

Use of Mepiquat Chloride in Cotton

**Louisiana Agricultural Technology & Management Conference
Paragon Casino Resort
Marksville, Louisiana
February 12, 2015**

**Dan Fromme
Associate Professor-State Cotton and Corn Specialist
Dean Lee Research & Extension Center
Alexandria, Louisiana**





MID-SEASON



Colorado beetle



Tobacco hornworm



Colorado beetle



Colorado beetle

SUBJECT: PEST CONTROL





Background

- **BASF**
 - Pix (mepiquat choride)
 - Single manufacturer from 1984-1998.
- **Upon patent expiration, several generic MC products were commercialized and the price of MC dropped significantly. However, was still being promoted to some extent.**
- **Today, about 5 cents an ounce compared to 1 dollar an ounce in the 1990s.**



Mode of Action of MC

Systemic – Readily absorbed by the leaves

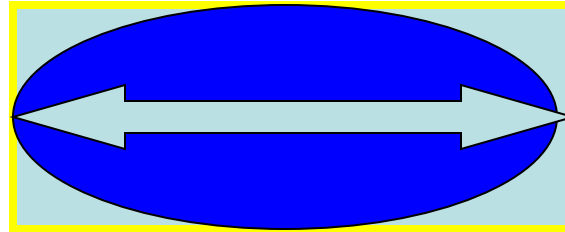
Readily translocated to growing points of the plant

Inhibits the production of Gibberelic Acid

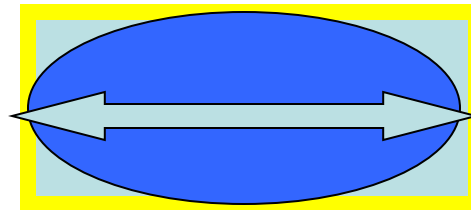


MC is an inhibitor of G. Acid

Without MC



With MC





MC

- **Darker leaves-thicker leaves**
- **Less leaf area**



Mode of action of MC

Mepiquat Chloride (pix) is not metabolized by the plant, however it is “biodiluted” as the plant grows.

The effect of MC in reducing plant growth depends on its internal concentration.



Direct and Indirect Effects of MC on Plant Growth

- Reduces plant height
- Reduce excessive vegetative growth
- Reduce boll rot
- Increases boll retention
- Increases boll weight
- *Increases earliness*
- Increases yield
- Increased scouting efficiency
- Increased insecticide penetration
- Increased harvest efficiency



Stewart, 2005

- **Mepiquat responses depend on rate. Increasing rates usually result in greater suppression of growth, although the actual response is also related to plant size and growth stage. Pre-bloom cotton is more sensitive to MC than flowering cotton. The later in the period, the less sensitive cotton is to MC. Excessive applications to pre-bloom cotton are the most likely to induce early cutout. Likewise, low rates applied to cotton in mid or late bloom are unlikely to be effective.**



MC

- Timing the first application of MC has caused concerns among cotton producers in that too much applied too soon can result in serious damage to plant structure and subsequent lint yields.
- However, too little material applied too late can increase production costs and still leave the grower with a rank plant and difficult harvest.

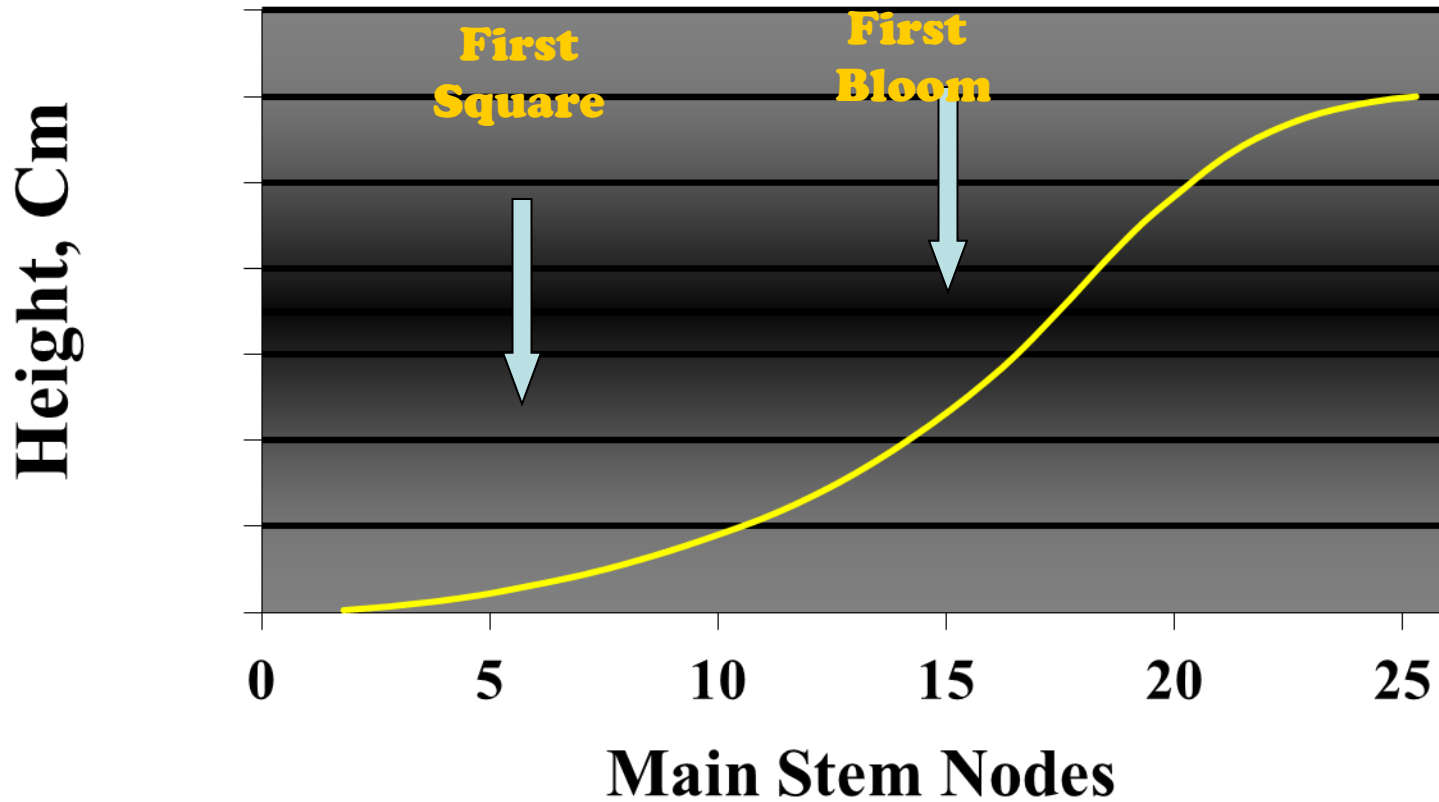


Timings

- **LRMS**
 - **Beginning at PHS**
 - **Risks associated with LRMS are minimized.**
- **EB applications**
 - **Train has already left the station**



Plant Height

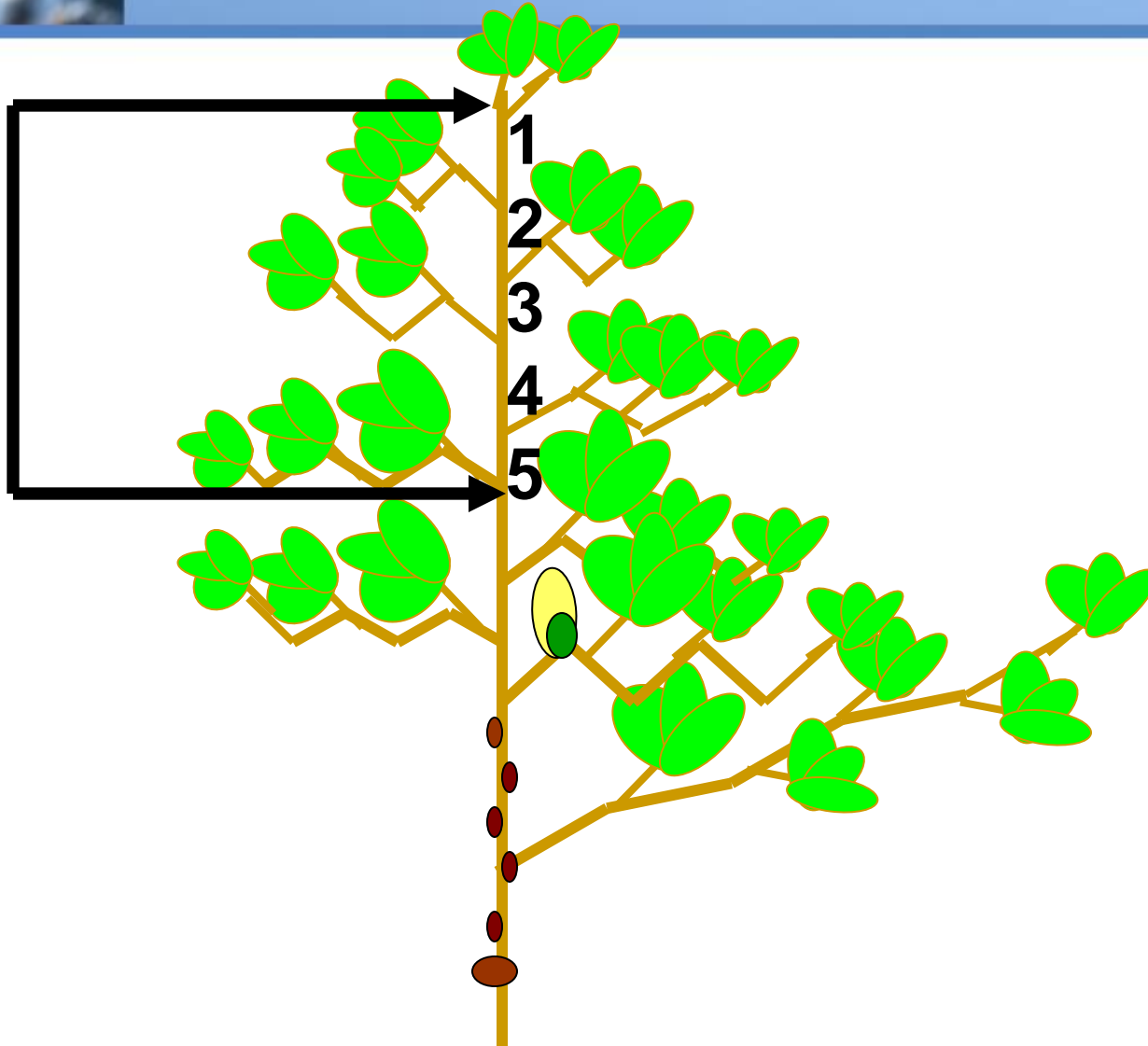




MC Program (based on 10-12 ppm in the plant)

- **Landivar**
 - **LRMS beginning at PHS**
 - **Based on the top 5 inter nodes**
 - Less than 1.4- do not apply
 - 1.4 to 1.80 and growing conditions are good-apply MC
 - 1.80 and > -apply MC
 - Every 7-10 days
 - **Before you apply**
 - Desired height
 - Number of nodes
 - Plant height
 - Row spacing
 - Plant density
 - DAE
 - Amount applied to date

Growing Nodes





6 2 2001



Ideal Height

A balance between:

- **Light interception**
- **Incidence of boll rot**
- **Efficient mechanical harvest**
- **Row spacing x 1.10**
 - **Example: 40 inches x 1.10 = 44 inches**



**Ideal Plant Height =
Row Space x 1.10
Example
40 in. x 1.10 = 44 in.**

This value can be adjusted based on:

- **Available Moisture (rainfalls, Relative Humidity)**
- **Soil Texture**
- **Drainage**
- **Variety**
- **Soil Fertility**

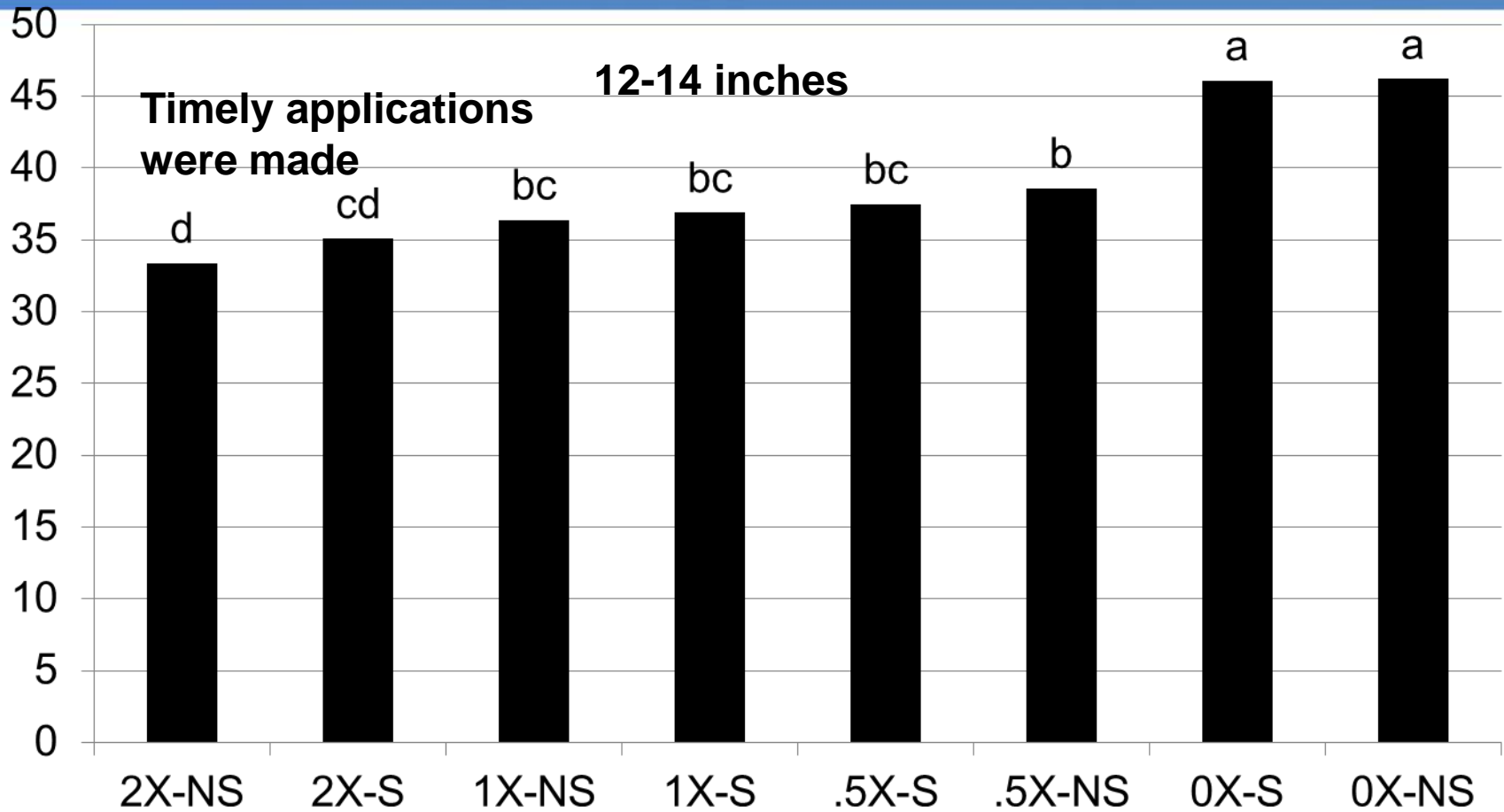


MC Rate and Time of Applications

- **Time and rate of Pix applications can be guided by comparing actual plant growth rate with an “ideal or target growth rate”.**
- **Pix applications can be made when rate of actual growth exceed target grow.**
- **Rate of application is based on plant size and is adjusted based on its deviation from the target growth rate.**

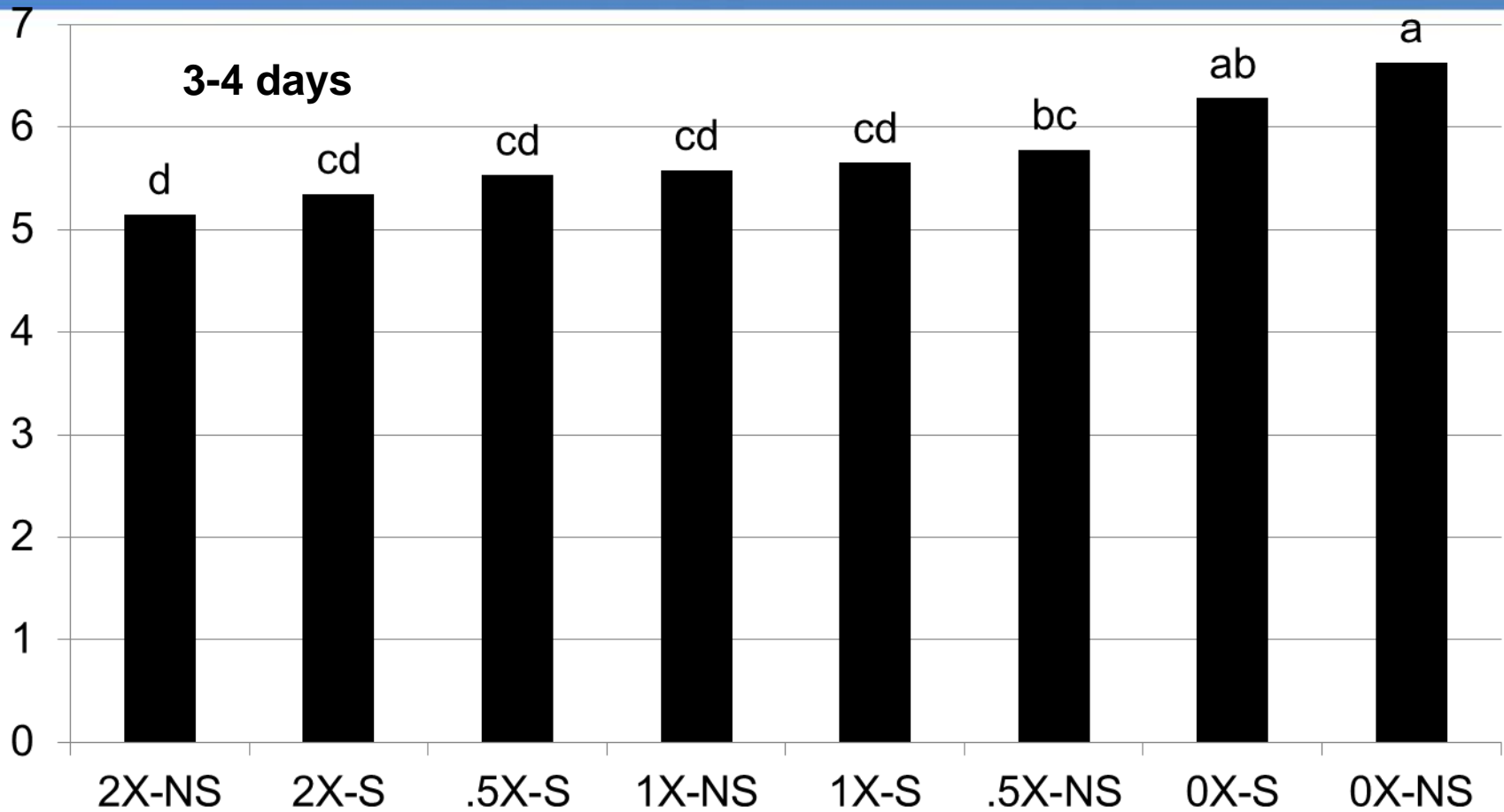


Alexandria Plant Height



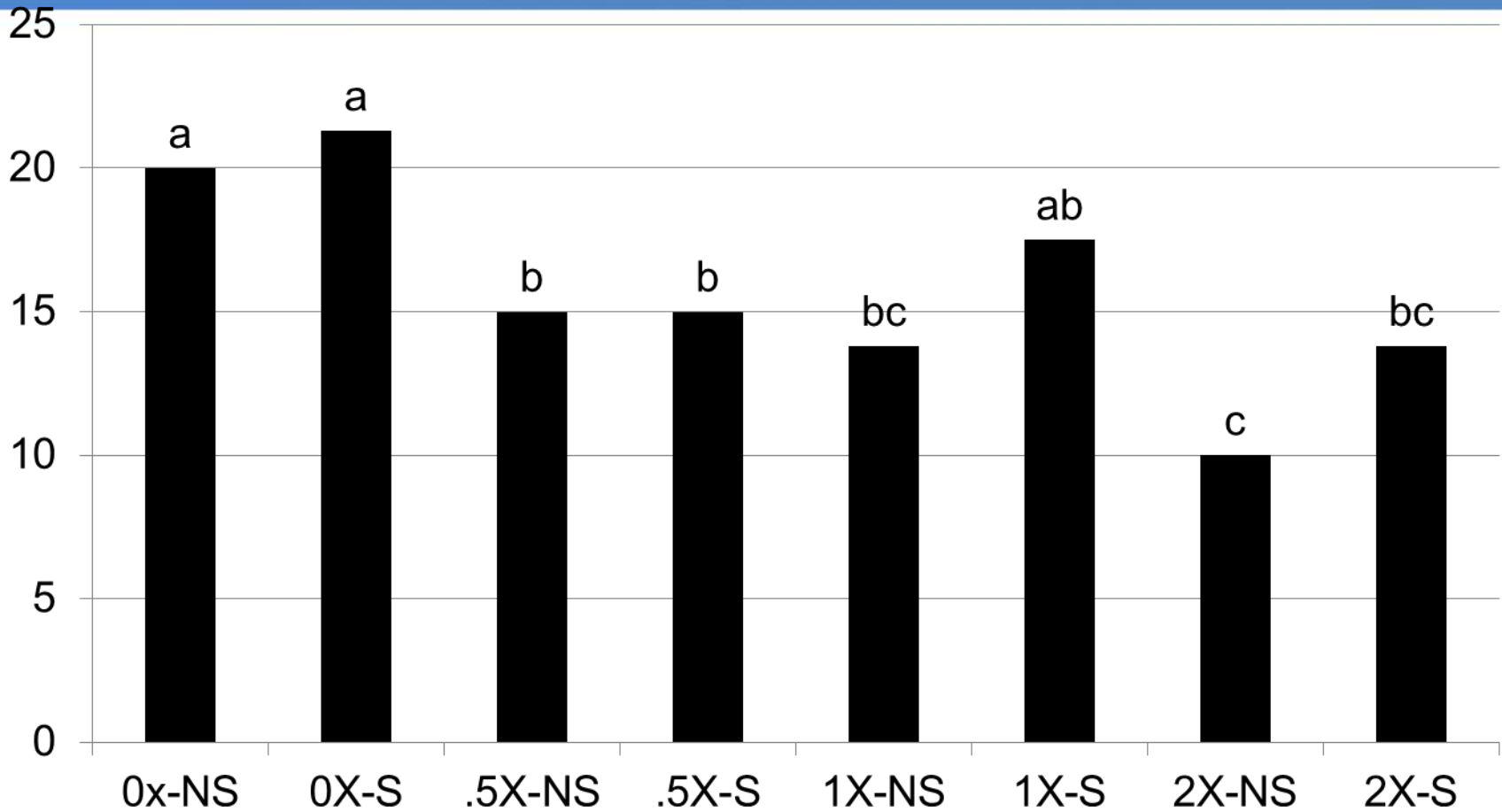


Alexandria NAWF





St. Joseph Target Spot-% Defoliation



Questions

Dan Fromme

dfromme@agcenter.lsu.edu

Office: 318-473-6522

Cell: 318-880-8079



Thank You





Alexandria Lint Yield/Acre

