

Effects of Leaf stripping, Non-stripping and Holding periods on establishment and Yield of sweetpotato in Rainforest Agroecology of Nigeria

By

Njoku, J.C and Anedo, E.
NRCRI Umudike, Nigeria



Background

Topic 4 of COP seed systems:

Packaging and transporting sweetpotato vine cuttings:



Emerging question;
Would stripping off leaves be viable

Bulkiness, perishability, loss of viability

Objectives

- To determine the effect of leaf stripping on establishment and yield
- Determine effect of holding/storage period on establishment and yield

Materials and Methods

- **Study conducted at the NRCRI, Research Farm, Nigeria (latitude 05⁰, 29' N and Longitude 07⁰ 33' E).**
- **The experiment was a factorial layout in RCBD**
- **Treatments:**
 1. **Two sweetpotato varieties (TIS 8164 and TIS 87/0087)**
 2. **Stripped and non-stripped (Whole) planted same day and stored 3 and 6 days before planting.**

Materials and Methods contin.....



Fig1-3 Left to Right
Stripped and whole planted the
same day
Stripped and whole stored for 3
days BP
Stripped and whole stored 6 days
BP

Materials and Methods contd.....

- **Data on establishment count was taken at 2WAP.**
- **The yield data was taken at harvest**
- **All agronomic practices recommended for sweetpotato were carried out**
- **Data collected were analysed using Genstat discovery edition 4. and significant means separated using Fishers Least Significant Difference at (F-LSD) at 5% level of probability.**

Results and Discussions

Table 1: Mean establishment count(M²)

	Variety		
Method	TIS 8164	TIS 87/0087	Mean
Stripped SD	2.26	2.91	2.58
Stripped 3DBP	1.48	2.54	2.01
Stripped 6DBP	0.41	1.61	1.01
Non stripped SD	2.63	2.98	2.81
Non stripped 3DBP	2.09	3.09	2.59
Non stripped 6DBP	1.15	2.85	2.00
Mean	1.67	2.66	

LSD(0.05) Variety=0.477

LSD (0.05) Method=0.825

LSD (0.05) Method X variety = NS

Averagely % establishment of non-stripped vines was 13% greater than that of stripped vines

Mean number of Marketable Roots(M²)

	Variety		
Method	TIS 8164	TIS 87/0087	Mean
Stripped SD	2.69	2.19	2.24
Stripped 3DBP	0.70	2.39	1.55
Stripped 6DBP	0.22	1.15	0.69
Non stripped SD	2.28	3.74	3.01
Non stripped 3DBP	1.74	3.30	2.52
Non stripped 6DBP	0.65	2.48	1.56
Mean	1.38	2.58	

LSD (0.05) Variety = 0.490

LSD (0.05) Method=0.849

LSD (0.05) Method X variety = NS

Mean total number of Roots(M²)

	Variety		
Method	TIS 8164	TIS 87/0087	Mean
Stripped SD	3.48	3.35	3.42
Stripped 3DBP	1.11	4.11	2.61
Stripped 6DBP	0.30	1.69	0.99
Non stripped SD	3.17	5.57	4.37
Non stripped 3DBP	2.31	5.58	4.10
Non stripped 6DBP	1.00	4.35	2.68
Mean	1.90	4.16	

LSD (0.05) Variety = 0.747

LSD (0.05) Method= 1.294

LSD (0.05) Method X variety = 1.830

Mean Marketable root weight(t/ha)

Method	Variety		Mean
	TIS 8164	TIS 87/0087	
Stripped SD	8.70	7.37	8.04
Stripped 3DBP	2.81	6.59	4.70
Stripped 6DBP	0.70	3.30	2.00
Non stripped SD	6.22	12.56	9.39
Non stripped 3DBP	5.93	12.44	9.19
Non stripped 6DBP	2.74	8.67	5.70
Mean	4.52	8.49	

LSD (0.05) Variety = 1.419

LSD (0.05) Method= 2.458

LSD (0.05) Method X variety = 3.476

Mean total root weight(t/ha)

	Variety		
Method	TIS 8164	TIS 87/0087	Mean
Stripped SD	9.30	8.26	8.78
Stripped 3DBP	3.13	8.00	5.56
Stripped 6DBP	0.85	3.70	2.28
Non stripped SD	6.89	13.78	10.33
Non stripped 3DBP	6.33	14.07	10.20
Non stripped 6DBP	3.06	10.04	6.55
Mean	4.93	9.64	

LSD (0.05) Variety = 1.546

LSD (0.05) Method= 2.678

LSD (0.05) Method X variety = NS

Non-stripped vine recorded 38% yield increase compared to stripped vines

Vine weight(t/ha)

	Variety		
Method	TIS 8164	TIS 87/0087	Mean
Stripped SD	4.96	8.37	6.67
Stripped 3DBP	3.19	6.44	4.81
Stripped 6DBP	1.41	4.78	3.09
Non stripped SD	4.33	7.78	6.06
Non stripped 3DBP	2.81	6.11	4.46
Non stripped 6DBP	2.22	5.00	3.61
Mean	3.15	6.41	

LSD (0.05) Variety = 1.459

LSD (0.05) Method= 2.527

LSD (0.05) Method X variety = NS

Averagely there was no appreciable difference in shoot weight

Few explanations

- Presence of leaves in vines cuttings greatly increases adventitious root production (Presence of active endogenous root promoting substances)
- Storage root yield is significantly higher in plants from vine cuttings with foliage than plants without foliage (Ravindran & Mohankunu 1989)
- Stripping of leaves should be avoided if vine cuttings are to be stored

Trial will be confirmed this year, 2017

THANKS FOR
LISTENING