Sugarcane Production and BMPs
501

A Graduate Level Review Course
Presented by
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Fall Semester 2011

Lecture
Discussion
Exam
Prerequisites

You are growing sugarcane in a region that prior to being used for agriculture was flooded 9-11 months per year.
Prerequisites

And

Your job is to maximize profits
Prerequisites

And

You usually apply phosphorus fertilizer once per year to your sugarcane
Prerequisites

But

Strict regulations limit the amount of phosphorus that leaves your fields.
Growing crops under drained conditions has historically been associated with a loss of about 1 inch of soil per year.
Purpose of this Review Course

Provide an opportunity for participants to demonstrate that they understand the latest information available to help them optimize...
Purpose of this Review Course

Optimize Sugarcane Yields
Meet BMP Regulations
Conserve Muck Soils.
What Should We Learn in this Course?

Some principles about the relationships of growing sugarcane, BMPs, and conserving muck soils.
What Should We Learn in this Course?

The limits of sugarcane’s tolerance to shallow water-table depths and periodic flooding.
What Should We Learn in this Course?

How knowledge of sugarcane flood tolerance can help you manage your BMP program.
Let’s begin with some exam questions
True or False

BMP is an acronym for Best Management Practice
True or False

Because BMPs are best management practices, that means that each BMP helps you improve sugarcane yields.
True or False

Best management practice regulations were implemented because phosphorus was contaminating the natural Everglades.
Fill in the blank

A general principle you should consider regarding BMPs is: If your sugarcane field has too much water, then let the water subside by seepage and _______________?
True or False

If your sugarcane gets flooded, you should start pumping the water out as soon as possible and move the water out as rapidly as possible.
Discussion

If you can allow periodic flooding or a water table near the soil surface without reducing sugarcane yields, are there other benefits in addition to reduced P export?
True or False

Microbial oxidation of the soil releases phosphorus which was held tightly to soil particles. Therefore, the more we can control microbial oxidation of soil, the better we can control phosphorus discharge.
True or False

If you achieve all of your BMP points, you will not lose any soil due to microbial oxidation.
True or False

However, generally the principles required to control phosphorus discharge and control microbial oxidation of soil are mutually supportive.
Match the answers

In **Blank 1**, if sugarcane is flooded for 2 days, yields might **Blank 2**.

<table>
<thead>
<tr>
<th>Blank 1</th>
<th>Blank 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. April</td>
<td>1. Increase</td>
</tr>
<tr>
<td>B. June</td>
<td>2. Decrease</td>
</tr>
<tr>
<td>C. August</td>
<td>3. Stay the same</td>
</tr>
</tbody>
</table>
Early Flooding

No Early Flooding
Lecture

After the cane covered the row, repeated cycles of 2-days flood followed by 12 days drainage moderately improved yields.

<table>
<thead>
<tr>
<th>Days Flood</th>
<th>Days Drained</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>12</td>
</tr>
</tbody>
</table>
Lecture

Repeated cycles of 14-days of flood followed by 7 days of drainage did not affect yields.

<table>
<thead>
<tr>
<th>Days Flood</th>
<th>Days Drained</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>7</td>
</tr>
</tbody>
</table>
True or False

Sugarcane and rice have similar tolerance to flooding.
Discussion

How would you describe the flood tolerance of sugarcane?
True or False

Sugarcane tolerates periodic flooding for up to 2 weeks well but constant water-table depths 6-10 inches below the soil surface will cause yield losses.
True or False

Sugarcane is most vulnerable to a short-duration flood after it has been planted and before it has emerged.
Lecture

If planted cane is covered in the furrow, pump flood water off after 2 days, unless CP 89-2376, then 6 days maximum.

For all varieties, if furrows are still open, you have more flexibility, probably about 10 days if temperatures remain warm (before November).
Recommendations

After cane covers row, keep routine water-table depth no higher than 20 inches. After floods, drain to at least 20 inches for at least 1 week.

What are the BMP implications of this recommendation?
Discussion

Drainage depth is a critical issue.
Discussion

What if you have less than 20 inches of soil?
What Have We Learned?

Sugarcane has some flood tolerance, but there are limitations.
What Have We Learned?

If you understand sugarcane’s flood tolerance, you can use it to your advantage as you comply with BMPs and maintain yields.
What Have We Learned?

Your successful compliance with BMPs is beneficial for the natural Everglades and helps conserve your muck soils, but the challenge is to do so while keeping high yields.
What Have We Learned?

Phosphorus enrichment (> 10 ppb) of the Everglades has caused changes in species adaptation. This is not equivalent to saying that P is contaminating the Everglades.
Thank You

What questions do you have?
See you next semester in

Sugarcane Production and BMPs
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