Effect of Topping Time on Dark Tobacco Yield

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EFFECT OF TOPPING TIME ON DARK TOBACCO YIELD

Bill Maksymowicz

When the terminal bud is removed from tobacco by topping, a number of changes are triggered in the plant: increased root growth, nicotine synthesis, improved drought tolerance, and leaf expansion and increased thickness. These changes are affected by topping time; generally there will be less crop response to topping as topping is delayed. The most important changes, from a producer’s perspective, are continued leaf expansion and thickening, with a commensurate improvement in quality and increase in yield. Topping at the proper time of plant development is often difficult on a field scale since uneven crop growth, particularly when tobacco is set early using bare-root plants, causes delay or irregular blooming. Two major factors that can cause irregular plant growth are soil compaction, usually due to tilling soil that is too wet in the spring, and black root rot. Many producers wait until 50% or more of the plants are in bloom before topping. Research was conducted from 1989 through 1991 to determine the effects of topping time on dark tobacco yield and quality.

Methodology

Replicated field experiments were conducted at the University of Kentucky Research and Education Center, Princeton, KY, in 1989 and 1990. Plots contained two rows, each 25 feet long. Treatments were plants topped at button elongation, 30-40% bloom (recommended burley topping time), or at full bloom. All treatments were replicated five times. Suckers were controlled with a 2% Prime+ solution applied as stalk rundown at topping. Two sticks per plot were harvested for yield and quality determinations.

Non-replicated farmer tests were also conducted from 1989 through 1991. The above topping times were used and 0.1 to 0.3 acre strips were harvested for yield determination. Results from farmer tests followed the pattern determined in the replicated trials, so locations across years (including replicated trials) were treated as replications and the data averaged for the purposes of the discussion. Varieties were different across locations, but were the same within locations. They included Narrow Leaf Madole, KY 171, and KY 160. These represent typical varieties used in the dark air- and fire-cured production areas.

Results

Results of five tests conducted across four locations are presented as Table I. Numbers followed by different letters are significantly different at the .05 level (LSD). For analysis purposes, treatments are compared within grades.

Total yield was reduced as topping time was delayed from mid-button to full bloom. There were no differences in lug and second yield, but leaf yield declined significantly as blooms developed. A decline in leaf yield, even with no reduction in total yield, would result in lower gross returns to the producer. Leaf is supported and sells at a higher price than seconds or lugs. These data show no statistical difference in total yield between a mid-button and 30-
40% bloom topping, but the trend across all locations was towards higher yield with earlier topping. Differences in total yield among these treatments across all locations and years ranged from 155 to 789 pounds per acre, averaging 348 pounds. In addition to yield loss, there was a shift in percentage leaf in higher quality stalk position. This is shown in Table II.

While there is little difference between percentage of total yield in lugs and seconds, the amount of heavy leaf—which commands the highest price at sales—declines as topping is delayed.

### Discussion and Recommendations

Although the data show direct benefits from timely topping, there are other reasons to top dark tobacco before blooms begin to open:

1. Topped tobacco tends to be less “attractive” to insects since flowers attract insects. A timely topping may prevent aphid populations from peaking, saving an additional insecticide application and could provide gains in yield and quality from lessened insect pressure.

2. Suckers begin to grow as the main bud elongates and begins to open. Proper topping time reduces labor cost associated with hand-suckering those suckers too large for chemical control.

3. Tobacco in bloom is more likely to lodge during thunderstorms. Sucker control and harvest of crooked tobacco is extremely difficult.

4. Stems break “cleaner” at the button stage compared to full bloom (when the stalk begins to get woody). Topping can be done more quickly and a clean break will heal faster, reducing the likelihood of hollow stalk.

A key to being able to top on time is uniform crop growth. Crop rotation, soil testing, proper soil preparation, correct planting date, proper pesticide usage, and the use of container-grown transplants should help get the even growth that will make the crop easier to manage.

In situations where tobacco is extremely irregular the producer should consider making more than one topping in the field. Apply a fatty alcohol or Prime+ at each topping time. Maleic hydrazide should not be used on bud-topped tobacco at topping; it will limit upper leaf expansion and can reduce yield and quality. Use of a local systemic or two applications of a contact material followed by maleic hydrazide (at least 10 days after topping) to optimize yield and quality. Topping on time results in more pounds of higher quality tobacco per stalk. Increased plant productivity results in more pounds per acre, lower labor costs associated with handling, and higher net returns.

### Table 1. Effects of Topping Time on Grade Distribution and Yield of Dark Tobacco.

<table>
<thead>
<tr>
<th>Topping Time</th>
<th>Lugs</th>
<th>Seconds</th>
<th>Leaf</th>
<th>Total</th>
<th>lb/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-button</td>
<td>226</td>
<td>670</td>
<td>1860</td>
<td>2759</td>
<td>a*</td>
</tr>
<tr>
<td>30-40% Bloom</td>
<td>256</td>
<td>717</td>
<td>1572</td>
<td>2545</td>
<td>a</td>
</tr>
<tr>
<td>Full Bloom</td>
<td>212</td>
<td>691</td>
<td>1134</td>
<td>2037</td>
<td>b</td>
</tr>
</tbody>
</table>

### Table 2. Percent Leaf Distribution by Stalk Position.

<table>
<thead>
<tr>
<th>Topping Time</th>
<th>Lugs</th>
<th>Seconds</th>
<th>Leaf</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-button</td>
<td>8</td>
<td>24</td>
<td>68</td>
</tr>
<tr>
<td>30-40% bloom</td>
<td>10</td>
<td>28</td>
<td>62</td>
</tr>
<tr>
<td>Full bloom</td>
<td>10</td>
<td>34</td>
<td>56</td>
</tr>
</tbody>
</table>

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