Effect of storage condition and post-harvest handling method on the shelf life of stored *S. aethiopicum*

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Background

The leafy type of vegetables, and their high moisture content gives them a short shelf life. On average *S. aethiopicum* (Shum) has a shelf life of one day, making it unable to keep fresh for a long time. This study was done to determine the effect of post-harvest handling practices and storage technology on the post-harvest quality in *S. aethiopicum.*

Methodology

The post-harvest handling and storage technologies were tested under two experimental conditions (with [RI] and without roots [RC]) and three different environmental conditions (i] 21.0±1.00 ^{o}C, 95.67±3.01% RH;ii] in ambient storage (AC), 23.8±2.86 ^{o}C, 69.38±6.72% RH; and iii] in cold room (CR), 7.17±1.30 ^{o}C, 95.80±3.19% RH) . Two kg of harvested of RI and RC were kept in a charcoal cooler (CC).

Experiment two involved storing 2.0 kg of *S. aethiopicum* in charcoal cooler with no water treatment (TT^{-}) and in ambient storage while immersing in portable water for 2 to 3 seconds during the day (TT^{+}).

Results and Discussion

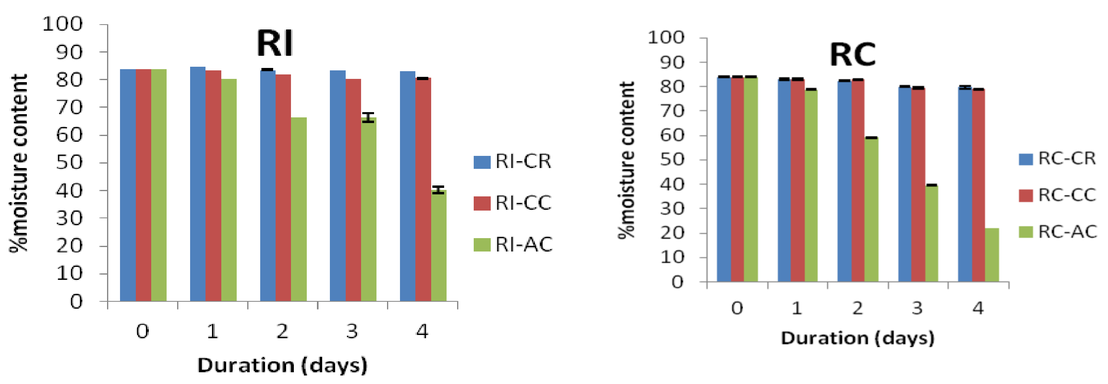

Figure 1: Percentage moisture content in *S. aethiopicum,* stored in cold room, charcoal cooler and at ambient condition

The fastest decrease in percentage moisture content was observed in ambient storage. Both RC-CR, RI-CR, RC-CC and RI-CC showed slight decrease in percentage moisture content from day zero to day four. The data showed that there was variation between the moisture content of RC-CR, RC-CC, RC-AC, RI-CR, RI-CC and RI-AC for each day in the five days of storage, which was significant (P≤0.05). The high temperature in the ambient storage led to increased rate of moisture loss.

The most rapid decrease in chlorophyll content was observed in RC-AC as shown in Figure 2 above. The results showed that there was a statistically significant difference in the chlorophyll content of *S. aethiopicum* kept in the three different storage conditions and between RI and RC in each day of storage (P ≤ 0.05). The light intensity in the charcoal cooler and cold room was relatively low hence reducing on the rate of chlorophyll degradation.

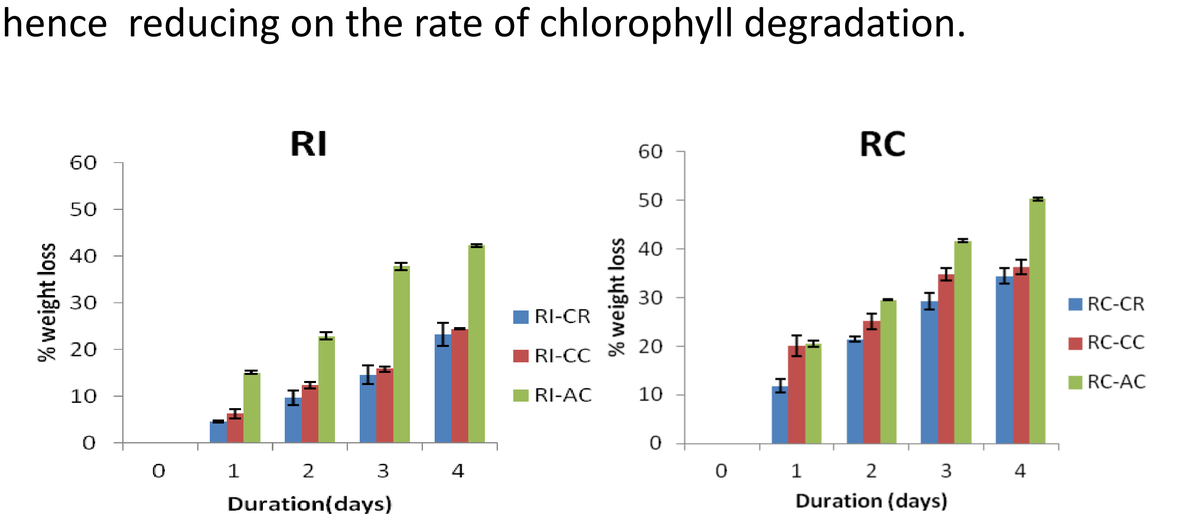

Figure 3: Percentage weight loss in *S. aethiopicum,* stored in cold room, charcoal cooler and at ambient condition

S. aethiopicum RC-AC showed the most rapid increase in the percentage weight loss. There was variation between the percentage weight loss RC-CR, RC-CC, RC-AC, RI-CR, RI-CC and RI-AC for each day in the five days of storage which was significant (P≤0.05). The first indicator of deterioration is the moisture loss, weight loss due to moisture loss and yellowing due to ethylene production.

Conclusion

Deterioration of *S. aethiopicum* occurs more rapidly when the roots are cut-off. The freshness of the vegetable can be maintained by immersing the leaves intermittently in portable water. Therefore, the stored *S. aethiopicum* must be kept away from contact with water to prevent rotting. This makes the charcoal cooler a better affordable storage technology. The vegetables have no contact with water yet it maintains a high relative humidity required.

References:- Poster content extracted from journal paper found at http://pubs.sciepub.com/ajfst/6/4/6 El-Ramady, H. R. (2015), Lee, E.et al, (2014).

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