Review of IFAS BMP program outside the EAA and Phosphorus transformation and movement in sandy soils

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Immokalee
• >60% of agricultural land under BMPs statewide
• Approx. 100% for some commodities
FDACS-OAWP BMP Manuals

- Vegetable & Agronomic Crops
- Container Nursery
- Sod
- Cow/Calf
- Specialty Fruit & Nut
- Commercial Equine
- Consolidated Citrus
BMP Manuals

- Provides BMPs on:
  - Land preparation
  - Nutrient management
  - Irrigation management
  - Drainage Management
  - Sediment and erosion control
  - Water resource protection
  - Integrated pest management
10 Basin Area Teams

- Each Team has a leader
- Approx. 140 extension agents
- In-service training
- Implement grower meetings and demonstrations
- Coordinate efforts with FDACS and WMDs
Use of the 4Rs Plant Nutrient Stewardship Concepts

• 4Rs – Right Source, Right Rate, Right Time and Right Place

• The concepts emphasized in in-service training and development of commodity-based meeting curriculum and materials

• The concepts are not new to most agents but will allow for a more consistent message
• Central information for IFAS agents and specialists as well as growers
• meeting schedules
• publications
• Event presentations
• FDACS links
• Water Management Resources
BMP Minigrants

• Five year total (2013 to 2018) = >$346,000
• 16 Total Projects - FY 2017/18 = $109,321
• All have field demonstrations
• 10 Project funded FDACS ($74,004)
• 4 Projects funded by Legislative Budget Request ($22,259)
• 3 Projects funded by Mosaic Foundation ($13,058)
2017/2018 BMP Minigrants

- Demonstrations of crop nutrients/irrigation management
- Soil test sampling and interpretations
- Soil moisture sensor use and irrigation scheduling
- Soil Phosphorus management
- Practices to prevent soil nutrient leaching and runoff
- Production using compost and manure
- Nursery irrigation scheduling
- Cover crops
2017/2018 In-Service Training

- Use of Precision Agriculture Technology for Water and Nutrient Best Management Practices
- Use of Soil Moisture Sensors and Weather Data in Irrigation Scheduling for Best Management Practices
- Soil Health and Sustainability Best Management Practices
- How to Conduct Successful On-Farm Research/Demonstration Trials
Success Stories

- Improved irrigation practices conserve water and nutrients
- “Best management Practices are what’s current for the time and farmers have always tried to adapt to that”
- “Soil moisture sensors are able to show where the water is going and how deep in the soil it travels in real time”
Success Stories

• “Technology makes irrigation management easier”
• “It was interesting that most of the improvement was made on the irrigation side and that made the fertilizer use more efficient”
• “We have these new sensors and they’re going to go to a computer program, like an app, and we will see that the moisture is at on three different levels”
Three studies have been started using BMP program funds until further support is found:

- **Project 1** – Use of smartphone app to schedule irrigation and fertilizer applications
- **Project 2** – Field study of soil base P fertilizer recommendations at four potato farms
- **Project 3** – Carrot N, P and K recommendations (currently none exist)
# Selected Soil Properties (pre-plant samples)

<table>
<thead>
<tr>
<th>Farm</th>
<th>pH</th>
<th>M-1 P</th>
<th>M-1 Ca</th>
<th>M-1 Mg</th>
<th>M-1 Fe</th>
<th>M-1 Al</th>
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<tbody>
<tr>
<td><strong>Farm 1</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>(alkaline and non-calcareous)</td>
<td>7.43</td>
<td>99</td>
<td>829</td>
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<td>18</td>
<td>56</td>
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<tr>
<td><strong>Farm 2</strong></td>
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<tr>
<td>(alkaline and calcareous)</td>
<td>7.08</td>
<td>454</td>
<td>3102</td>
<td>81</td>
<td>44</td>
<td>215</td>
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</tbody>
</table>
Labile P vs. Extractable P

Farm 1

- M1 (R² = 0.538)
- M3 (R² = 0.675)
- Bray (R² = 0.623)
- Olsen (R² = 0.396)
- AB-DTPA (R² = 0.622)

Farm 2

- M1 (R² = 0.432)
- M3 (R² = 0.504)
- Bray (R² = 0.506)
- Olsen (R² = 0.506)
- AB-DTPA (R² = 0.609)
- DTPA (R² = 0.416)
Sequential Soil P Analysis

- Approximately 25 and 50 mg/kg applied at the 100 and 50% P rates
- Nearly all added P in water soluble fraction at planting (0DAT)
- Reduction water soluble P and increase in Carbonate extractable P at 30 DAT
- Little change in other soil (nonavailable) P fractions
Green Bean – Growth Response to Added P

- Leaf P was in optimum range at all sample dates
- 28% leaf P significantly greater in full P rate compared with zero rate
- 44% of sample had significantly greater biomass at 30 and 60 days after planting with increased fertilizer P
Green Bean – Yield Results

28% of crops significant increase in pods < 3 inches long with increased fertilizer P

78% of crops significant increase in pods > 4 inches long with increased P rate
Tomatoes – Yield Results

- Little significant difference in total yields with added P
- Xlarge fruit significantly increased at first harvest <20% of time
QUESTIONS ?????