Phosphorous Deficiency

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Introduction:

Water culture :systems are about the simplest of all six types of hydroponic systems. While technically simple, they are still very effective for growing plants hydroponically. Not only do a lot of home hydroponic growers really like using water culture systems, but many commercial growers use this type of system on a large scale as well. Mainly because the water culture systems is a simple and easy concept. It's also a very inexpensive type of system to build, and another reason why it's popular with home growers as well. Even though the concept is simple, there are plenty of imaginative ways to use and build water culture systems out of different materials.

How a hydroponic Water Culture system operates is easy.

The plant is actually suspended in baskets right above the nutrient solution in the reservoir. Usually by Styrofoam floating on top, or through holes cut in the lid covering the reservoir. The roots hang down from baskets the plants are in, and hang down directly into the nutrient solution where they are submerged. The roots remain submerged all the time 24/7. The roots don't suffocate because they get the air and oxygen they need from air bubbles rising through the nutrient solution, as well as from dissolved oxygen in the water itself.

Mechanism:

We did this experiment to see if the deficit sulfur(as fertilizer) has a bad effect on pepper plant , also to know if the sulfur is important to vegetative growth or syphilis. With the use of more than one type elements (without use sulfur element).

****In this article we will focus our attention on phosphorus element:***

Phosphorus: is a chemical element with symbol P and atomic number 15.

A multivalent pnictogen, phosphorus as a mineral is almost always present in its maximally oxidized state, as inorganic phosphate rocks. Elemental phosphorus exists in two major forms—white phosphorus and red phosphorus—but due to its high reactivity, phosphorus is never found as a free element on Earth.

The first form of elemental phosphorus to be produced (white phosphorus, in 1669) emits a faint glow upon exposure to oxygen – hence its name given from Greek mythology, Φωσφόρος meaning "light-bearer" (Latin *Lucifer*), referring to the "Morning Star", the planet Venus. The term "phosphorescence", meaning glow after illumination, originally derives from this property of phosphorus, although this word has since been used for a different physical process that produces a glow. The glow of phosphorus itself originates from oxidation of the white (but not red) phosphorus— a process now termed chemiluminescence.

*phosphorus deficiency:

is a plant disorder associated with insufficient supply of phosphorus. Phosphorus refers here to salts of phosphates (PO_4^{3-}), monohydrate phosphate (HPO_4^{2-}), and dehydrogenates phosphate ($H_2PO_4^-$). These anions readily interconvert, and the predominant species is determined by the pH of the solution or soil. Phosphates are required for the biosynthesis of genetic material as well as ATP, essential for life. Phosphorus deficiency can be controlled by applying sources of phosphorus-based fertilizers such a.
. superphosphate.[1]

Objectives

The main objective of this study is to observe and record the effect of nutrient availability and symptoms of deficiency on pepper crop growth and development

Materials and methods:

*Material:

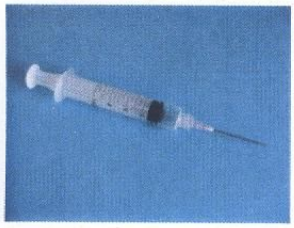
1-meters

2-Caliber

3-Oven

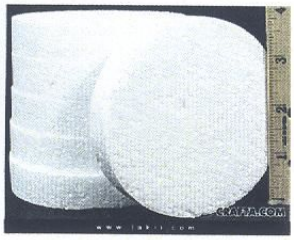
4-Balance

5-Syringes



6-Glass bottles

7-Cork



8- Aluminum foil

Methods:-

Seedlings of pepper were planted on September 2 ,2013 in glass bottles*.
Add Cork in the top of the glass bottles and surrounding this glass bottles with aluminum foil.

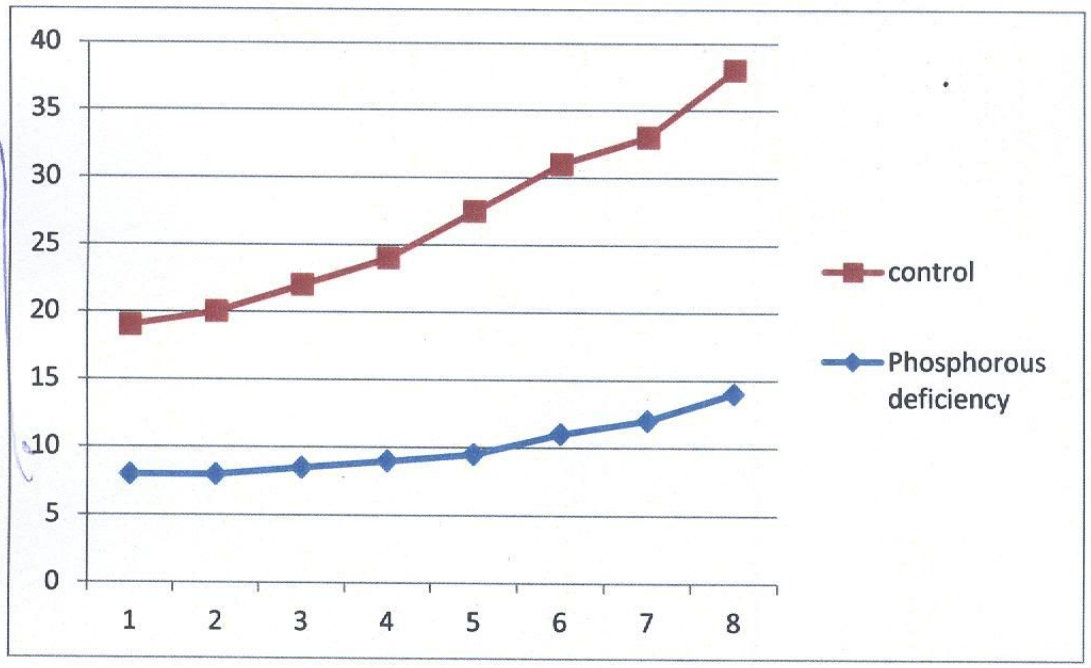
*Add all fertilizer in specific amounts without calcium one time for two weeks, Add water and oxygen one time per weeks.

*Plant length, width, number of leaves, number of flowers and fruits were measured weekly, Fruits of pepper were harvested and the end of experiment and the total fruit weight were measured. .
*Fresh weight was measured at the end of the experiment and the dry weight was measured after drying of plant in oven on 100-103c for 24 hours

Result:

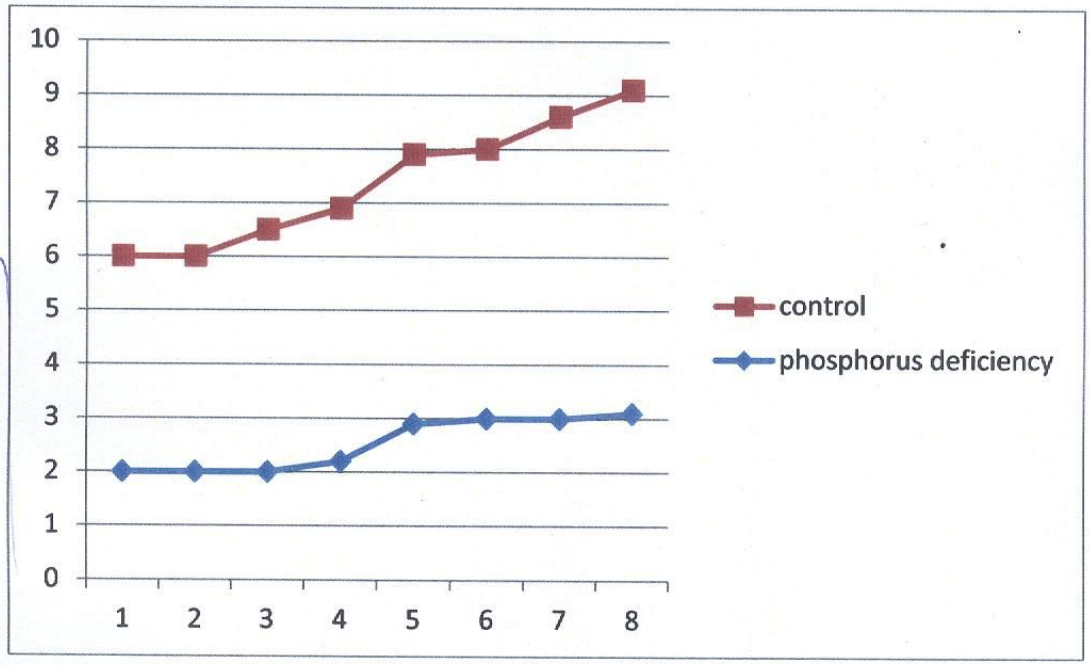
Pepper length:

control	Phosphorous deficiency
11	8
12	8
13.5	8.5
15	9
18	9.5
20	11
21	12
24	14



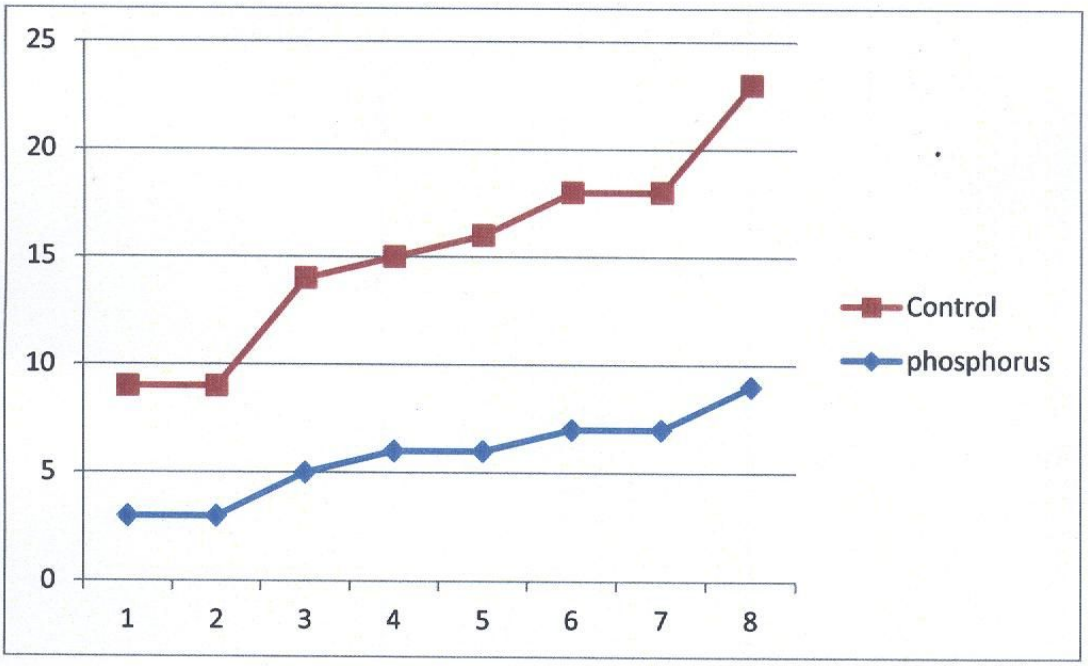
Pepper diameter:

control	phosphorus deficiency
4	2
4	2
4.5	2
4.7	2.2
5	2.9
5	3
5.6	3
6	3.1



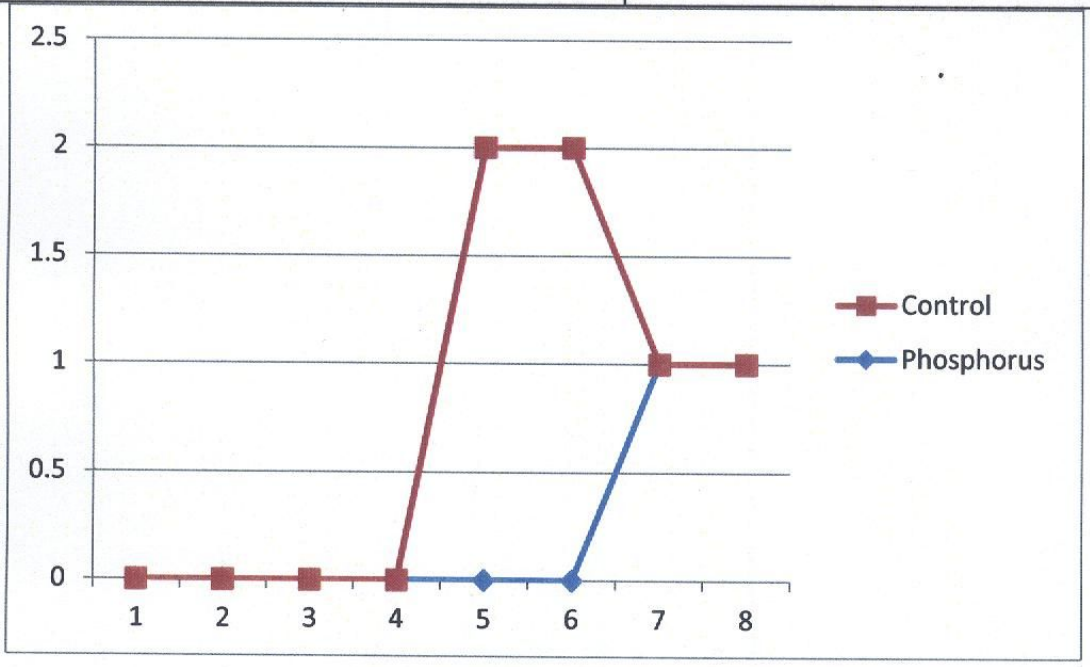
*No of leaves (pepper plant):

Control	phosphorus
6	3
6	3
9	5
9	6
10	6
11	7
11	7
14	9



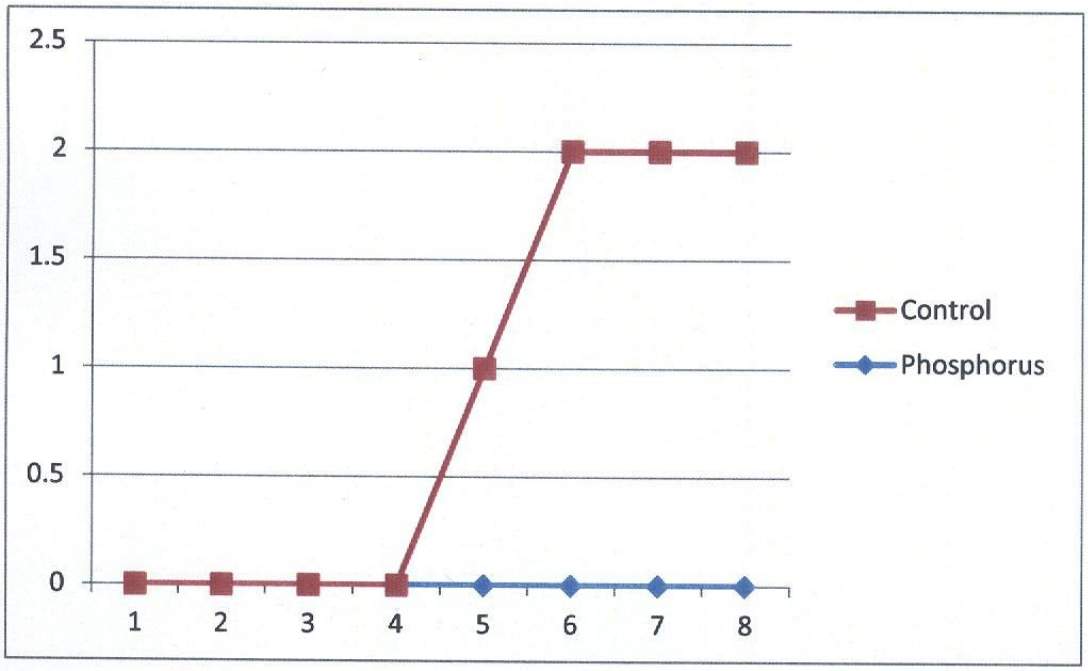
No of flower (pepper plant):

Control	Phosphorus
0	0
0	0
0	0
0	0
2	0
2	0
0	1
0	1



No of fruit:

Control	Phosphorus
0	0
0	0
0	0
0	0
1	0
2	0
2	0
2	0



Result:

Weight	phosphorous	Control
Fresh root	5	3.1
Fresh shoot	8	7
Dry root	.5	0.3
Dry shoot	2.2	1.1

Result (picture):

conclousion:

Does appear on the seedlings pepper yellowing of the leaves, but the plant was not dwarfed and large size and weight of the fruit, directed by a few small and non-marketable size and here we note that the addition of compost possible impact on the growth and the size and growth of the fruit and the size of the plant and its growth