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Domain: Smart Agriculture

Course: Growing of Hydroponics Spinach

Project topic: Crop Management

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pH and EC of nutrient solution

- A pH of **5.8** is considered optimum for the described spinach growing system, however a range of **5.6- 6.0** is acceptable.
- Nutrient deficiencies may occur at ranges above or below the acceptable range.
- Higher EC will prevent nutrient absorption due to osmotic pressure and lower level severely affect plant health and yield.
- Appropriate management of EC in hydroponics technique can give effective tool for improving vegetable yield and quality
- EC(dSm-1) between **1.8 to 2.3** is advised for spinach.
- During colder periods the EC can be slightly higher but during high temperatures it is important not to let the EC go above **2.0**

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Crop Health

Diseases:

•hydroponic spinach is particularly susceptible to a water-borne pathogen called *Pythium aphanadermatum* that will attack the crop roots slowing growth and eventually killing the plants.

•If root disease does occur, solution tanks should be drained and the crop sacrificed. Tanks should be cleaned with a 2% bleach solution.

•It is possible the disease started in the Germination Area, and that area, including the benches and solution tanks, should be cleaned, as well.

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- Wash the Styrofoam floats, trays, and other equipment with a 2% bleach solution (sodium hypochlorite).
- The equipment should be washed between each use, to prevent the spread of disease.
- Keep the solution tanks shaded in some manner.
- Algae flourish in wet, well-lit locations, and the solution tank is ideal for algal growth. Shading the tanks, input and output pipes, and other "wet" equipment will inhibit algal growth.
- The algae will not harm the crop directly, but may act to weaken the crop to potential disease.

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•Pests

•Pests in hydroponic spinach production have not been a major problem.
•Fast plant growth rates make pest population establishment difficult.
•With continuous crop production, pest populations may have the opportunity to establish themselves.
•Precautions can be taken to exclude pests from the facility, such as screening potential entry points (ventilation inlets).
•Keeping the grass and weeds mowed outside the greenhouse or removing all vegetation entirely can reduce pest pressure inside the greenhouse.
•Few pesticides have been labeled for use on greenhouse vegetables.
•Biological insect control is a viable but less used alternative.

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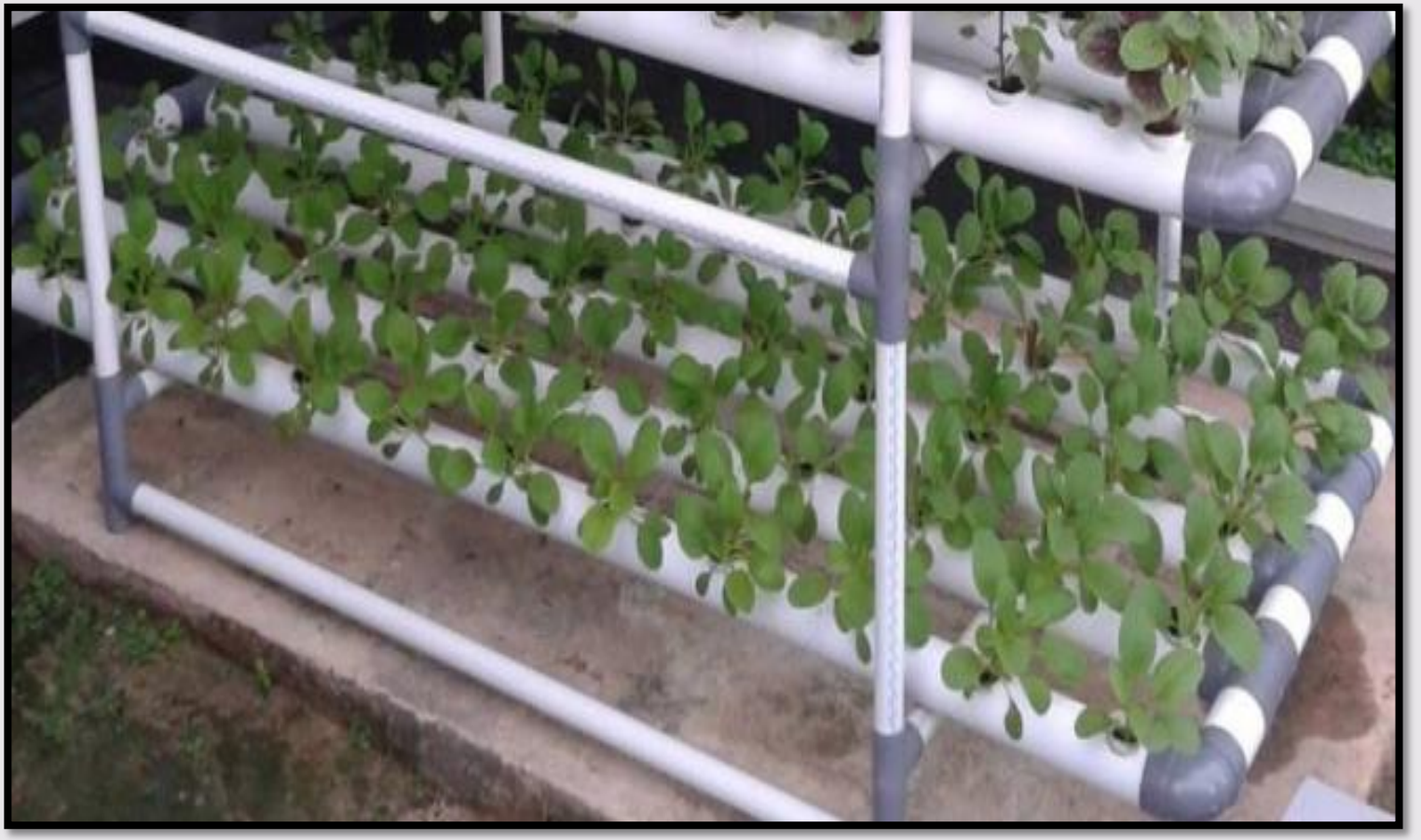

Thank you...