to complete BMP training.

Continued…Table 4.2. Summary of Current Additional Fertilizer Regulations by County (as of June 2023)

COUNTY	FERTILIZER FREE EXCLUSION ZONE (FT)	VOLUNTARY LOW MAINTENANCE ZONE (FT)	APPLIES TO COMMERCIAL & INSTITUTIONAL APPLICATORS	ADDITIONAL PROFESSIONAL/COMMERCIAL REQUIREMENTS
Columbia	10 (3 with deflector)	10	Yes	At least one employee of all businesses applying fertilizer is required to complete BMP training.
Duval	10 (3 with deflector)	6 (required)	Yes	All commercial applicators are required to complete BMP training.
Escambia	10 (3 with deflector)	10	Yes	All commercial applicators are required to complete BMP training. At least one employee of all businesses applying fertilizer is required to complete BMP training.
Gadsdsen	10 (3 with deflector)	10	Yes	All commercial applicators are required to complete BMP training. At least one employee of all businesses applying fertilizer is required to complete BMP training.
Hendry	10 (3 with deflector)	10	Yes	All commercial applicators are required to complete BMP training. At least one employee of all businesses applying fertilizer is required to complete BMP training.
Hernando	25	10	Yes	All establishments selling fertilizers must post signage provided by Alachua County. All commercial/institutional applicators must complete BMP training.
Hillsborough	10	6	Yes	All commercial applicator employees and supervisors are required to complete BMP training and obtain LUF license. Vehicle decal required.

Continued…Table 4.2. Summary of Current Additional Fertilizer Regulations by County (as of June 2023)

COUNTY	FERTILIZER FREE EXCLUSION ZONE (FT)	VOLUNTARY LOW MAINTENANCE ZONE (FT)	APPLIES TO COMMERCIAL & INSTITUTIONAL APPLICATORS	ADDITIONAL PROFESSIONAL/COMMERCIAL REQUIREMENTS
Indian River	10	10	Yes	All commercial applicators are required to complete BMP training. At least one employee of all businesses applying fertilizer is required to complete BMP training.
Lake	15	15	Yes	All commercial applicators must carry proof of FDACS certification. At least one employee of all businesses applying fertilizer is required to complete BMP training.
Lee	10	6	Yes	Professional and institutional landscapers are required to complete BMP training. Vehicle decal required
Leon	15	15	Yes	Professional applicator supervisors must complete BMP training and re-certify with County program every 4 years.
Manatee	10	6	Yes	Supervisors must complete BMP training. Employees must complete training (at a lower level). Vehicle decal required.
Marion	75 ft of river/spring 100ft of sinkhole/karst feature 15ft every other waterbody, 30ft of any waterbody if non-turf	6	Yes	Must complete BMP training every 4 years or county approved CEU every 2 years. Vehicle decal required.
Martin	25	10	Yes	All applicators (including golf courses) must ensure at least one employee is BMP certified. County conducts all training. Sellers must post notice provided by the County.

Continued…Table 4.2. Summary of Current Additional Fertilizer Regulations by County (as of June 2023)

COUNTY	FERTILIZER FREE EXCLUSION ZONE (FT)	VOLUNTARY LOW MAINTENANCE ZONE (FT)	APPLIES TO COMMERCIAL & INSTITUTIONAL APPLICATORS	ADDITIONAL PROFESSIONAL/COMMERCIAL REQUIREMENTS
Miami-Dade	20	10	Yes	All applicators must complete BMP training, but only commercial applicators are required to be FDACS certified.
Monroe	20	10	Yes	All applicators must complete BMP training and LUF certification. Golf courses must complete golf course BMP training.
Orange	25	10	Yes	Sellers must post signage covering restrictions. All commercial applicators must take BMP training. Individuals must follow US/IFAS recommendations. Vehicle decal required.
Osceola	10 (3 with deflector)	10	Yes	All commercial and institutional applicators are required to complete BMP training.
Palm Beach	10 (3 with deflector)	Not specified	Yes	All commercial and institutional applicators are required to complete BMP training.
Pasco	10 (3 with deflector)	10	Yes	All commercial and institutional applicators are required to complete BMP training.
Pinellas	10	6	Yes	All commercial applicators must have LUF certification. Site supervisors and manager must complete BMP training. Vehicle decal required.
Polk	10	10	Yes	All commercial and institutional applicators are required to complete BMP training.
Sarasota	10	6	Yes	All commercial and institutional applicators are required to complete BMP training. Vehicle decal is required.

Continued…Table 4.2. Summary of Current Additional Fertilizer Regulations by County (as of June 2023)

COUNTY	FERTILIZER FREE EXCLUSION ZONE (FT)	VOLUNTARY LOW MAINTENANCE ZONE (FT)	APPLIES TO COMMERCIAL & INSTITUTIONAL APPLICATORS	ADDITIONAL PROFESSIONAL/COMMERCIAL REQUIREMENTS
Seminole	15	10	Yes	All commercial and institutional applicators are required to complete BMP training. At least one employee of all businesses applying fertilizer is required to complete BMP training.
St. Johns	10 (3 with deflector)	6	Yes	All commercial and institutional applicators are required to complete BMP training.
St. Lucie	10	10	Yes	All commercial and institutional applicators are required to complete BMP training. At least one employee of all businesses applying fertilizer is required to complete BMP training.
Suwannee	10	10	Yes	All commercial and institutional applicators are required to complete BMP training. At least one employee of all businesses applying fertilizer is required to complete BMP training.
Volusia	15	10	Yes	All commercial and institutional applicators are required to complete BMP training. At least one employee of all businesses applying fertilizer is required to complete BMP training.
Wakulla	10 (3 with deflector)	Not specified	Yes	All commercial and institutional applicators are required to complete BMP training. At least one employee of all businesses applying fertilizer is required to complete BMP training.

4.1.3 SUMMARY OF STATE-WIDE FERTILIZER APPLICATION RATE RULES AND RECOMMENDATIONS

4.1.3.1 FDACS URBAN TURF FERTILIZER LABELLING RULE RE-1.003(2)

The only state-wide fertilizer application rate policy is the Florida Department of Agriculture and Consumer Services (FDACS) Urban Turf Fertilizer Labelling Rule (RE-1.003(2) FAC). The maximum fertilizer application rates (in lbs N per 1,000 square feet (ft^2)) per this rule are included below in **Table 4.3**. Application rates vary by region and turfgrass species, and the rule also stipulates the minimum percentage of slow-release nitrogen (30%) and maximum applications during specific seasons. There are no seasonal prohibited application periods under RE-1.003(2).

Table 4.3. Current Fertilizer Application Rates by FDACS Rule RE-1.003(2)

Species	N Application (lb N/1,000 ft^2/yr) by Region		
	North [a]	Central [a]	South [a]
Bahia	2-3	2-4	2-4
Centipede	1-2	2-3	2-3
St. Augustine	2-4	2-5	4-6
Zoysiagrass	2-3	2-4	2.5-4.5

[a] North Florida = north of Ocala; Central Florida = from Ocala to State Road 60; South Florida = south of State Road 60.

The rates in **Table 4.3** are based, in part, on the DEP WM 869 Warm Season Turf Grass Nitrogen Rates and Irrigation BMP Verification study (FDEP, 2012). The research for the DEP WM 869 study was conducted by the University of Florida Institute of Food and Agricultural Sciences (IFAS) between 2005 and 2013, and its subsequent recommendations were used in FDACS Rule RE-1.003. Moreover, Rule RE-1.003 directs users to follow IFAS recommendations for annual fertilizer application rates. It is important to note that the IFAS recommendations do not appear to prioritize environmental impact according to the following excerpt from Dukes, M.D. (2020):

> *"As a land-grant university, the University of Florida has a mission to serve all stakeholders through UF/IFAS. Those stakeholders represent agriculture, horticulture, and natural resources. UF/IFAS develops fertilizer recommendations with the goal of using the least amount of fertilizer to elicit a desired response in plants, as do all land-grant universities. In agriculture, the goal is to use the smallest fertilizer application to produce the maximum yield. In horticulture, the objective is to apply the smallest amount of fertilizer to maintain optimal health and acceptable quality.* ***Although the development of fertilizer recommendations described here minimizes the amount used, the primary consideration is plant response rather than environmental impact.*** *Fertilizer recommendations are regularly reviewed to assess whether less product can be used to obtain the same response, because fertilizer is costly and the science of identifying, documenting and measuring impacts on the natural environment is ongoing. Recent research has resulted in reduced fertilization recommendations for three turfgrass species…That said, under certain conditions, even the recommended amount could have environmental consequences."*

For various institutional reasons, IFAS has continued to focus its fertilizer recommendations primarily on plant response rather than environmental impact to water resources, including the research conducted for DEP WM 869. While the aim of DEP WM 869 was to investigate the fertilizer rates producing acceptable plant response, in some cases, the data was used to lower the recommended fertilizer rates and potentially reduce environmental impact. The DEP WM 869 studies included complex study designs that incorporated different turf grass species, age of the turf, several fertilizer and irrigation application levels, and statistical analysis to explore the effect of the fertilizer on turf quality, nitrate leaching, and interactions between fertilizer and irrigation. However, the broad reach and application of these data as the basis for statewide fertilizer recommendations requires careful consideration of study boundaries and data gaps. These include 1) relatively short study periods (generally less than three years), 2) nitrate being the only form of nitrogen that was measured, and 3) failure to measure nitrogen in runoff from study sites.

It is important to note that the root issue represented by the points above can be said of much scientific research since replicating real-world conditions is difficult and budgets and project timeframes are limited. The limitations described above are primarily related to the use of the DEP WM 869 study for statewide recommended fertilizer rates and not a criticism of the standalone scientific merit of the work. Numerous peer reviewed publications have been sourced from the DEP WM 869, indicating that the methods are acceptable to the scientific community. However, there are limitations when applying the results of controlled experiments with typical experimental constraints (time, analytes, samples) to an entire state. And while a single study cannot be expected to replicate real-world conditions, it is important to present study limitations (considering the broad application of the DEP WM 869) and contribute to the body of knowledge around turfgrass fertilization and environmental impact. Understanding the limitations can also help inform potential future studies to supplement the DEP WM 869 and further understand the role of fertilizer and Florida's water quality. Additional information is available at https://wfrec.ifas.ufl.edu/turfgrass-science/nutrient-management-research/fdep-funded-study/.

4.1.3.2 CURRENT IFAS FERTILIZER RECOMMENDATIONS FOR RESIDENTIAL LAWNS

While RE-1.003(2) is the only state-wide fertilizer rule, UF/IFAS continues to conduct research and produce influential recommendations regarding fertilizer application rates. In 2018, IFAS published a revision to their recommended best management practices for home lawns in Florida, originally published in 2004 (Trenholm, 2004). **Table 4.4** lists the annual total fertilizer application rates recommended in IFAS's original 2004 publication and in the updated 2018 revision. These rates are shown as total pounds of N to be applied per year to 1,000 ft^2 of turf per year, depending on region and turf species.

Table 4.4 Original and Current UF/IFAS Recommended Annual Nitrogen Application Rates

Species	N Application (lb N/1,000 ft^2/yr) by Region					
	North [a]		Central [a]		South [a]	
	2004	2018	2004	2018	2004	2018
Bahia	2-3	1-3	2-4	1-3	2-4	1-4
Centipede	1-2	0.4-2	2-3	0.4-3	2-3	0.4-3
St. Augustine	2-4	2-4	2-5	2-5	4-6	4-6
Zoysiagrass	3-5	2-3	3-6	2-4	4-6	2.5-4.5

[a] North Florida = north of Ocala; Central Florida = from Ocala to State Road 60; South Florida = south of State Road 60.

The recommended fertilizer application rates are shown in **Table 4.4**. Between 2004 and 2018, the recommended fertilizer application rates have been reduced for every region and every species, except for St. Augustine grass. The St. Augustine grass application rate has remained the consistent and has the highest fertilizer application rate of the four turf species listed. In contrast, Centipede grass has the lowest recommended fertilizer application rates across the three regions.

IFAS's reduction of their recommended annual fertilizer application rates suggests that most species of turfgrass can grow suitably with less nitrogen than previous research suggested. Recommending homeowners apply less fertilizer is likely to result in a more successful marketing approach than enforcing a maximum application rate. Additionally, it should be noted there is increasing interest among municipalities and homeowners to replace turfgrass with alternative groundcover species or landscapes. These options often do not require any fertilizer input.

5.0 ALTERNATIVE TURF AND LANDSCAPING PRACTICES

While fertilizer restrictions have proven effective at reducing nutrient pollution to surface waters, alternative landscaping practices also provide an opportunity to reduce nutrient inputs from urban systems. Brief descriptions of common alternative approaches to residential landscaping are included below. While fertilizer input is the main focus of this report, considerations for irrigation are included in this section as it can have significant impacts on fertilizer leaching and runoff. The alternatives described below aim to minimize the need for fertilizer and irrigation inputs and can help shift expectations from turfgrass monoculture to more diverse landscaping. Shifting the collective view of what is "acceptable turf quality" is another step towards reducing the impacts of our landscaping practices, particularly when alternative practices can provide improved habitat or ecological value.

5.1 ALTERNATIVE TURF SPECIES

In cases where turf is required, selection of the right species for the right area can result in reduced fertilizer rates and irrigation. Based on the recommended fertilizer rates, Centipede grass and Bahia grass require less N input

for optimum growth compared to other species recommended for Florida. Additionally, the UF/IFAS turfgrass breeding program is continuing to develop new cultivar varieties of turfgrass like Citra Blue, a cultivar of St. Augustine grass, that require less irrigation and fertilizer.

5.2 ALTERNATIVE GROUNDCOVER PLANTS

Lawn-like landscapes may be desired for openness, visibility, and smooth visual texture. Some low-growing plants are listed in **Table 5-1**. Note however that these do not necessarily provide the same services as turfgrass (e.g., play areas for children and pets) and use of these alternatives will depend on personal preference.

Table 5.1. Groundcover Alternatives (Y=Yes, N=No, H=High, M=Medium).

Common Name / Scientific Name	FL Native	Mowable	Flowers	Butterfly Host Plant	Drought Tolerance	Ever-green	Walkable	Additional Notes
Perennial peanut *Arachis glabrata*	N	Y	Y	N	H	Y*	Y	Nitrogen fixer
Sunshine Mimosa *Mimosa strigillosa*	Y	Y	Y	Y	--	N	Y	Nitrogen fixer
Frogfruit *Phyla nodiflora*	Y	Y	Y	Y	--	N	N	--
Asiatic Jasmine *Trachelospermum asiaticum*	N	N	Y	N	M	Y	N	Shade tolerant
Twinflower *Dyschoriste oblongifolia*	Y	N	Y	Y	H	Y	--	--

* May reduce growth, freeze back, or go dormant in the winter
Source: Compiled from (Silvasy, 2021), (UF/IFAS, 2018)

5.3 ALTERNATIVE LAWN AESTHETICS

New lawn models allow opportunities for greater personal creativity: planting with food, flowering plants, herbs, or wildlife habitat (Ponsford, 2020). Complete turf replacement may be daunting so the goal should be gradual reductions in turf areas (Damiano, 2022).

5.4 FREEDOM LAWNS / WILDFLOWER MEADOWS

A freedom lawn contains whatever plants grow without fertilizer, weed killer, water, or restrictions (UF/IFAS, 2022). Essentially, the lawn is allowed to go wild. The first places recommended to convert are around trees and wooded areas since trees generally outcompete turf for water, may develop large roots that could interfere with mowing, and can drop leaves that would smother turf if not raked (Stibolt, 2021).

5.5 DROUGHT TOLERANT/NATIVE PLANTINGS

UF IFAS Extension's Florida-Friendly Landscaping (FFL) program is promoted throughout the state to influence landscaping behaviors and is partially funded by the Florida Department of Environmental Protection. It is based on nine principles: Right Plant, Right Place; Water Efficiently; Fertilize Appropriately, Mulch, Attract Wildlife, Manage Yard Pests Appropriately, Recycle Yard Waste, Reduce Stormwater Runoff, and Protect the Waterfront. Messaging is important in influencing landscaping behaviors, and simply recommending "fertilizing appropriately" legitimizes the use of fertilizer and normalizes this behavior. Alachua County has suggested that the program downplay the importance of fertilizer and irrigation on their website and create an additional tier of the program which does not include permanent irrigation and fertilizer use. As illustrated in **Figure 5.1** below from the FFL website, the description of "fertilize appropriately" leads with four benefits of fertilizer followed by two downfalls. Although the FFL program includes plant species for which irrigation and fertilizer may be recommended, there are also drought tolerant native and non-native plant species requiring minimal inputs. In a recent study by Clem et al. (2021), yards with FFL used 84% less water than traditional turf yards.

Figure 5.1. Fertilization Example from UF IFAS Extension's Florida-Friendly Landscaping Program

FFL also includes plant species recommendations. Separate from FFL, a survey of landscape professionals identified the Florida native and resilient plants with the greatest potential for increased use and most widespread familiarity and current use. The top ten plants for each category are listed in **Table 5-2.** A 2018 poll by the American Society of Landscape Architects found that 83% of landscape architects were being increasingly asked about using native plants as part of planting schemes (Ponsford, 2020). Fertilization rates are especially important as alternative lawn species may be less efficient at using applied nitrogen (Erickson et al., 2001) and management practices are still crucial to reducing leaching regardless of species (Erickson et al., 2008).

Table 5.2. Florida Native and Resilient Plants with the Greatest Potential for Increased Use and Most Widespread Familiarity and Current Use.

Plant	Shade Trees	Herbaceous Perennials	Understory Trees	Shrubs	Ground Cover	Palms
Muhly Grass	Bald Cypress	Scarlet Sage	Yaupon Holly	Simpsons Stopper	St. John's Wort	Coontie Palm
Fakahatchee Grass	Summer Red Maple	Blue Porterweed	Eastern Redcedar	Walter's Viburnum	Swamp Twinflower	Saw Palmetto
Purple Lovegrass	Shumard Oak	Lanceleaf Tickseed	Fringetree	Firebush	Sunshine Mimosa	Dwarf Palmetto
Sand Cordgrass	Miss Chloe Southern Magnolia	Leavenworth's Tickseed	Chickasaw Plum	Oakleaf Hydrangea	Frogfruit	Paurotis Palm
Elliot's Lovegrass	Longleaf Pine	Blue-eyed Grass	Flatwoods Plum	Wild Coffee	Oblongleaf Twinflower	Cardboard Plant
Little Bluestem	Winged Elm	Starry Rosinflower	Sweetbay Magnolia	American Beautyberry	Creeping Sage	Scrub Palmetto
Sea Oats	Sand Live Oak	Carolina Wild Petunia	Southern Waxmyrtle	Anise	Common Violet	Lady Palm
Lopsided Indiangrass	Bluff Oak	Lyreleaf Sage	Dahoon Holly	Darrow's Blueberry	Beach Verbena	Needle Palm
Splitbeard Bluestem	Tuliptree	-	Eastern Redbud	White Stopper	Narrowleaf Silkgrass	-
Wiregrass	Turkey Oak	-	Florida Privet	Sparkleberry	Partridge Berry	-

5.6 RAIN GARDENS AND GREEN INFRASTRUCTURE

Turf can also be replaced with rain gardens or other green infrastructure that are aesthetically pleasing and improve runoff water quality. Rain gardens are shallow depressions used to capture, temporarily store, treat, and infiltrate stormwater runoff. Organic mulch and soils, vegetation, and additional nutrient adsorption media facilitate nutrient removal and infiltration to the groundwater.

5.7 COMBINING ALTERNATIVES AND MICRO-IRRIGATION

The alternatives described above can also be combined (smaller areas of turfgrass, incorporating drought-tolerant species) for additional water conservation. In a 29-month long IFAS study titled “Home Irrigation and Landscape Combinations for Water Conservation in Florida “by Haley et al. (2020), three irrigation regimes were tested in different residential landscape aesthetics in Florida, summarized in **Table 5.3**. Using micro-irrigation and drought tolerant plants in Treatment 3 resulted in 39% less irrigation water compared to the typical landscape and irrigation regime represented in Treatment 1.

Table 5.3. Summary of Treatment and Water Savings from Haley et al. (2020).

Treatment	Irrigation Regime	Water Savings
Treatment one (T1)	Existing irrigation systems and typical landscape plantings where the homeowner controlled the irrigation scheduling (“Set it and forget it” approach).	Homes in T1 consumed the most water for irrigation purposes.
Treatment two (T2):	Existing irrigation systems and typical landscape plantings with irrigation scheduling based on 60% replacement of historical Evapotranspiration.	Homes in T2 consumed 16% less irrigation water than T1
Treatment three (T3)	Irrigation system designed according to specifications for optimal efficiency including a landscape design that minimized turfgrass and maximized the use of native drought-tolerant plants.	Homes in T3 consumed 39% less irrigation water than T1

6.0 FERTILIZER BAN CASE STUDIES

In some areas, municipalities have incorporated alternative landscaping requirements to reduce fertilizer and irrigation inputs. Select cases are summarized below. These cases serve as examples for creating policies to limit fertilizer and irrigation while maintaining aesthetically pleasing landscapes:

- Alachua County adopted a winter-season ban on the application of fertilizers to residential properties in 2016 and in 2019 the ban was extended to July through February.
- Sarasota County, Tampa Bay Water, and Homestead have landscape ordinances that limit turf to 50-60% of open areas on new developments (Randolph, 2005)
- Nevada banned nonfunctional turf at existing non-single-family properties and required its removal and replacement with drought tolerant landscaping in a first of its kind law in the nation (Metz, 2021). Targeted areas include HOA entrances, apartments, condominiums, commercial complexes, streetscapes, and medians (Nevada Business Mag, 2022).
- California has banned watering of non-functional ornamental grass at commercial, industrial, and institutional buildings (Powells, 2022)
- Residents and businesses in counties around Los Angeles are being limited to one day of outdoor water use per week (Ramirez, 2022).
- Phoenix, Arizona charges more for water in the summer and banned lawns on new developments, reducing lawns from 80% to 14% (Ponsford, 2020).
- Montgomery County, Maryland offered to pay families and HOAs to design gardens that collect storm water in water features and underground rain barrels (Ponsford, 2020)
- Some municipalities are enacting Turf Swap programs:
    - Long Beach Water Department – Up to $3/sq ft for front yards $2/sq ft for side and back yards up to a total of 15,000 sq ft of turf replaced with native or drought tolerant plants.
    - San Diego County, CA - $4/sq ft up to 5,000 sq ft for residential properties and 10,000 sq ft for commercial properties. Commercial properties may receive an additional $2/sq ft up to 50,000 sq ft.
    - Colorado recently passed a bill that will require the Colorado Water Conservation Board to develop a statewide financial incentive program to inspired voluntary turf replacement for homeowners, local governments, and non-profits (Metzger, 2022).
    - Minnesota homeowners have been offered rebates to replace lawns with flowering plants for bees (Ponsford, 2020).

Results of some of these bans have been studied previously, and these were described in Section 3.0 of this document.

7.0 SUMMARY

In this report, WSP reviewed published literature related to turfgrass fertilizer use, ordinances, and impacts on water quality. These documents included reports published by the University of Florida's Institute of Food and

Agriculture, as well as other scientific literature, and reports. This review specifically included information on seasonal bans, exclusion zones, social perspectives, and economic incentives. As part of this report, the current use of fertilizer was discussed, as well as the Hernando County fertilizer ordinances that was recently implemented, as well as other fertilizer ordinances that have been established in Florida. Another section of this report reviewed alternative turf and landscape practices that can potentially reduce the need for additional fertilizer. Finally, case studies for fertilizer bans were described.

As a result of input from WSP, the Hernando County fertilizer ban was revised to include dates from December 15 to March 15 and June 1 to September 30. This is in addition to fertilizer restrictions in 20 counties throughout Florida. These restrictions include changes to the timing of fertilizer applications, the amount of slow-release fertilizer (now 50%), exclusion zones, and weather-based restrictions. The majority of counties (18) have summer bans, and 4 counties have winter bans, and 2 (including Hernando County) have both summer and winter bans. The recommended amount of fertilizer applied to residential lawns, as suggested by IFAS, has declined from 2004 to 2018. Reductions in amount of fertilizer applied can also result in lower amounts of nitrogen runoff. Finally, alternative turf and landscaping practices can decrease the amount of fertilizer export to waterways and should be considered. These alternatives include new cultivars of turfgrass that require less nitrogen fertilizer, replacement of turfgrass with other vegetation, including native and drought tolerant species, and optimization of irrigation that can potentially reduce the export of nitrogen.

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APPENDIX

A PRESENTATION MATERIALS

APPENDIX

B

HERNANDO COUNTY FERTILIZER ORDINANCE

APPENDIX

A PRESENTATION MATERIALS

Hernando County
FERTILIZER
MANAGEMENT ORDINANCE

Questions or Comments? Reach out at fertilizer@hernandocounty.us

Goal of this Ordinance: Prevent nutrient pollution from nitrogen and phosphorus in fertilizer from entering natural water bodies.

Where the ordinance applies: All landscape areas, including plants, trees and turfgrass.

Who the ordinance applies to: All fertilizer applicators within unincorporated Hernando County.

Compliance Calendar Dates:

December 1 through March 31 and June 1 through September 30

- Fertilizer with nitrogen and phosphorus are prohibited from application.

April 1 through May 31 and October 1 through November 30

- If using nitrogen fertilizer, at least 50% N must be slow release.
- Apply zero phosphorus unless a soil test shows a deficiency.

All Year

- Do not apply fertilizer containing nitrogen before seeding or sodding a site, and for the first 30 days after seeding or sodding.
- Broadcast spreaders must be equipped with deflector shield.
- Keep spilled fertilizer, grass clippings, and lawn debris off pavement and away from storm drain inlets. Collect and manage for proper disposal or reapply landscape.

Application Setbacks:

- Broaden the exclusion zone to protect water bodies.

Training and Licensing Requirements

- Show proof that GI-BMP course was completed.
- Commercial applicators are required to possess a valid FDACS Limited Commercial Fertilizer Applicator Certificate.

HERNANDO COUNTY FERTILIZER

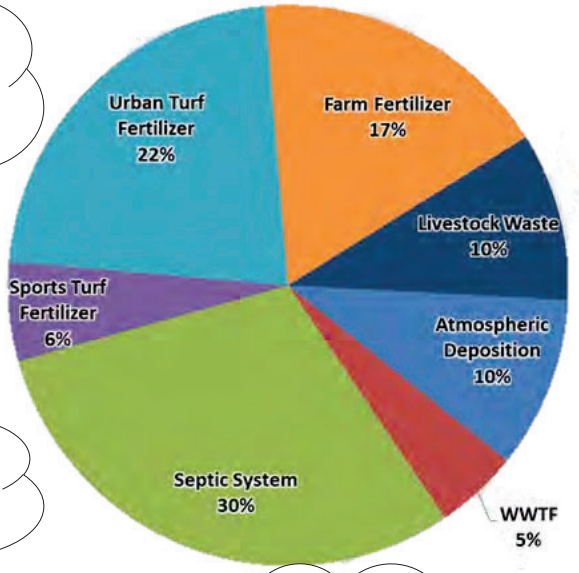
May 02, 2023

WHY?

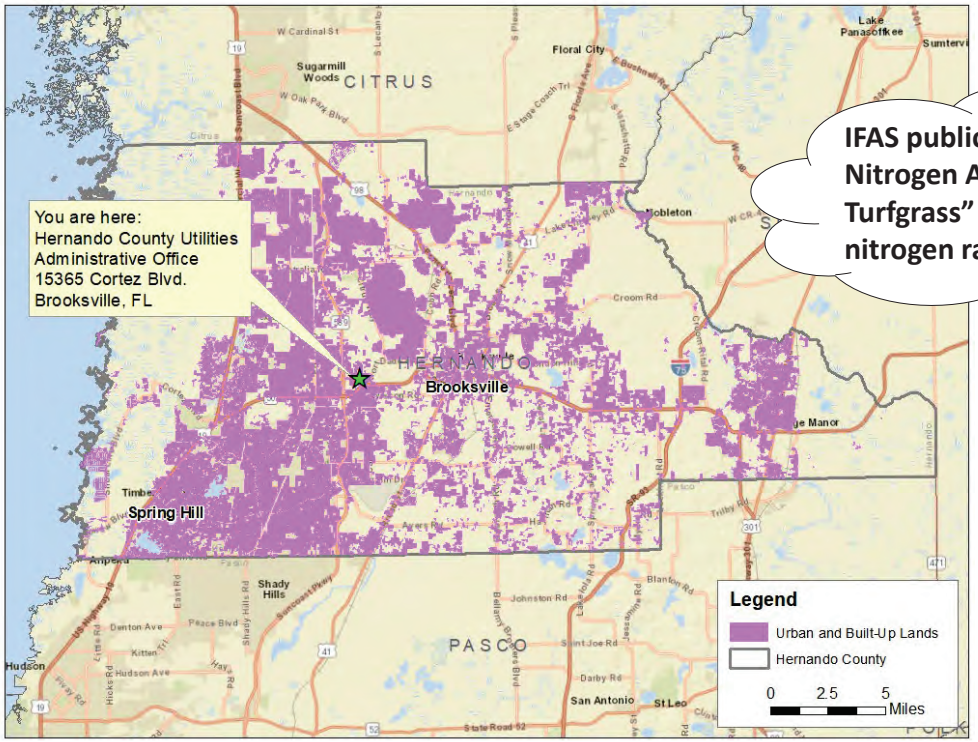
Impaired Waterbodies

- Studies conducted by the SWFWMD and FDEP have determined that one of the primary causes of water quality issues in Weeki Wachee Springshed comes from inappropriate fertilizer use.[2]
- FDEP assumes 20% leaching of nitrogen from lawn fertilizers. [4]
- In Florida, water quality issues are among the most important environmental concerns, and preferences for iconic, lush, green landscapes have been associated with overuse of inputs such as water and fertilizer (Kumar Chaudhary et al. 2017).

Fertilizer applied to turfgrass can also have impacts on water quality through runoff of the fertilizer itself. [1]



IFAS publication "Fate of Nitrogen Applied to Florida Turfgrass" reports leaching of nitrogen ranges from 0-55%. [3]



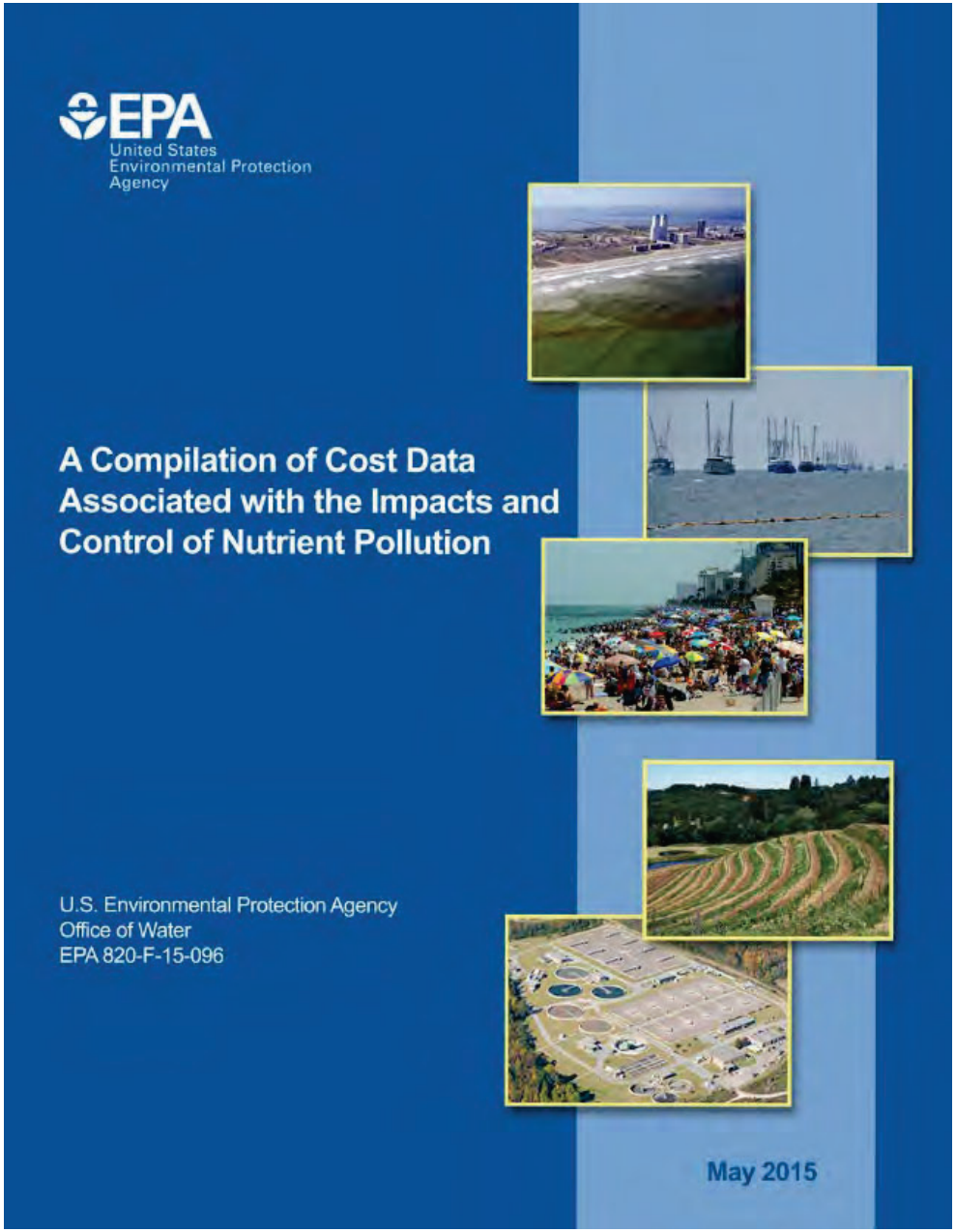
Based on the Nitrogen Source Inventory Loading Tool and BMAP, urban turf fertilizer contributes 22% of nitrogen loading in the Weeki Wachee Springshed. [4]

1- De la Vega, E. L., & Ryan, J. (2016). Analysis of nutrients and chlorophyll relative to the 2008 fertilizer ordinance in Lee County, Florida. Florida Scientist,
2- https://www.hernandocounty.us/Home/Components/News/News/1707/274?selamenityid=2
3- Shaddox, T.W. and J.B. Unruh. 2018. The Fate of Nitrogen Applied to Florida Turfgrass. ENH1282, UF/IFAS Extension.
4- FDEP. 2018. Weeki Wachee Basin Management Action Plan.

Cost of Nutrient Pollution Impacts and Treatment

Property Values

- Home values near lakes in Orange County, Florida: 17% increase in nutrient pollution decreased property values by $4,000 to $12,000
- Home values near St. Lucie River, St. Lucie Estuary, and Indian River Lagoon: 1% increase in water clarity increased property values by $2,000 to $11,000



Cost of Nutrient Pollution Impacts and Treatment

Tourism and Economic Losses

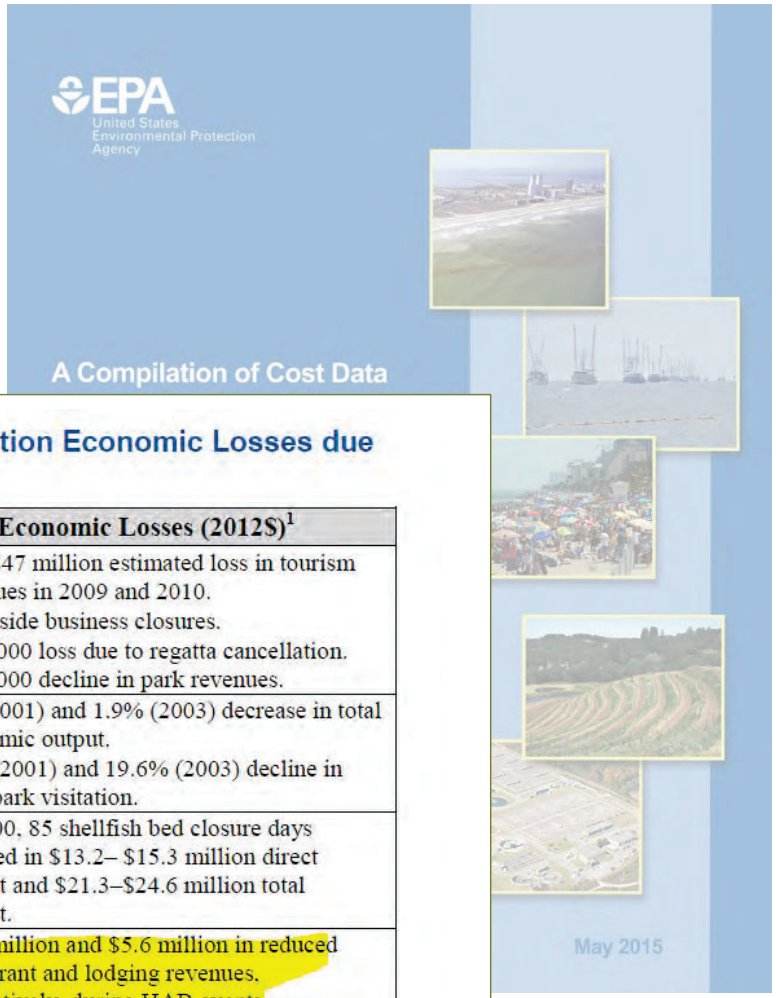


Table III-1. Examples of Estimated Tourism and Recreation Economic Losses due to HABs

Study	State	Waters	Economic Losses (2012$)[1]
Davenport and Drake (2011); Davenport et al. (2010)	OH	Grand Lake St. Marys	• $37–$47 million estimated loss in tourism revenues in 2009 and 2010. • 5 lakeside business closures. • $632,000 loss due to regatta cancellation. $263,000 decline in park revenues.
Oh and Ditton (2005)	TX	Possum Kingdom Lake	• 5% (2001) and 1.9% (2003) decrease in total economic output. • 57% (2001) and 19.6% (2003) decline in state park visitation.
Evans and Jones (2001)	TX	Galveston Bay	• In 2000, 85 shellfish bed closure days resulted in $13.2– $15.3 million direct impact and $21.3–$24.6 million total impact.
Larkin and Adams (2007)	FL	Ft Walton Beach and Destin areas	• $4.2 million and $5.6 million in reduced restaurant and lodging revenues, respectively, during HAB events.
Morgan et al. (2009)	FL	Southwest coast	• Reduced daily restaurant sales of $1,202 to $4,390 (13.7%–15.3%) during HAB events.
Dyson and Huppert (2010)	WA	Beaches in Grays Harbor and Pacific Counties	• Typical closure (2–5 days) results in $2.23 million in lost labor income and $6.13 million in sales impacts due to decreased visitation.

HABs = harmful algal blooms

[1] *All economic losses updated to 2012$ using the Consumer Price Index.*

Cost of Nutrient Pollution Impacts and Treatment

Lawn fertilization programs compared to other nutrient BMPs

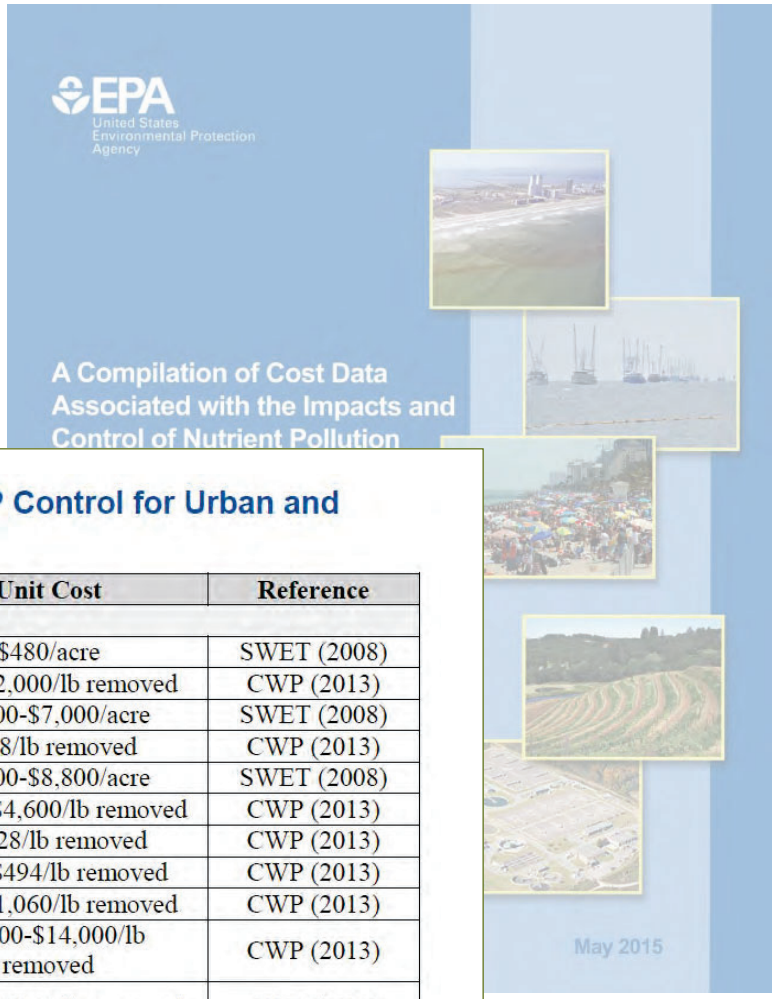


Table IV-6. BMP Cost and Performance for TN and TP Control for Urban and Residential Runoff

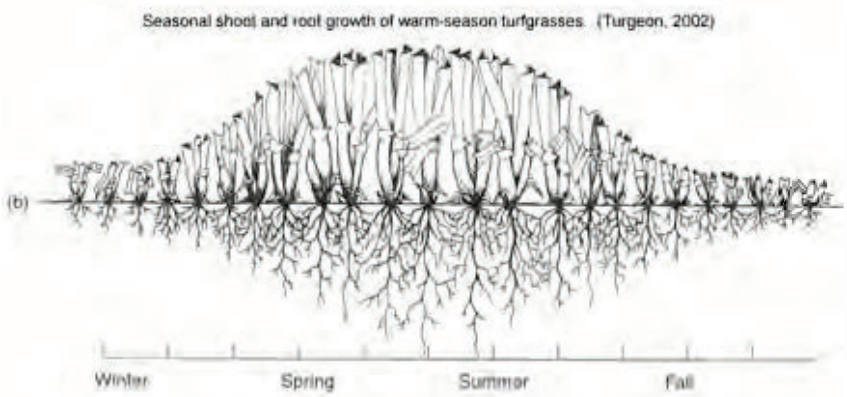
	Description	Performance	Unit Cost	Reference
	Total Nitrogen			
Structural BMPs	Baffle Boxes	15% reduction	$480/acre	SWET (2008)
	Bioretention Units	--	$338-$2,000/lb removed	CWP (2013)
	Bioswales	15-25% reduction	$3,500-$7,000/acre	SWET (2008)
		--	$308/lb removed	CWP (2013)
	Detention Basins	15-20% reduction	$4,400-$8,800/acre	SWET (2008)
		--	$1,100-$4,600/lb removed	CWP (2013)
	Impervious Surfaces	--	$2,428/lb removed	CWP (2013)
	Infiltration Basin	--	$486-$494/lb removed	CWP (2013)
	Media Filtration	--	$975-$1,060/lb removed	CWP (2013)
	Porous Pavement	--	$1,900-$14,000/lb removed	CWP (2013)
Non-Structural BMPs	Illicit Discharge Control Program	--	$8.82-$17.62/lb removed	CWP (2013)
	Lawn Fertilization Programs	15-30% reduction	<$1-$17/acre	SWET (2008)
	Pet Waste Programs	--	$0.43/lb removed	CWP (2013)
	Street Sweeping	--	$3,500-$14,600/lb removed	CWP (2013)
		2% reduction	$22/acre	SWET (2008)

WHEN?

No application of fertilizer containing nitrogen or phosphorus from **June 1 through September 30** and **December 1 through March 31**

Why Support a Winter Black Out?

- N application to turfgrasses is generally not needed in winter months due to the grasses entering a state of dormancy (or at least decreased growth).
- Smidt et al (2022) found fertilizer ordinances favorably impacted lacustrine water quality, and winter/dry season fertilizer bans had the greatest effect across all water quality metrics.
- While lawns naturally go dormant, turning brown in the process, during the winter in Florida, some homeowners will overwater and over fertilize as a way to prevent this.



Your last fertilizer application should be around mid-October for central Florida- *Homeowner BMPs for Home and Lawn- UF IFAS 2018*

Decreased plant growth and root density in winter (cooler temperatures, less growth, less light)

It is important to not fertilize when grasses are not growing, as this can increase the possibility of nutrients leaching through the soil or running off

Smidt, S., D. Aviles, E. Belshe, A. Reisinger. 2022. Impacts of residential fertilizer ordinances on Florida lacustrine water quality. Limnology and Oceanography Letters

Trenholm, Laurie E. 2008. "Homeowner Best Management Practices for the Home Lawn: ENH979/EP236, Rev. 01/2018". EDIS 2018

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WHEN?

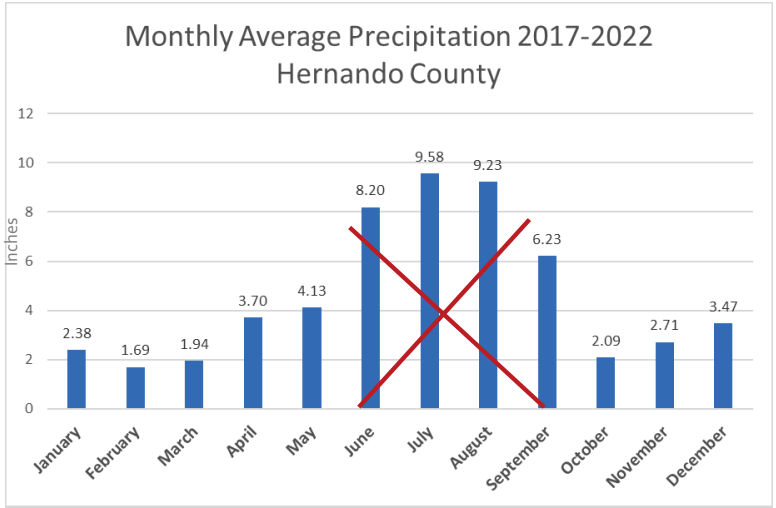
No application of fertilizer containing nitrogen or phosphorus from **June 1 through September 30** and **December 1 through March 31**

Why Support a Rainy Season Black Out?

- Higher precipitation can mobilize N and allow it to leave lawns via leaching or runoff.
- Losses are most likely when fertilizer is applied just before or during heavy rainfall (Soldat and Petrovi 2008).
- Given the inability to predict future storm patterns and rain totals, **the most certain way to protect against run-off is to not allow fertilizing during the summer rainy season.**
- Krimsky et al (2021) performed stable isotope study of nitrate from lawn runoff in Florida between the wet and dry seasons. This study found that during the dry season the likely average percent contribution of inorganic fertilizers was 44.2% but dropped to 30.8% during the wet season, when a fertilizer restriction was in place.

Increased rainfall June – September increases chances for leaching and runoff

A summer restriction period would reduce the amount of N available to be mobilized to surface and ground waters



For much of Florida, including the Tampa Bay region, summer is not the only growth period for turf grasses and landscape vegetation. Plants are also active in spring and fall. SWFWMD (2009) recognized that the prudent application of fertilizer bracketing the rainy season is a reasonable alternative to summer fertilization

Krimsky, L. S., Lusk, M. G., Abeels, H., & Seals, L. 2021. Sources and concentrations of nutrients in surface runoff from waterfront homes with different landscape practices. Science of The Total Environme

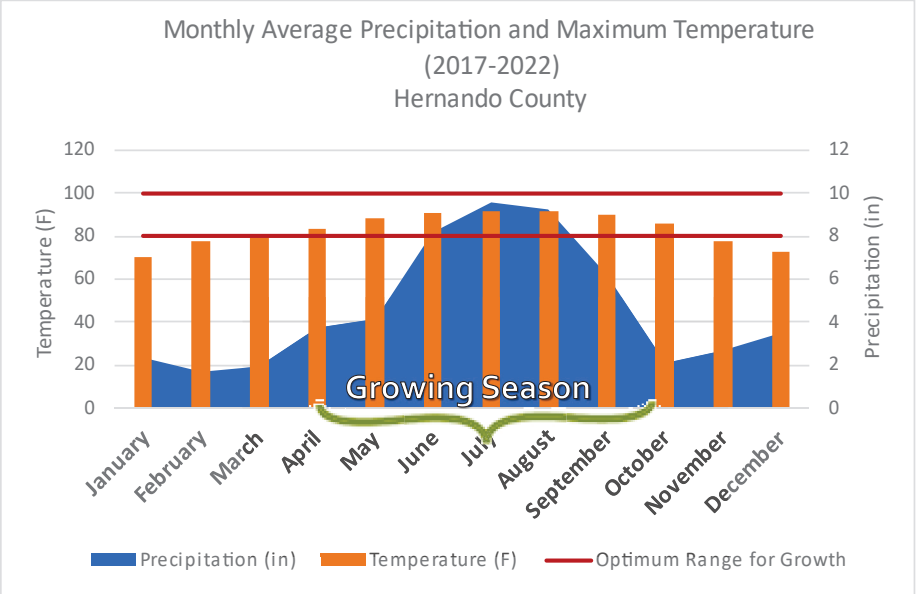
Soldat, D. J., and A. M. Petrovic. 2008. The fate and transport of phosphorus in turfgrass ecosystems. Crop Science 48: 2051–2065

Southwest Florida Water Management District. 2009. Fertilizer Facts. Brooksville, FL.

WHEN?

Why Support a Rainy Season Black Out?

- St. Augustine grass grows best in the warmth of spring and summer, when high temperatures are normally 80-100 °F.[1]
- Utilize slow-release fertilizer products to meet nutrient needs and support growth of healthy vegetation through the growing months (May to October) but adhere to the fertilizer black out between June and September.
- Allowing fertilizer application in May and (early) October will still allow at least two applications during the active growing season.
- The rationale for this provision to restrict the application of N and P containing fertilizers during this summer period is that more frequent rains will increase the likelihood of higher levels of soil saturation, runoff, and leachate carrying nutrients to surface water and groundwater. This is reasonable, in that over 50% of Hernando County's annual rains occur during this summer period (SWFWMD, 2023).



"If you are in an area with a restricted application period, fertilize with a long-term controlled release product at the end of May. The grass will receive low doses of nitrogen over a period of 3 to 4 months, depending on the product used. When the restrictive period is over, fertilize again with a product that has a more soluble nitrogen component, such as sulfur-coated urea. This will reduce the potential for the fertilizer to release nitrogen during the winter months when the ability to take up the nutrients is reduced." -Trenholm., L.E. Homeowner Best Management Practices for the Home Lawn. ENH979, UF/IFAS Extension.

1-Lu, H., Jessup, K.E., Xue, Q. & Cherry, R.H. (2013) Morphological and Physiological Responses of St. Augustine Grass Cultivars to Different Levels of Soil Moisture, Journal of Crop Improvement, 27:3, 291-308
2- Southwest Florida Water Management District. 2023. Hydrologic Data

WHERE?

Apply Fertilizer to Areas Away from Waterbodies or Wetlands

STAY AWAY FROM THE WATERWAY

Fertilizer exclusion zone- Waterfront property or 100ft set back from waterbody, whichever is less.

Buffer strips reduced runoff, compared with no buffer strips. Dense turf vegetation reduces runoff by creating pathways that reduce runoff rate thus enhancing infiltration. Water can be filtered of its sediment and nutrient load by turf shoots and roots- **Hochmuth et al. 2011. UF/IFAS SL283**

It is widely recognized by professional landscapers and researchers alike that maintaining a non-fertilized strip along water bodies is a good practice for protecting water. No-mow zones also help absorb nutrients present in runoff as well as add a margin for application error -**Hillsborough County Environmental Services Division. 2010. Technical Support Document for Proposed Local Fertilizer Rule**

"It's important to designate a 'maintenance-free zone' of at least 10 feet between your landscape and the riparian zone. This area helps to protect the water from runoff. Don't mow, fertilize, or apply pesticides in the maintenance-free zone. Select plants that will do well without fertilization or irrigation after establishment." - **UF/IFAS. 2015. Florida Yards and Neighborhoods Handbook**

WHAT?

Florida-Friendly Blackout Compliant Fertilizer

Restricted Season

- Fertilizers containing nitrogen or phosphorus are not permitted between June 1 and September 30 or December 1 and March 31
- Fruit and vegetable gardens can still be fertilized
- Summer fertilizer blends can still be applied

"Fertilization with N in the summer is not always desirable since this often encourages disease and insect problems. …the addition of iron (Fe) to these grasses provides the desirable dark green color, but does not stimulate excessive grass growth which follows N fertilization."

Shaddox, T. (2017). SL21/LH014

Summer Fertilizer Blends

- Must be nitrogen and phosphorus free
- Can be applied anytime
- Should be based on soil test
- Iron enhances color
- Manganese enhances disease resistance
- **Potassium** improves overall plant health
- Lime corrects acidic soil
- **Compost can be used at any time**

WHAT?

Choosing Ordinance Compliant Fertilizers

If using fertilizer during the allowed application period….

- Only choose fertilizer that has at least 50% Slow-Release Nitrogen
- Apply zero phosphorus unless a soil test shows a deficiency

Many Florida soils are high in plant-available phosphorus and your lawn may not require any additional phosphorus in the form of fertilizer- **Trenholm, L.E., Cisar, J.L. and J.B. Unruh. 2006. St. Augustine Grass for Florida Loawns . ENH5**

The use of controlled-release fertilizer in the summer helps minimize the losses of N because only very small amounts of N are released from the fertilizer at any one time (typically based on temperature and moisture) -**Sartain, J.B. 2007. General Recommendations for Fertilization of Turfgrasses on Florida Soils, IFAS Publication SL21**

Slow-release N sources may be applied at higher rates than soluble N sources so long as the single application rate and total annual N applied do not exceed UF/IFAS recommendations- **Shaddox, T.W. and J.B. Unruh. 2018.**

To this end, slow-release N fertilizers can increase N uptake by as much as 300% compared with soluble N sources- **Shaddox, T.W. and J.B. Unruh. 2018. The Fate of Nitrogen Applied to Florida Turfgrass. ENH1282**

Slow release products are capable of meeting the nutritional needs of turf grasses through 6 months. If slow release nitrogen (SRN) is used in the spring months then lawns should be adequately fertilized during the summer months- **Sartain, J. B. 2008. Comparative influence of N source on N leaching and St. Augustine grass quality, growth and N uptake. Soil and Crop Sci. Soc. Florida Proc. 67: 43–47.**

Florida-Friendly Landscaping Article

- Draft Code that mirrors the State's Florida Friendly Landscaping legislation (F.S. 373.185) stating that a deed restriction or covenant may not prohibit or be enforced so as to prohibit any property owner from implementing Florida Friendly Landscaping on his or her land
- Provides assistance to homeowners in making sustainable changes in their landscapes
- Prohibits Homeowner Associations from requiring irrigation and turf mandates in HOA codes, covenants, and restrictions

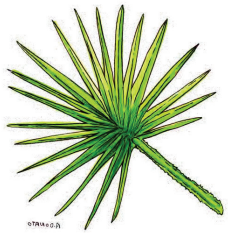
If you're adhering to Florida-friendly landscaping principles, then you're in the clear by state law. By encouraging the transformation of conventional landscapes to Florida-Friendly landscapes, HOAs and homeowners can conserve water, protect the environment, and allow a wide range of aesthetic choices.

Florida statute 720.3075

"Homeowners' association documents, including declarations of covenants, articles of incorporation, or bylaws, may not prohibit or be enforced so as to prohibit any property owner from implementing Florida-friendly landscaping, as defined in s. 373.185, on his or her land or create any requirement or limitation in conflict with any provision of part II of chapter 373 or a water shortage order, other order, consumptive use permit, or rule adopted or issued pursuant to part II of chapter 373."

Florida-Friendly Landscaping

New lawn models allow opportunities for greater personal creativity: planting with food, flowering plants, herbs, or wildlife habitat (Ponsford, 2020). **Complete turf replacement may be daunting so the goal may have to be gradual reductions in turf areas.**



If the natural terrain and conditions are correct for the particular plant, then that plant will require less water, less fertilizer, less pesticides, and generally be healthier and look better. In other words, **don't plant something that likes wet soil on a sandy dune**. Florida native plants are encouraged, but not required.

"Florida-friendly landscaping" means quality landscapes that conserve water, protect the environment**, are adaptable to local conditions, and are drought tolerant**. The principles of such landscaping include planting the right plant in the right place, efficient watering, appropriate fertilization, mulching, attraction of wildlife, responsible management of yard pests, recycling yard waste, reduction of storm water runoff, and waterfront protection.

Florida Native and Resilient Plants with the Greatest Potential for Increased Use and Most Widespread Familiarity and Current Use.

Grasses	Shade Trees	Herbaceous Perennials	Understory Trees	Shrubs	Ground Cover	Palms
Muhly Grass	Baldcypress	Scarlet Sage	Yaupon Holly	Simpsons Stopper	St. John's Wort	Coontie Palm
Fakahatchee Grass	Summer Red Maple	Blue Porterweed	Eastern Redcedar	Walter's Viburnum	Swamp Twinflower	Saw Palmetto
Purple Lovegrass	Shumard Oak	Lanceleaf Tickseed	Fringetree	Firebush	Sunshine Mimosa	Dwarf Palmetto
Sand Cordgrass	Miss Chloe Southern Magnolia	Leavenworth's Tickseed	Chickasaw Plum	Oakleaf Hydrangea	Frogfruit	Paurotis Palm
Elliot's Lovegrass	Longleaf Pine	Blue-eyed Grass	Flatwoods Plum	Wild Coffee	Oblongleaf Twinflower	Cardboard Plant
Little Bluestem	Winged Elm	Starry Rosinflower	Sweetbay Magnolia	American Beautyberry	Creeping Sage	Scrub Palmetto
Sea Oats	Sand Live Oak	Carolina Wild Petunia	Southern Waxmyrtle	Anise	Common Violet	Lady Palm
Lopsided Indiangrass	Bluff Oak	Lyreleaf Sage	Dahoon Holly	Darrow's Blueberry	Beach Verbena	Needle Palm
Splitbeard Bluestem	Tuliptree	-	Eastern Redbud	White Stopper	Narrowleaf Silkgrass	-
Wiregrass	Turkey Oak	-	Florida Privet	Sparkleberry	Partridge Berry	-

Ponsford, M. 2020 (April 17). Designing an end to a toxic American obsession: The Lawn. CNN Style. Retrieved from https://www.cnn.com/style/article/lawns-american-yard-us/index.html

Other Ordinances

County	Seasonal restriction	At least 50% slow release nitrogen	No phosphorus without a soil test	Fertilizer-free exclusion zone from water body	Voluntary low maintenance zone	Applies to commercial and institutional applicators	Additional professional training requirements
ALACHUA	July 1 - Feb 28	Yes	Yes	10		Yes	Not specified
BREVARD	June 1 - Sept 30	Yes	Yes	15	15	Yes	All commercial applicator employees and supervisors are required to complete BMP training.
BROWARD	NA	Not specified	Not specified	Not specified	Not specified	Yes	Not specified
CHARLOTTE	June 1 - Sept 30	Yes	Yes	10 (3 with deflector)	Not specified	Yes	Vehicle decal required.
CITRUS	Nov 1 - Mar 31	No, 33%	Not specified	25	Not specified	No	All professional applicators (including golf courses) must complete BMP training.
COLLIER	NA	Yes	Yes	10	Not specified	Yes	Not specified
COLUMBIA	NA	Not specified	Not specified	10 (3 with deflector)	Not specified	Yes	Not specified
DUVAL	NA	Not specified	Not specified	6	Not specified	Yes	Not specified
ESCAMBIA	NA	Not specified	Not specified	10	Not specified	Yes	Not specified
GADSDSEN	NA	Not specified	Not specified	10	Not specified	Yes	Not specified
HENDRY	NA	Not specified	Not specified	10	Not specified	Yes	Not specified
HERNANDO	Jan 1 - Mar 31	Not specified	Not specified	10	Not specified	No	Not specified
HILLSBOROUGH	June 1 - Sept 30	Yes	Yes	10	6	Yes	All commercial applicator employees and supervisors are required to complete BMP training. Vehicle decal required.
INDIAN RIVER	June 1 - Sept 30	Yes	Yes	10	Not specified	Yes	Not specified
LAKE	June 1 - Sept 30	Yes	Not specified	15	Not specified	Yes	Not specified
LEE	June 1 - Sept 30	Yes	Special rates defined	10	6	Yes	Vehicle decal required
LEON	"winter months"	Yes	Yes	15	15	Yes	Professional applicator supervisors must complete BMP training and re-certify with County program every 4 years.
MANATEE	June 1 - Sept 30	Yes	Yes	10	Not specified	Yes	Supervisors must complete BMP training. Employees must complete training (at a lower level). Vehicle decal required.

Other Ordinances, Continued

County	Seasonal restriction	At least 50% slow release nitrogen	No phosphorus without a soil test	Fertilizer-free exclusion zone from water body	Voluntary low maintenance zone	Applies to commercial and institutional applicators	Additional professional training requirements
MARION	NA	No, special rates defined	Special rates defined	75 ft of river/spring 100ft of sinkhole/karst feature 15ft every other waterbody	Not specified	Yes	Must complete BMP training or county approved CEU. Vehicle decal required.
MARTIN	June 1 - Sept 30	Yes	Yes	25	Not specified	Yes	All applicators (including golf courses) must ensure at least one employee is BMP certified. County conducts all training.
MIAMI-DADE	May 15 - Oct 31	Yes, 65%	Yes	20	10	Yes	All applicators must complete training, but only commercial applicators are required to be BMP certified.
MONROE	May 15 - Oct 31	Yes, 65%	Yes	20	10	Yes	All applicators must complete BMP training and golf courses must complete golf course BMP training.
ORANGE	June 1 - Sept 30	Yes, 65%	Yes	25	10	Yes	Any individual applying fertilizer must take BMP training. Vehicle decal required.
OSCEOLA	NA	Not specified	Not specified	10	Not specified	Yes	Not specified
PALM BEACH	NA	Not specified	Not specified	10	Not specified	Yes	Not specified
PASCO	NA	Not specified	Not specified	10	Not specified	Yes	Not specified
PINELLAS	June 1 - Sept 30	No, special rates defined	Yes	10	6	Yes	County has their own BMP training program (for site supervisors and managers). Training for employees is required, but less stringent. Vehicle decal required.
POLK	NA	Not specified	Not specified	10	Not specified	Yes	Not specified
SARASOTA	June 1 - Sept 30	Yes	Special rates defined	10	Not specified	Yes	Not specified
SEMINOLE	June 1 - Sept 30	Yes, 65%	Yes	15	10	Yes	Not specified
ST. JOHNS	NA	Not specified	Not specified	10	Not specified	Yes	Not specified
ST. LUCIE	June 1 - Sept 30	Yes	Yes	10	Not specified	Yes	Not specified
SUWANNEE	NA	Not specified	Not specified	10	Not specified	Yes	Not specified
VOLUSIA	June 1 - Sept 30	Yes	Yes	15	Not specified	Yes	Not specified
WAKULLA	NA	Not specified	Not specified	10 (3 with deflector)	Not specified	Yes	Not specified

WHO?

Anyone Applying Fertilizer Within Unincorporated Areas of Hernando County

- A study conducted in the Wekiva River watershed (FDEP/SJRWMD 2010) suggests that **commercial landscape/lawn care companies do contribute substantial amounts of N to surface waters**
- According to Market Insight Research, more than three-quarters of **Tampa Bay residents** surveyed indicated their lawn had been treated with fertilizer in the past twelve months and of these **almost half had it applied by a lawn care service**
    - Fertilizer is applied monthly according to some who use a lawn service
- 79% of Manatee County residents surveyed use a landscape contractor to apply fertilizer
- Data clearly demonstrate that summer rainfall patterns make it difficult for even experts to determine in advance whether a specific location in the County will receive significant rains within the following 24 to 48 hours

Exempting commercial applicators from the fertilizer restrictions would allow a majority of those applying fertilizer to be exempt from the restrictions, thereby minimizing the environmental gains

1- Florida Department of Environmental Protection/St. John's River Water Management District (FDEP/SJRWMD). 2010. Final Report Wekiva River Basin Nitrate Sourcing Study. Palatka and Tallahassee, FL.
2- Market Insight. 2009. Analysis of Focus Group Research: TBEP's Fertilizer Education Campaign. Report for the Tampa Bay Estuary Program.
3-Persaud, A., Alsharif, K., Monaghan, P., Akiwumi, F., Morera, M. C., & Ott, E. (2016). Landscaping practices, community perceptions, and social indicators for stormwater nonpoint source pollution management. Sustainable cities and society, 27, 377-385.

WHO?

- Residential Fertilizer Study (Souto et al 2007-2011) collected subdivision, regional, and statewide, consumer fertilizer information demonstrating that:
  - Homeowners who applied fertilizer to the lawn themselves applied much less nitrogen (N) than the IFAS recommended rates on average [1]
  - Half of Florida's fertilized lawns are managed by homeowners who are following the seasonal restriction intuitively [1]
- **There is no evidence that the fertilizer industry has suffered as a result of more restrictive ordinances** [2] :
  - Once restrictive period ordinances began to pass in Florida, fertilizer manufacturers responded quickly to develop products that can be applied during the seasonal restriction (There are over 120 products available on the market) [2]
  - Florida-owned fertilizer companies benefitted most by capitalizing on new products that can be applied in Florida during the rainy season. These products include micronutrients such as iron, magnesium, and other beneficial plant needs, they just don't have N or P [2]
  - In response to the Pinellas and Hillsborough County ordinances, Tru-Green opened a new residential lawn care center in Tampa and hired 175 new workers to help support the new emerging market [2]

1- Souto, Leesa, "Landscaping Perceptions And Behaviors: Socio-ecological Drivers Of Nitrogen In The Residential Landscape" (2012). Electronic Theses and Dissertations. 2341.
2- Souto, Leesa. "Science to Support Fertilizer Controls." *Florida Today*, 24 Nov. 2013.

WHO?

- The GI-BMP certification is a one-day training (class and test) or an on-line module.
  - A passing grade is 75%, which means that the test taker can get the entire fertilizer module wrong and still pass the test.
- Regardless of training, professional applicators still cannot predict rain events.
  - How does the industry address the current Code that prohibits fertilizer application prior to 2 inches of rain in 24 hours?
- What is the premise upon which Hernando County's exemption for certified applicators from the restricted season application period is based?
- Hernando County is one of <u>two</u> Counties in Florida that have an exemption for commercial and institutional applicators.

Best Management Practices for
Protection of Water Resources by the Green Industries
Florida-Friendly Landscaping™

Lessons Learned- Orange County

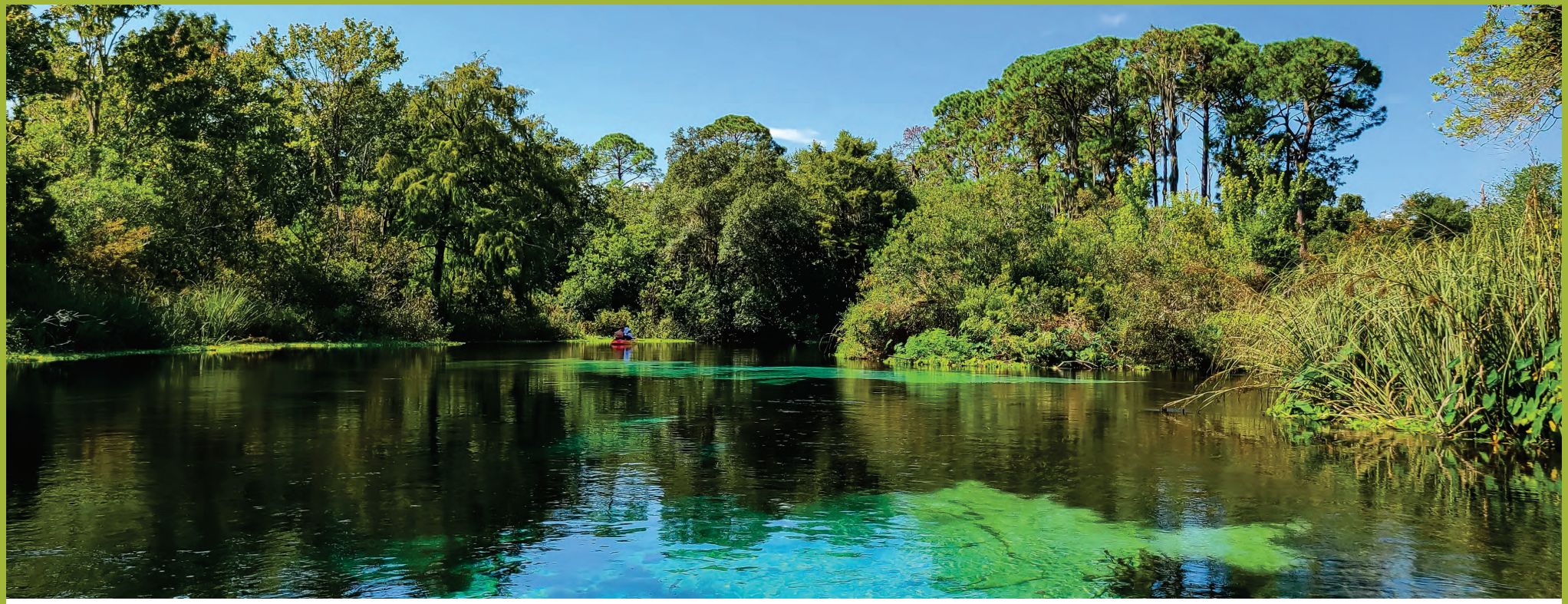
- 2008- FDEP identified fertilizer and septic tanks as highest nitrogen pollution sources to the Wekiva Basin.
- 2009- Orange County adopted initial Fertilizer Ordinance.
- 2010- Urban turf fertilizer (residential, and other) identified by contractor as 20% of nitrate loadings to the Wekiva Basin.
- 2015- State Model Ordinance updated.
- 2016- Florida Springs and Aquifer Protection Act required County to adopt State Model Fertilizer Ordinance Language by 2017.
- 2017- County Ordinance updated to comply with State Model Ordinance. The County also implemented an educational fertilizer campaign.
  - Ordinance included exemptions for trained and certified applicators.
  - BOCC directed County to complete a study to determine where nitrate was coming from.
- 2018- FDEP identifies urban turf fertilizer as 26% of nitrate loadings to the Wekiva Basin.
- 2021- Contractors for the County identified residential turf fertilizer as a significant contributor to groundwater nitrate within the springshed.
  - This evidence was sufficiently compelling for the Orange County BOCC to implement a revised fertilizer ordinance that restricts application of nitrogen-containing fertilizers during the rainy season, for ALL applicators (residential, commercial, and institutional).

Takeaway- Orange County had to spend millions of dollars on scientific studies to show that that limiting the application period for just residential homeowners was not leading to improvements in water quality, and that the majority of nitrate in the groundwater was still associated with urban turf fertilizer, likely from the continued application year-round from commercial and institutional applicators. An economically feasible way to reduce nutrient loads and meet regulatory criteria is to remove exemptions for commercial and institutional applicators.

Lumbard, L., Szafraniec, M., and Shah, N. 2021. Wekiva Springshed Groundwater Monitoring & Data Analysis Summary.Wood

Ordinance Options

	Current	Protective	Most Protective
Restricted Period	January - March	June - September	Winter and Summer
Slow Control N	Silent	50%	65%
Phosphorus	Silent	Reduced rate	Soil test required
Commercial Applicators	Exempt	Included	Included
GI-BMP Training	Training for single employee	Training for managers and supervisors	Training for all employed applicators
Exclusion Zone (ft)	10	20	Greater than 25



THANK YOU FOR PROTECTING OUR NATURAL RESOURCES!

Training Requirements

Sec. 28-514. Applicator training.

(a) All commercial applicators of fertilizer within Hernando County shall abide by and successfully complete the University of Florida IFAS "Florida-Friendly Best Management Practices for Protection of Water Resources by the Green Industries," training program or an approved equivalent. Successful completion shall be evidenced by issuance of a training certificate and a limited certification for urban landscape commercial fertilizer application to the applicator.

(b) All institutional applicators of fertilizer within Hernando County shall ensure **that at least one (1) employee has completed the training** program specified in subsection (a) of this section and received a training certificate. The employee or employees shall complete the training for the purpose of ensuring that fertilizer application practices are planned and carried out in compliance with this article and with Green Industry best management practices.

(Ord. No. 2013-34, § I, 11-12-13)

Sec. 28-515. Applicator licensing and certification.

(a) By January 1, 2014, all commercial fertilizer applicators within Hernando County shall have and carry in their possession at all times when applying fertilizer, a limited certification for urban landscape commercial fertilizer application or other approved evidence of certification by the Florida Department of Agriculture and Consumer Services as a commercial applicator per 5E-14.117(18) Florida Administrative Code.

(b) By January 1, 2014, **all institutional applicators shall be supervised on site during the application of fertilizer by at least one (1) institutional applicator** who shall have and carry in their possession at all times when applying fertilizer, a University of Florida IFAS "Florida-Friendly Best Management Practices for Protection of Water Resources by the Green Industries" training certificate.

(Ord. No. 2013-34, § I, 11-12-13)

Any institutional applicator that applies fertilizer within the county shall abide by and successfully complete the six-hour training and continuing education requirements in the Florida-Friendly Best Management Practices for Protection of Water Resources by the Green Industries, offered by the Florida Department of Environmental Protection through the UF/IFAS "Florida-Friendly Landscaping " program.

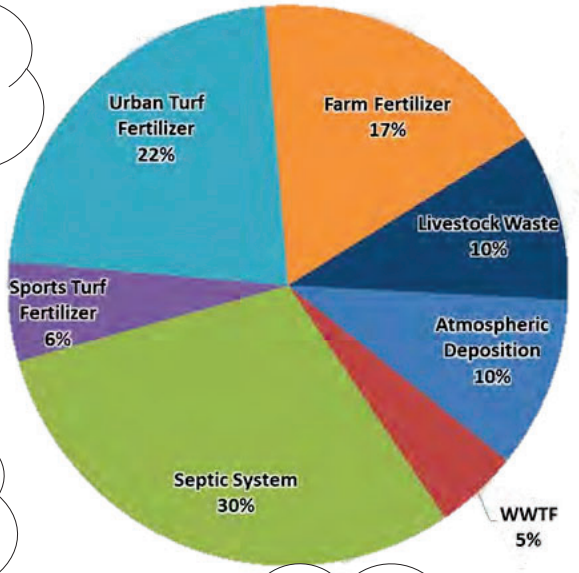
Professional applicators must submit proof of certification to Hernando County to receive an applicator decal and shall affix the decal provided to all vehicles used during fertilizer application.

WHY?

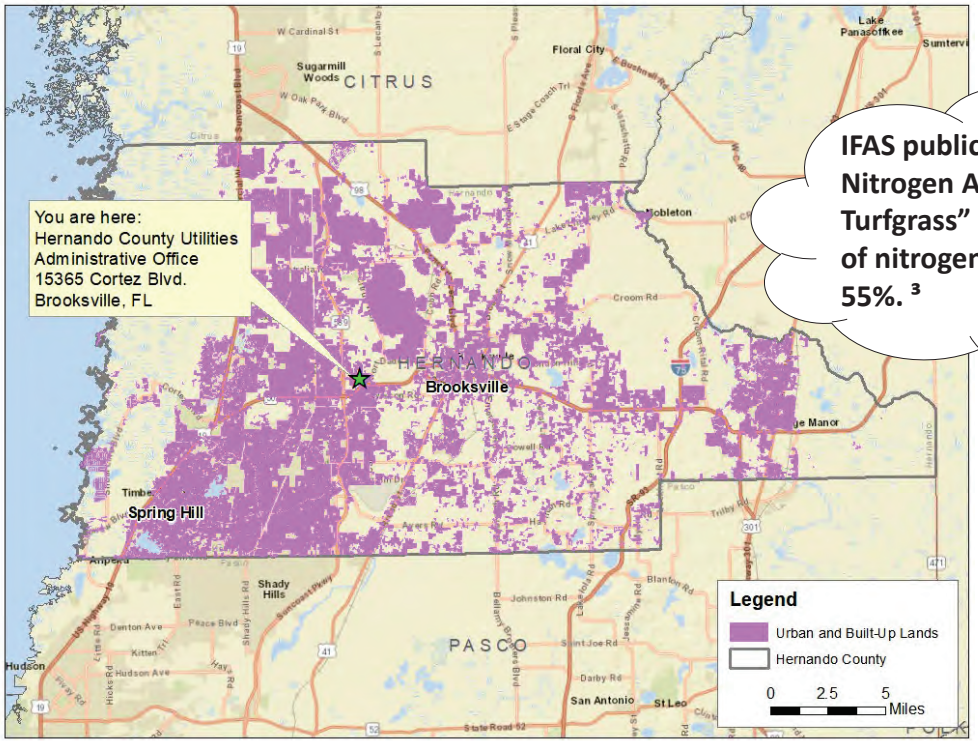
Impaired Waterbodies

- Studies conducted by the SWFWMD and FDEP have determined that one of the primary causes of water quality issues in Weeki Wachee Springshed comes from inappropriate fertilizer use.[2]
- FDEP assumes 20% leaching of nitrogen from lawn fertilizers.[4]
- In Florida, water quality issues are among the most important environmental concerns, and preferences for iconic, lush, green landscapes have been associated with overuse of inputs such as water and fertilizer (Kumar Chaudhary et al. 2017).

Fertilizer applied to turfgrass can also have impacts on water quality through runoff of the fertilizer itself. [1]



IFAS publication "Fate of Nitrogen Applied to Florida Turfgrass" reports leaching of nitrogen ranges from 0-55%. [3]



Based on the Nitrogen Source Inventory Loading Tool and BMAP, urban turf fertilizer contributes 22% of nitrogen loading in the Weeki Wachee Springshed. [4]

1- De la Vega, E. L., & Ryan, J. (2016). Analysis of nutrients and chlorophyll relative to the 2008 fertilizer ordinance in Lee County, Florida. Florida Scientist,
2- https://www.hernandocounty.us/Home/Components/News/News/1707/274?selamenityid=2
3- Shaddox, T.W. and J.B. Unruh. 2018. The Fate of Nitrogen Applied to Florida Turfgrass. ENH1282, UF/IFAS Extension.
4- FDEP. 2018. Weeki Wachee Basin Management Action Plan.

WHO?

All Applicators Within Unincorporated Areas of Hernando County

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WHEN?

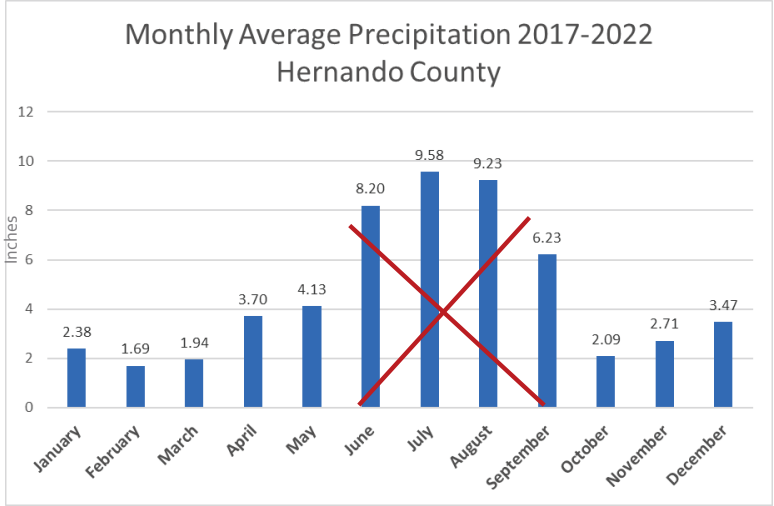
No application of fertilizer containing nitrogen or phosphorus from **June 1 through September 30** and **December 1 through March 31**

Why Support a Rainy Season Black Out?

- Higher precipitation can mobilize N and allow it to leave lawns via leaching or runoff
- Losses are most likely when fertilizer is applied just before or during heavy rainfall (Soldat and Petrovi 2008)
- Given the inability to predict future storm patterns and rain totals, **the most certain way to protect against run-off is to not allow fertilizing during the summer rainy season**
- Krimsky et al (2021) performed stable isotope study of nitrate from lawn runoff in Florida between the wet and dry seasons. This study found that during the dry season the likely average percent contribution of inorganic fertilizers was 44.2% but dropped to 30.8% during the wet season, when a fertilizer ban was in place.

Increased rainfall June – September increases chances for leaching and runoff

A summer ban would reduce the amount of N available to be mobilized to surface and ground waters



For much of Florida, including the Tampa Bay region, summer is not the only growth period for turf grasses and landscape vegetation. Plants are also active in spring and fall. SWFWMD (2009) recognized that the prudent application of fertilizer bracketing the rainy season is a reasonable alternative to summer fertilization, stating: ”do not apply fertilizer if heavy rainfall is forecast in the next 24 hours.” and “fertilize only when the grass is actively growing.

Krimsky, L. S., Lusk, M. G., Abeels, H., & Seals, L. 2021. Sources and concentrations of nutrients in surface runoff from waterfront homes with different landscape practices. Science of The Total Environme

Soldat, D. J., and A. M. Petrovic. 2008. The fate and transport of phosphorus in turfgrass ecosystems. Crop Science 48: 2051–2065

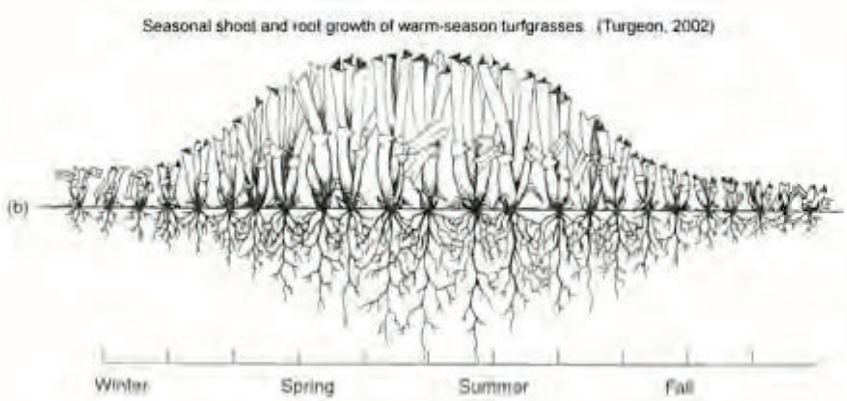
Southwest Florida Water Management District. 2009. Fertilizer Facts. Brooksville, FL.

WHEN?

No application of fertilizer containing nitrogen or phosphorus from **June 1 through September 30** and **December 1 through March 31**

Why Support a Winter Black Out?

- N application to turfgrasses is generally not needed in winter months due to the grasses entering a state of dormancy (or at least decreased growth)
- Smidt et al (2022) found fertilizer ordinances favorably impacted lacustrine water quality, and winter/dry season fertilizer bans had the greatest effect across all water quality metrics
- While lawns naturally go dormant, turning brown in the process, during the winter in Florida, some homeowners will overwater and over fertilize as a way to prevent this



Your last fertilizer application should be around mid-October for central Florida- *Homeowner BMPs for Home and Lawn- UF IFAS 2018*

Decreased plant growth and root density in winter (cooler temperatures, less growth, less light)

It is important to not fertilize when grasses are not growing, as this can increase the possibility of nutrients leaching through the soil or running off

Smidt, S., D. Aviles, E. Belshe, A. Reisinger. 2022. Impacts of residential fertilizer ordinances on Florida lacustrine water quality. Limnology and Oceanography Letters

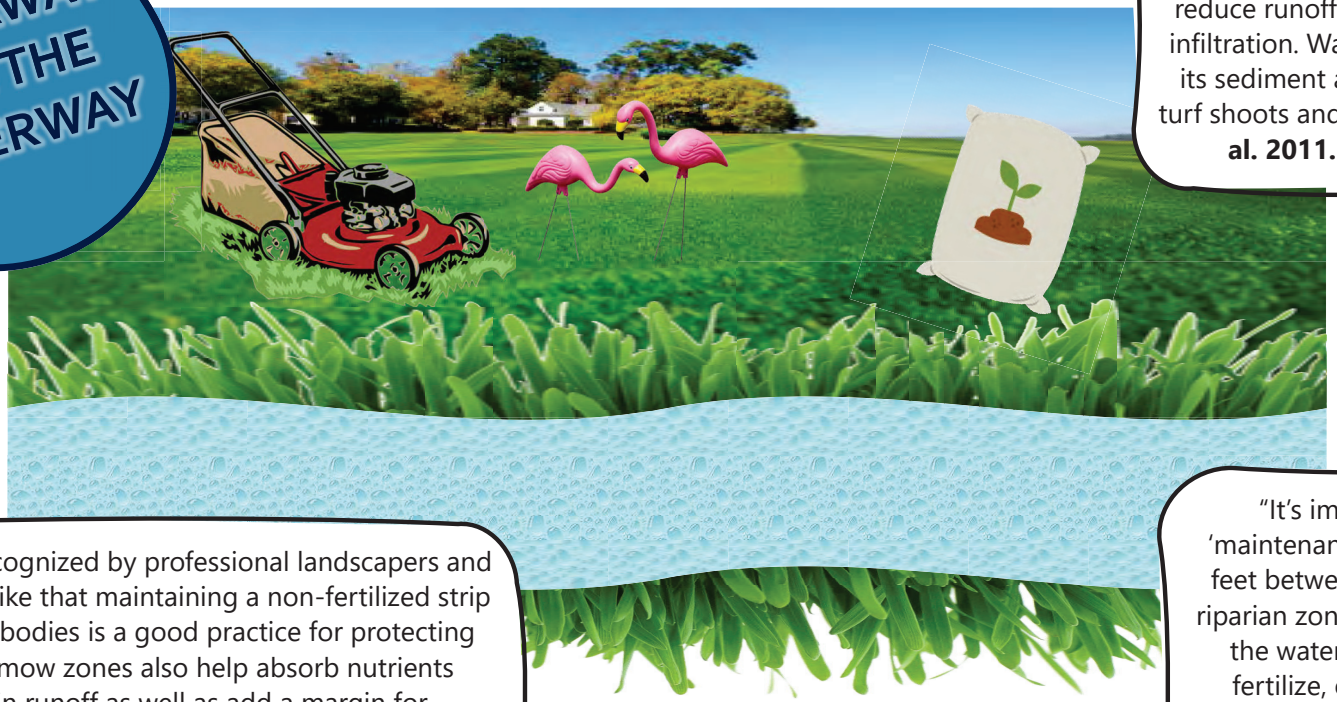
Trenholm, Laurie E. 2008. "Homeowner Best Management Practices for the Home Lawn: ENH979/EP236, Rev. 01/2018". EDIS 2018

Persaud, A., Alsharif, K., Monaghan, P., Akiwumi, F., Morera, M. C., & Ott, E. (2016). Landscaping practices, community perceptions, and social indicators for stormwater nonpoint source pollution management. Sustainable cities and society, 27, 377-385.

WHERE?

Apply Fertilizer to Areas Away from Waterbodies or Wetlands

STAY AWAY FROM THE WATERWAY



Buffer strips reduced runoff, compared with no buffer strips. Dense turf vegetation reduces runoff by creating pathways that reduce runoff rate thus enhancing infiltration. Water can be filtered of its sediment and nutrient load by turf shoots and roots- **Hochmuth et al. 2011. UF/IFAS SL283**

It is widely recognized by professional landscapers and researchers alike that maintaining a non-fertilized strip along water bodies is a good practice for protecting water. No-mow zones also help absorb nutrients present in runoff as well as add a margin for application error -**Hillsborough County Environmental Services Division. 2010. Technical Support Document for Proposed Local Fertilizer Rule**

"It's important to designate a 'maintenance-free zone' of at least 10 feet between your landscape and the riparian zone. This area helps to protect the water from runoff. Don't mow, fertilize, or apply pesticides in the maintenance-free zone. Select plants that will do well without fertilization or irrigation after establishment." - **UF/IFAS. 2015. Florida Yards and Neighborhoods Handbook**

WHAT?

Florida-Friendly Blackout Compliant Fertilizer

Restricted Season

- Fertilizers containing nitrogen or phosphorus are not permitted between June 1 and September 30 or December 1 and March 31
- Fruit and vegetable gardens can still be fertilized
- Summer fertilizer blends can still be applied

"Fertilization with N in the summer is not always desirable since this often encourages disease and insect problems. …the addition of iron (Fe) to these grasses provides the desirable dark green color, but does not stimulate excessive grass growth which follows N fertilization."
Shaddox, T. (2017). SL21/LH014

Summer Fertilizer Blends

- Must be nitrogen and phosphorus free
- Can be applied anytime
- Should be based on soil test
- Iron enhances color
- Manganese enhances disease resistance
- **Potassium** improves overall plant health
- Lime corrects acidic soil
- **Compost can be used at any time**

WHAT?

Choosing Ordinance Compliant Fertilizers

If using fertilizer during the allowed application period….

- Only choose fertilizer that has at least 50% Slow-Release Nitrogen
- Apply zero phosphorus unless a soil test shows a deficiency

Many Florida soils are high in plant-available phosphorus and your lawn may not require any additional phosphorus in the form of fertilizer- **Trenholm, L.E., Cisar, J.L. and J.B. Unruh. 2006. St. Augustine Grass for Florida Loawns . ENH5**

The use of controlled-release fertilizer in the summer helps minimize the losses of N because only very small amounts of N are released from the fertilizer at any one time (typically based on temperature and moisture) -**Sartain, J.B. 2007. General Recommendations for Fertilization of Turfgrasses on Florida Soils, IFAS Publication SL21**

Slow-release N sources may be applied at higher rates than soluble N sources so long as the single application rate and total annual N applied do not exceed UF/IFAS recommendations- **Shaddox, T.W. and J.B. Unruh. 2018.**

To this end, slow-release N fertilizers can increase N uptake by as much as 300% compared with soluble N sources- **Shaddox, T.W. and J.B. Unruh. 2018. The Fate of Nitrogen Applied to Florida Turfgrass. ENH1282**

Slow release products are capable of meeting the nutritional needs of turf grasses through 6 months. If slow release nitrogen (SRN) is used in the spring months then lawns should be adequately fertilized during the summer months- **Sartain, J. B. 2008. Comparative influence of N source on N leaching and St. Augustine grass quality, growth and N uptake. Soil and Crop Sci. Soc. Florida Proc. 67: 43–47.**

Florida Friendly Landscaping Article

- Draft Code that mirrors the State's Florida Friendly Landscaping legislation (F.S. 373.185) stating that a deed restriction or covenant may not prohibit or be enforced so as to prohibit any property owner from implementing Florida Friendly Landscaping on his or her land
- Provides assistance to homeowners in making sustainable changes in their landscapes
- Prohibits Homeowner Associations from requiring irrigation and turf mandates in HOA codes, covenants, and restrictions

If you're adhering to Florida-friendly landscaping principles, then you're in the clear by state law. By encouraging the transformation of conventional landscapes to Florida-Friendly landscapes, HOAs and homeowners can conserve water, protect the environment, and allow a wide range of aesthetic choices.

Florida statute 720.3075

"Homeowners' association documents, including declarations of covenants, articles of incorporation, or bylaws, may not prohibit or be enforced so as to prohibit any property owner from implementing Florida-friendly landscaping, as defined in s. 373.185, on his or her land or create any requirement or limitation in conflict with any provision of part II of chapter 373 or a water shortage order, other order, consumptive use permit, or rule adopted or issued pursuant to part II of chapter 373."

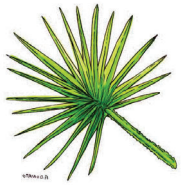
Florida Friendly Landscaping

Groundcover Alternatives (Y=Yes, N=No, H=High, M=Medium).

Common Name / Scientific Name	FL Native	Mowable	Flowers	Butterfly Host Plant	Drought Tolerance	Evergreen	Walkable	Additional Notes
Perennial peanut *Arachis glabrata*	N	Y	Y	N	H	Y*	Y	Nitrogen fixer
Sunshine Mimosa *Mimosa strigillosa*	Y	Y	Y	Y	--	N	Y	Nitrogen fixer
Frogfruit *Phyla nodiflora*	Y	Y	Y	Y	--	N	N	--
Asiatic Jasmine *Trachelospermum asiaticum*	N	N	Y	N	M	Y	N	Shade tolerant
Twinflower *Dyschoriste oblongifolia*	Y	N	Y	Y	H	Y	--	--

* May reduce growth, freeze back, or go dormant in the winter

Source: Compiled from (Silvasy, 2021), (UF/IFAS, 2018)



If the natural terrain and conditions are correct for the particular plant, then that plant will require less water, less fertilizer, less pesticides, and generally be healthier and look better. In other words, **don't plant something that likes wet soil on a sandy dune**. Florida native plants are encouraged, but not required.

New lawn models allow opportunities for greater personal creativity: planting with food, flowering plants, herbs, or wildlife habitat (Ponsford, 2020). **Complete turf replacement may be daunting so the goal may have to be gradual reductions in turf areas.**

"Florida-friendly landscaping" means quality landscapes that conserve water, protect the environment**, are adaptable to local conditions, and are drought tolerant**. The principles of such landscaping include planting the right plant in the right place, efficient watering, appropriate fertilization, mulching, attraction of wildlife, responsible management of yard pests, recycling yard waste, reduction of storm water runoff, and waterfront protection.

Florida Native and Resilient Plants with the Greatest Potential for Increased Use and Most Widespread Familiarity and Current Use.

Grasses	Shade Trees	Herbaceous Perennials	Understory Trees	Shrubs	Ground Cover	Palms
Muhly Grass	Baldcypress	Scarlet Sage	Yaupon Holly	Simpsons Stopper	St. John's Wort	Coontie Palm
Fakahatchee Grass	Summer Red Maple	Blue Porterweed	Eastern Redcedar	Walter's Viburnum	Swamp Twinflower	Saw Palmetto
Purple Lovegrass	Shumard Oak	Lanceleaf Tickseed	Fringetree	Firebush	Sunshine Mimosa	Dwarf Palmetto
Sand Cordgrass	Miss Chloe Southern Magnolia	Leavenworth's Tickseed	Chickasaw Plum	Oakleaf Hydrangea	Frogfruit	Paurotis Palm
Elliot's Lovegrass	Longleaf Pine	Blue-eyed Grass	Flatwoods Plum	Wild Coffee	Oblongleaf Twinflower	Cardboard Plant
Little Bluestem	Winged Elm	Starry Rosinflower	Sweetbay Magnolia	American Beautyberry	Creeping Sage	Scrub Palmetto
Sea Oats	Sand Live Oak	Carolina Wild Petunia	Southern Waxmyrtle	Anise	Common Violet	Lady Palm
Lopsided Indiangrass	Bluff Oak	Lyreleaf Sage	Dahoon Holly	Darrow's Blueberry	Beach Verbena	Needle Palm
Splitbeard Bluestem	Tuliptree	-	Eastern Redbud	White Stopper	Narrowleaf Silkgrass	-
Wiregrass	Turkey Oak	-	Florida Privet	Sparkleberry	Partridge Berry	-

Ponsford, M. 2020 (April 17). Designing an end to a toxic American obsession: The Lawn. CNN Style. Retrieved from https://www.cnn.com/style/article/lawns-american-yard-us/index.html

APPENDIX

B

HERNANDO COUNTY FERTILIZER ORDINANCE

ARTICLE XII. REGULATION OF THE USE OF FERTILIZERS CONTAINING NITROGEN AND/OR PHOSPHORUS, TO IMPLEMENT REGULATIONS TO MINIMIZE THE NEGATIVE ENVIRONMENT EFFECTS CAUSED BY THE MISUSE OF FERTILIZERS[1]

Sec. 28-505. Purpose and intent.

This article regulates the proper use of fertilizers by any applicator; requires proper training of commercial and institutional fertilizer applicators; establishes training and licensing requirements; establishes a prohibited application period for fertilizer containing nitrogen or phosphorus; specifies allowable fertilizer application rates and methods, fertilizer-free zones, low maintenance zones, and exemptions. The article requires the use of best management practices which provide specific management guidelines to minimize negative secondary and cumulative environmental effects associated with the misuse of fertilizers. These secondary and cumulative effects have been observed primarily in and on Hernando County's springs, and also in and on Hernando County's natural and constructed stormwater conveyances, rivers, creeks, canals, lakes, estuaries and other water bodies. Collectively, these water bodies are an asset critical to the environmental, recreational, cultural and economic well-being of Hernando County residents and the health of the public. Overgrowth of algae and vegetation also hinders the effectiveness of flood attenuation provided by natural and constructed stormwater conveyances. Regulation of nutrients, including both phosphorus and nitrogen contained in fertilizer, will help improve and maintain water and habitat quality.

(Ord. No. 2013-34, § I, 11-12-13; Ord. No. 2023-07, § 1, 5-23-23)

Sec. 28-506. Definitions.

[The following words, terms and phrases, when used in this article, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:]

Application or *apply* shall mean the physical deposit, placement, or release of fertilizer upon soil, turf, or landscape plants.

Applicator shall mean any person who applies fertilizer on turf or landscape plants.

Best management practices (BMPs) or *green industry best management practices (GI-BMPs)* shall mean turf and landscape practices or combination of practices based on research, field testing, and expert review, determined to be the most effective and practicable on-location shall mean, including economic and technological considerations, for improving water quality, conserving water supplies and protecting natural resources. Best management practices for Florida fertilizer application that are especially applicable to Hernando County are those developed and promulgated by the UF/IFAS and the FDEP including, but not limited to, the most current version of

[1]Editor's note(s)—Ord. No. 2023-07, § 1, adopted May 23, 2023, amended the title of Art. XII to read as herein set out. The former Art. XII title pertained to regulation of the use of fertilizers containing nitrogen and/or phosphorus.

FDEP's "Florida-Friendly Best Management Practices for Protection of Water Resources by the Green Industries," and, "Best Management Practices for the Enhancement of Environmental Quality on Florida Golf Courses."

Bank shall mean, in reference to a water body, the slope immediately bordering the normal expanse of water in the applicable body. The top-of-bank is the top of the slope.

Commercial fertilizer applicator or *commercial fertilizer application* shall mean any person, except as provided in section 482.1562(9), Florida Statutes, who applies fertilizer, or the act of applying fertilizer, for payment or other consideration to property not owned by the person or firm applying the fertilizer or the employer of the applicator.

Compost means a mixture of decaying organic matter, as from leaves and manure, used as an amendment to improve soil structure and provide nutrients. The composting process is largely the result of the activity of aerobic organisms. Compost reduces the need to fertilize because nutrients are supplied in a slow-release manner. Compost does not include material that has been modified by the addition of inorganic fertilizers.

FDEP means the Florida Department of Environmental Protection.

Fertilize, fertilizing or *fertilization* shall mean the application of fertilizer.

Fertilizer shall mean any substance that contains one (1) or more recognized plant nutrients and promotes plant growth, controls soil acidity or alkalinity, provides other soil enrichment, or, provides other corrective measures to the soil.

Fertilizer-free zone shall mean an area a minimum of twenty-five (25) feet wide adjacent to any pond, stream, river, spring, watercourse, lake, canal, or wetland as measured from the top-of-bank or the face of the seawall.

Golf course means any public or private area of land designed and used exclusively for playing or practicing golf, including tees, fairways, greens, rough areas, hazards and driving ranges (stand-alone ranges or those associated with a golf course). Golf Course also includes clubhouses and all facilities that are adjacent to, and associated with, the uses that are listed in the preceding sentence. Golf-related structures or features on residentially zoned private land shall not constitute a golf course.

Heavy rain shall mean rainfall events that have occurred, are occurring, or are forecast as likely to occur within the ensuing twenty-four (24) hours with a total accumulation of two (2) inches or more for any portion of Hernando County.

Institutional applicator shall mean any person, other than a private, non-commercial or a commercial fertilizer applicator (unless such definitions also apply under the circumstances), who applies fertilizer for the purpose of maintaining turf or landscape plants to areas other than individual private residential properties. Institutional Applicators shall include, but shall not be limited to, owners, managers or employees of public lands, governmental entities, utilities, schools, parks and golf courses, religious institutions, hospitals, community organizations, industrial or business sites and any residential areas maintained in condominium or common ownership. Institutional Applicators that are also commercial fertilizer applicators must meet the applicable requirements of this article for commercial fertilizer applicators.

Landscape plant shall mean any native or exotic tree, shrub, or groundcover (excluding turf).

Limited certification for urban landscape commercial fertilizer applicationthe "state certification"} shall mean a certification issued by the Florida Department of Agriculture and Consumer Services to a commercial applicator that certifies successful completion of required training and testing in the UF/IFAS' Green Industry Best Management Practices (GI-BMPs), pursuant to the requirements of F.S. § 482.1562.

Low maintenance zone shall mean an area a minimum of ten (10) feet wide adjacent to water courses that is planted, preferably with native or Florida-Friendly Landscaping™, and managed in order to minimize the need for fertilization, pesticide application, watering, or mowing.

Person shall mean any and all persons, natural or artificial, including any individual, firm, or association; any municipal or private corporation organized or existing under the laws of Florida or any other state; any county of the state; and any governmental agency of the state or the federal government.

Prohibited application period shall mean the time period during which a flood watch or warning, or a tropical storm watch or warning, or a hurricane watch or warning is in effect for any portion of Hernando County, issued by the National Weather Service, or if more than two (2) inches of rain are forecasted within a twenty-four-hour period.

Saturated soil shall mean a soil in which the voids are filled with water. Saturation does not require flow. For the purposes of this article, soils shall be considered saturated if standing water is present or the pressure of a person standing on the soil causes the release of free water.

Slow- or controlled-release fertilizer shall mean nitrogen in a form that delays its availability for plant uptake and use for an extended period after application, or that extends its availability to the plant longer than a readily available, rapid, or quick-release product, including but not limited to ammonium nitrate and urea. This definition includes the terms "controlled release," "timed release," "slowly available," and "water insoluble."

Sports turf shall mean non-agricultural land planted exclusively for golf courses, parks and athletic fields. *Turf, sod,* or *lawn* shall mean a piece of grass-covered soil held together by the roots of the grass.

UF/IFAS means the University of Florida's Institute of Food and Agricultural Sciences.

Urban landscape shall mean pervious areas on residential, commercial, industrial, institutional, highway rights-of-way, or other nonagricultural lands that are planted or maintained with turf or landscape plants. For the purposes of this section, agriculture has the same meaning as in F.S. § 570.02.

Wetlands as defined in section F.S. § 373.019(27), as it may be amended, means those areas that are inundated or saturated by surface water or ground water at a frequency and a duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soils. Soils present in wetlands generally are classified as hydric or alluvial, or possess characteristics that are associated with reducing soil conditions. The prevalent vegetation in wetlands generally consists of facultative or obligate hydrophytic macrophytes that are typically adapted to areas having soil conditions described above. These species, due to morphological, physiological, or reproductive adaptations, have the ability to grow, reproduce or persist in aquatic environments or anaerobic soil conditions. Florida wetlands generally include swamps, marshes, bayheads, bogs, cypress domes and strands, sloughs, wet prairies, riverine swamps and marshes, hydric seepage slopes, tidal marshes, mangrove swamps and other similar areas. Florida wetlands generally do not include longleaf or slash pine flatwoods with an understory dominated by saw palmetto.

(Ord. No. 2013-34, § I, 11-12-13; Ord. No. 2023-07, § 1, 5-23-23)

Sec. 28-507. Applicability.

This article shall be applicable to and shall regulate any and all applicators of fertilizer and areas of application of fertilizer to urban landscapes within the unincorporated area of Hernando County, unless such applicator or application is specifically exempted by the terms of this article from the regulatory provisions of this article. This article shall be prospective only, and shall not impair any existing contracts.

(Ord. No. 2013-34, § I, 11-12-13)

Sec. 28-508. Timing of fertilizer application.

(a) No person or applicator shall apply fertilizer containing nitrogen or phosphorus to turf or landscape plants during the prohibited application period or to saturated soils.

(b) No person or applicator shall apply fertilizer containing nitrogen or phosphorus to turf or landscape plants from December 15 through March 15.

(c) No person or applicator shall apply fertilizer containing nitrogen or phosphorus to turf or landscape plants from June 1 through September 30.

(d) Fertilizer containing nitrogen shall not be applied before seeding or sodding a site, and shall not be applied for the first thirty (30) days after seeding or sodding, except when hydro-seeding for temporary or permanent erosion control in an emergency situation (e.g., wildfire), or in accordance with the Stormwater Pollution Prevention Plan for that site.

(Ord. No. 2013-34, § I, 11-12-13; Ord. No. 2023-07, § 1, 5-23-23)

Sec. 28-509. Fertilizer-free zones.

(a) Fertilizer shall not be applied within a minimum of twenty-five (25) feet of the top-of-bank of any spring, pond, stream, watercourse, river, lake, canal, or wetland as defined by the FDEP (Chapter 62-340, Florida Administrative Code) If more stringent Hernando County Code regulations apply, including those contained in Chapter 23, Article VI, Riverine Protection, and other applicable sections, this provision does not relieve the requirement to adhere to the more stringent regulations.

(b) Newly planted turf or landscape plants may be fertilized in this zone once beginning thirty (30) days after planting if needed to allow the plants to become well established.

(Ord. No. 2013-34, § I, 11-12-13; Ord. No. 2023-07, § 1, 5-23-23)

Sec. 28-510. Fertilizer content and application rates.

(a) Fertilizers applied to turf within Hernando County shall be applied in accordance with requirements and directions provided by Rule 5E-1.003(2), Florida Administrative Code, Specialty Fertilizer Label Requirements for Urban Turf or Lawns, as it may be amended or renumbered from time to time, unless otherwise specified in this section.

(b) Fertilizer containing nitrogen or phosphorus shall not be applied to turf or landscape plants except as provided in (a) above for turf, or in the UF/IFAS's recommendations for landscape plants, vegetable gardens, and fruit trees and shrubs, unless a soil or tissue deficiency has been verified by an approved test.

(Ord. No. 2013-34, § I, 11-12-13; Ord. No. 2023-07, § 1, 5-23-23)

Sec. 28-511. Application practices.

(a) Spreader deflector shields are required when fertilizing via rotary (broadcast) spreaders. Deflectors must be positioned such that fertilizer granules are deflected away from all impervious surfaces, fertilizer-free zones and water bodies, including wetlands.

(b) Fertilizer shall not be applied, spilled, or otherwise deposited on any impervious surfaces.

(c) Any fertilizer applied, spilled, or deposited, either intentionally or accidentally, on any impervious surface shall be immediately and completely removed to the greatest extent practicable.

(d) Fertilizer released on an impervious surface must be immediately contained and either legally applied to turf or any other legal site, or returned to the original or other appropriate container.

(e) In no case shall fertilizer be washed, swept, or blown off impervious surfaces into stormwater drains, ditches, conveyances, or water bodies.

(f) Fertilizer shall not be applied to saturated soils or in saturated soil conditions.

(Ord. No. 2013-34, § I, 11-12-13)

Sec. 28-512. Management of vegetative matter.

In no case shall grass clippings, vegetative material, or vegetative debris be washed, swept, or blown off into stormwater drains, ditches, conveyances, water bodies, wetlands, sidewalks or roadways. Any material or debris that is accidentally so deposited into, or that may block, stormwater infrastructure shall be immediately removed to the maximum extent practical and consistent with this article.

(Ord. No. 2013-34, § I, 11-12-13; Ord. No. 2023-07, § 1, 5-23-23)

Sec. 28-513. Exemptions.

The provisions set forth above in this article shall not apply to:

(a) Bona fide farm operations as defined in the Florida Right to Farm Act, F.S. § 823.14; provided, that fertilizers are applied in accordance with the appropriate best management practices manual adopted by the Florida Department of Agriculture and Consumer Services, Office of Agricultural Water Policy for the crop in question; or,

(b) Other properties not subject to or covered under the Florida Right to Farm Act that have pastures used for grazing livestock; provided, that fertilizers are applied in accordance with the appropriate best management practices manual adopted by the Florida Department of Agriculture and Consumer Services, Office of Agricultural Water Policy for the crop in question; or,

(c) Any lands used for bona fide scientific research, including, but not limited to, research on the effects of fertilizer use on urban stormwater, water quality, agronomics, or horticulture; or,

(d) Yard waste, food compost, or mulch; or,

(e) Sports turf managed for active recreation, including, but not limited to, on athletic fields; provided, that fertilizers are applied in accordance with the document entitled UF/IFAS SL191 "Recommendations for N, P, K and Mg for Golf Course and Athletic Field Fertilization Based on Mehlich III Extractant," revision: October 2013, which is hereby adopted and incorporated by reference into this Article pursuant to Rule 5E-1,003(3)(b), Florida Administrative Code," as that regulation may be amended; or,

(f) Vegetable gardens, defined as a plot of ground where herbs, fruits (fruit trees and shrubs), flowers, or vegetables are cultivated for human ingestion and not for commercial sale, provided they are not within fifteen (15) feet of any water body or wetland; or,

(g) Golf courses; provided, that:

  (1) Fertilizers are applied by or under the direction of a professional who possesses a valid certification from the UF/IFAS' Florida Golf Course Best Management Practices Certification Training, or its successor program; and,

  (2) Fertilizers are applied in compliance with the "Best Management Practices for the Enhancement of Environmental Quality on Florida Golf Courses," which is hereby adopted and incorporated by reference into this Article pursuant to Rule 5E-1.003(3)(c), Florida Administrative Code, "Labeling Requirements for Sports Turf," as this regulation may be amended.

(Ord. No. 2013-34, § I, 11-12-13; Ord. No. 2023-07, § 1, 5-23-23)

Sec. 28-514. Applicator training.

(a) All commercial applicators of fertilizer within Hernando County shall abide by and successfully complete the UF/IFAS' "Florida-Friendly Best Management Practices for Protection of Water Resources by the Green Industries," training program or an approved equivalent. Successful completion shall be evidenced by issuance of a training certificate and a State Certification to the applicator.

(b) All institutional applicators of fertilizer within Hernando County shall ensure that at least one (1) employee has completed the training program specified in subsection (a) of this section and received a training certificate. The employee or employees shall complete the training for the purpose of ensuring that fertilizer application practices are planned and carried out in compliance with this article and with the Florida-Friendly Best Management Practices for Protection of Water Resources by the Green Industries.

(c) Private, non-commercial, non-institutional applicators are encouraged to follow the recommendations of the UF/IFAS to assist them in complying with the fertilizer application standards of this article. In the event of a conflict between any provision contained within this article and the UF/IFAS' Florida Yards and Neighborhoods program, the requirements of this article shall apply.

(Ord. No. 2013-34, § I, 11-12-13; Ord. No. 2023-07, § 1, 5-23-23)

Sec. 28-515. Applicator licensing and certification.

(a) All commercial fertilizer applicators performing fertilizer application in Hernando County shall obtain a State Certification from the Florida Department of Agriculture and Consumer Services pursuant to F.S. § 482,1562, and Rule 5E-14.117(11), Florida Administrative Code, as they may be amended. A commercial fertilizer applicator shall physically possess a copy of his or her active State Certification at all times when he or she is applying fertilizer.

(b) All employees or agents of institutional applicators shall be supervised on site during the application of fertilizer by at least one (1) institutional applicator who shall have and carry in their possession at all times when applying fertilizer, a UF/IFAS "Florida-Friendly Best Management Practices for Protection of Water Resources by the Green Industries" training certificate.

(Ord. No. 2013-34, § I, 11-12-13; Ord. No. 2023-07, § 1, 5-23-23)

Sec. 28-516. Registration of commercial fertilizer applicators and institutional applicators.

(a) All commercial fertilizer applicators shall register with Hernando County prior to performing professional landscaping in unincorporated Hernando County. Commercial fertilizer applicators must present an active State Certification to successfully complete registration. Commercial fertilizer applicators shall renew their Hernando County registration concurrent with renewal of their State Certification.

(b) All institutional applicators of fertilizer shall register with Hernando County prior to applying fertilizer in unincorporated Hernando County. Any institutional applicators seeking to register and remain registered with the county shall have at least one (1) employee who holds an active UF/IFAS "Florida-Friendly Best Management Practices for Protection of Water Resources by the Green Industries" training certificate. Institutional applicators shall renew their registration every four (4) years with presentation of an updated training certificate showing the completion of continuing education units (CEUs) that meet state standards.

(c) Hernando County may assess initial and annual registration fees sufficient to cover the cost of administration of the registration program.

(Ord. No. 2013-34, § I, 11-12-13; Ord. No. 2023-07, § 1, 5-23-23)

Sec. 28-517. Low maintenance zones.

A voluntary ten-foot maintenance zone is strongly recommended, but not mandated, from any pond, stream, water course, lake, wetland or from the top of a seawall. A swale/berm system is recommended for installation at the landward edge of this low maintenance zone to capture and filter runoff. No mowed or cut vegetative material should be deposited or left remaining in this zone or deposited in the water. Care should be taken to prevent the over-spray of aquatic weed products in this zone. If more stringent Hernando County Code regulations apply, including those contained in chapter 23, article VI, riverine protection, and other applicable sections, this provision does not relieve the requirement to adhere to the more stringent regulations.

(Ord. No. 2013-34, § I, 11-12-13; Ord. No. 2023-07, § 1, 5-23-23)

Editor's note(s)—Ord. No. 2023-07, § 1, adopted May 23, 2023, renumbered the former § 28-517 as § 28-519 and enacted a new § 28-517 as set out herein. The historical notation has been retained with the amended provisions for reference purposes.

Sec. 28-518. Notice to consumers.

Persons, firms, corporations, franchises, and commercial establishments selling fertilizers containing nitrogen or phosphorus shall prominently display, at the point of distribution, a notice to customers that the use of lawn and landscape fertilizers containing nitrogen or phosphorus within the county is restricted in accordance with this article. Signage will be provided by Hernando County and shall be displayed in a location that is clearly visible to consumers.

(Ord. No. 2013-34, § I, 11-12-13; Ord. No. 2023-07, § 1, 5-23-23)

Editor's note(s)—Ord. No. 2023-07, § 1, adopted May 23, 2023, renumbered the former § 28-518 as § 28-520 and enacted a new § 28-518 as set out herein. The historical notation has been retained with the amended provisions for reference purposes.

Sec. 28-519. Violations.

(a) Any person applying fertilizers in violation of any stipulation or performance standard contained herein, including the best management practices and other documents incorporated herein by reference, shall be subject to the remedies and-or penalties as provided for in this article.

(b) Each incident or separate occurrence of an act that violates this article, or in the case of continuous violations, each day a violation occurs or continues, shall be deemed a separate offense.

(Ord. No. 2013-34, § I, 11-12-13; Ord. No. 2023-07, § 1, 5-23-23)

Editor's note(s)—Ord. No. 2023-07, § 1, adopted May 23, 2023, renumbered the former § 28-517, as § 28-519, as herein set out. The former § 28-517 pertained to violations. The historical notation has been retained with the amended provisions for reference purposes.

Sec. 28-520. Enforcement.

(a) Any code enforcement officer or law enforcement officer with jurisdiction over the unincorporated areas of Hernando County may enforce the provisions of this article.

(b) Any violation hereunder may be prosecuted as described in Hernando County Code Chapter 2, Article III, Code Enforcement, as it may be amended. A violation of this article shall be considered irreparable or irreversible. Notwithstanding the foregoing, nothing contained in this article shall be deemed to prohibit the County from seeking enforcement by any other means provided by law, including, but not limited to, filing an action for declaratory and injunctive relief in a court of competent jurisdiction.

(Ord. No. 2013-34, § I, 11-12-13; Ord. No. 2023-07, § 1, 5-23-23)

Editor's note(s)—Ord. No. 2023-07, § 1, adopted May 23, 2023, renumbered the former § 28-518, as § 28-520, as herein set out. The former § 28-518 pertained to enforcement, remedies, and penalties. The historical notation has been retained with the amended provisions for reference purposes.

Secs. 28-521—28-550. Reserved.