UNIVERSITY OF NAIROBI

PROJECT REPORT PRESENTATION ON:

Effects of Seedbed Preparation on Sweet Potato Growth

Name: Soy Tracy Rose C
Reg No: A22/0091/2007

Supervisor: Dr. Mary W K Mburu

Introduction.

- Sweet potato (SP) is the 7th most important crop world wide after wheat, rice, maize, potato, barley and cassava (FAOSTAT, 2009).

- Asia and Africa account for 92% and 5% of the world production, respectively (CIP, 1999).

- China produces roughly 80% of the world's SP.

- SP is Grown in Africa a wide range of environments

Production.

- Nigeria, Uganda and Tanzania are key producers and Kenya ranks sixth.
- Kenya – Nyanza (52%), Western(35%),Eastern (6%),Rift valley(4%) and Coast (2%) provinces (MoA 2005).
- Grown by small holder farmers.
- Tubers are used for food whereas vines are fed to livestock.

Production constraints

- Economic - proximity to markets and lack of marketing standards (Ames, 1996).
- Abiotic - low soil fertility and drought which limit availability of planting vines.
- Biotic factors - nematodes, weevils and viruses.
- Crop husbandry factors - low quality vines and poor agronomic practices i.e. seedbed (Onwueme, 1976).

Seed bed preparation methods

Three common seedbed types:

- Mounds - labor intensive, common practice
- Ridges – labour intensive
- Flat - low labour requirement

Problem statement and justification.

- Inappropriate seedbed preparation methods reduce sweetpotato growth and yield.

- Improved seed preparation increase sweet potato growth and yield and this may offset initial cost.

Objective

- To asses the effect of commonly used seedbed preparation methods on sweet potato growth and yield.

Hypothesis

- A seed bed that will enhance tuber penetration into the soil would be expected to increase growth and yield.

Methodology

- Materials:
  - Sweet potato vines of variety 103001.152d.
- Experimental site: UoN -Kabete Field Station.
- Experimental Design-RCBD (Randomized complete block design), replicated thrice
- The treatments were:
  - Ridges, Mounds, Flats.

Collection of data.

- Percent ground cover
- Time taken to prepare seedbed

RESULTS

Ridges: 1 row-9 min

22.5min per sq meter

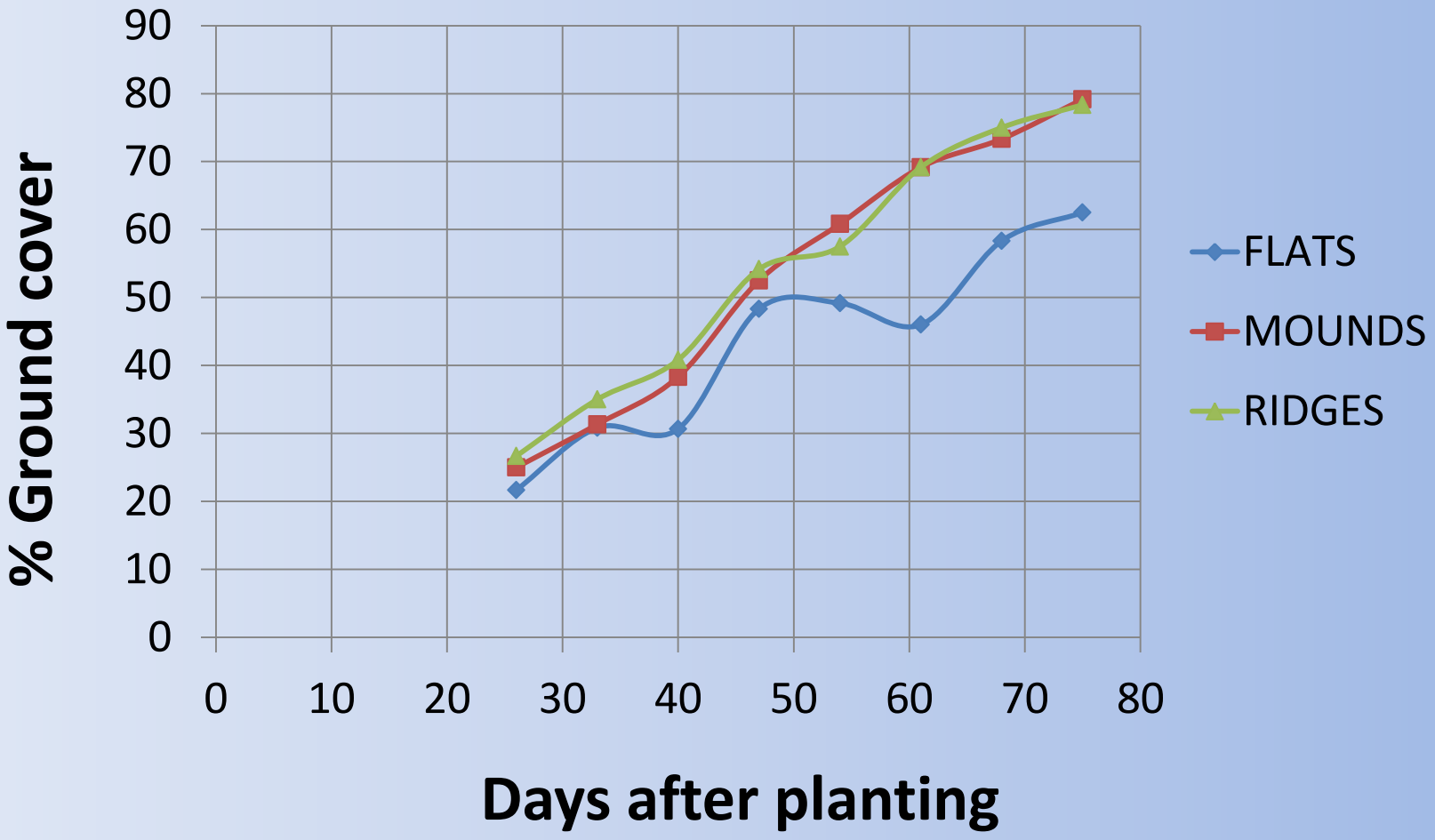
Mounds: 1 row-11 min

27.5min per sq meter

Flats: 1 row-5 min

12.5min per sq meter

Seed bed effect on percentage ground cover of sweet potato



RESULTS ANOVA - output (sample for 72 DAP)

Variate: %GROUND_COVER

Source	d.f.	s.s.	m.s.	v.r.	F pr.
Block	2	4.16	2.08	0.29	
Treatment	2	529.16	264.58	36.29	0.003
Residual	4	29.16	7.29		
Total	8	562.50			

Results ctd--

- Percentage ground cover was initially comparable among all beds

- Percent canopy was higher in SP planted on ridges and mounds (but comparable between the two), but significantly lower in SP planted on flat beds from 55 DAP onwards

Tables of means - % Ground cover

Grand mean	73.33		
TREATMENT	Flats	Mounds	Ridges
	62.50	79.17	78.33

L.s.d. 6.121

Discussion

- Canopy cover of was comparable early in season probably because vines were small, hence little competition
- There were more weeds in the flat bed and this may have increased competition for water and light
- Mounds and ridges might have stored more water than flat ridges

Results

- Percentage ground cover is the same initially among all beds
- Percent canopy cover was comparable between SP planted on ridges and mounds latter in the season
- Growth was consistently significantly lower in SP planted on flat beds late in the season – i.e. from 55 DAP onwards

Discussion ctd---

- Ground cover measurements are frequently used to estimate light interception.
- The ability of a sweet potato plant to intercept solar radiation is closely related to tuber yield.
- It is likely that tuber yield might be comparable in the SP grown under mould and ridges but lowest in flat beds.

CONCLUSION AND RECOMMENDATIONS

- Although Ridges require as much time as the mounds, they are easier to make.

- The initial cost of preparing ridges and moulds compared to flat might be off set by the increase in growth and possibly higher tuber and vine yields at the end.