



Fertigation: Way of direct feed to crops

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Fertigation is a process in which fertilizer is dissolved, diluted and distributed along with water through micro irrigation systems. This method is especially common in horticulture and extensive agriculture. Fertigation systems add the correct amount of fertilizer according to the plants' nutrient deficiencies.

This process reduces soil erosion, minimizes the risk of the roots contracting soil-borne diseases, reduces water consumption, reduces the amount of fertilizer used, increases the nutrients absorbed by the plants, and controls the precise time and rate of fertilizers being released.

There are two main types of fertigation approaches:

– The proportional approach is used in soil-less mediums where a precise quantity of fertilizer stock solution is injected into each unit of water flowing through

the irrigation system.

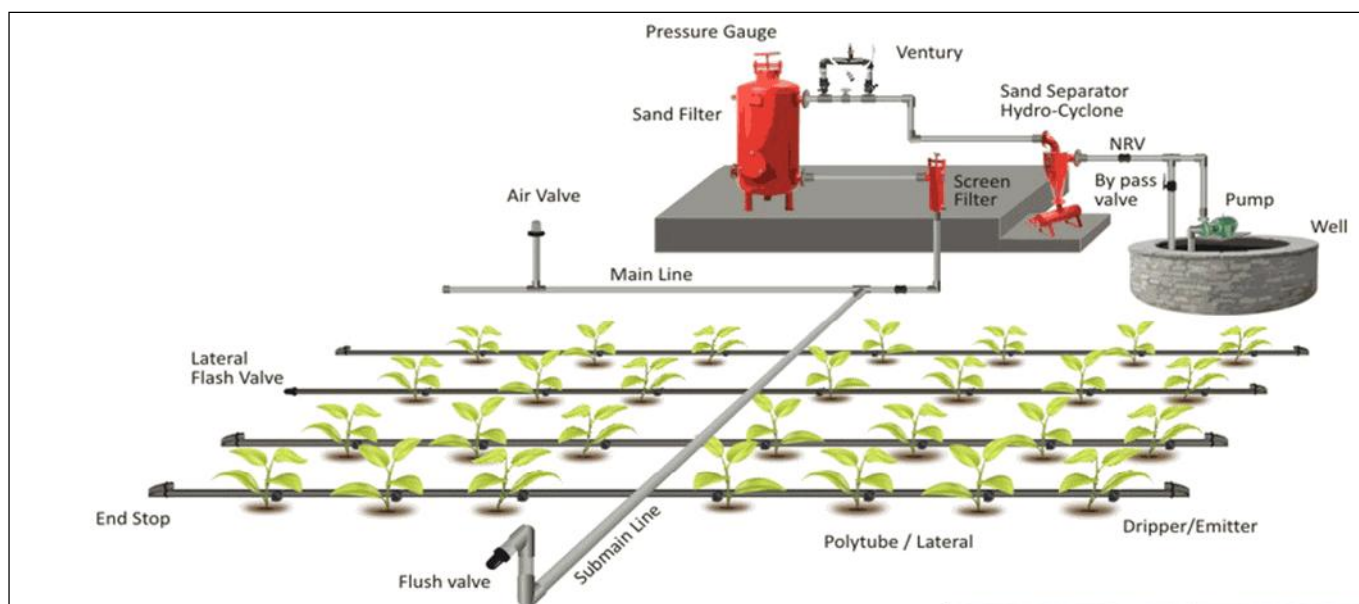
– The quantitative approach is used in open fields where the horticulturalist first decides how much fertilizer should be applied per unit area.

Why should farmers use fertigation?

Higher yields and better quality crops: The supply of nutrients to the crops according to the physiological stage, considering the climate and soil characteristics, resulting in high yields and high quality crops.

Increased efficiency of nutrients: Nutrients are applied to the root zone and uniformly, where the active roots are concentrated. Less fertilizer applied resulting on decrease of production costs.

Reduction of groundwater pollution: The exact dosage optimizes fertilization, reducing the potential for



groundwater contamination caused by the leaching of fertilizers.

Greater convenience and economy: Allows use of fertilizer solutions, which is more practical than the solid or granular type fertilizers.

Efficient application of microelements: which are expensive and are required in small quantities.

What should be considered?

Soil analysis : To determine soil nutrient availability and soil type. The soil analysis will assist in the development of a fertilization programme.

Irrigation system and injector pump: Drip irrigation system is utilized for vegetable production. Injector pumps such as piston pump and Venturi type are recommended.

Water quality: Sediments in the water can plug the emitters in drip hoses.

Water supply: Adequate supply of water demanded by the crop.

Fertilizers: It is essential that nutrients used for fertigation are soluble.

Advantages of fertigation:

The benefits of fertigation methods over conventional methods include:

- Increased nutrient absorption and fertilizer use efficiency by plants.
- Accurate placement of nutrient, where the water goes the nutrient goes as well.
- More productive and produce high quality crops

– Reduction of fertilizer, chemicals and water needed.
– Reduced leaching of chemicals and fertilizers into the water supply.

– Reduced water consumption due to the plant's increased root mass's ability to trap and hold water.

– Application of nutrients can be controlled at the precise time and rate necessary.

– Minimized risk of the roots contracting soil borne diseases through the contaminated soil.

– Reduction of soil erosion issues as the nutrients are pumped through the water drip system. Leaching is decreased often through methods used to employ fertigation.

Constraints in fertigation:

– High initial capital and labour intensive
– Lacking the information about selection of appropriate irrigation systems, rate of application and frequency of application.

– Concentration of the solution may decrease as the fertilizer dissolves, this depends on equipment selection. If poorly selected may lead to poor nutrient placement.

– Good quality of water requires that's why water supply for fertigation is to be kept separate from the domestic water supply to avoid contamination.

– Possible pressure loss in the main irrigation line.

– The process is dependent on the water supply's non-restriction by drought rationing.

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