

JOB ROLE – FLORICULTURIST (PROTECTED CULTIVATION)

Sector – Agriculture

(Qualification Pack Code: AGR/Q0702)



PSS Central Institute of Vocational Education
Shyamla Hills, Bhopal – 462 013 , Madhya Pradesh, India

www.psscive.ac.in

UNIT 4: IRRIGATION AND FERTIGATION IN GREENHOUSES

Session 2: Types of Fertilisers and Their Scheduling

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Session Objectives

The student will be able to

- Explain fertigation and its advantages
- Describe about fertilisers suitable for fertigation
- Describe about fertigation equipment

Introduction

Most greenhouse operations apply soluble fertilisers through irrigation systems, thus the use of the term 'fertigation'. This is accomplished by drip (pipes) where soluble fertilisers are injected using injectors at a calculated quantity of concentrated solution (stock solution) into the irrigation line so that the water from the hose (dilute solution) carries as much fertiliser as planned.

The fertigation method varies depending on the type of crop, irrigation required and the size and technological status of the greenhouse

Fertigation and Its Advantages

Fertigation

It is a method of applying soluble fertilisers through irrigation system

Advantages

- It saves about 25-30 per cent of fertilisers as the uniform distribution of fertilisers is possible

Fertigation and Its Advantages

- Application of water soluble acidic nature fertilisers can be more beneficial to the growers to maintain EC & pH of the soil & water. Thus the emitter clogging problems can be minimized.
- Requisite quantities of fertilisers can be apply through water
- Increases crop yield by 25 – 30 per cent
- Saves time, labour and energy

Cares to be Taken During Fertigation

- Do not inject fertilisers in combination with pesticides or chlorine
- Always use hand gloves and mask while handling the fertilisers
- Time taken for giving fertilisers should not exceed the irrigation duration

Cares to be taken during Fertigation

- Do not use phosphatic fertilisers (like DAP, 10-26-26 etc) through drip irrigation to avoid the clogging of the emitters
- If possible prefer to use water soluble/liquid fertilisers.
- Always wash hands after fertigation
- Operate drip system for some time after fertigation so that the precipitates if any are drained out.

Fertigation Equipment

- Fertiliser tank
- Venturi
- Fertiliser injection pump

The equipment are connected to the drip irrigation system by bypassing the main line of irrigation system



Fertilisers Suitable for Fertigation

Nitrogen Fertilisers

- Ammonium Phosphate
- Ammonium Sulphate
- Ammonium thio-sulphate
- Calcium Ammonium Nitrate
- Urea Sulphuric Acid
- Di-Ammonium Phosphate etc

Fertilisers Suitable for Fertigation

Phosphatic Fertilisers

- Urea Phosphate
- Phosphoric Acid
- Mono Ammonium Phosphate

Fertilisers Suitable for Fertigation

Potassium Fertilisers

- Potassium Chloride
- Potassium Nitrate
- Potassium Sulphate
- Potassium Thio-Sulphate

Solubility of Nitrogenous Fertilisers

S. No.	Types of Fertilisers	Nitrogen Content (%)	Solubility (g/l)
1	Ammonium Sulphate	21	750
2	Urea	46	1100
3	Ammonium Nitrate	34	1920
4	Calcium Nitrate	15.5	1290

Solubility of Potassic Fertilisers

S. No.	Types of Fertilisers	Potassium Content (%)	Solubility (g/l)
1	Potassium Sulphate	50	110
2	Potassium Chloride	60	340
3	Potassium Nitrate	44	133

Solubility of Micronutrient Fertilisers

S. No.	Types of Fertilisers	Content (%)	Solubility (g/l)
1	Solubor	20 B	220
2	Copper Sulphate	25 Cu	320
3	Iron Sulphate	20 Fe	160
4	Magnesium Sulphate	10	710
5	Ammonium Molybdate	54	430
6	Zinc Sulphate	36	965
7	Manganese Sulphate	27	1050

Care While Mixing Fertilisers

Never mix the following fertiliser

- Calcium Nitrate with Mono Ammonium Phosphat
- Calcium Nitrate with Mono Potassium Phosphate

Summary

In this session you have learnt about fertigation, fertigation equipment and fertilisers suitable for fertigation

Project Coordinator : Dr. Rajiv Kumar Pathak

Assistance

Dr. Narendra Vasure

Dr. Rajesh Jatav



Joint Director

**PSS Central Institute of Vocational Education
Shyamla Hills, Bhopal – 462013 , Madhya Pradesh, India**

E-mail: jdpsscive@gmail.com

Tel. +91 755 2660691, 2704100, 2660391, 2660564

Fax +91 755 2660481

Website: www.psscive.ac.in