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FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES

COMMISSIONER ADAM H. PUTNAM

May 9, 2017

Mr. Tom Frick, Director
Division of Environmental Assessment and Restoration
Florida Department of Environmental Protection
Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Frick:

As we have discussed, our staff has compiled information on the effect of best management practices on nutrient load reductions as a follow-up to the meeting on April 25, 2017 between our two agencies.

Specifically staff has assembled pertinent technical documentation in support of quantifying the effects of implementing nutrient and irrigation-related best management practices (BMPs) on fertilized croplands and on implementing other BMPs on livestock operations. Attached are two bibliographies that list the key documents used to support our findings. The documents are either journal articles, final reports, or in a few cases, extension publications. These documents are all provided in two folders within the enclosed flash-drive device.

In general, for cropland fertilization BMP load reduction effects, we have provided three documents with broad applicability on expected nutrient load reductions, five journal articles and one final report that more specifically address nitrogen load reductions, and one recent extension publication on watermelon BMP adoption in the Suwannee Valley. In the April 25th meeting, Terry Hansen asked about the expected groundwater nutrient load reductions based on the Natural Resources Conservation Service Conservation Practices Physical Effects (CPPE) worksheet. Staff reviewed the CPPE that was developed during the 2015 revision of the Vegetable and Agronomic Crop BMP manual, and the expected reduction for this category alone (in isolation of the others) was 31%. We are available to discuss this in more detail if requested.

For livestock operations (cow/calf in particular), we have provided the draft CPPE for the pending 2017 revision of the cow/calf BMP manual and 15 journal articles and/or extension publications. Most of the published water quality data related to BMP load reductions is the result of grazing management, riparian buffers, and off-stream watering sources.

I believe that the enclosed documentation will lead impartial reviewers to the conclusion that crop farms implementing nutrient management, irrigation management, and installing buffers and/or vegetative filter

strips will collectively reduce nitrogen loading impacts in springsheds by a minimum of 30%, compared to no BMP treatments. Implementation of livestock BMPs will collectively reduce nitrogen loading impacts in springsheds by a minimum of 20%, compared to no BMP treatments. This estimate does not include any reductions attributed to implementation of BMPs for fertilization of pasture or range because of the dynamics associated with grazing, nitrogen (nutrition) utilization, and commonly accepted as-excreted manure values for nitrogen passing through the animals.

We look forward to working with you and your staff in other Basin Management Action Plan areas.

Sincerely,

Steve Dwinell
Director

SD/bh

cc: Stan Posey, Deputy Director
Ray Scott, Deputy Director

Enclosures

Cropland Fertilization References

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4. Frydenborg, B. and Frydenborg, R. 2016. A Meta-Analytical Approach for Determining the Effectiveness of Agricultural Best Management Practices for Reducing Nutrient Pollution in Florida:1-98.
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8. Thomas, M., and Bailey, N. 2016. Development and Initial Verification of Effectiveness for Agricultural Best Management Practices (BMPs) in Florida. ASABE Meeting Presentation Paper No. 162460868:1-7.
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10. Zotarelli, L., et.al. 2011. Irrigation Scheduling for Green Bell Peppers Using Capacitance Soil Moisture Sensors. Journal of Irrigation and Drainage Engineering. 137:73-81.

Livestock References

1. Agouridis, C., et.al. 2005. Livestock Grazing Management Impacts on Stream Water Quality: A Review. Journal of the American Water Resources Association. 41(3):591-606.
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7. Dubeux, J.C.B., et.al. 2009. Animal Behavior and Soil Nutrient Redistribution in Continuously Stocked Pensacola Bahiagrass Pastures Managed at Different Intensities. Crop Science. 49:1503-1510.
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9. Hoorman, J. and McCutcheon. 2007. Best Management Practices to Control the Effects of Livestock Grazing Riparian Areas. Ohio State University Extension Fact Sheet LS-4-05:1-9.
10. Line, D., et.al. 2000. Nonpoint-Source Pollutant Load Reductions Associated with Livestock Exclusion. Journal of Environmental Quality. 29:1882-1890.
11. North Carolina State University. 2002. Riparian Buffers and Controlled Drainage to Reduce Agricultural Nonpoint Source Pollution. Technical Bulletin 318. 1-64.
12. Obour, A., et.al. 2010. Evaluating Cattle Manure Application Strategies on Phosphorus and Nitrogen Losses from a Florida Spodosol. Agronomy Journal. 102(5):1511-1520.
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