PROJECT REPORT PRESENTATION

by
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DETERMINING THE EFFECT OF DIFFERENT APPLICATION RATES OF FERTILIZER AND MANURE ON DEVELOPMENT AND PRODUCTION OF COWPEA
Cowpea (*vigna unguiculata* (L) walp), kunde. *Leguminosae* family.

- Kenya produces 75% of world's cowpea.
- Area: 1800 ha, excluding homegarden cowpea.
- Cheap source of protein.
- Leaves, pods and seeds utilized as food.
There is limited phosphorus availability in western Kenya soils.
Fertilizer is becoming more expensive.
Land is limited.
Animal manure is misused/wasted.
Justification

- Nutrients: 24% carbohydrates, 57% protein.
- Pods, seeds and leaves utilized as food
- Cheap and inexpensive source of protein
- Fertilizer is expensive
- Limited land
Broad objectives

• To make use of animal manure
• Provide cheap and inexpensive source of phosphorus

Hypothesis
• Both manure and fertilizer have an effect on development and production of cowpea
Materials and methods

Site: kabete campus field station
Materials: kk1 seeds, DAP and manure

Method:
- RBD, 4 treatments, 3 replicates, 12 plots, 5.5 x 5.5 m, 1 x 1.5 m
- Spacing: 20 x 60 cm, 3 seeds per hole, 0.5 m between plots
- Fertilizer application rate: 200 kg/ha
- Manure application rate: 4 tonnes per ha
1. Number of leaves per treatment
2. Dry matter per treatment
3. Number of pods per treatment
4. Height of pods per treatment
5. Weight of seeds per treatment
6. Relative humidity and temperatures
**No. of the leaves per plot**

<table>
<thead>
<tr>
<th></th>
<th>Treat 1</th>
<th>Treat 2</th>
<th>Treat 3</th>
<th>Treat 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block 1</td>
<td>870</td>
<td>900</td>
<td>480</td>
<td>420</td>
</tr>
<tr>
<td>Block 2</td>
<td>810</td>
<td>840</td>
<td>510</td>
<td>510</td>
</tr>
<tr>
<td>Block 3</td>
<td>930</td>
<td>900</td>
<td>600</td>
<td>510</td>
</tr>
<tr>
<td>Mean</td>
<td>870</td>
<td>880</td>
<td>530</td>
<td>480</td>
</tr>
</tbody>
</table>

**Bar Chart**

**Mean NO. OF LEAVES PER TREATMENT**

- Treatments: 1, 2, 3, 4
- Leaves: 0, 500, 1000

The bar chart visualizes the mean number of leaves per treatment.
## Mean drymatter per plot.

<table>
<thead>
<tr>
<th></th>
<th>Treat 1</th>
<th>Treat 2</th>
<th>Treat 3</th>
<th>Treat 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block 1</td>
<td>1,515.30</td>
<td>2,268.00</td>
<td>826.20</td>
<td>638.10</td>
</tr>
<tr>
<td>Block 2</td>
<td>2,160.00</td>
<td>2,062.50</td>
<td>787.00</td>
<td>1,289.40</td>
</tr>
<tr>
<td>Block 3</td>
<td>2,205.60</td>
<td>2,500.50</td>
<td>1,252.80</td>
<td>881.10</td>
</tr>
<tr>
<td>mean</td>
<td>1,960.30</td>
<td>2,277.00</td>
<td>955.33</td>
<td>936.20</td>
</tr>
</tbody>
</table>

![Mean Drymatter per Treatment](chart.png)
**Mean no. of the pods per treat.**

<table>
<thead>
<tr>
<th></th>
<th>Treat 1</th>
<th>Treat 2</th>
<th>Treat 3</th>
<th>Treat 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block 1</td>
<td>300</td>
<td>420</td>
<td>180</td>
<td>150</td>
</tr>
<tr>
<td>Block 2</td>
<td>330</td>
<td>450</td>
<td>270</td>
<td>240</td>
</tr>
<tr>
<td>Block 3</td>
<td>330</td>
<td>450</td>
<td>300</td>
<td>270</td>
</tr>
<tr>
<td>mean</td>
<td>320</td>
<td>440</td>
<td>250</td>
<td>220</td>
</tr>
</tbody>
</table>

**MEAN NO. OF PODS PER TREATMENT**

![Bar chart showing mean number of pods per treatment]
# Mean height of the pods

<table>
<thead>
<tr>
<th></th>
<th>Treat 1</th>
<th>Treat 2</th>
<th>Treat 3</th>
<th>Treat 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block 1</td>
<td>12</td>
<td>13</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Block 2</td>
<td>11</td>
<td>12</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>Block 3</td>
<td>12</td>
<td>13</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>mean</td>
<td>11.6</td>
<td>12.6</td>
<td>7.6</td>
<td>7.3</td>
</tr>
</tbody>
</table>

![Mean height of pods per treat](image.png)
RH and Temp.

TEMP AND RH RANGE FROM PLANTING DAY

RELATIVE HUMIDITY
TEMPERATURES

dates/days
DISCUSSION

- Fertilizer mixed with manure shows the highest cowpea production.
- Manure alone gives low cowpea production in the first season because manure is released slowly to the soil, but in the second season manure give highest production.
- Fertilizer shows the highest cowpea production because it is released easily.
- Control shows lowest results because no nutrients were applied.
Both fertilizer and manure have a significant effect on development and production of cowpea.

Manure and fertilizer gives high production and yield on cowpea.

Cowpea requires low temperatures and high relative humidity for good production.
Farmers should be advised to use manure because it is released slowly but supply nutrients for many seasons, it is cheap and also it increases cowpea production.

Farmers should be advised to combine fertilizer and manure for better results on cowpea production.