EFFECT OF SEED TUBER SIZE AND SEED PIECES ON THE EMERGENCE, GROWTH VIGOUR AND YIELD OF IRISH POTATOES (SOLANUM TUBEROSUM L)

BY; KIPLAGAT SHADRACK
A22/0074/2009
SUPERVISED BY;
DR. R. NYANKANGA
Potato is grown worldwide and ranks fourth in food production after wheat, maize and rice stem tuber crops and root crops followed by cassava, sweet potato and yam. In Kenya potato ranks as the second most important food crop after maize (Guyton et al., 1994) and plays a major role in food security and income generation by providing employment opportunities (MOA, 2003).
Production constraints

- Lack of quality seed potatoes among growers
- Prices of potato fluctuate according to the seasonality
- Potato crop is susceptible to more than 300 pests and diseases (Horton, 1902). E.g. potato tuber moth, late blight and bacterial wilt.
Problem statement and justification

- The potato seed is bulk and one requires 4 tons/ha. This is costly.
- Lack of good quality seeds among growers has been a problem.
- Lack of knowledge among the farmers in the right size of potato tubers to be planted has led to low yields in potato production.
- The use of other alternative propagules such as TPS, mini tubers and macro tubers has also been faced with challenges.
- This study therefore plans to investigate the effect of seed tuber size and the use of seed pieces on emergence, growth vigour and yield of potatoes.
Objectives

- The broad objective of this study is to improve potato production by the use of quality potato seed tubers in terms of correct tuber size and correct handling of the seed pieces.

Specific objective

- To determine the effect of seed tuber size on emergence, growth vigour and yield of Irish potato.
- To determine the effect of tuber seed pieces on emergence, growth vigour and yield on Irish potato.
Hypothesis

- Seed tuber size has no effect on emergence, growth vigour and yield of Irish potato.
- Seed pieces have no effect on the emergence, growth vigour and yield of Irish potato.
Materials and methods

- The study will be carried out at Kabete campus field station, University of Nairobi.
- The research will be carried out using two potato varieties (Asante and Tigoni varieties).
- The experiment will be laid on a completely randomised design (CRD) with each treatment being replicated three times.
- The treatments are: Small tuber size (28–45 mm diameter), Medium tuber size (45–55 mm diameter) and Large tuber size (> 55 mm diameter) and the seed pieces.
- The seed pieces will be suberized by being stored on warm conditions for 10 days.
Data collection

- Data will be collected on infection during suberization and after planting on the following parameters.
  - Emergence (%)
  - Number of stems per hill
  - Plant vigour
  - Plant height
  - Number of leaves per plant
  - Number and weight of tubers
Data analysis

- Analysis of variance (ANOVA) will be performed by genstat package and the means will be separated using LSD at 5% level of significance.
- Comparison will be done on the whole seed verses the seed pieces.
## Work plan

<table>
<thead>
<tr>
<th>Activity</th>
<th>Stage</th>
<th>February</th>
<th>March</th>
<th>April</th>
<th>May</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land preparation</td>
<td>Primary</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procurement of inputs</td>
<td>Secondary</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weeding</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data collection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Report writing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Report submission</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item</td>
<td>Units</td>
<td>Unit Cost</td>
<td>Total Cost</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td>-------</td>
<td>-----------</td>
<td>------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seed tubers</td>
<td>10 kg</td>
<td>60</td>
<td>600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DAP</td>
<td>4 Kg</td>
<td>150</td>
<td>600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labour</td>
<td>4</td>
<td>410</td>
<td>1640</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Report printing</td>
<td>2 copies</td>
<td>400</td>
<td>800</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pesticides</td>
<td>1</td>
<td>500</td>
<td>500</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total: 4,140
Burton, w.g., 1989. The potato (3rd edition), Longman London 742
Beukema HP and DE. Vander Zaag. 1990. *Introduction to potato production*. PudockWageningen. 208
THANK YOU