



# Preservation of Fruits and Vegetables Using Lemon Grass

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## Introduction

many small entrepreneurs especially the green grocers obtain great loss since they cannot afford to preserve their products because most preservative methods are expensive to them. Also furniture attacks by termites and other wood eating insects has been another problem to people using furniture and houses made of wood especially in areas of Kisimiri, Maji ya chai , Momela, Usa river and other of Meru areas.

What people do not know is that all these problems can be solved easily and cheaply by the use of lemon grass oil. Many Tanzanians , plant the lemon grass(Mchaichai) for tea purposes only. This project brings about another useful way to use the lemon grass. Through the same processes for distillation of local alcohol(GONGO) lemon grass oil can be locally obtained to solve this problem

## Method

We visited the Meru area including Kisimiri , Ngarenanyuki , Momella and other areas like Usa river and observed the markets and schools to see the extent of rotting of groceries in markets and the way the school desks and other furniture have been affected by termites.

The interview was conducted to normal residents of Meru area, asking them on their knowledge and uses on lemon grass, furniture producers were also interviewed on how they ensure durable furniture to their clients. From this, we aimed at;

- Obtaining people's knowledge on their use of lemongrass
- Inquiring on people's knowledge on the existence of lemongrass oil
- Knowing how furniture producers ensure that the furniture they produce are free from termite attacks.
- Knowing the extent of loss to green grocers, caused by rotting of fruits.

## Results

In this section ,we tested for three things;

What causes the rotting of vegetables and fruits.

The chemicals present in the lemon grass oil and their properties essential for prevention of fruit and vegetable rotting.

The types of fruits which can be preserved , the preservation duration and other conditions in which this method may be suitable or favourable.

(i)We found the following components in the lemongrass oil sample;

The role of the lemon grass oil is that when the fruit is dipped in the oil, it prevents the ripening hence rotting of the fruits since the oil hinders the produced ethylene gas from spreading to the surrounding fruits ,and also since it has anti bacterial, anti fungal ,anti microbial ,properties it then prevents bacteria's and any other microorganism from attacking the fruits and vegetables hence rendering them safe and free from rotting.

We also experimented on the types of fruits and vegetables which can be stored or preserved using the lemon grass oil and the conditions which this method holds.

All sorts of vegetable can be preserved and the fruits which are suitable for this method are tomatoes, bananas , berries , pears , avocados, pawpaws e.tc.

The fruits and vegetables can be preserved for as long as eight to ten days depending on the type of fruit, this method does not alter the chemical composition of the products.

## Conclusion

The following should be noted:

- The anti bacterial, anti fungal, anti oxidant , and anti microbial properties of the lemongrass oil are responsible for the preservation of the fruits and vegetables .
- The insect repellent , vermifugal and fungicidal properties present in the lemon grass oil are responsible for preventing insect attacks on furniture made of wood, hence making it durable and strong for a longer time. The oil works when it is applied on the surface of the respective furniture.

## References

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## Acknowledgments

We would like to extend our sincere gratitude to Mr. Valentine Tarimo and Mr.Emmanuel Peter,our teachers for their effective supervision and assistance, also to Mr.Stephen from Ngarenanyuki market for his willingness to support us in collecting information from the entrepreneurs at the site.



Image 02: Some of fruits sold in the Meru and other areas of Tanzania.



Image 02: Showing small entrepreneurs (green grocers) in one of the markets in Arusha.

### 2.2.3: QUESTIONNAIRE

We conducted a questionnaire to green grocers asking them on how much loss in terms of number of fruits do they encounter per three days and the total cost of loss per three days, and the information obtained was analyzed in the tables below.

Number of rotting fruits per three days	00 - 10	10 - 20	21 - 30	31 - 40	41 and more
Number of entrepreneurs encountering respective loss	00	03	12	15	10

Amount (cost)of loss obtained per three days	10,000 -20,000	21,000 -30,000	31,000 - 40,000	41,000 and more.
Number of entrepreneurs encountering respective loss	2	15	12	11

Chemical compound present	Property of the component .
Myrcene	• Used as an intermediate component in making fragrances.
Cetronellal	• Anti - bacterial • Anti - septic • Insect repellent • Fungicidal • It is a tonic. • Vermifuge substance.
Geranyl acetate	• It is strongly anti - microbial.
Nerol	• Anti - microbial • Anti oxidant • Anti viral.
Geraniol	• Has insecticidal and repellent properties. • Anti microbial and anti bacterial • Anti oxidant and anti fungal.
Limonene	• Anti oxidant • Anti cancer.



Left side: image showing comparison of the two fruits in the beginning.

Right and bottom: image showing comparison of fruits after ten (10) days .It is seen that the one stored under the lemon grass oil is still fresh compared to the one left bare.

