

# Sprout Control of Yam to reduce post-harvest losses

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## CONTEXT

The storage life of yam tubers is influenced by the period of termination of dormancy and when new sprouts eventually develop. It has been reported that sprouting in stored yam tubers causes weight and quality loss (Osunde and Orhevba, 2009; Sahore et al., 2007). In this study the potential of crude extract from locally available plant materials to delay the break of dormancy and eventual sprouting during storage was tested.

## METHODOLOGY

This was done inside an improved yam barn using 3 yam varieties (efuru, ikokoro and ewura). The tubers were treated with extracts from 3 locally available plant materials used by farmers in the field, namely; neem leaves, neem seeds and sweet potato leaf extract.



Neem seeds

The extracts were prepared by crushing 200 g of each material and squeezing out the juice by hand. The juice was dissolved in 1 litre of distilled water. Then, 3 sound tubers (free from bruises, cuts, rot, pests and insects) of each variety (efuru, ewura and ikokoro) were selected. Each tuber was dipped separately into the extract up to 5 cm apical portions for 2 minutes. The treated tubers were stored inside an improved yam barn in replicates of 3 at random locations. Three tubers of each variety which were not dipped in the solution served as the control. The treated yam tubers and the control were monitored daily for the following parameters for over a period of six months.

- Weight.
- Day of breaking of dormancy (bud formation) and number of tubers with buds
- Day of sprouting and number of tubers with sprout.
- Number of tubers with signs of rot or insect infestation
- Temperature and relative humidity inside the storage structure
- Number of tubers discarded and number of wholesome tubers after the storage period

## RESULTS AND DISCUSSION

Figure 1 shows the monthly changes in weight of yam tubers treated with different plant extracts and the weight of the control, while Figure 2 depicts the percent losses in the yam tubers during and after storage. For all the different yam cultivars, the tubers not treated with anti-sprout had the highest weight loss, while neem leaf extract was the most effective anti-sprout. Also, as shown in Tables 1 and 2, neem leaf extract delayed the process of bud formation (i.e. break of dormancy) the most, while sweet potato extract had the least effect. The same trend has been reported by Osunde and Orhevba (2011) for giwa variety in Niger state, Nigeria. Figure 3 depicts the temperature and relative humidity inside the modern yam barn which ranged from 24.6 – 27.9 ° C and 80.4 – 91.1%, respectively.

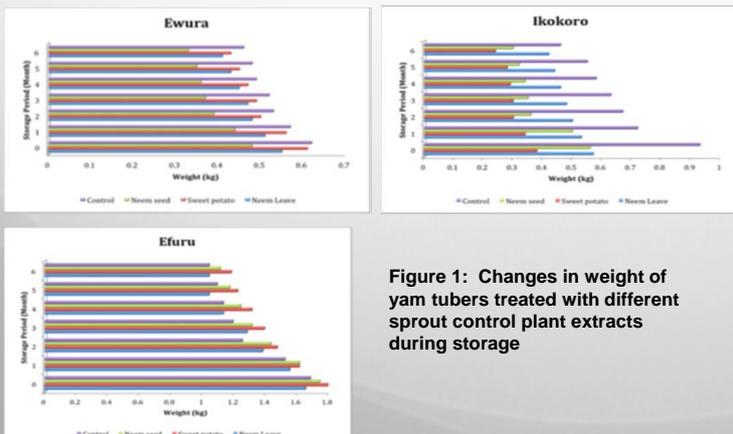


Figure 1: Changes in weight of yam tubers treated with different sprout control plant extracts during storage

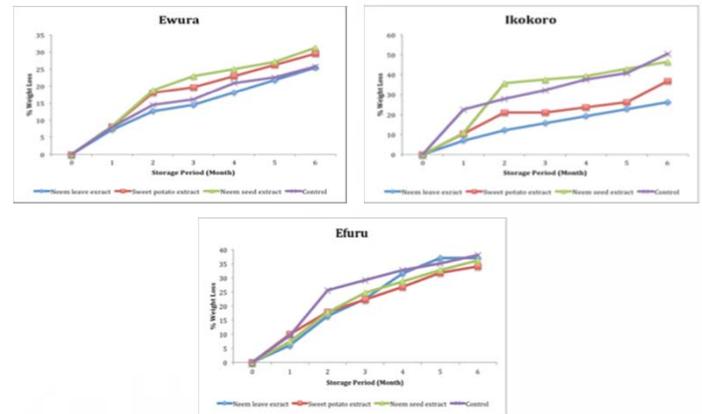


Figure 2: Percent loss in weight of yam tubers treated with different sprout control plant extracts during storage

Table 1: Day of Budding and Number of Yam Tubers with Bud

Day	Ewura				Efuru				Ikokoro			
	Neem leaf extract	Sweet potato leaf extract	Neem seed extract	Control	Neem leaf extract	Sweet potato leaf extract	Neem seed extract	Control	Neem leaf extract	Sweet potato leaf extract	Neem seed extract	Control
4	1	1	2	2	0	3	6	2	1	0	0	1
5	0	0	0	0	0	3	0	0	0	0	0	0
8	2	0	1	1	0	0	0	0	2	0	1	0
9	0	0	0	0	0	0	0	0	0	0	0	2
11	0	0	0	0	0	0	0	0	0	1	0	0
12	0	0	1	0	0	0	0	0	3	0	0	0
16	0	0	1	0	1	0	0	1	0	0	3	0
21	2	1	1	0	2	0	0	3	0	2	2	0
25	1	0	0	0	0	0	0	0	0	0	0	0
29	0	2	0	0	3	0	0	0	0	0	0	0
31	0	2	0	0	0	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0	0	0	0	0	0
35	0	0	0	0	0	0	0	0	0	0	0	0

Table 2: Day of Sprouting and Number of Yam Tubers with Sprout

Day	Ewura				Efuru				Ikokoro			
	Neem leaf extract	Sweet potato leaf extract	Neem seed extract	Control	Neem leaf extract	Sweet potato leaf extract	Neem seed extract	Control	Neem leaf extract	Sweet potato leaf extract	Neem seed extract	Control
11	0	0	0	0	0	0	0	1	2	0	0	0
12	1	1	0	1	0	4	5	0	0	0	0	1
16	0	0	1	0	0	1	0	0	0	2	1	0
17	0	0	0	0	0	0	0	1	0	0	0	0
21	0	0	1	0	1	0	0	0	0	0	1	0
22	0	0	1	0	0	0	0	0	0	0	0	2
23	0	0	1	0	0	0	0	1	0	0	0	0
25	1	0	1	0	1	0	0	0	2	2	0	0
27	0	1	0	0	0	0	0	0	0	0	0	0
29	0	0	1	0	0	1	1	0	0	2	2	0
31	1	0	2	0	0	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0	0	0	0	0	0
35	0	2	0	0	4	0	0	4	0	0	0	0
37	3	2	0	0	0	0	0	0	0	0	0	0

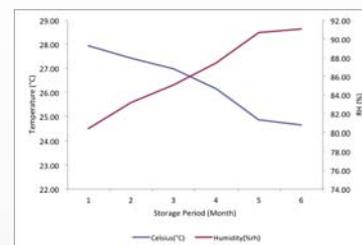


Figure 3: Temperature and Relative Humidity inside the modern yam barn

## CONCLUSION

Neem leaf extract was found to have the best potential as a sprout depressant compared to sweet potato leaf and neem seed extracts.

## REFERENCES

- Osunde ZD, Orhevba BA (2009). African Journal of Food, Agriculture, Nutrition and Development, 9: 678–690.
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