



## QUALITY ATTRIBUTES OF CARROT GROWN ORGANICALLY ON KITCHEN WASTE MANURE

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### ABSTRACT

In the present study a fruit class vegetable carrot was grown using vermicompost, normal soil & manure prepared from kitchen waste 85 was studied for its sensory characteristics. Recipe was formulated & evaluated. There trial (T1, T2 & T3) were conducted for testing of various sensory characteristics such as appearance, colour, texture, test, flavor & acceptability. For this purpose five human panelists were coded as T1, T2, T3, T4 & T5. Recipes were served fresh based on mean values results were tabulated & analyzed statistically by applying one way annova & scheffs test. It was observed that kitchen waste manure variety significantly scored maximum than normal soil vermicompost. It shows highly significant difference in both varieties when compared on organoleptic characteristics. Thus it was concluded that kitchen waste manure was highly appreciated & more superior in all sensory characters over normal soil, which was statistically proved. Thus by using organic manure & vermicompost for growing vegetables, we can save our ecosystem & health by consuming these fresh organic vegetable.

**Keywords:** T1-T5 (Judges), Kitchen Waste Manure, Sensory Characteristics, Ecosystem.

### INTRODUCTION

The concept of organic farming is conceived differently by different people. It is generally said that organic farming is the practice of growing crops using only organic manures & not following the usual plant protection measures. Organic farming is defined as a production system which avoids fertilizers,

pesticides, growth regulars. 85 live stock feed additive to the maximum extent feasible, organic farming relies on crop production, crop residues, animal manure, legumes, green manures, off farming, agricultural cultivation, mineral bearing rocks & aspects of biological pest control to maintain soil productivity &, to supply plant



nutrients & also to control insects seeds &, other pests. According to Fantilamn (1990) organic farming is a matter of giving back to nature of the way back from it.

In our country, since centuries, organic manures were the primary sources of plant nutrients for crop growth & development. Recycling of organic waste & application of bulky organic manures were the most popular organic measures adopted to sustain soil health (Sehgal & Chauhan 2000).

To satisfy the ever increasing demand of food production to feed the increasing population. Indian agriculture research since 1960 focused its attention on increased productivity, high yielding varieties, fertilizer & pesticides along with irrigation. The chemical fertilizers played significant role in providing large quantities of nutrients needed for intensive crop production which brought about maintain increasing in agricultural production in the initial days. But its repeated use has

led to degradation of soil health, pollution of ground water, salinity & soil biodiversity went down (Jackson 1967). Due to above reasons organic farming is being practiced now-a-days, which involves the use of humus, cow dung, vermicompost & kitchen waste, that improves & maintains soil fertility.

Everyday we throw kitchen waste such as fruit & vegetable peels & leftover into a trash can. These kitchen wastes are full of nutrient that end up landfills to be never be reused again. However our yard can always use more nutrients so why not recycle our kitchen waste into our yard or vegetable garden. Composting is natural process. Organic materials like vegetables scraps are broken down by microorganisms forming a rich soil like substances called compost. Vegetables scraps, grains, fruit peels, egg shells, bread & cereals are the best kitchen waste for composting.



## **MATERIALS AND METHOD**

All kitchen waste for contains rich nutrients which are totally wasted by throwing it in dustbin. The process of converting kitchen waste into organic manure is very simple, mostly done by nature with the help of microorganisms. For that terrace of a house was selected for preparation of kitchen waste manure. All old cooler tank with holes on all sides to have a good oxygen flow was used. Kitchen waste was collected daily at the end of the day. Next day collected waste was spread in tank with normal soil. Repeated the same till the tanks was full covered the tank with gunny bags. To maintain the optimum moisture level in the tank water was added. Kitchen waste manure was ready within 60-75 days. The pots were filled by kitchen waste manure 3:1 proportion & another 2 pots were filled by normal soil. The carrot sapling were inserted in the centre of the pot in the month of September & the carrot were ready in the month of December.

## **Sensory Evaluation**

It was on the basis of organoleptic characteristics of the carrot soup that was prepared using fresh carrot ploughed from the experimental pots grown on manure prepared from kitchen waste. After collection of 100 gm of carrot it was cleaned, washed, chopped & 200 ml water was added to it. It was cooked till soft, and then grounded in a mixture. The mixture was kept for boiling, salt was added, boiled for a minute & the hot soup was served to the judges. Same procedure was followed for carrot grown on normal soil. Score card was developed for the recipe on the basis of appearance, color, texture, taste, flavor, consistency & acceptability. Statistical appraisal of the data was done using.

Arithmetic mean/average

One way annova test

Graphical representation

The purpose of the present study was comparative study of carrot grown in kitchen waste manure & normal soil. Carrot soup



recipe was prepared & standardized 85 results were tabulated, analyzed & discussed under the following heads.

Preparation of kitchen waste manure by using household kitchen waste.

Sensory characteristics of cooked vegetable.

The table 1 shows that the calculated value of F is 20.76955 which is greater than the table value of 3.15 is at 5% level with df being  $v_1=2$  and  $v_2=42$  and hence which support alternative hypothesis it means there difference in sample means. We may therefore conclude that there is significant difference between appearance due to varieties of manures.

Table 2 show that control group differs from other groups, there is difference between K & V, K & C and V & C are statistically differ significantly.

#### **Color of Carrot:**

The colors of vegetables speak volumes about their nutritional value. The wide array of bright

colors that give fruits and vegetables their visual appeal come from three main types of pigment: carotenoids, which give orange and yellow vegetables their colors; flavonoids, which provide blue, red and cream colors; and chlorophyll, which makes, greens green. These colorful compounds also provide health and nutrition benefits. Eating healthfully is simpler when you know what the colors of vegetables indicate about their nutritional value.

The table 3 shows that the calculated value of F is 18.79887 which is greater than the table value of 3.15 at 5% level with df being  $v_1=2$  and  $v_2=42$  and hence which support alternative hypothesis it means there difference in sample means. We may therefore conclude that there is significant difference between color due to varieties of manures.

Table 4 shows that control group differs from other groups, there is difference between K & V, K & C and V & C are statistically differ significantly.



### **Taste of Carrot:**

Sweetness, usually regarded as a pleasure sensation, is produced by the presence of sugars and a few other substances. Sweetness is often connected to aldehydes and Ketones which contain a carbonyl group. Sweetness is detected by a variety of G protein coupled receptors coupled to the G protein gustducin found on the taste buds. At least two different variants of the "sweetness receptors" must be activated for the brain to register sweetness. Compounds the brain senses as sweet are thus compounds that can bind with varying bond strength to two different sweetness receptors. These receptors are T1R2+3 (heterodimer) and T1R3 (homodimer), which account for all sweet sensing in humans and animals. Taste detection thresholds for sweet substances are rated relative to sucrose, which has an index of 1. The average human detection threshold for sucrose is 10 millimoles per liter. For lactose it is

30 millimoles per liter, with a sweetness index of 0.3, and 5-Nitro-2-propoxyaliline 0.002 millimoles per liter.

The table 5 shows that the calculated value of F is 24.304 which is greater than the table value of 3.15 at 5% level with df being  $v_1=2$  and  $v_2=42$  and hence which support alternative hypothesis it means there difference in sample means. We may therefore conclude that there is significant difference between taste due to varieties of manures.

Table 6 shows that control group differs from other groups, there is difference between K & V, K & C and V & C are statistically differ significantly.

### **CONCLUSION**

Thus, it can be concluded that when compared on the organoleptic characteristics kitchen waste manure variety had been appreciated more than the other variety. Thus, it showed that kitchen waste manure was more superior over other variety which was



statistically proved. Kitchen waste manure can be prepared from household and kitchen waste by housewives at household level, which is also called as organic manure. Use of this manure for farming is known as organic farming. Organic farming is eco-friendly and also enhances the quality of soil. It helps in increasing the productivity. It keeps the environment clean and balanced. Fruits and vegetables grown on this compost are healthy, highly nutritious and no harmful residues are left in the soil waster and in crop. At the same time original colour, texture, flavor and taste are retained. Artificially cultivated vegetables requires lots of chemical fertilizers and pesticides. These chemicals get accumulated in vegetables, fruits, soil and water. If

these fruits and vegetable are not washed properly they remain in the food and cause ill effects on human body. Thus, by using organic manure for farming, we can save our ecosystem and health by consuming these vegetables.

The technology of utilizing household waste and kitchen waste for preparation of compost need to be popularized among the community at the household level. By doing so, we can save our environment from pollution, money, energy and time. For this purpose, extensive training is required to be provided to the farming community of the entire state. This technique can also be popularized among common masses by organizing exhibitions, demonstrations and other such activities.

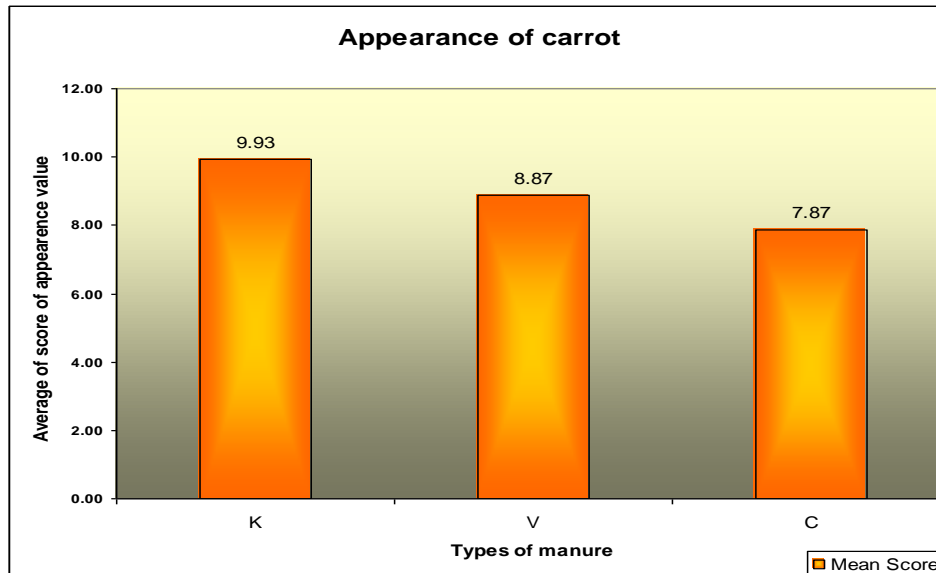


**Table 1: Appearance of Carrot**

<b>ANOVA</b>				
<b>Sources of Variation</b>	<b>df</b>	<b>ss</b>	<b>mss</b>	<b>F</b>
Between Fertilizer	2	32.04444	16.02222	20.76955
Within Groups	42	32.4	0.771429	(p<0.01)
<b>Total</b>	<b>44</b>			

**Table 2: Scheff's Test of Multiple Comparison**

<b>Scheff's Test of Multiple Comparison</b>			
	<b>K</b>	<b>V</b>	<b>C</b>
K	X	8.533333	32.03333
V		X	7.5
C			X



**Figure 1: Average Score of Appearance of Carrot**

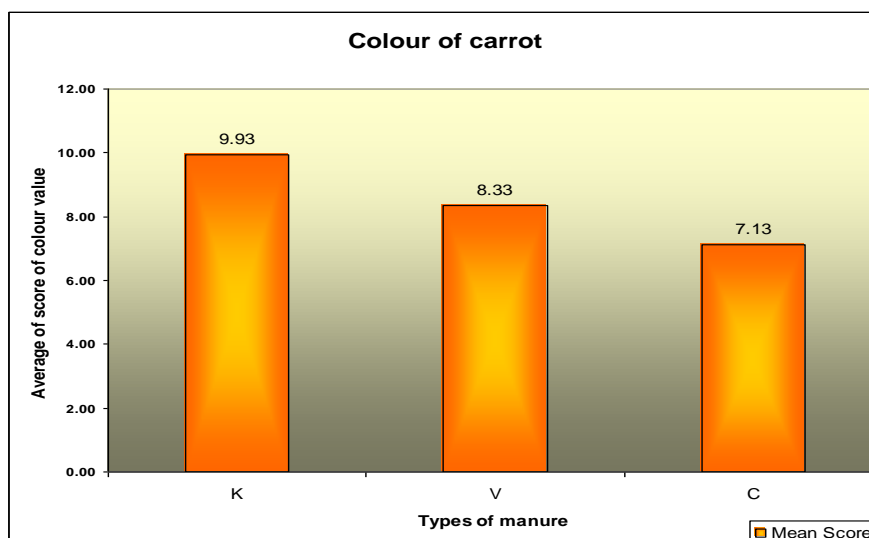


**Table 3: Color of Carrot**

<b>ANOVA</b>				
<b>Sources of Variation</b>	<b>df</b>	<b>ss</b>	<b>mss</b>	<b>F</b>
Between Fertilizer	2	59.2	29.6	27.02609
Within Groups	42	46	1.095238	(p<0.01)
<b>Total</b>	<b>44</b>			

**Table 4: Scheff's Test of Multiple Comparison**

<b>Scheff's Test of Multiple Comparison</b>			
	<b>K</b>	<b>V</b>	<b>C</b>
K	X	19.2	58.8
V		X	10.8
C			X



**Figure 2: Average Score of Color of Carrot**



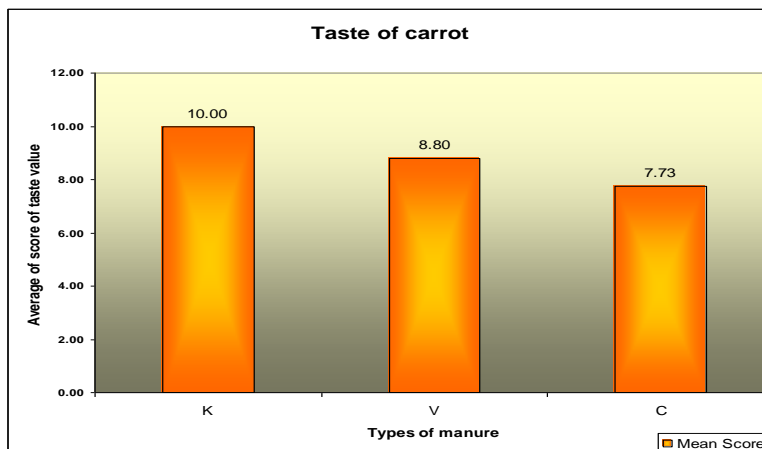


**Table 5: Taste of Carrot**

<b>ANOVA</b>				
<b>Sources of Variation</b>	<b>df</b>	<b>ss</b>	<b>mss</b>	<b>F</b>
Between Fertilizer	2	38.57778	19.28889	24.304
Within Groups	42	33.33333	0.793651	(p<0.01)
<b>Total</b>	<b>44</b>			

**Table 6: Scheff's Test of Multiple Comparison**

<b>Scheff's Test of Multiple Comparison</b>			
	<b>K</b>	<b>V</b>	<b>C</b>
K	X	10.8	38.53333
V		X	8.533333
C			X



**Figure 3: Average Score of Taste of Carrot**

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