Regional Biosolids Symposium

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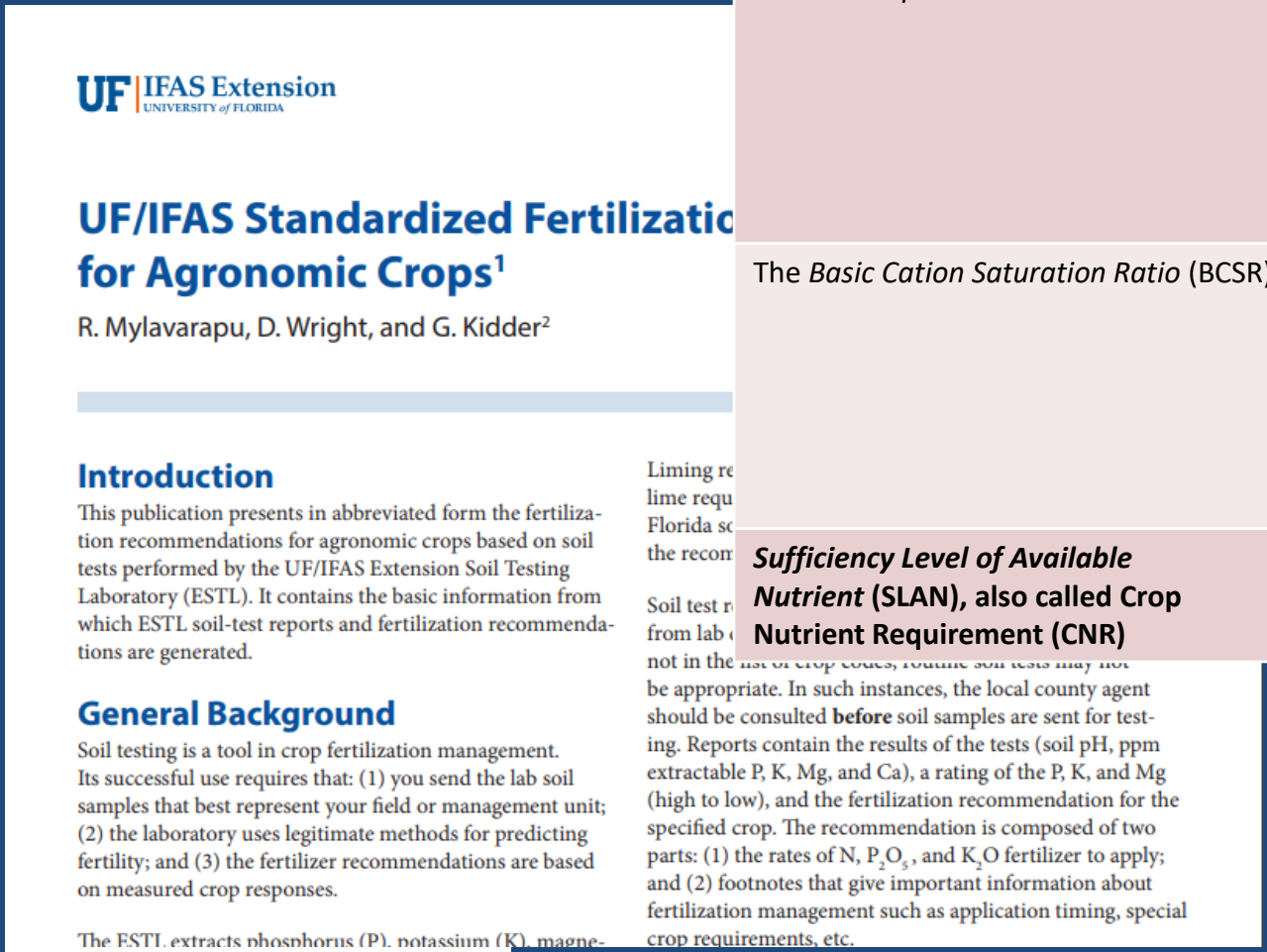
UF/IFAS Range Cattle REC

Purpose

1. Explain UF/IFAS fertilizer recommendations for pastures in FL
2. Describe the differences in P availability among various P sources
3. Discuss major limitations associated with soil test P as a tool to predict environmental hazard

UF/IFAS Fertilizer Recommendations (SL 129)

CONCEPT	
The *Build-Up and Maintenance*	The goal is to build up the soil fertility level to the *high* category with additions of specific nutrients whose indexes were interpreted as *medium* or lower per the soil test. Nutrients removed with harvested crop should be replaced to maintain high nutrient status.
The *Basic Cation Saturation Ratio* (BCSR)	This concept was developed in the early 1940's and it attempts to maintain desired ratios of cations [potassium (K), magnesium (Mg), and calcium (Ca)] on the soil cation-exchange complex. Recycling of nutrients in the soils is not considered.
***Sufficiency Level of Available Nutrient* (SLAN), also called Crop Nutrient Requirement (CNR)**	**Soil tested medium or above for a particular nutrient can supply 100% of crop nutrient requirement**



UF | IFAS Extension
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UF/IFAS Standardized Fertilizatic
for Agronomic Crops[1]

R. Mylavarapu, D. Wright, and G. Kidder[2]

Introduction

This publication presents in abbreviated form the fertilization recommendations for agronomic crops based on soil tests performed by the UF/IFAS Extension Soil Testing Laboratory (ESTL). It contains the basic information from which ESTL soil-test reports and fertilization recommendations are generated.

General Background

Soil testing is a tool in crop fertilization management. Its successful use requires that: (1) you send the lab soil samples that best represent your field or management unit; (2) the laboratory uses legitimate methods for predicting fertility; and (3) the fertilizer recommendations are based on measured crop responses.

The ESTL extracts phosphorus (P), potassium (K), magne-

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be appropriate. In such instances, the local county agent should be consulted **before** soil samples are sent for testing. Reports contain the results of the tests (soil pH, ppm extractable P, K, Mg, and Ca), a rating of the P, K, and Mg (high to low), and the fertilization recommendation for the specified crop. The recommendation is composed of two parts: (1) the rates of N, P_2O_5, and K_2O fertilizer to apply; and (2) footnotes that give important information about fertilization management such as application timing, special crop requirements, etc.

Last revision: April, 2015

Fertilizer Recommendations for Established Bahiagrass Pastures

1996

- State was divided into North and South designations (based on turf recommendations and USDA-NRCS thermic/hyperthermic regimens)

"In Central and South FL, recent field research has shown that soil testing is not a reliable tool for bahiagrass fertilizer management decisions, and is not recommended. Fertilizer decisions for bahiagrass pastures should be based on the economics of your operation"

2007

- 11 years (1996-2007) without soil test or P recommendations
- Bahiagrass decline (mole cricket, low pH, P deficiency, stand loss, weed infestation)

Challenges

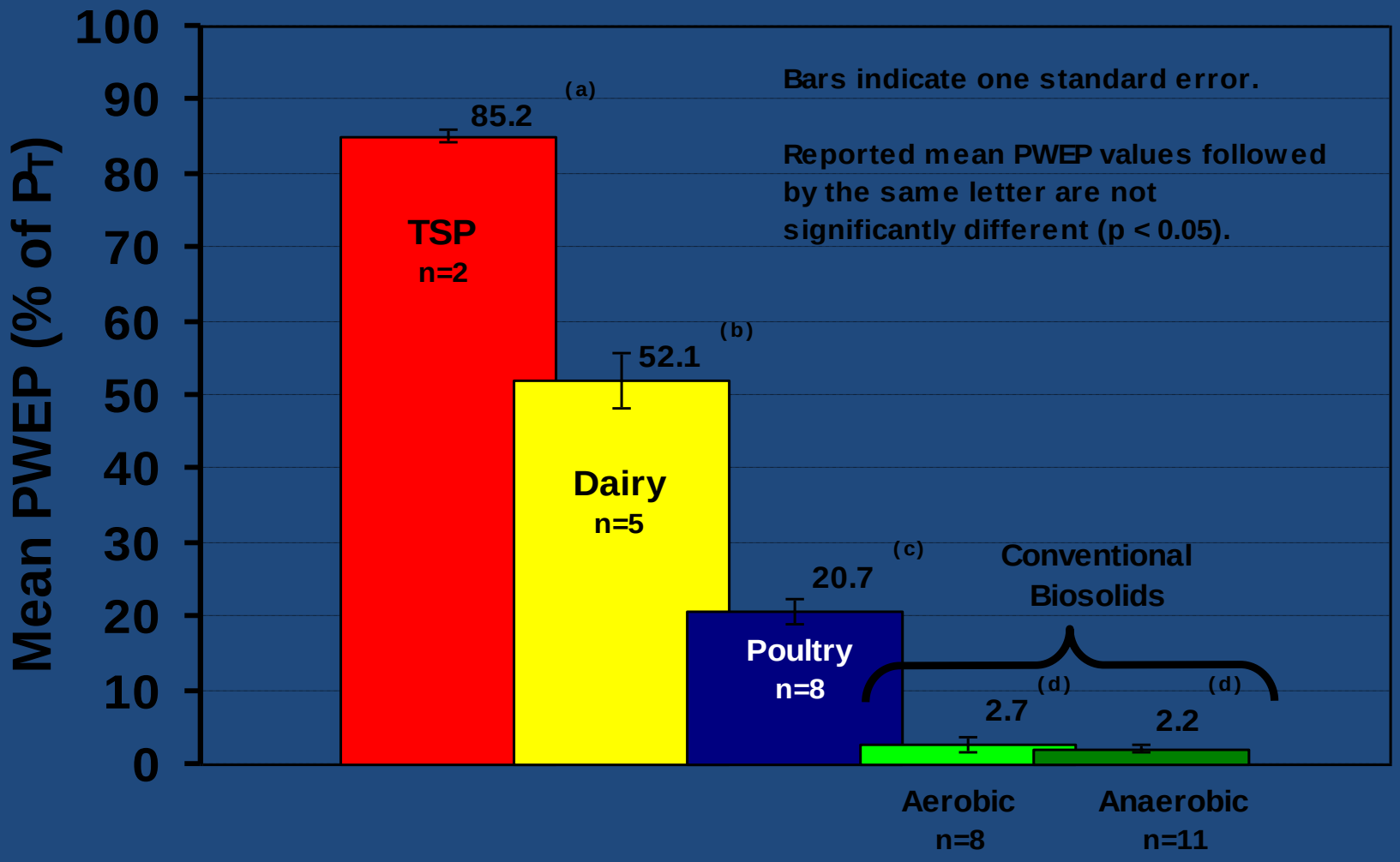
- Standard soil test results of no help in decision making for P fertilization of **established/grazed bahiagrass**
- Inconsistent results, high P application rates
- Key questions

1. Can tissue plus soil testing provide a better diagnostic tool to predict bahiagrass P requirements?

2. How much P should be used to sustain pasture productivity while avoiding water quality impact?

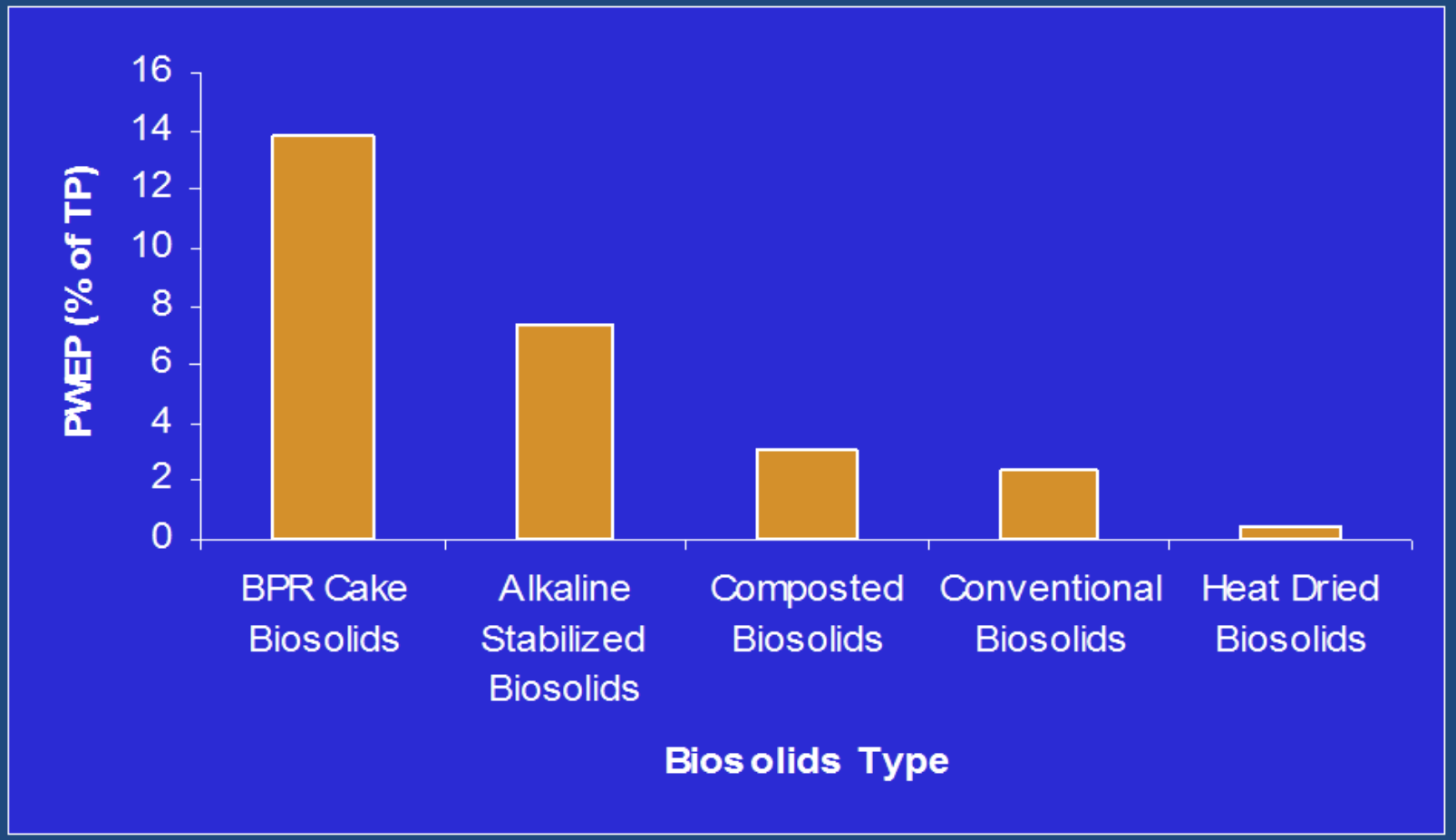
13 scientific peer-reviewed publications, 2 grad students (1 MS and 1 PhD), numerous abstracts in scientific meetings, extension publications, and other educational activities

Water-extractable P of various P sources



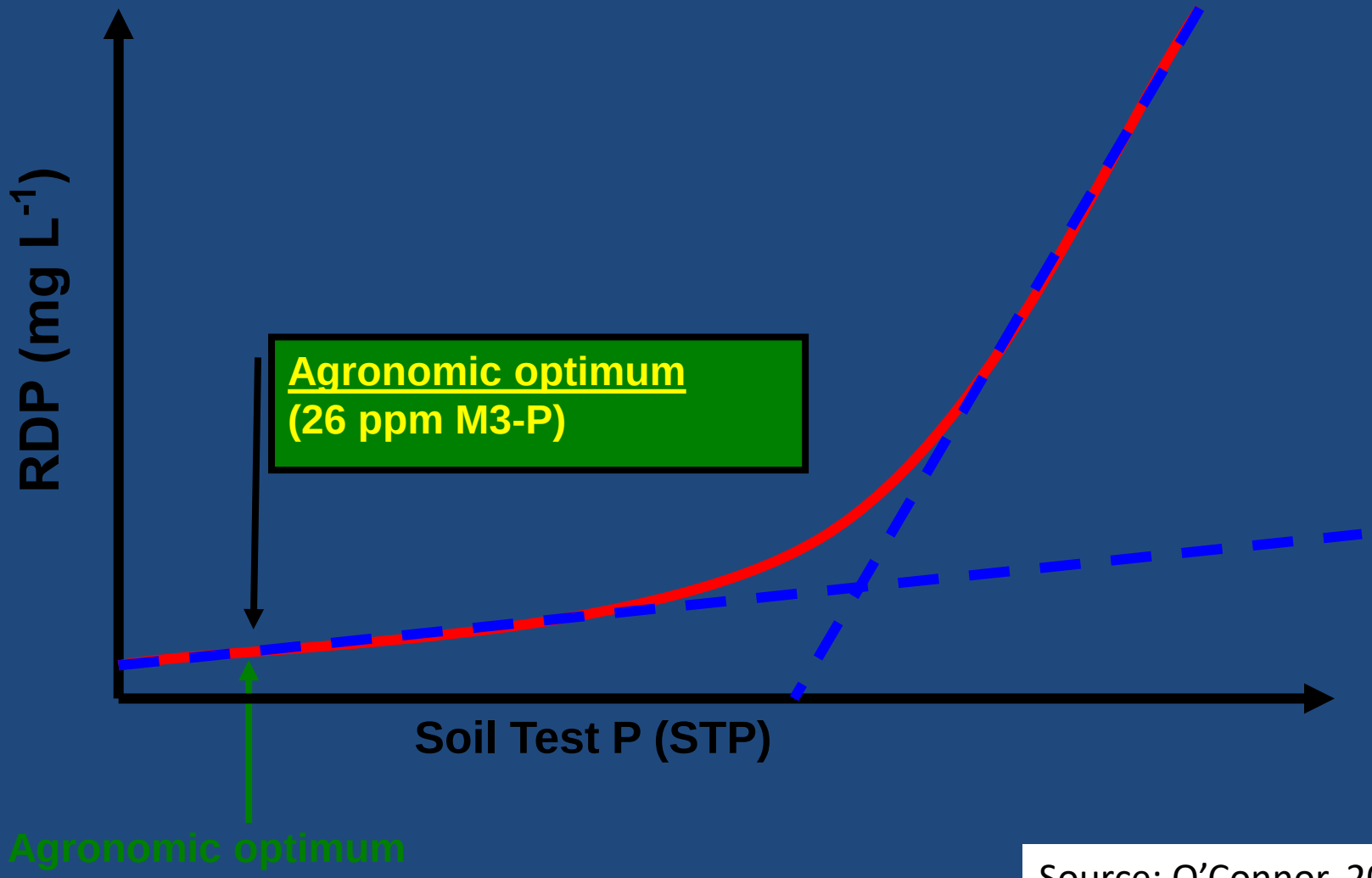
Source: O'Connor, 2013 (adapted from Brandt et al., 2004)

Water-extractable P of various biosolids



Source: O'Connor, 2013

Soil test P: Agronomic vs. environmental interpretations



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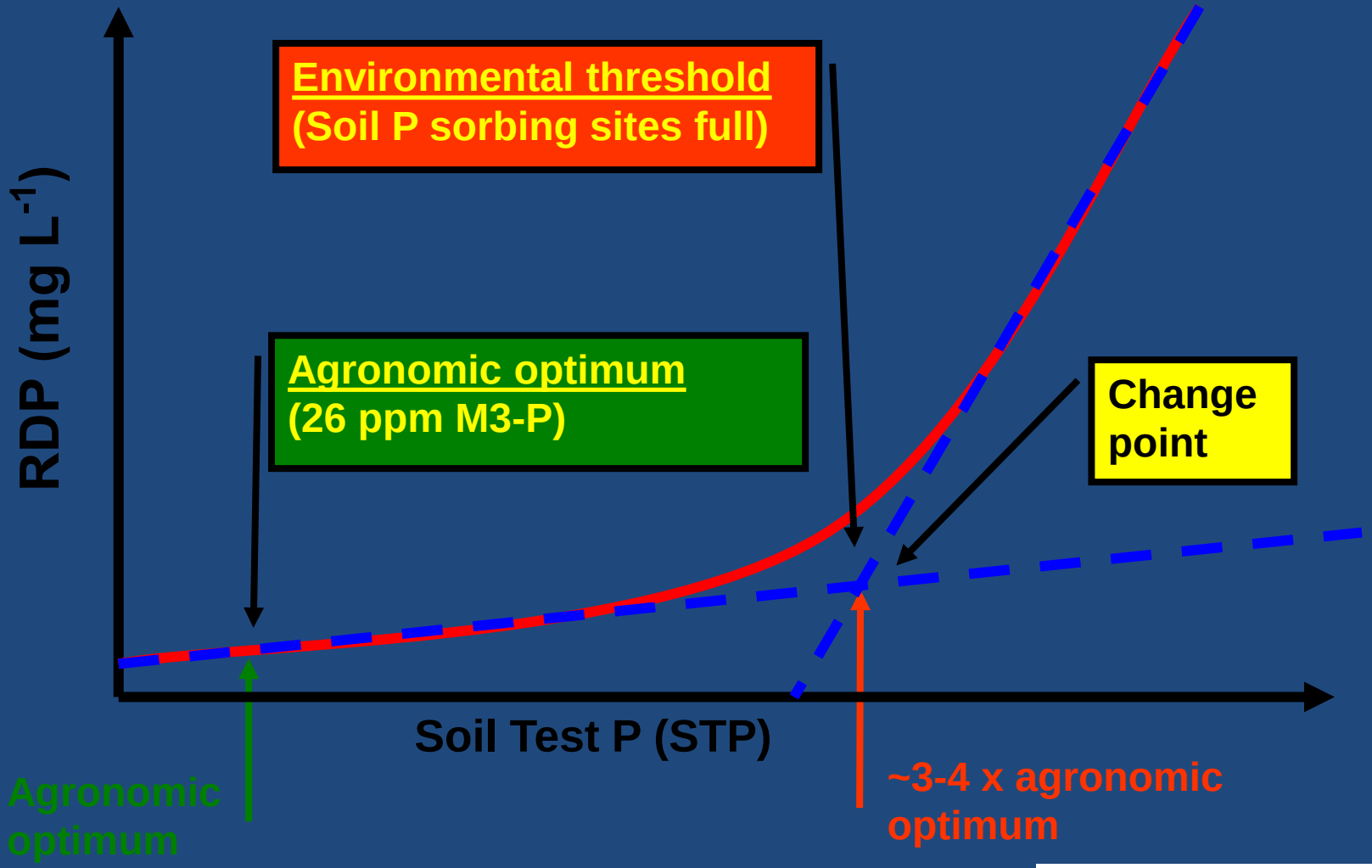
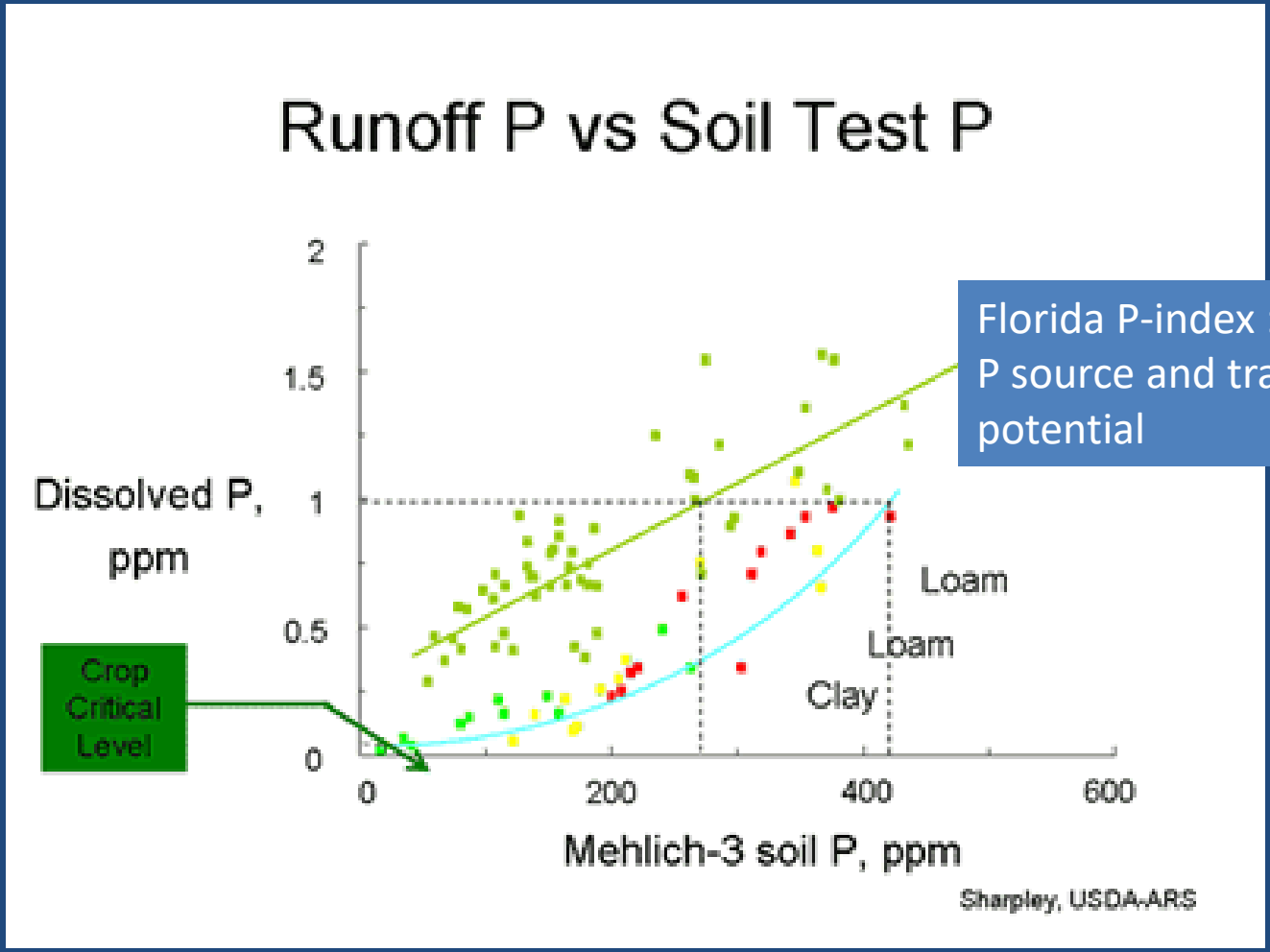


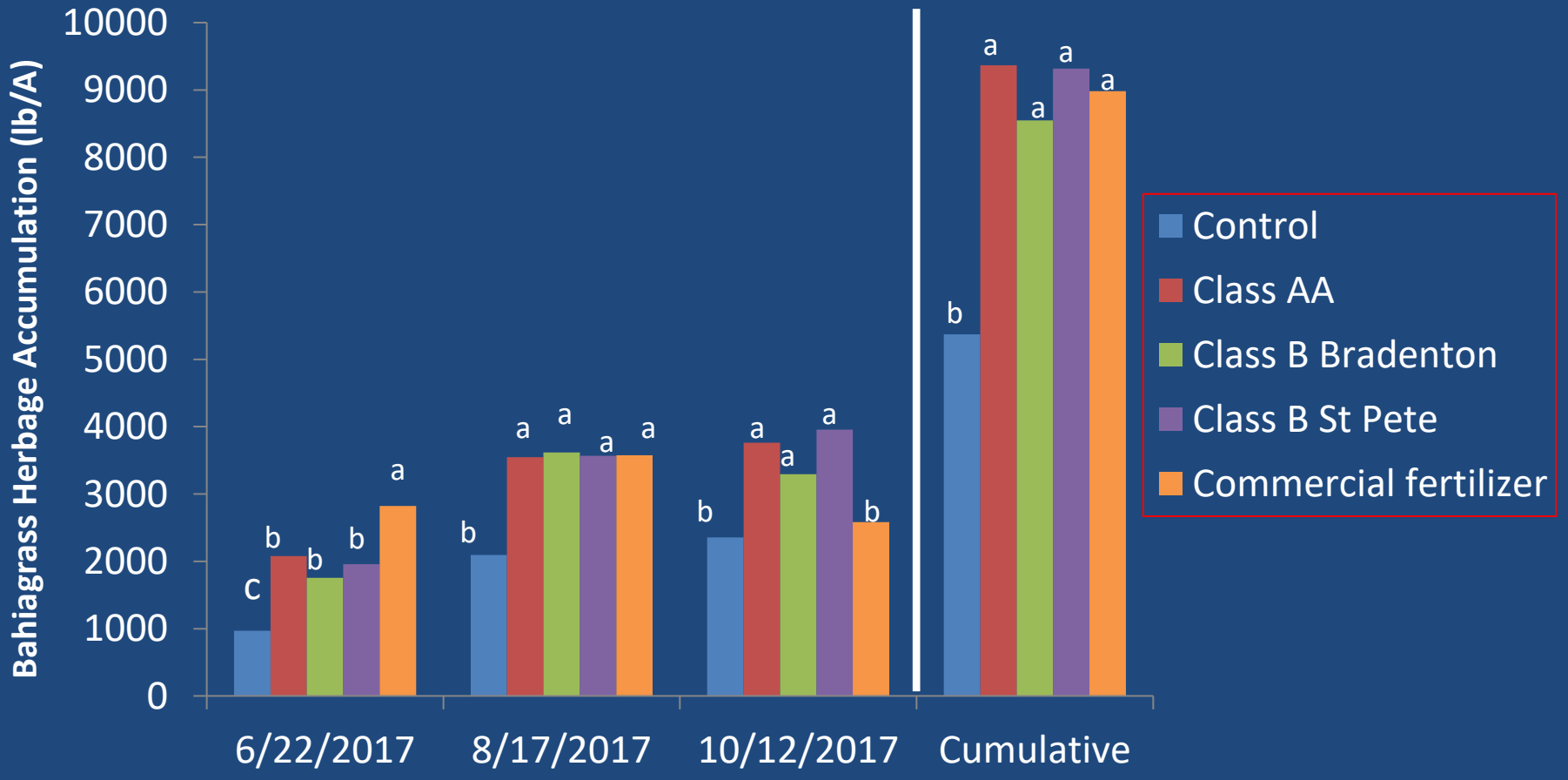
Source: O'Connor, 2013

Differences in soil P retention capacity



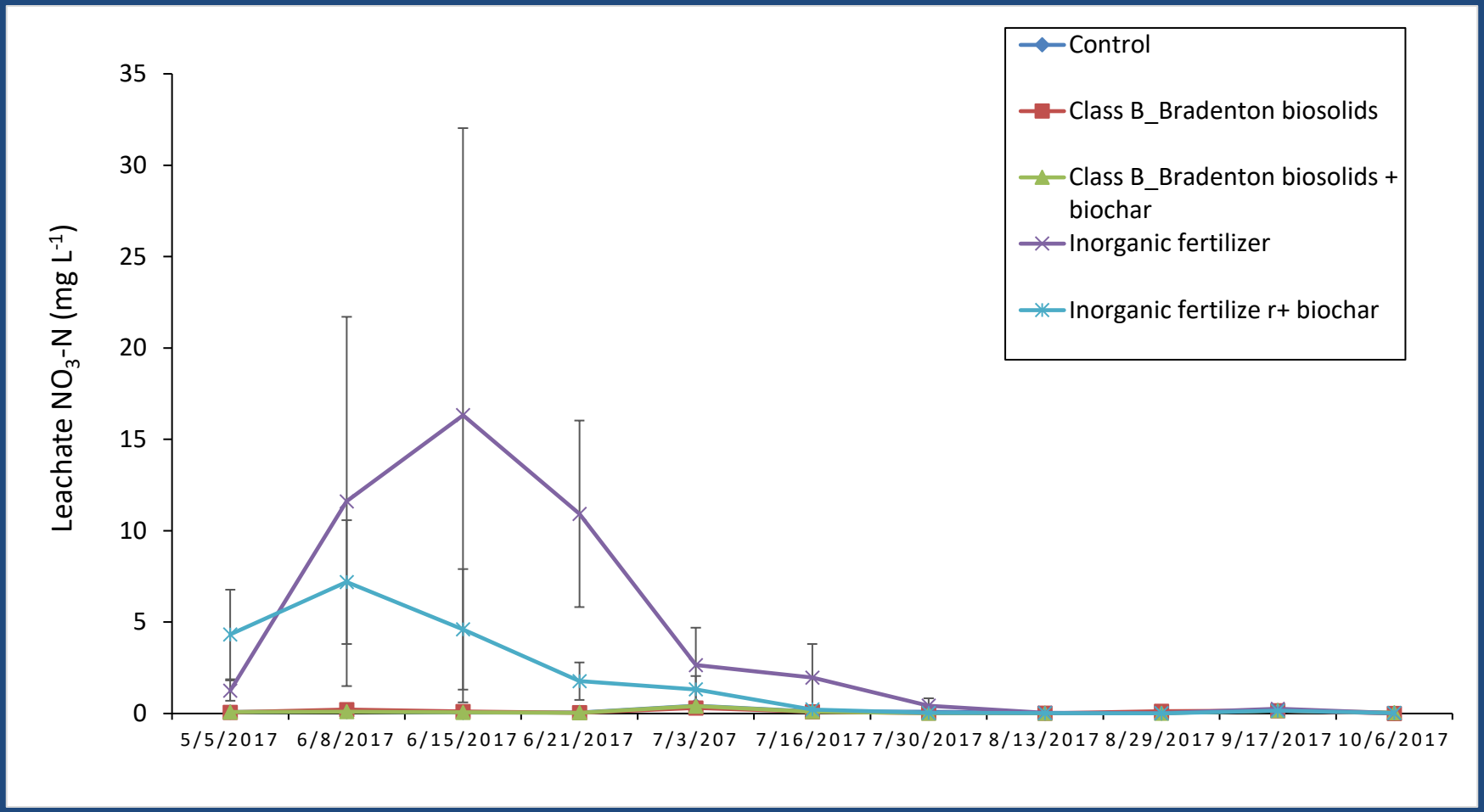
Florida P-index : risk-based, P source and transport potential

Biosolids project at Ona



Source: Silveira et al. (unpublished data)

Biosolids project at Ona



Source: Silveira et al. (unpublished data)

THANK YOU!

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