



Soilless Agriculture

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Soilless agriculture

(Hydroponics culture/water culture/nutrient culture)



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- Reasons to hydroponics
- Type of soilless culture
- Advantages of soilless culture
- Disadvantages of Soilless culture

Introduction

- Technology of growing crop in a complete nutrient solution with or without a solid phase.



Reasons to hydroponics

- Overcome poor soil conditions
 - salinity
 - Rocky,Sandy,gravelly soils
 - Pathogens
- Shrinking of arable land

Reasons to hydroponics

- To get high yield and quality .
- Readily available nutrients(energy saving)
- Provide optimum resources for the growing plant.

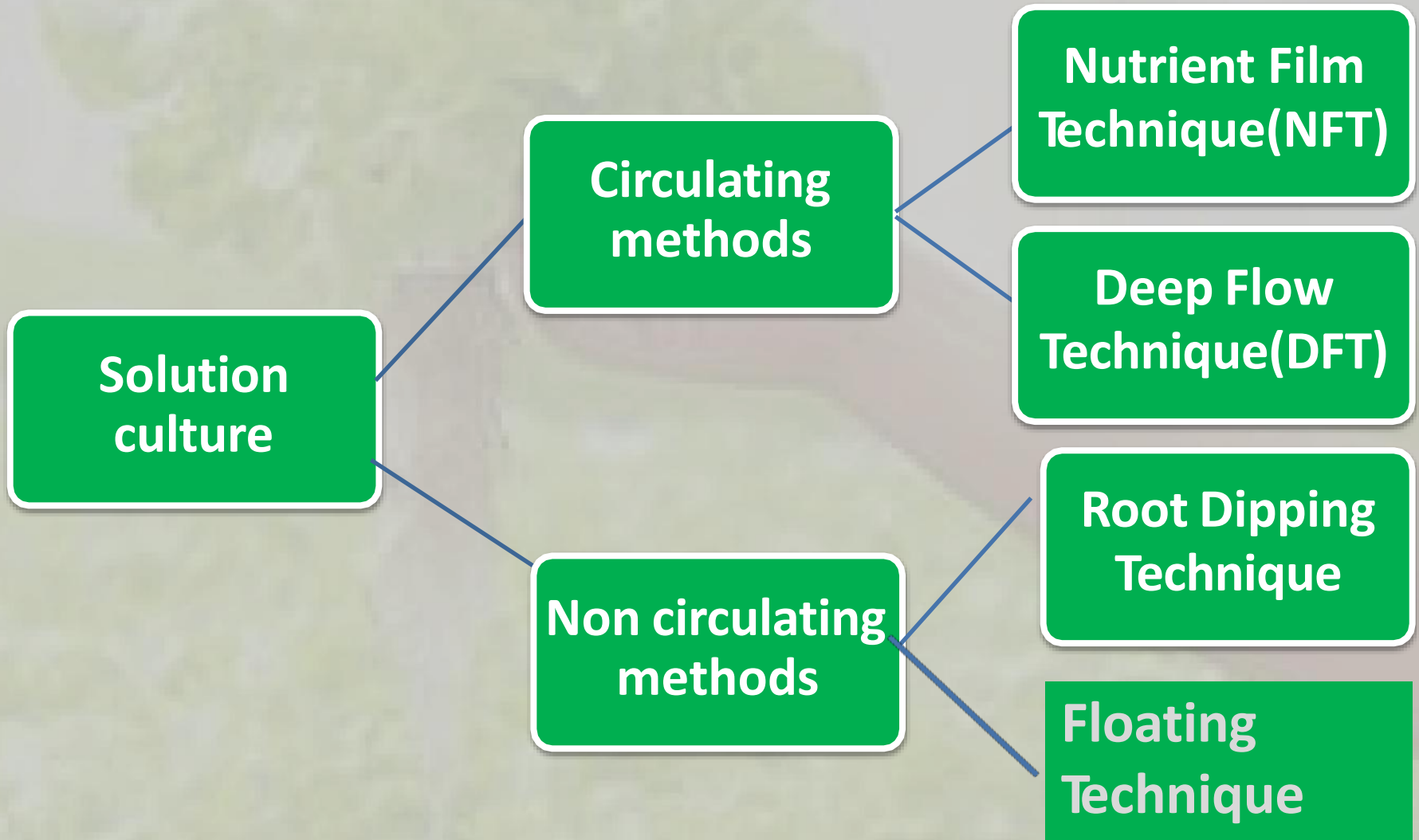
Type of soilless culture

1.Solution Culture

2.Aeroponics

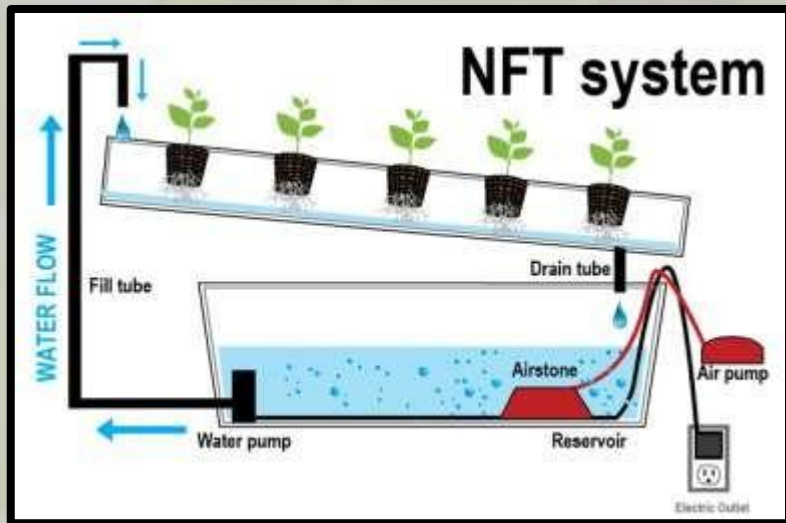
3.Solid media culture

01. Solution culture



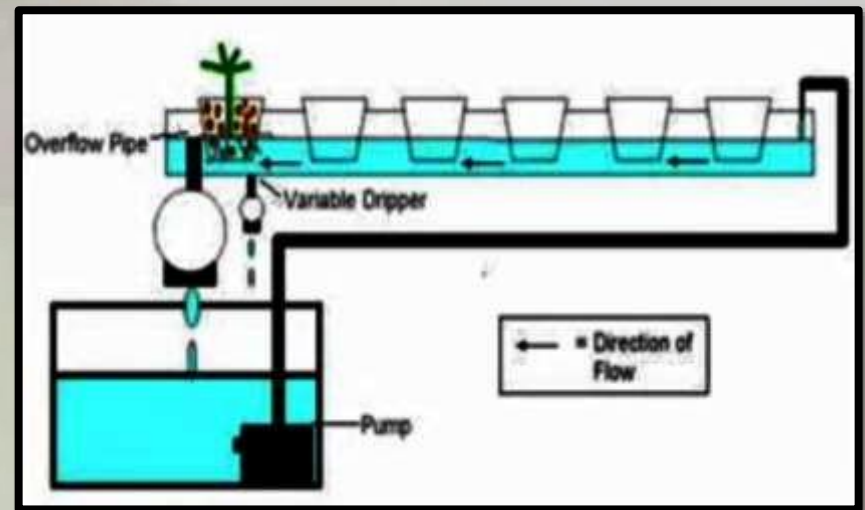
Circulating methods

Nutrient film techniques



- ❖ Plant roots are directly exposed to nutrient solution

Deep flow technique



- ❖ Use 2-3cm deep nutrient solution

Non circulating methods

Root dipping technique



- ❖ Plant grow in small contains filled with growing media

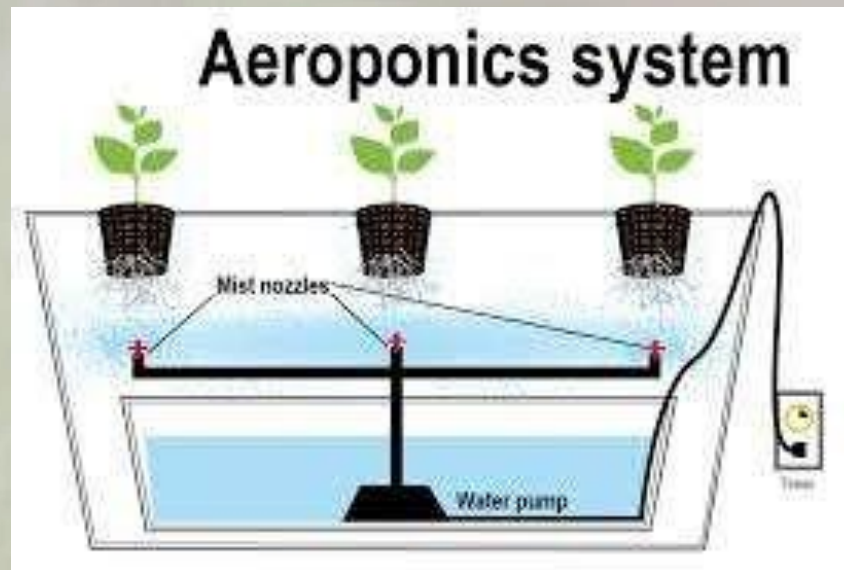
Floating technique



- ❖ Similar to root dipping technique
- ❖ Solution is aerated artificially

02.Aeroponics

- plant root hang in the air are misted with the nutrient solution
- Misting is done for avoid rapid drying



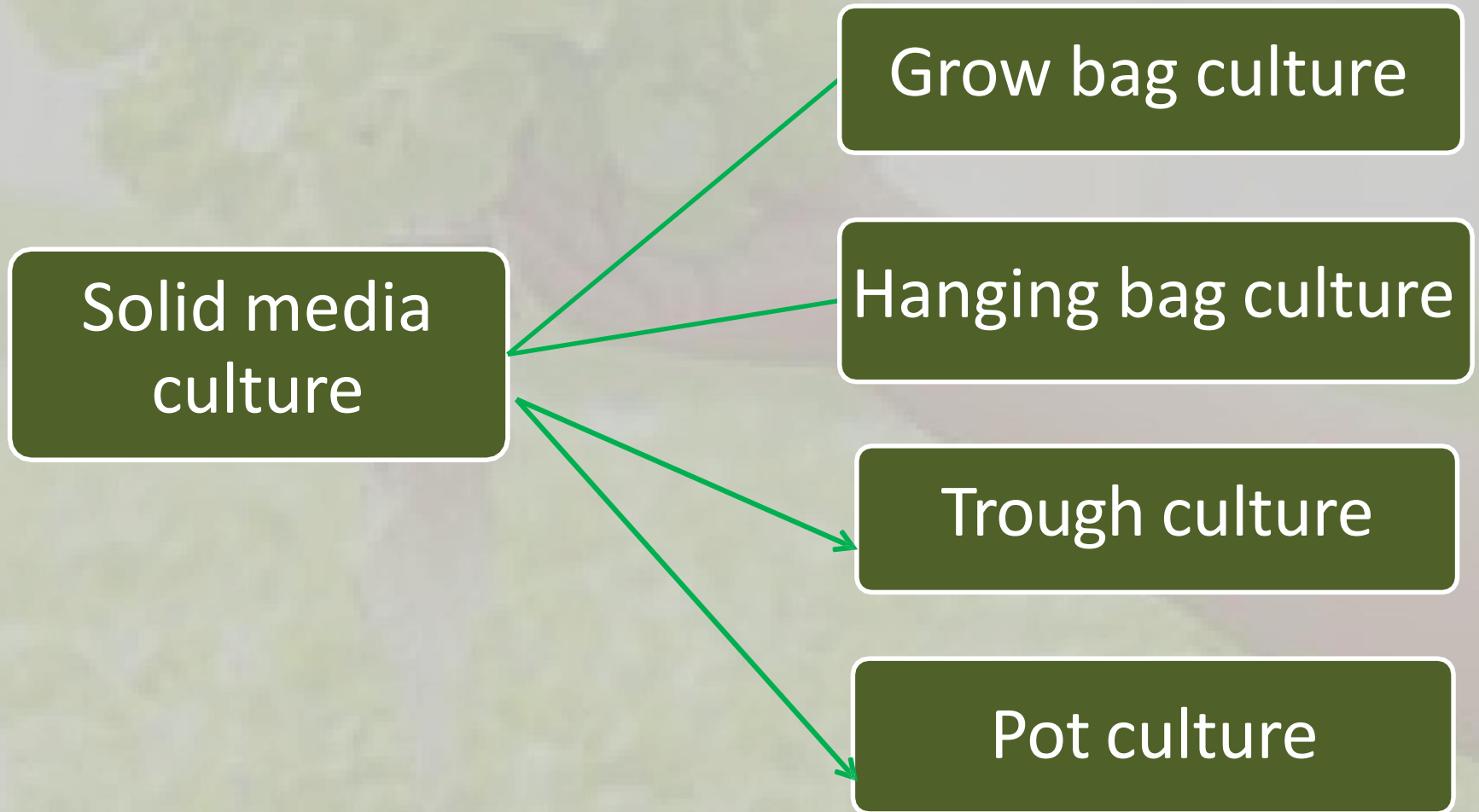
02.Aeroponics

- Root absorbed the nutrient from the nutrient film adhere to the roots



03.Solid Media Culture

- Plant roots are developed in a growing medium
- The substrate irrigated with a Complete nutrient solution



Grow bag technique



- ❖ Poly bags are arranged in rows
- ❖ Filled with growing media (coir dust, peat, vermiculite)

Hanging bag technique



- ❖ Light weight media used to grow crops

Trough culture



- ❖ Plant grown in narrow trenches in the ground and above ground troughs

Pot culture



- ❖ Plants are established in plastic pot/polythene bags

Advantages of Soilless agriculture

- Continuous cultivation in the same land
- Low cost and time for land preparation and soil sterilization
- Low labour requirement

Advantages of Soilless agriculture

- Maintenance of clean products
- Year-round production
- Low soil and water born disease



Disadvantages of soilless culture

- Higher initial cost
- High operational cost
- Requirement of technical know how



Disadvantages of soilless culture

- Needs thorough knowledge on the agronomy and crop physiology
- Requirement of quality water

