

Title Water chemistry data for three agricultural ponds in the southern Coastal Plain of Georgia, USA
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Ponds used to capture and store water for irrigation are a common feature in agricultural landscapes of the southern Coastal Plain of Georgia, USA. However, not much is known about the biogeochemistry of these ponds. As part of a project describing water quality in irrigation ponds of agricultural landscapes, pond water samples were collected from October 2021 to October 2023 at three ponds in Georgia, USA. Two ponds were located on a farm near Ty Ty, GA (Ty Ty Cooperator Farm, TCF) and one pond was located on a farm near Sumner, GA (Sumner Cooperator Farm, SCF; 31.614247, -83.710532). The two ponds on the TCF are identified as TCF-North (TCF-N; 31.5139853, -83.6177578) and TCF-South (TCF-S; 31.5086980, -83.6167862). The TCF is a rotational cropland while the SCF is an integrated crop-livestock farm. At each pond, water samples were collected at various locations along the edges (littoral sites) and in the center (limnetic sites). At the limnetic sites, samples were collected at the water surface and at 1 m depth. Water samples were collected in 500 mL pre-washed plastic bottles using a peristaltic pump and kept on ice until returned to the laboratory. The samples were filtered (934-AH, Whatman) and the filtrate was split for various chemical analyses including dissolved nutrients (ammonia-N, nitrate-N, nitrite-N, orthophosphate-P, and chloride) using flow injection analysis with colorimetric detection, dissolved micro- and macronutrients (aluminum, arsenic, boron, calcium, iron, potassium, magnesium, manganese, molybdenum, sodium, phosphorus, sulfur, silica, and vanadium) using Inductively Coupled Plasma with Optical Emission Spectroscopy (ICP-OES), and optical characteristics of the dissolved organic matter using UV-Visible and Fluorescence spectroscopy.

Abstract

FIELD NAME	DESCRIPTION
SampleName	Sample lab number
Site	Pond location: Sumner Cooperator Farm, SCF; TyTy Cooperator Farm-South, TCF-S; TyTy Cooperator Farm-North, TCF-N
Station	Sample location number
Depth	Sampling depth, m
Habitat	Sample habitat, littoral vs limnetic
Collection_Date	Sample collection date, MM/DD/YYYY
Flag	Notes related to sample collection and analysis: 1, Missing fluorescence data; 2, Missing fluorescence and absorbance data; 3, Sample collected during bloom event from irregular littoral site; 4, DOC and fluorescence data used in Albright et al. (2025)
NH3_NH4_N	Ammonia plus ammonium-N concentration (water, dissolved), mg/L, Lachat flow injection analyzer, Method Detection Limit (MDL) = 0.00892
Cl	Chloride concentration (water, dissolved), mg/L, Lachat flow injection analyzer, MDL = 0.474
NO3_N	Nitrate-N concentration (water, dissolved), mg/L, Lachat flow injection analyzer, MDL = 0.00608
NO2_N	Nitrite-N concentration (water, dissolved), mg/L, Lachat flow injection analyzer, MDL = 0.00225
PO4_P	Ortho-phosphate-P concentration (water, dissolved), mg/L, Lachat flow injection analyzer, MDL = 0.00376
DOC	Dissolved organic carbon concentration (water, dissolved), mg/L, Shimadzu TOC-VCN analyzer, MDL = 0.695
TDN	Total dissolved nitrogen concentration (water, dissolved), mg/L, Shimadzu TOC-VCN analyzer, MDL = 0.467
Al	Aluminum concentration (water, dissolved), mg/L, ThermoFisher iCAP 7400 ICP-OES, MDL = 0.0908
As	Arsenic concentration (water, dissolved), mg/L, ThermoFisher iCAP 7400 ICP-OES, MDL = 0.00201
B	Boron concentration (water, dissolved), mg/L, ThermoFisher iCAP 7400 ICP-OES, MDL = 0.016
Ca	Calcium concentration (water, dissolved), mg/L, ThermoFisher iCAP 7400 ICP-OES, MDL = 0.262
Fe	Iron concentration (water, dissolved), mg/L, ThermoFisher iCAP 7400 ICP-OES, MDL = 0.0183
K	Potassium concentration (water, dissolved), mg/L, ThermoFisher iCAP 7400 ICP-OES, MDL = 0.1
Mg	Magnesium concentration (water, dissolved), mg/L, ThermoFisher iCAP 7400 ICP-OES, MDL = 0.1
Mn	Manganese concentration (water, dissolved), mg/L, ThermoFisher iCAP 7400 ICP-OES, MDL = 0.00572
Mo	Molybdenum concentration (water, dissolved), mg/L, ThermoFisher iCAP 7400 ICP-OES, MDL = 0.00336
Na	Sodium concentration (water, dissolved), mg/L, ThermoFisher iCAP 7400 ICP-OES, MDL = 0.0407
P	Phosphorus concentration (water, dissolved), mg/L, ThermoFisher iCAP 7400 ICP-OES, MDL = 0.00712
S	Sulfur concentration (water, dissolved), mg/L, ThermoFisher iCAP 7400 ICP-OES, MDL = 0.125
Si	Silicon concentration (water, dissolved), mg/L, ThermoFisher iCAP 7400 ICP-OES, MDL = 0.145
V	Vanadium concentration (water, dissolved), mg/L, ThermoFisher iCAP 7400 ICP-OES, MDL = 0.00162
FI	Fluorescence Index; ratio of emission intensities at 470nm and 520nm, obtained at excitation 370nm, Horiba Aqualog
HIX	Humification Index, area under the emission spectra from 435-480nm divided by the peak area from 300-345nm plus 435-480nm, at excitation 254nm, Horiba Aqualog
BIX	Biological Index, ratio of emission intensity at 380nm divided by 430nm, at excitation 310nm, Horiba Aqualog
b_a	Freshness Index, ratio of emission intensity at 380nm divided by the maximum emission intensity between 420 and 435nm, at excitation 310nm, Horiba Aqualog
Peak_A	Fluorescence Intensity at an excitation wavelength of 260nm and emission wavelength of 450nm, Raman Units, Horiba Aqualog
Peak_C	Fluorescence Intensity at an excitation wavelength of 340nm and emission wavelength of 440nm, Raman Units, Horiba Aqualog
Peak_M	Fluorescence Intensity at an excitation wavelength of 300nm and emission wavelength of 390nm, Raman Units, Horiba Aqualog
Peak_B	Fluorescence Intensity at an excitation wavelength of 275nm and emission wavelength of 310nm, Raman Units, Horiba Aqualog
Peak_T	Fluorescence Intensity at an excitation wavelength of 275nm and emission wavelength of 340nm, Raman Units, Horiba Aqualog
SR	Spectral slope ratio; spectral slope from 275-295nm divided by the spectral slope from 350-400nm, Horiba Aqualog
Abs_254	Absorbance at 254nm, m-1, Horiba Aqualog
SUVA254	Absorbance at 254nm divided by the DOC concentration, L mg C-1 m-1
Abs_254:365	Ratio of absorbance at 254nm to 365nm, Horiba Aqualog
Abs_280:465	Ratio of absorbance at 280nm to 465nm, Horiba Aqualog