Nutrient Deficiency Symptoms

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Introduction:

Nutrient Deficiency Symptoms

In many cases, deficiency may occur because an added nutrient is not in the form the plant can use.

Nutrient deficiency symptoms usually appear on the plant when one or more nutrients are in short supply.

Deficiency symptoms for specific elements are included on the "Key to Nutrient Disorders".

Effect calsium in plant

- ✓ *affects chlorophyll production, protein synthesis*
- ✓ *and plant function and structure*
- ✓ *affects some oxidation-reduction reactions*
- ✓ *reduces cysteine and methionine content in rice*
- ✓ *delayed plant development and maturity*
- ✓ *affects yield if deficiency occurs at vegetative stage*

Mineral requirements in plants

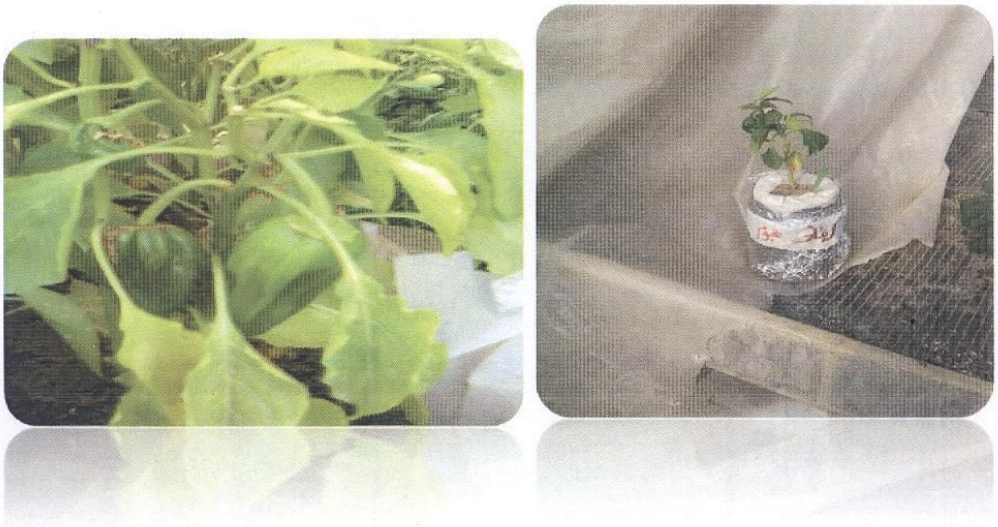
- ✓ *In order to synthesize amino acids, nitrate ions must be taken into the plant from the soil through the root*
- ✓ *Other minerals are also necessary to maintain the life of the plant*

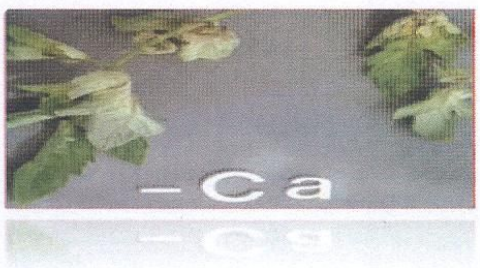
Deficiency Symptoms – ca

- ✓ *Leaves uniformly light green, followed by yellowing and poor spindly growth.*
- ✓ *Uniform chlorosis does not occur*
- ✓ *chlorotic young leaves with necrotic tips*
- ✓ *lower leaves do not show necrosis*
- ✓ *reduced plant height*

✓ *reduced number of tillers and spikelets*

✓ *fewer and shorter panicles*





Purpose

- ✓ *Measuring the effect of the lack of the elements on the plant in this experiment (water culture)to*
- ✓ *seedling measure the effect of the lack of (ca) on pepar*
- ✓ *-Measuring the effect of adding all fertilizers+trace to plant tomatoes and plant pepar (soil culture)*
- ✓ *Measuring the effect of adding k+trace to plant tomato and pepar(soil culture)*

All fertilizer+trace

- ❖ *13:13:13*

  10 gm/leter

- ❖ *Millimicro* *5cm/leter*

- نضيف 10سم3/قوار/اسبوع
- نضيف 5سم3/قوار/اسبوع

K+trace

❖اضافة 10سم3 من الk2so4/قوار/اسبوع

❖اضافة 5سم3 من الtrace/قوار/اسبوع

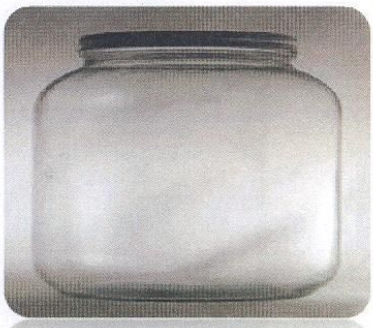
Material and method

two experiment:

- ✓ Water culture
- ✓ Soil culture

Water culture:

1. Cans



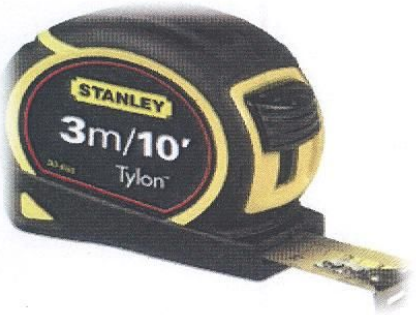
2. Pipline

3. Distilled water

4. Blastec wrab

5. Nutrient solution

6. Meter



7.Diameter

8.Corn

Method

1. Put papper seedling in pot

2. Add destil water to half pot

3. *Wrabbed with blastec around pot*

4. *Put the cork to cover pot*

5. *Put a sucker for inflatable air inside the pot*

6. *Add nutriuent solution (-ca) every week*

7. *Then take measurements every week(width,length,no.leaf,no.fruit,no. Flower)*

Nutrition solution: add nutriuent solution according to the table

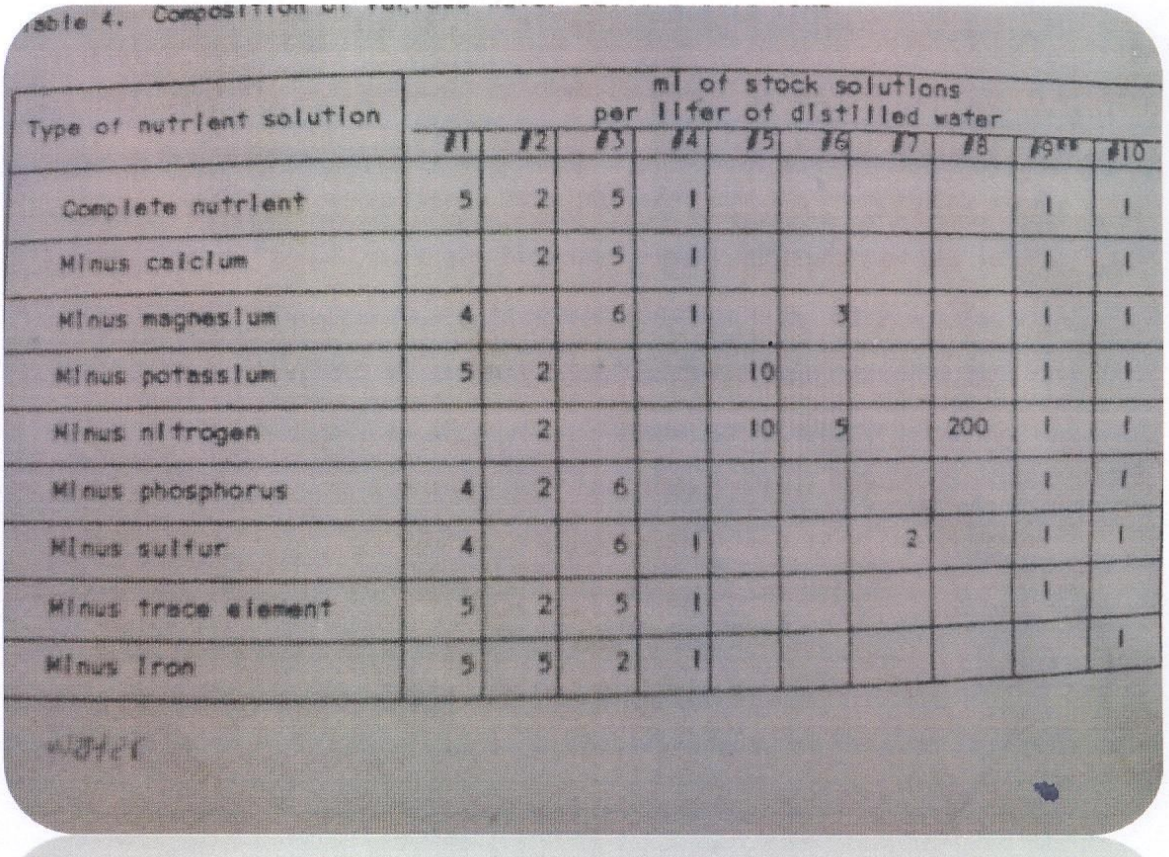


Table 4. Composition of [illegible]

Type of nutrient solution	ml of stock solutions per liter of distilled water									
	#1	#2	#3	#4	#5	#6	#7	#8	#9***	#10
Complete nutrient	5	2	5	1					1	1
Minus calcium		2	5	1					1	1
Minus magnesium	4		6	1		5			1	1
Minus potassium	5	2			10				1	1
Minus nitrogen		2			10	5		200	1	1
Minus phosphorus	4	2	6						1	1
Minus sulfur	4		6	1			2		1	1
Minus trace element	5	2	5	1					1	
Minus iron	5	5	2	1						1

Soil culture

1) Tomato and pepar Seedlings

2) Nutrient solution+trace element

3) Water

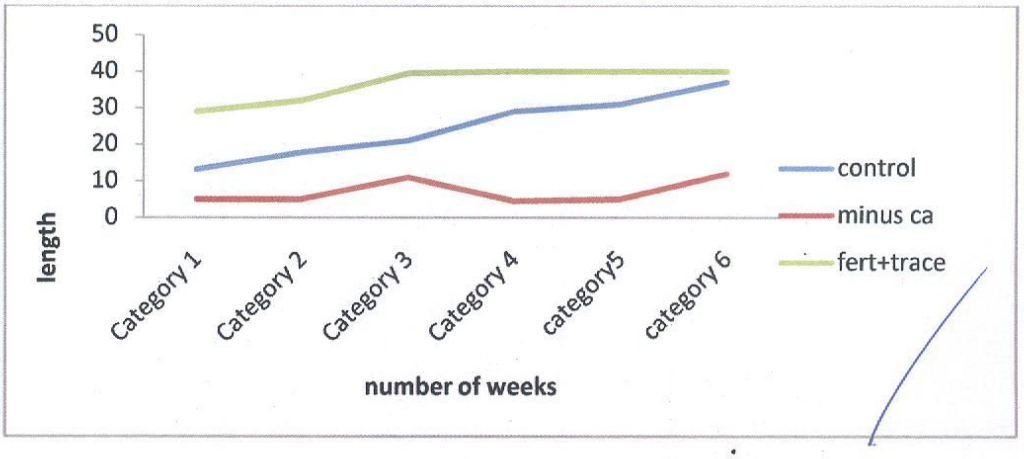
4) Meter

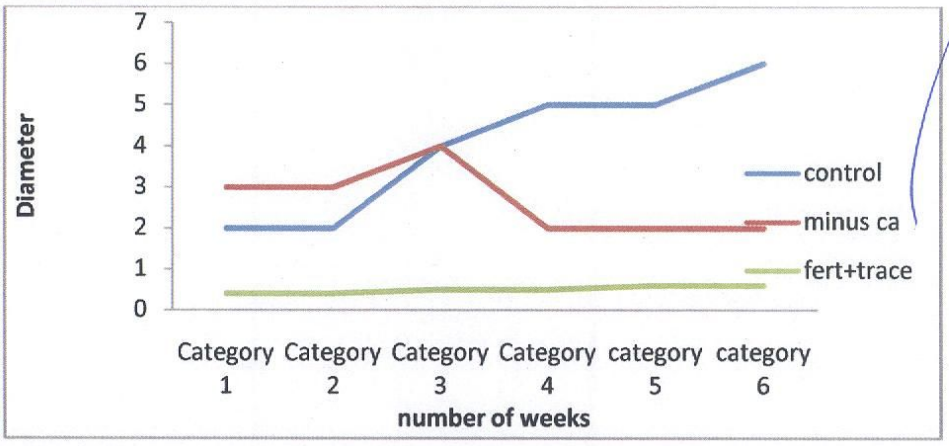
Cultivate tomato and pepar seedlings in the can

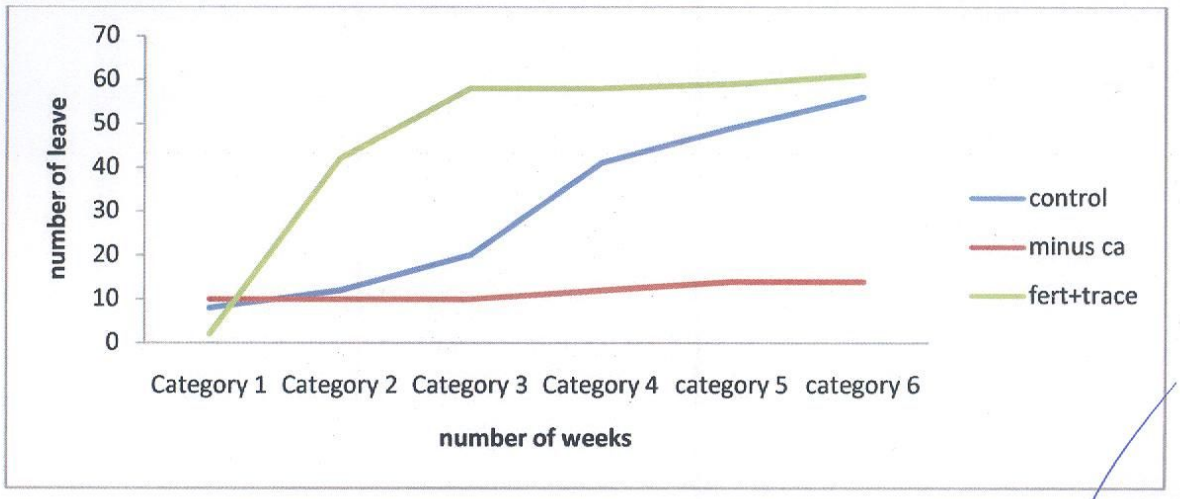
Add all fertilizers

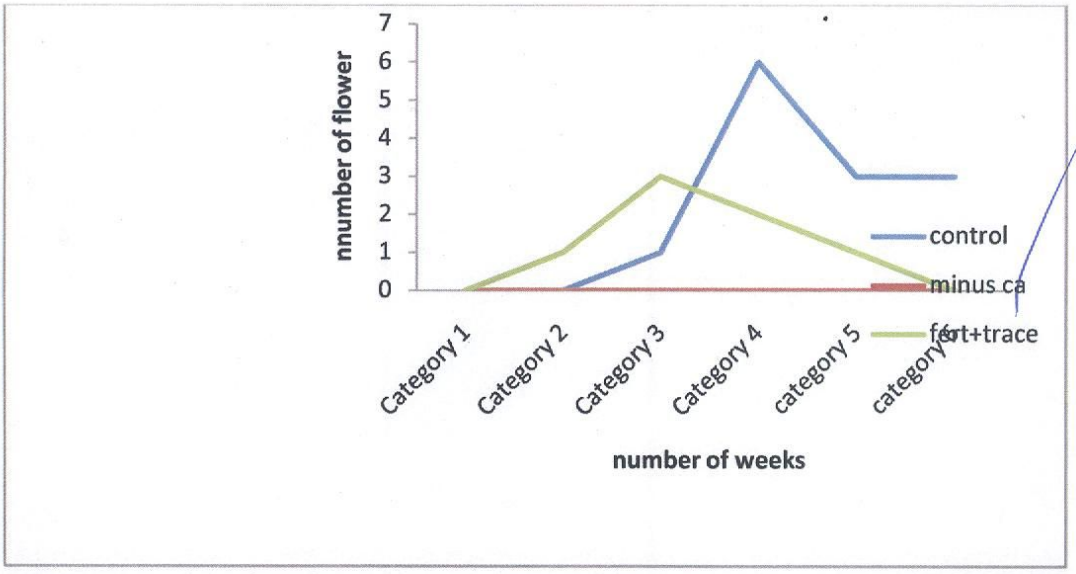
Results

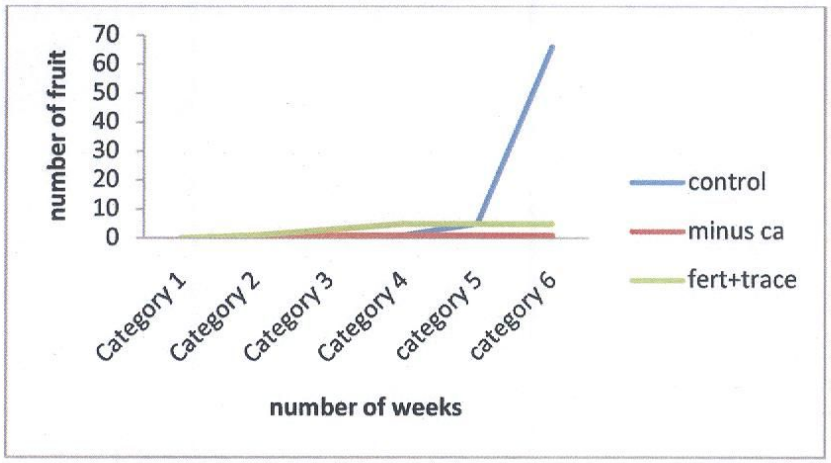
In water soil






70
60
50
40
30
20
10
0
number of leave
Category 1
Category 2
Category 3
Category 4
category 5
category 6
number of weeks
control
minus ca
fert+trace

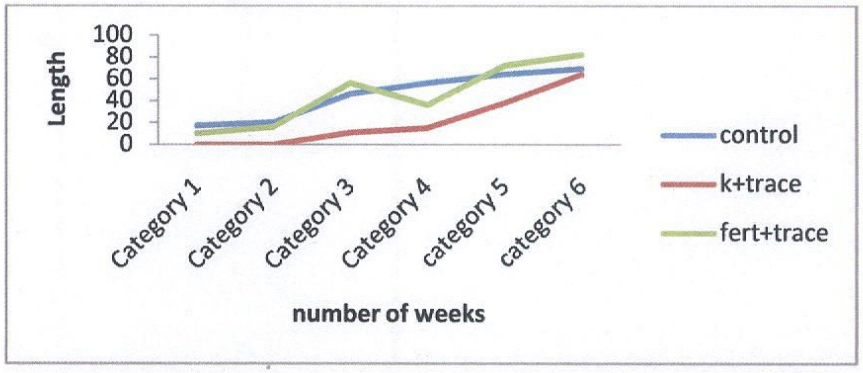

7
6
5
4
3
2
1
0
nnumber of flower
Category 1
Category 2
Category 3
Category 4
category 5
category 6
number of weeks
control
minus ca
fert+trace

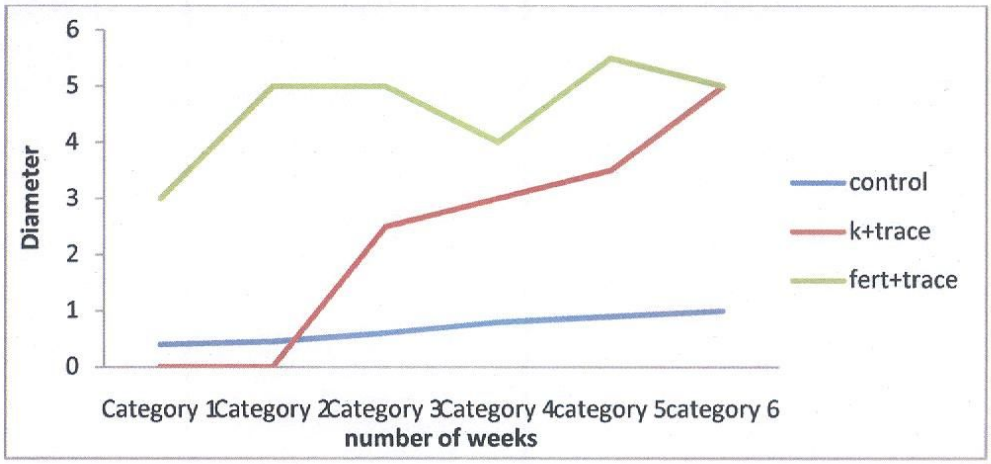


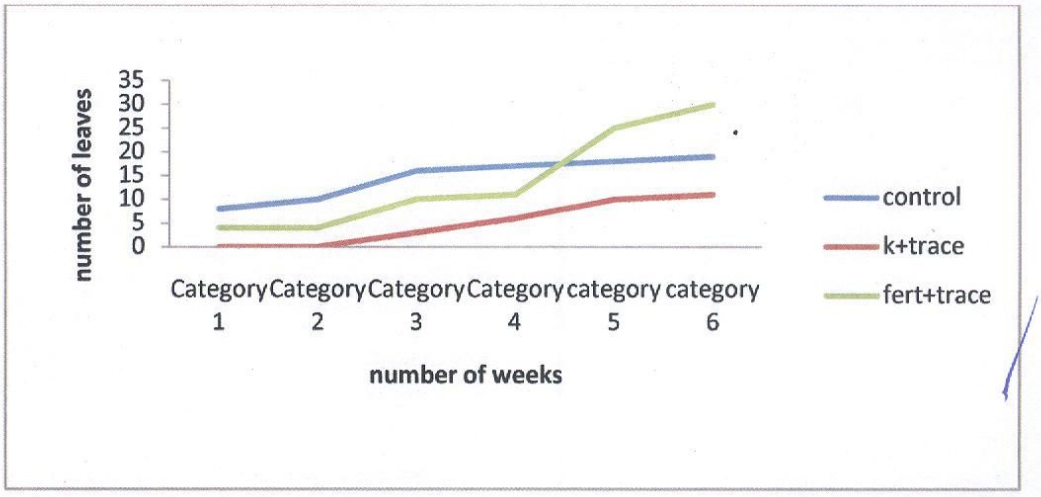
In soil cultur:

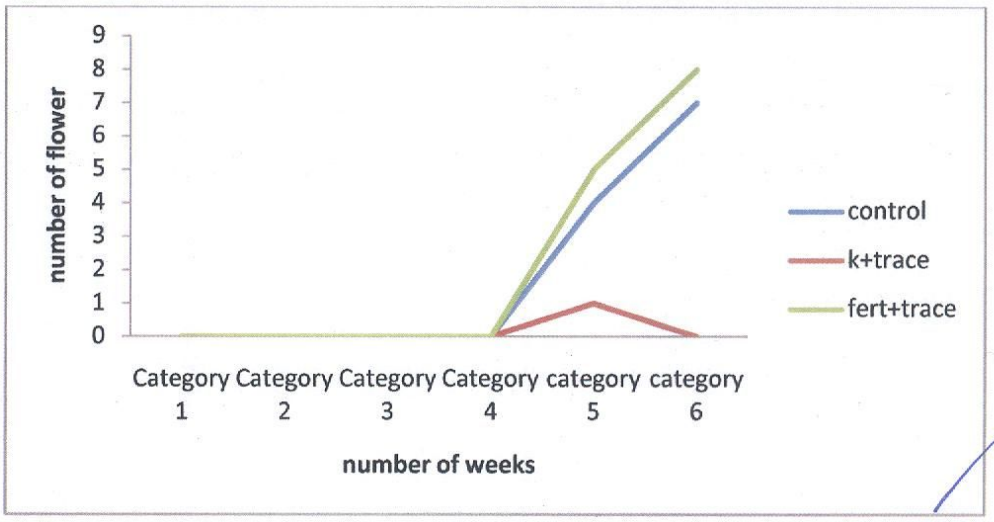
Plant tomato

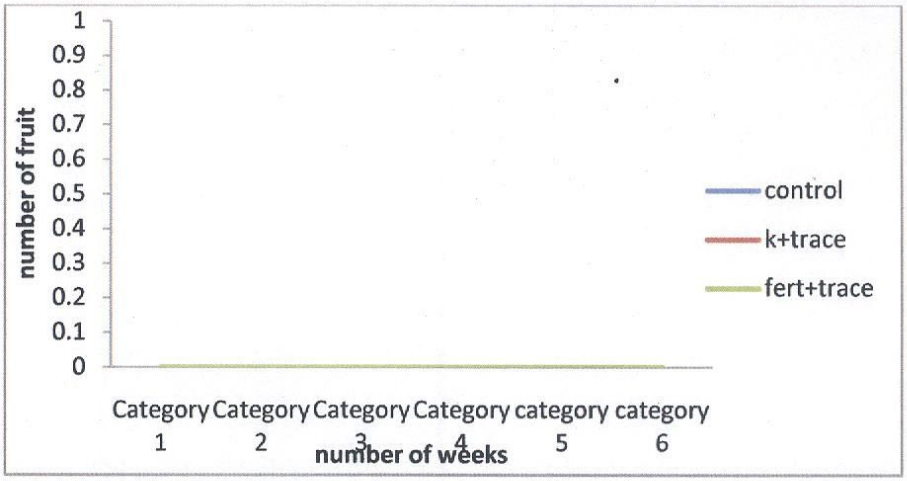
Length



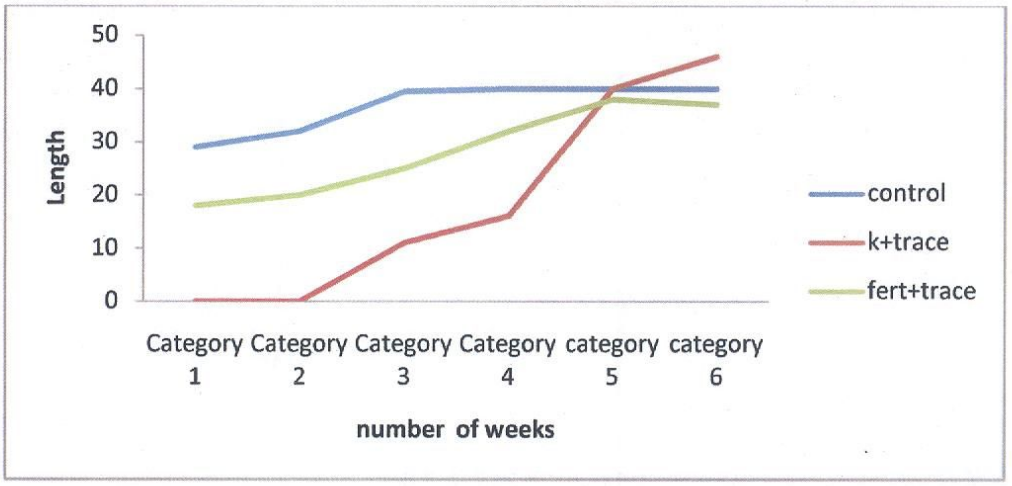

6
5
4
3
2
1
0
Diameter
control
k+trace
fert+trace
Category 1Category 2Category 3Category 4category 5category 6
number of weeks

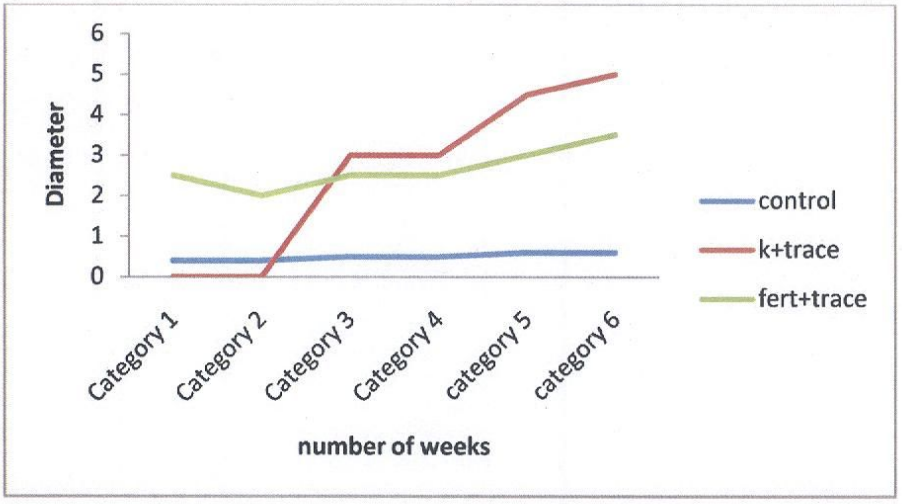

35
30
25
20
15
10
5
0
number of leaves
control
k+trace
fert+trace
Category 1
Category 2
Category 3
Category 4
category 5
category 6
number of weeks

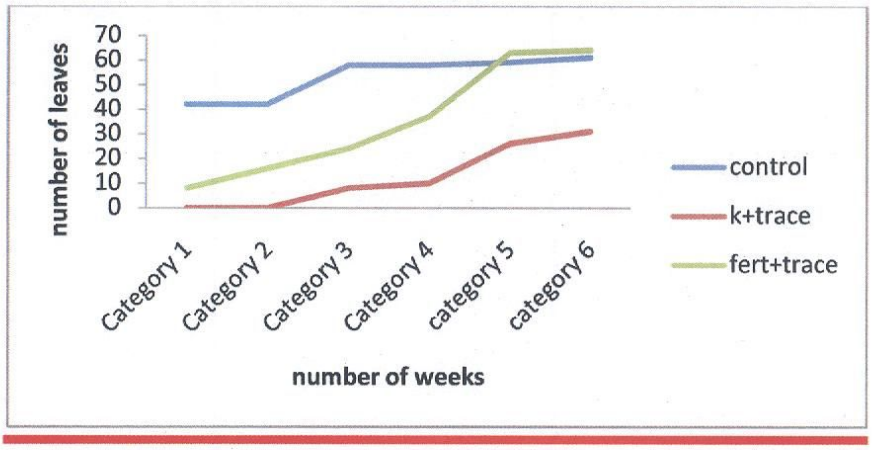

number of flower
9
8
7
6
5
4
3
2
1
0
Category 1
Category 2
Category 3
Category 4
category 5
category 6
number of weeks
control
k+trace
fert+trace

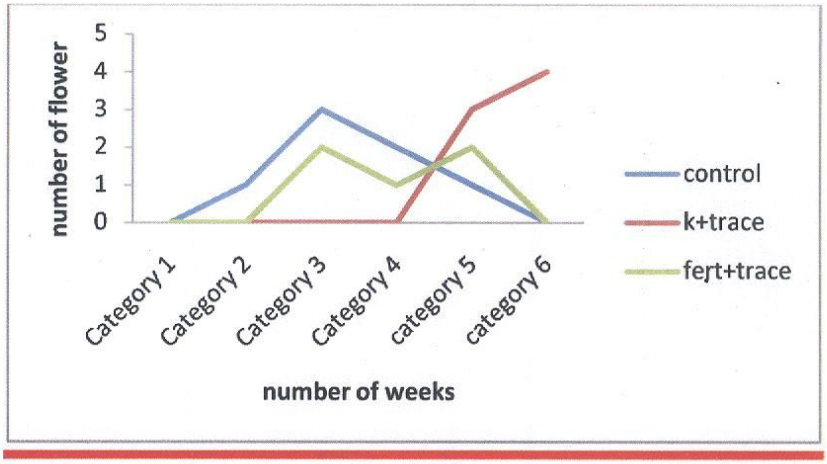

number of fruit
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Category 1
Category 2
Category 3
Category 4
category 5
category 6
number of weeks
control
k+trace
fert+trace

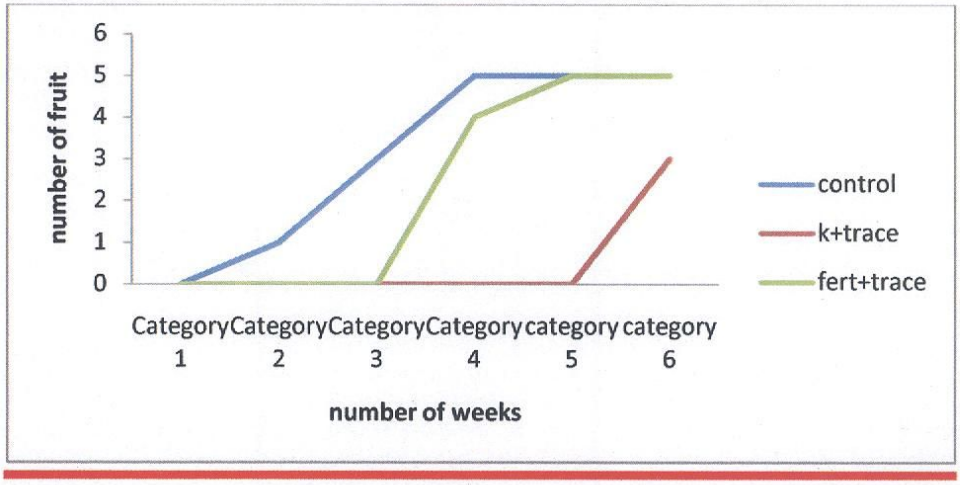
Plant pepar


50
40
30
20
10
0
Length
Category 1
Category 2
Category 3
Category 4
category 5
category 6
number of weeks
control
k+trace
fert+trace


6
5
4
3
2
1
0
Diameter
Category 1
Category 2
Category 3
Category 4
category 5
category 6
number of weeks
control
k+trace
fert+trace


number of leaves
70
60
50
40
30
20
10
0
Category 1
Category 2
Category 3
Category 4
category 5
category 6
number of weeks
control
k+trace
fert+trace


number of flower
5
4
3
2
1
0
Category 1
Category 2
Category 3
Category 4
category 5
category 6
number of weeks
control
k+trace
fert+trace


number of fruit
6
5
4
3
2
1
0
Category 1
Category 2
Category 3
Category 4
category 5
category 6
number of weeks
control
k+trace
fert+trace

The Result

Water culture

وزن الجزء العلوي 4.5 غرام

وزن الجذر 8.6 غرام

وزن الثمرة 2.2 غرام

طول الجذر 11.5 سم

طول الساق 19 سم

طول الثمرة 3.5 سم

وضع الجذر والساق في الفرن واخذ الوزن الجاف لهم بحيث ان القراءة كانت:-

وزن الجذر 1 غرام

ووزن الجزء العلوي 9. غرام

أي اننا نلاحظ ان الجزء السفلي (الجذر)اكبر من الجزء العلوي(الساق)

في تجربة التربة للفلفل

K+trace

كان وزن الثمار 97 غرام ووزن الجزء العلوي للفلفل وهو رطب 37 غرام،بينما وزن البندورة 29 غرام ،ووزن الجزء العلوي للبندورة وهو رطب 29 غرام

وبعدها اخذنا الوزن الجاف للفلفل كانت القراءة 7 غرام والبندورة 16 غرام

في التجربة الثانية للفلفل والبندورة ايضا

All fert+trace

كان وزن البندورة وهو رطب 156 غرام بحيث

انه كان معظم اوراقة السفلى صفراء اللون

ووزن الفلفل وهو رطب 34 غرام ووزن الثمار

49 غرام ،وبعد وضعها في الفرن اخذنا

القراءات وكانت قراءة الفلفل وهو جاف 7 غرام

والبندورة وهي جافة 33 غرام