Effects of PIX and PREP on Short Staple Cotton  
Bonita, Graham County

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Summary

Four different treatments of PIX were evaluated with and without  
PREP on short staple cotton on two locations in the southern part  
of Graham county above the 4000 foot level. PIX caused significant decreases in plant height. The effect of the PIX treatments  
on yield, even though not significant, varied with the robustness of the cotton plants. PREP caused significant increases in maturity with no changes in yield on both locations.

Introduction

Research on PIX and PREP have been done in other areas that varied significantly from this one. It was felt necessary to do this research at these locations to evaluate the effects of these plant growth regulators at higher elevation, shorter season, and with the cotton variety that is planted in the area.

The split application of PIX that had detrimental affects on several cotton varieties in Graham county in 1984(1), was re-evaluated along with 1/2 pint rate applied early and a 1 pint early and 1 pint late. A single application of 1 quart/acre of PREP was applied to see if the hastened boll maturity seen in the past(2) would help the crop mature before the first frost.

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References


Methods and Materials

Location A

- ELEVATION: 4350 feet
- SOIL TYPE: Sandy clay loam
- PREVIOUS CROP: Corn
- TILLAGE: Disked, ripped, disked
- EXPT DESIGN: Strip applic., 1 rep
- PLOT SIZE: 2532' long by 12.7' wide
- PLANTING: 5-10 April 1985, Coker 304
- HERBICIDE: Treflan
- FERTILIZER: 35 N, through sprinkler
- PIX APPLN: 4 treatments; 2 application dates, 22 July, 15 Aug
- PREP APPLN: 4 October (21% open)
- IRRIGATION: 24" sprinkler
- HARVEST: 4 November and 20 November

Location B

- ELEVATION: 4400 feet
- SOIL TYPE: Sandy loam
- PREVIOUS CROP: Cotton
- TILLAGE: Disked, ripped, disked
- EXPT DESIGN: Strip applic., 2 reps
- PLOT SIZE: 1636' to 1708' by 12.7'
- PLANTING: 5-10 April 1985, Coker 304
- FERTILIZER: 50 units N
- PREP APPLN: 4 October (30 % open)
- IRRIGATION: 18" furrow irrigated
- HARVEST: 5 November and 16 December

Results

Table 1A. Effects of PIX on Maturity, Yield (Seed Cotton) and Plant Height -- Location A

<table>
<thead>
<tr>
<th>RATE (pts/ac)</th>
<th>% Open (18 Oct)</th>
<th>% 1st Pick (4 Nov)</th>
<th>Yield (lbs/ac)</th>
<th>Plant Height (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>32</td>
<td>61</td>
<td>1635</td>
<td>34</td>
</tr>
<tr>
<td>1/2 early</td>
<td>51</td>
<td>85</td>
<td>1694</td>
<td>29</td>
</tr>
<tr>
<td>1/2 late</td>
<td>42</td>
<td>80</td>
<td>1759</td>
<td>26</td>
</tr>
<tr>
<td>1 early</td>
<td>35</td>
<td>82</td>
<td>1667</td>
<td>25</td>
</tr>
<tr>
<td>1 late</td>
<td>42</td>
<td>82</td>
<td>1612</td>
<td>31</td>
</tr>
</tbody>
</table>

Table 1B. Effects of PIX on Maturity, Yield (Seed Cotton) and Plant Height -- Location B

<table>
<thead>
<tr>
<th>RATE (pts/ac)</th>
<th>% Open (18 Oct)</th>
<th>% 1st Pick (5 Nov)</th>
<th>Yield (lbs/ac)</th>
<th>Plant Height (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>52</td>
<td>85</td>
<td>1111</td>
<td>28</td>
</tr>
<tr>
<td>1/2 early</td>
<td>69</td>
<td>88</td>
<td>1008</td>
<td>18</td>
</tr>
<tr>
<td>1/2 late</td>
<td>63</td>
<td>89</td>
<td>1111</td>
<td>19</td>
</tr>
<tr>
<td>1 early</td>
<td>66</td>
<td>89</td>
<td>1076</td>
<td>19</td>
</tr>
<tr>
<td>1 late</td>
<td>66</td>
<td>89</td>
<td>1077</td>
<td>23</td>
</tr>
</tbody>
</table>
Table 2A. Effects of PREP on Maturity, Yield (Seed Cotton) and Plant Height — Location A

<table>
<thead>
<tr>
<th>RATE (qts/ac)</th>
<th>% Open (18 Oct)</th>
<th>% 1st Pick (4 Nov)</th>
<th>Yield (lbs/ac)</th>
<th>Plant Height (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>33</td>
<td>76</td>
<td>1670</td>
<td>29</td>
</tr>
<tr>
<td>1 (4 Oct)</td>
<td>53</td>
<td>80</td>
<td>1677</td>
<td>28</td>
</tr>
</tbody>
</table>

Table 2B. Effects of PREP on Maturity, Yield (Seed Cotton in lbs/ac) and Plant Height — Location B

<table>
<thead>
<tr>
<th>RATE (qts/ac)</th>
<th>% Open (18 Oct)</th>
<th>% 1st Pick (5 Nov)</th>
<th>Yield (lbs/ac)</th>
<th>Plant Height (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>52</td>
<td>87</td>
<td>1070</td>
<td>22</td>
</tr>
<tr>
<td>1 (4 Oct)</td>
<td>74</td>
<td>90</td>
<td>1082</td>
<td>21</td>
</tr>
</tbody>
</table>

Discussion

The two locations compared to one another in the following ways; "A" was heavier soil, had more residual nitrogen and organic matter from the previous crop and received better water management. The cotton grew more robustly on "A" and yielded higher, too.

A comparison of the PIX treatments over the two locations: (1) The apparent increase in maturity (increase in % open and % 1st pick) from the zero rate to the split rate is not real. All the PIX treatments were summed over PREP and non-PREP treatments excepting the zero rate, it was only summed over non-PREP treatments. Thus, the increase in maturity seen is a PREP effect. (2) There were no statistically significant differences in the yields, but it is interesting to look at the trends.

On the robust cotton on "A", the yields tended to increase as the plant heights decreased, the highest yield being with the 1/2 pt/ac early treatment, the lowest yield being with the 1 pt/ac late treatment.
On "b" where the cotton was none too tall to begin with, PIX tended to decrease the yields. Part of this decrease was due to the pickers inability to get all the cotton from such short plants. (3) Plant heights were significantly reduced, and the late treatment, where plants had almost attained their full height before the application, had the least effect.

Comparing the PREP treatments over the two locations:
(1) Significant increases in boll opening occurred in two weeks after application. Location "A" had 21% of its bolls open at application and "B" had 30% open, and this accounts for part of the difference between the 53% and 74% opening 2 weeks after application. Perhaps more significant though, was the difference in the effect of the foliar density between the two sites. The robust foliage at location "A" diluted the effect of the PREP applied, slowing its action.

(2) In the delay between when the boll counts were made and when the fields were actually picked, the untreated strips matured naturally, diminishing the earlier advances in maturity caused by the PREP.

(3) Untimely rains came just after the PREP caused the bolls to crack open, this caused many of the bolls to have tight locks which were very difficult to pick. This reduced the beneficial effects of PREP.

References
