EFFECTS OF WEEDS ON COMMON BEANS PLANTATION.

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A138/27591/2012
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Introduction

- Common beans (*Phaseolus vulgaris* L.) is the most widely grown legume in Kenya, with average per capita consumption of common bean in Africa estimated at 31.4kg/year (Schoonhoven and Voysest, 1991).


- Productivity of common beans is constrained by
  - Weeds - crop’s competitors for nutrients, space and sun light.
  - Diseases such as Halo blight, Anthracnose, bean Rust, Angular leaf spots, Yellow leaf curl virus, (Buruchara, 2007).
  - Pests such as white flies, thrips, aphids, bean flies
  - Abiotic stresses such as drought and soil fertility
Weeds have devastating economic losses to common beans producers, which have leads to yield loss, increased cost of production in procuring labour and herbicides to manage weeds, low quality beans and harboring diseases for both the crops in the field and man.

Considering that Common bean (*Phaseolus vulgaris* L) is an important food and cash crop in Kenya, whereby in Kenya, about 417,000 metric tons of common bean were produced in 2007, (FAOSTAT, 2010), it calls for an effective way of managing weed to improve the production.
**Objectives**

- **Specific objectives**
  - To know the amount of yield loss due to weed infestation.

- **Other objectives**
  - To identify the effective weeding interval for weed control.
  - To justify the intervals of weeding and the yields produced at different intervals so as to come up with appropriate weeding interval which will be much cheap and effective for weed control.
Experimental site

* The field experiment was carried out in 2013 (August 2013 and December 2013).

Experimental Designs

* Randomized complete block design with three replicates.

Materials

* 108 common bean seeds developed
* 15 m by 8 m piece of land
* Fertilizers, CAN and DAP
Data Collection

- Data was collected on the number of weeds per species in each experimental plot.
- Yield at the end of the production was collected to determine the extent of yield loss due to weed infestation.
## Results and Discussions

### Sampling Period in weeks

<table>
<thead>
<tr>
<th>Treatment</th>
<th>No. of weedings</th>
<th>Pre-treat (wk 3)</th>
<th>Wk 5</th>
<th>Wk 7</th>
<th>Wk 9</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weed free</td>
<td>5</td>
<td>131.2</td>
<td>1.6</td>
<td>1.7</td>
<td>0.7</td>
<td>1</td>
</tr>
<tr>
<td>Three weedings</td>
<td>3</td>
<td>132.3</td>
<td>28.3</td>
<td>23.7</td>
<td>23.7</td>
<td>25.23</td>
</tr>
<tr>
<td>Two weedings</td>
<td>2</td>
<td>167.9</td>
<td>32.7</td>
<td>30.4</td>
<td>42.4</td>
<td>35.17</td>
</tr>
<tr>
<td>Late weeding</td>
<td>1</td>
<td>127.5</td>
<td>197.1</td>
<td>237.0</td>
<td>109.7</td>
<td>181.27</td>
</tr>
<tr>
<td>Control (no weeding)</td>
<td>none</td>
<td>140.1</td>
<td>206.6</td>
<td>266.4</td>
<td>249.9</td>
<td>240.97</td>
</tr>
<tr>
<td>L.S.D(p&lt;0.001)</td>
<td>47.36</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% CV</td>
<td>25.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Row Labels</td>
<td>Sum of Weight (g)</td>
<td>Yield in ton per hectare</td>
<td>Percentage yield gain over control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>------------------</td>
<td>--------------------------</td>
<td>----------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trt 1</td>
<td>8100</td>
<td>9</td>
<td>102.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trt 2</td>
<td>7020</td>
<td>7.8</td>
<td>75.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trt 3</td>
<td>6420</td>
<td>7.1</td>
<td>60.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trt 4</td>
<td>5770</td>
<td>6.4</td>
<td>44.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trt 5</td>
<td>4000</td>
<td>4.4</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grand Total</td>
<td>31310</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
From the results of this study, it is possible to conclude that common beans have two periods during which weeds do not cause losses.

Weed that grow during the first 21 days after sowing have little importance. The beans are not influenced by this early competition, i.e. However, it has to be stressed that the beans and weeds must begin to grow at the same time.

Late weeding, carried out 28 days after sowing, does reduce the yields, very late weeding performed after flowering significantly reduced the yield.

This was mainly due to competition but also to the damage to the bean plants caused by the weeding.
From the findings of these experiments, it could be concluded that it is important to control weeds twice; one weeding carried out 21 days after sowing and a complementary weeding 28 days after sowing. Weeds that appear after this time will be suppressed by the crop.

For bean growers who use mechanical weed control, a tentative recommendation would thus be to use bean densities that close the rows early, and make one thorough weeding about three weeks after sowing. This will help one to carry out the activity without injuring the crops because injuring the crops creates wounds which act as the part way to bacteria which might cause some diseases to the plants.
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