EFFECTS OF VARIOUS IRRIGATION REGIMES ON WATERMELON YIELD, FRUIT NUMBER AND SIZE

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Introduction
Soil types can vary considerably in the watermelon production region of south Georgia. Therefore, irrigation requirements can also be vastly different due to lighter, more porous soils in some areas and soils with higher clay content in other areas. Irrigation can be a major input into producing a good crop of watermelons during drier seasons. Excessive irrigation can reduce quality of melons and yet lack of irrigation can reduce yield considerably. Thus, this experiment was conducted to ascertain the most ideal irrigation regimes for achieving adequate yields.

Watermelons are annually Georgia’s largest vegetable commodity based on acreage. Production usually exceeds 30,000 acres and $70 million in farmgate value.

Methods
Watermelon plants (variety “Tri-X Carousel”, Syngenta Seed Co.) were produced in a greenhouse by a commercial transplant grower. Plots were established at the Stripling Irrigation Park (elev. ~175 feet) in Camilla, GA. Plot land was tilled and phosphorous and potassium were applied according to soil test recommendations and incorporated. Preplant N of 60 pounds per acre was also applied and incorporated at the same time. Methyl bromide was applied (134 lb. a.i./acre) when black plastic mulch and drip tape were installed.

Watermelons were transplanted on April 12, 2004 into a Lucy loamy sand (loamy, siliceous, thermic Arenic Paleudults) soil. Plots consisted of three rows of watermelons planted on raised beds that were spaced six feet apart (from center to center). In-row spacing was 48 inches per plant. Plots were each 30 feet long and were replicated four times. Watermark sensors were used to schedule water applications. The low irrigation rate was applied to maintain 10 centibars of pressure or less. The high irrigation rate was 20% greater than the low rate. The experiment was arranged in a Randomized Complete Block Design.

Watermelons were harvested on June 24, July 1 and July 13, 2004 and data collected on yield and fruit size. Other than fertilizer treatments, normal cultural and pest control practices were used.

Results and Discussion

Results are presented in Table 1. There were no significant differences between melons grown with low versus high irrigation rates. Neither were there any differences among irrigation rates for fruit number or average fruit weight. There was adequate rainfall during most of the experiment. However, conditions were not excessively wet. Therefore, it appears that maintaining soil moisture at no more than 10 centibars is adequate to produce acceptable and profitable yields of melons. Additional irrigation would not result in any additional yield and would likely hurt melon quality.

Table 1. Yield by weight, fruit number and average fruit weight of watermelons grown with two irrigation rates at the Stripling Irrigation Park near Camilla, Georgia in 2004.

<table>
<thead>
<tr>
<th>Irrigation Rate (#/A)</th>
<th>Yield (#’s/A)</th>
<th>Fruit No./A</th>
<th>Avg. Fruit Wt. (#’s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>85,086 a</td>
<td>5283 a</td>
<td>16.1 a</td>
</tr>
<tr>
<td>High</td>
<td>81,727 ab</td>
<td>5022 a</td>
<td>16.4 a</td>
</tr>
<tr>
<td>Mean</td>
<td>83,407</td>
<td>5152</td>
<td>16.2</td>
</tr>
<tr>
<td>C.V.</td>
<td>12.5</td>
<td>13.1</td>
<td>3.5</td>
</tr>
<tr>
<td>L.S.D. (0.05)</td>
<td>11,746</td>
<td>763</td>
<td>0.6</td>
</tr>
</tbody>
</table>

Means in a column followed by the same letter are not significantly different at p=0.05.