

Impact of Water Deficit and Nematode infection on Growth and Physiological Responses of Mungbean (*Vigna radiata* L.)

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Introduction

- ▶ Water scarcity is being increasingly accepted as a major limitation for increased agricultural production and food security in the 21st century.
- ▶ Water on a global scale is plentiful but 97 % is saline and 2.25 % is trapped in glaciers and ice, leaving only 0.75 % available in fresh water .
- ▶ Drought and Disease(abiotic & biotic) stresses are global problem reducing plant growth and productivity worldwide.
- ▶ Sustainable agricultural development, in arid and semi-arid regions is influenced to a great extent by available water and free of attacked of disease that might help effectively in developing agriculture.
- ▶ Mungbean is a summer legume crop that has short- growth season and nitrogen fixation capability, also it was found as a drought resistance (Subtitute to Alfaalfa and barely froge).

Research Group Goals

To solve problem of drought , some strategies have been used:

1. Selecting drought-tolerant genotypes
2. Improving water use efficiency in plants.
3. Using suitable irrigation scheduling methods providing plants with enough water requirements.
4. Using municipal wastewater treatment plant.
5. Using some alternative crops such as a triticales complement of wheat.
6. Imported new genotypes have short growing season and drought resistance.(my presentation today will be on this topic).

The Main Objective

- Thus, the present study was proposed to clarification of the strategy #6 and to study the Physiological responses of mungbean (*Vigna radiate*) to water deficit and Nematode infection stress
(This work is a part of master thesis of graduate student Areej Alzarqaa).

How To Handel The Problem





- **Plant Materials**

Two genotypes of mungbean; Kawmay -1 and VC-2010 were tested in pots experiment.

- **Drought Stress Induction**

Three irrigation levels (20%, 40% and 80%) based on field capacity were used.

- **Root-Knot Nematode Inoculum**

After four weeks from sowing, half of the pots were inoculated with root-knot nematode @15000 egg/pot while other half was kept non-inoculated as control.

- **Experimental Design**

The experiment has 12 treatments with 3 replicates (2x3x2x3), 36 experimental units

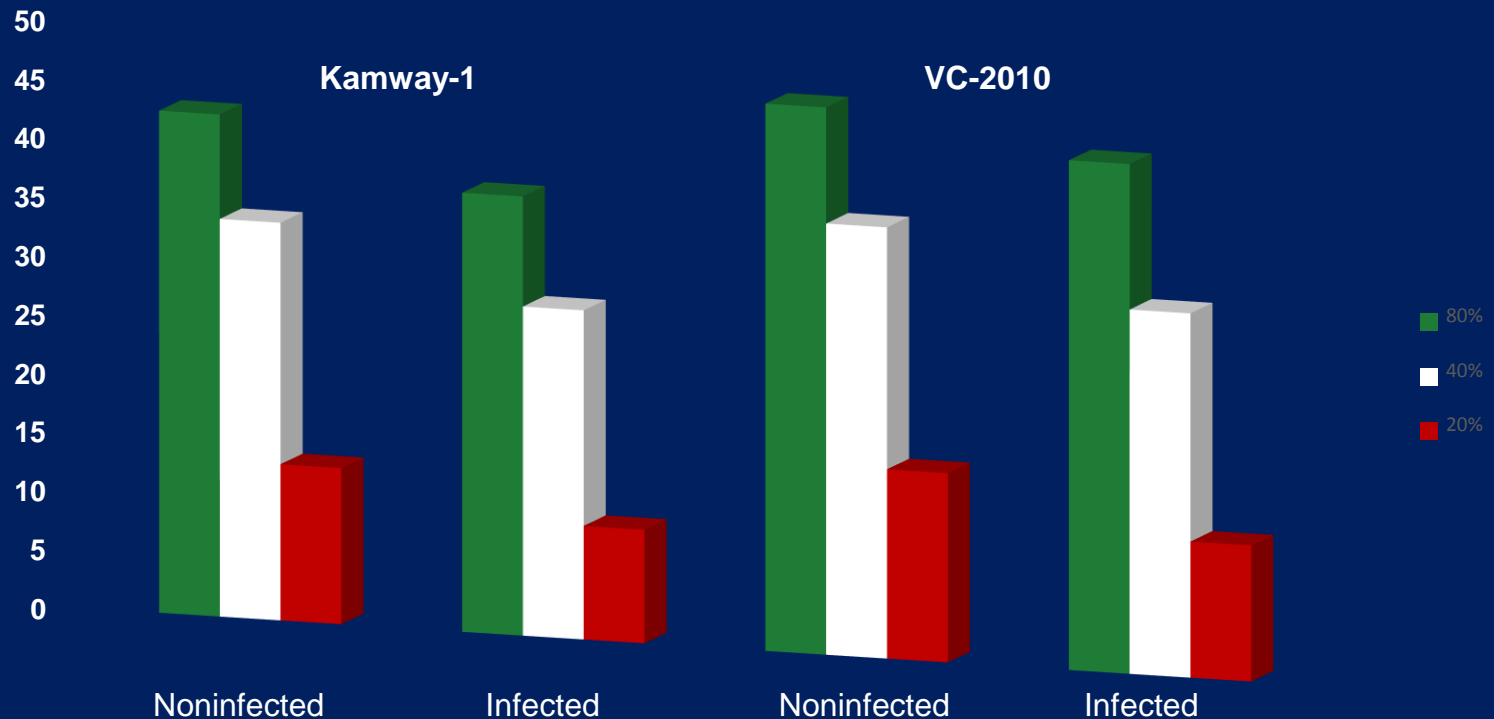
- **Statistical analysis**

Data were statistically analyzed according to the methods described by Gomez and Gomez [1984]. The means were compared using the least significant difference LSD.

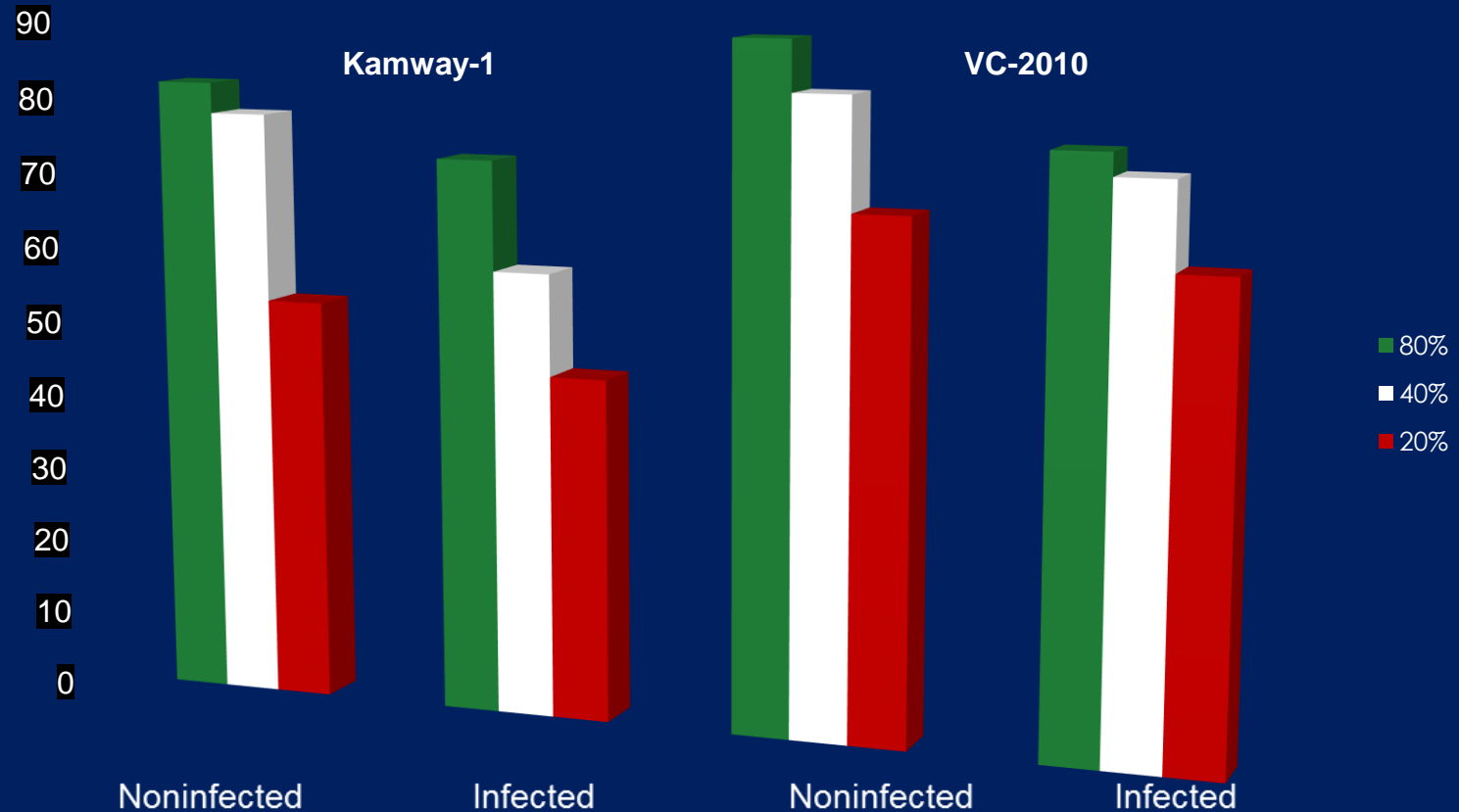
RESULTS



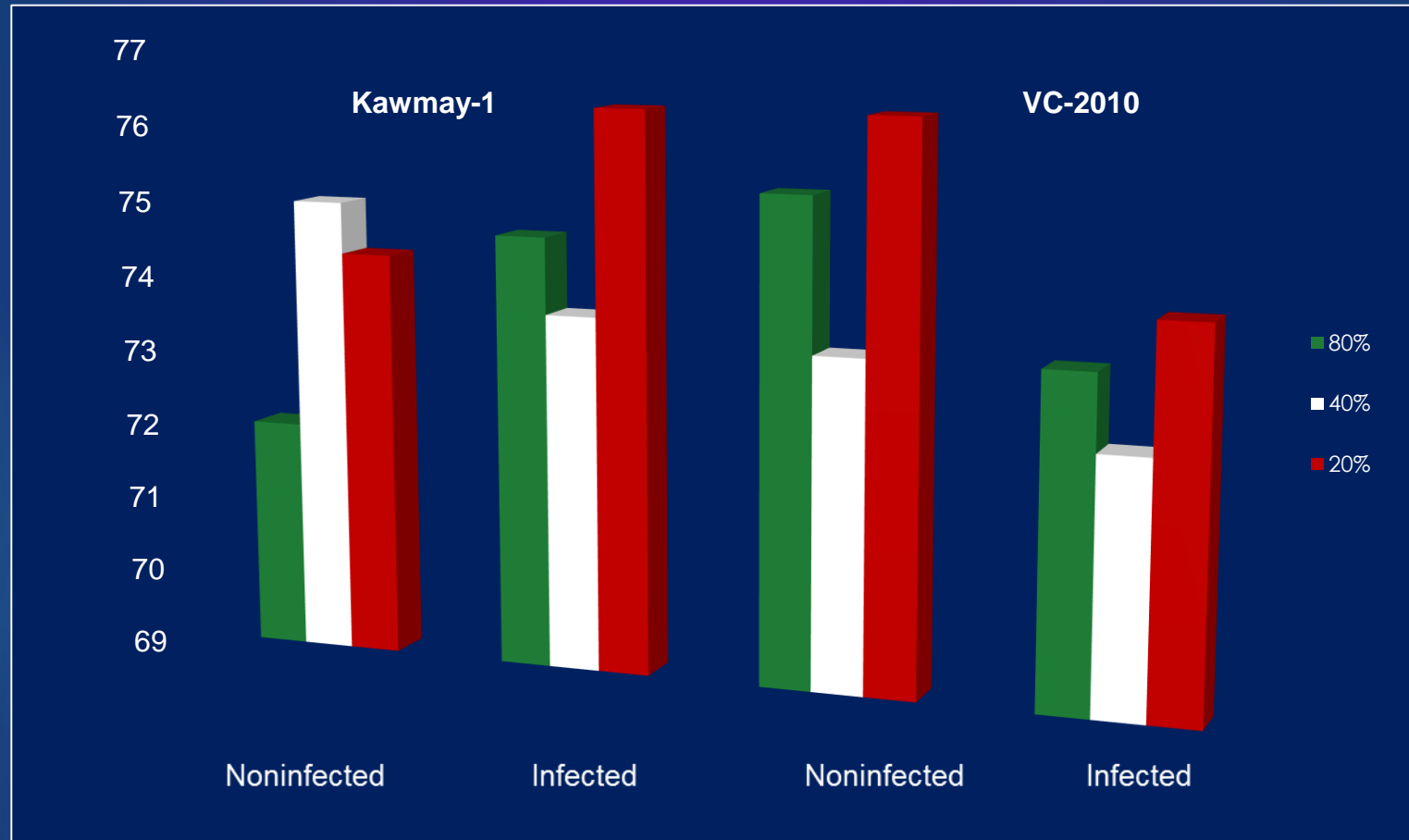
Plant leaf area (cm²/plant) as affected by water deficit and Nematode infection



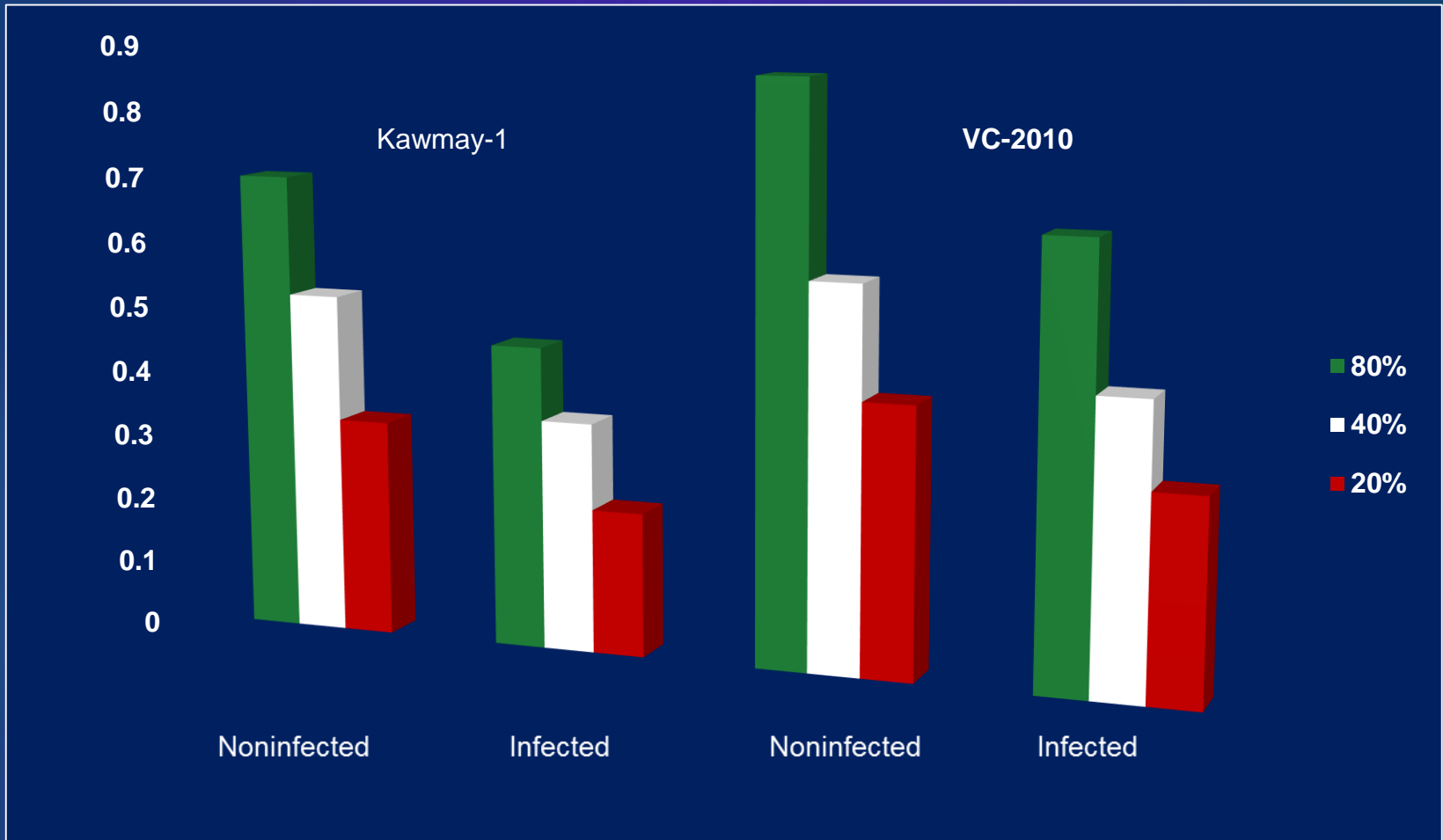
Stomata conductance ($\mu\text{mol}/\text{m}^2/\text{s}$) as affected by water deficit and Nematode infection



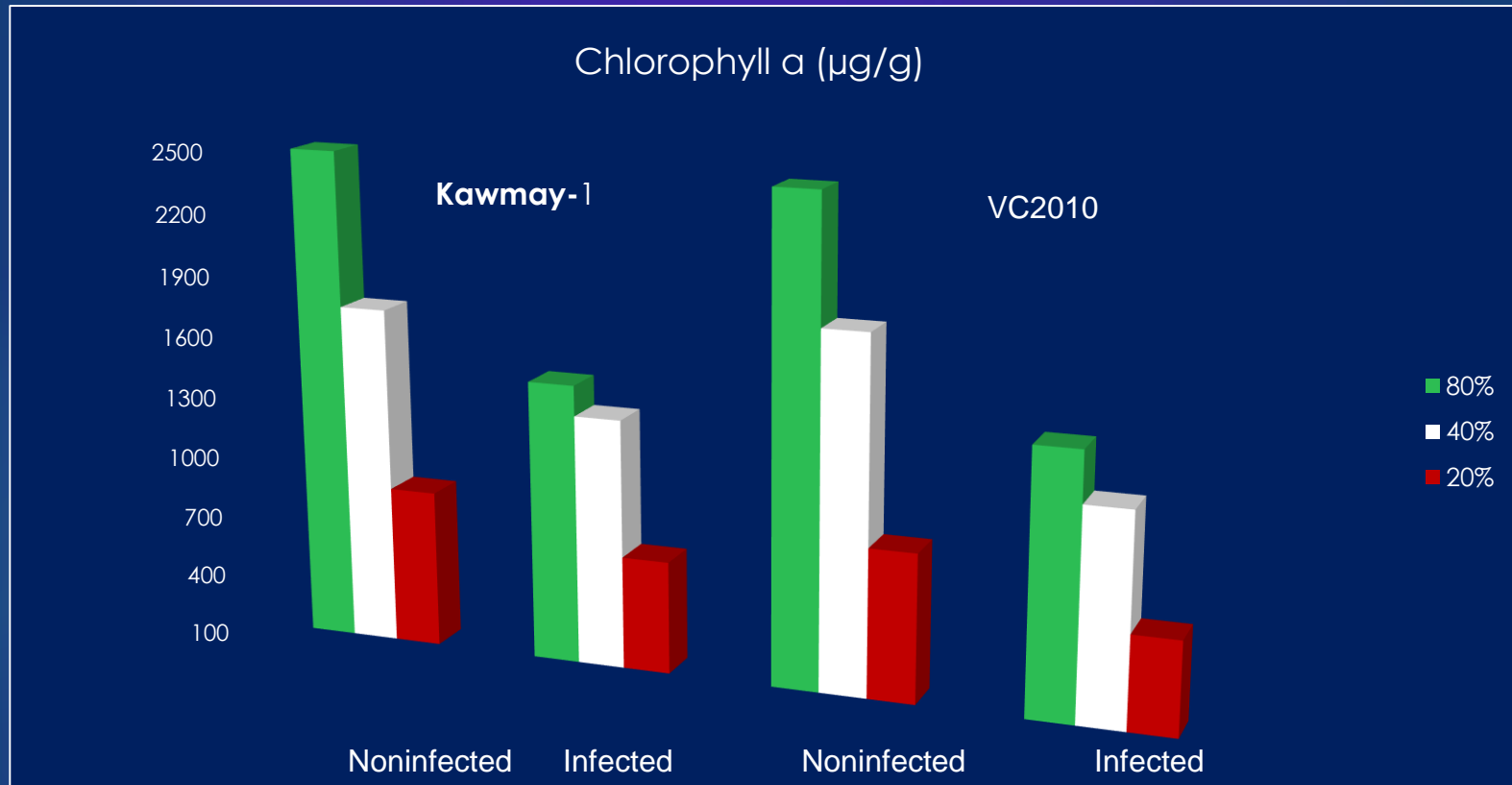
Shoot water content (%) as affected by water deficit and nematode infection



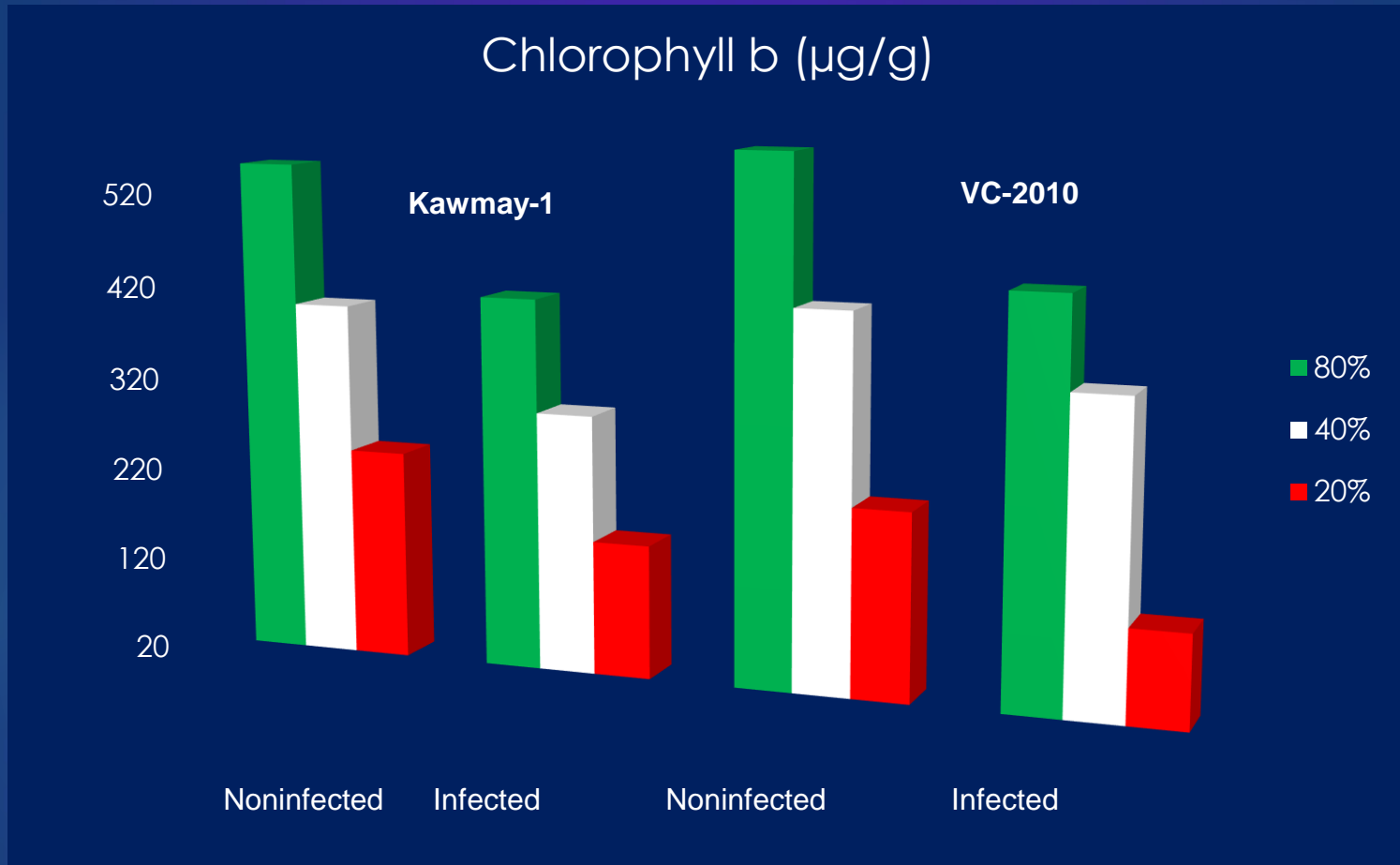
Shoot dry weight (g) as affected by water deficit and nematode infection



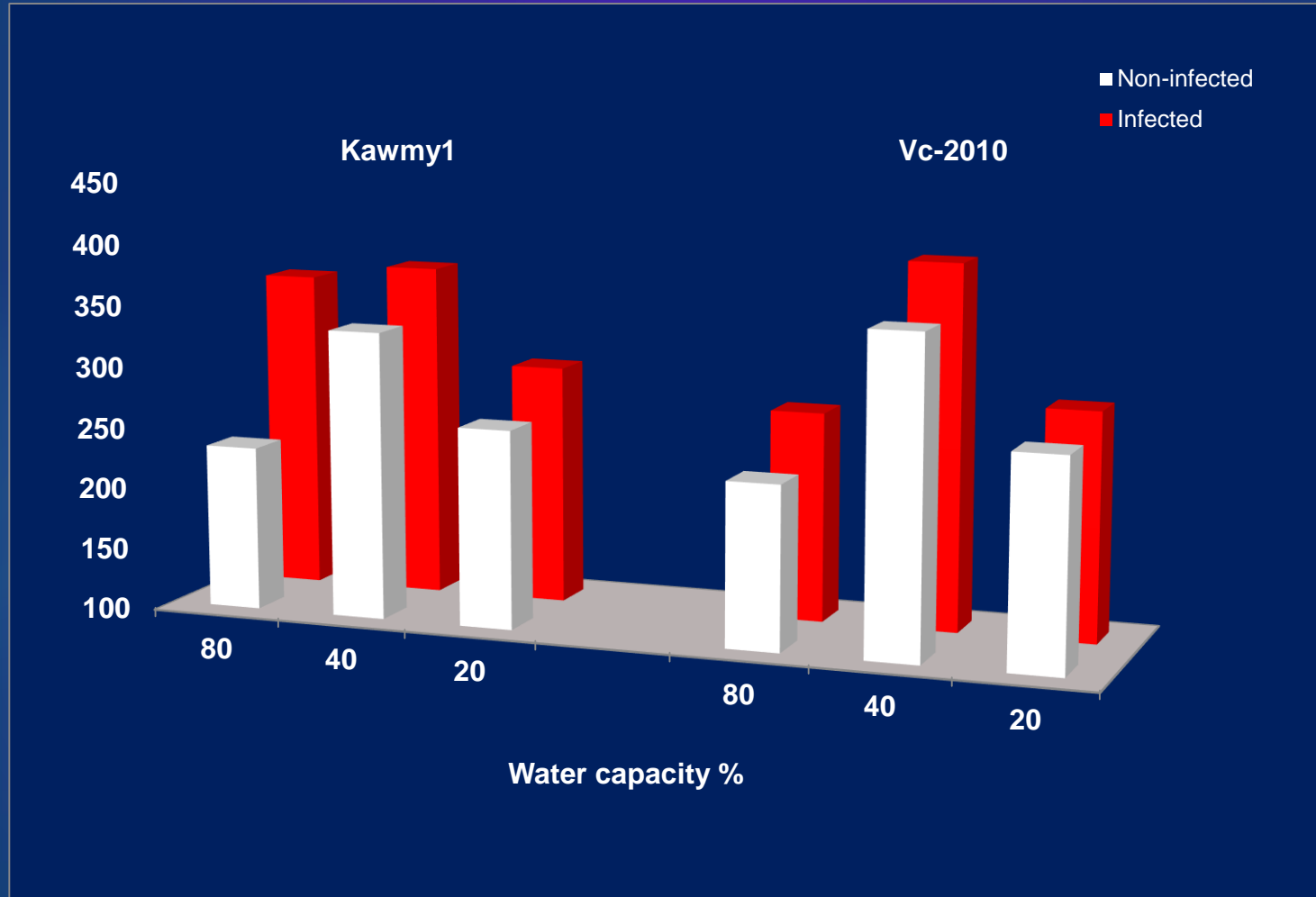
Leaf chlorophyll (a) content as affected by water deficit and Nematode infection



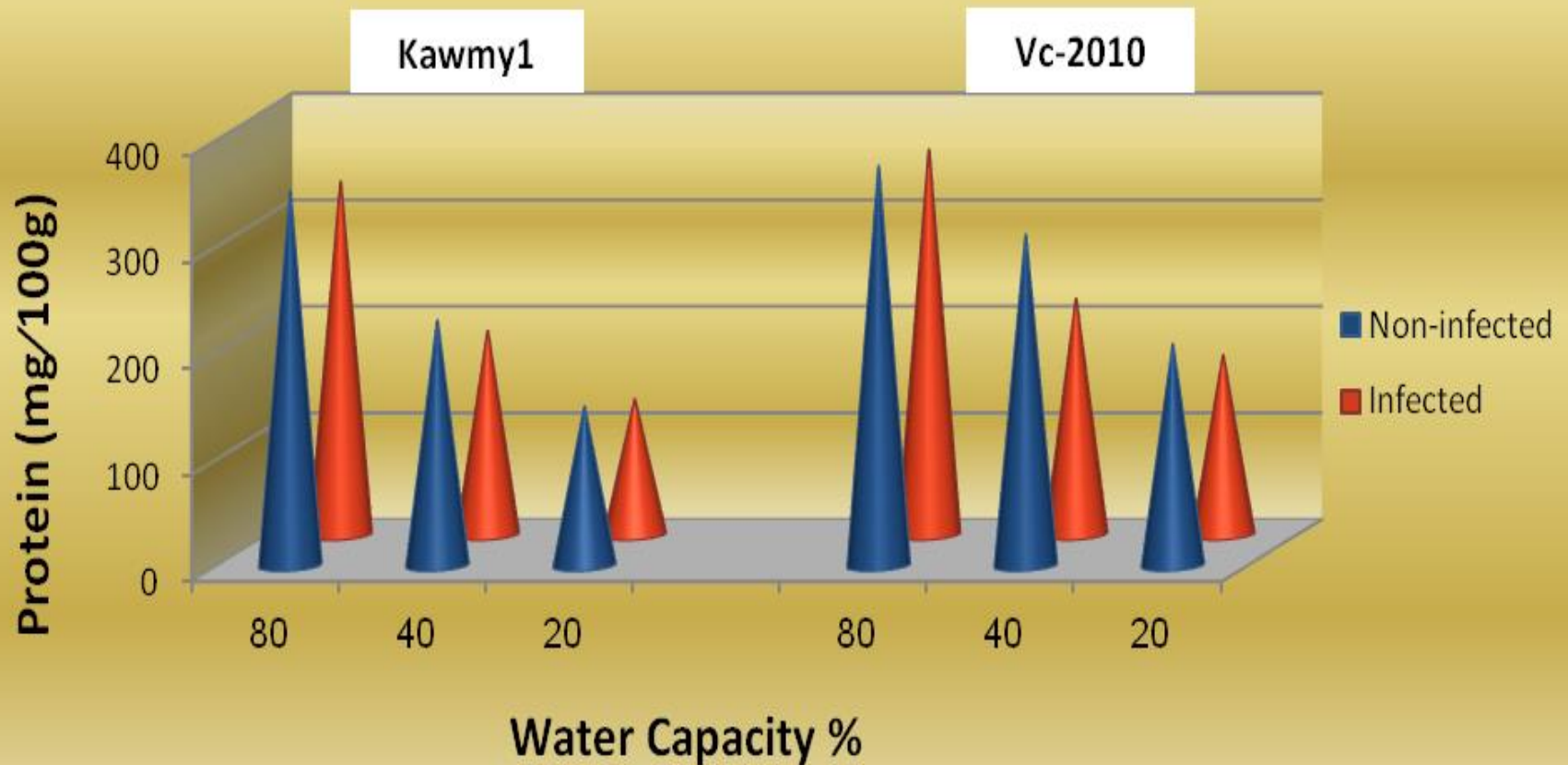
Leaf chlorophyll (b) content as affected by water deficit and Nematode infection



Leaf proline content (mg/100g) as affected by water deficit and Nematode infection



Leaf protein content as affected by water deficit and Nematode infection



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My pleasure to answer your questions



THANK YOU