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Fertigation-Review

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ABSTRACT
Fertigation, which is a similar, but more specific term, refers to the application of fertilizer to crops through the irrigation system. Fertigation has greater resemblance with chemigation, the only feeble difference is instead of chemical injection fertilizers are injected through different types of injecting equipments. It's an innovative process for getting rid of the pest and other insects which attacks the crop varieties.

Keyword: - Fertigation, Injection, Resemblance, Chemigation, Fertilizer

INTRODUCTION

Fertigation is the injection of fertilizers through the irrigation system. Micro irrigation systems are well-suited to fertigation because of their frequency of operation and because water application can be easily controlled by the manager. Applying fertilizer solutions through irrigation water is not a recent development; the first agricultural use of anhydrous ammonia was through application in irrigation water in the early 1930's (Achorn, F. P, 1984). With the mechanization of irrigation, particularly with the development of center pivot sprinkler irrigation systems, new application techniques have opened up for fertilizer and chemical solutions. New words describing these application techniques include fertigation, chemigation, fungigation, herbigation, insectigation and pestigation (Todhunter, J. A, 1985). These are certain efficient way for getting rid of the pest and other insects which attacks the crops.

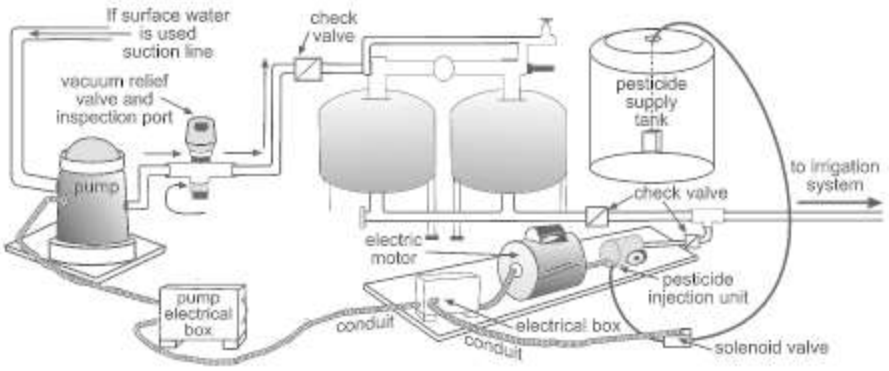
What is Fertigation?

Fertigation is the application of a commercial fertilizer, soil amendment, or reclaimed water from food processing and wastewater treatment facilities with irrigation water. A commercial fertilizer is a substance that contains one or more recognized plant nutrients used for its plant nutrient content and is claimed to have value in promoting plant growth. Also included are lime, gypsum, and mixed or specialty fertilizer.

Irrigation System Design – Things toDo

• Select equipment that is designed or adapted for the injection of chemicals into the irrigation system at a controlled rate.
• Select irrigation system components that are compatible with the chemicals to be used.
• Locate the injector so that relatively small amounts of water are delivered to the field before the material reaches the crop. This will reduce the potential for over-watering a crop and subsequent chemical leaching.
• Design the irrigation system to maximize application uniformity (Burt, C., et.al., 1998).

EQUIPMENT



Minimum requirements for antipollution devices and arrangement of equipment for applying pesticides through an irrigation system using a pesticide injection unit powered by an electric motor and a media filtration system. (The same safety devices would be used by a system operating with an engine drive).

TYPES OF FERTIGATION

PHOSPHORUS FERTIGATION:

Phosphorus fertilizer in the form of ammonium polyphosphate solutions (APP) have been successfully applied in sprinkler irrigation water. However, due to relative phosphate immobility in soil, coupled with phosphate's importance for early season growth, sprinkler-applied phosphorus may not be meeting crop's needs during the critical early stages of growth (especially corn and grain sorghum). The same research also indicated a more favorable plant uptake of phosphorus and increased early season growth where broadcast incorporated or row-applied phosphorus was utilized in comparison to sprinkler-applied phosphorus. Sprinkler-applied phosphorus can be used as a viable saving treatment, or as a supplement on sandy soils. Generally crop response to phosphorus is through root uptake early in the growing season, so phosphate must be worked into the tillage layer first (Achorn, F. P, 1984).

SULFUR FERTIGATION:

Lower organic matter soils are under irrigation, the need for sulfur becomes more pronounced. Just as nitrate nitrogen is highly leachable, so is sulfate sulfur, the form of sulfur taken up by plants. Periodic, split-applications of sulfur are recommended, along the same schedule as for nitrogen applications with approximately 1:10 sulfur to nitrogen ratio being adhered to at each application. Total sulfur applications of ten to twenty pounds per season, depending on the amount of sulfur already contained in the water, are usually sufficient. Sulfur deficiencies are not uncommon on sandy soils, especially during cold, wet springs where irrigation may not occur before the 10 to 12-leaf stage in corn or grain sorghum. Correcting for these conditions requires supplementing sulfur before irrigation begins, applying sulfur in a starter (five to eight pounds of S per acre) or in preplant applications combined with nitrogen and/or phosphorus (preferably in a surface, dribble band) is highly recommended.

ZINC AND OTHER MICRONUTRIENT FERTIGATION:

Due to the importance of micronutrients at early stages of growth, in-row applications (zinc, iron, manganese, or copper) or broadcast incorporated (boron) are recommended. A notable exception might be zinc, as in-season zinc deficiencies in corn have been corrected with ZnEDTA on sandier soils. Research done on a sandy loam soil shows ZnEDTA movement to the four-inch depth, sufficient enough to correct in-season zinc deficiencies if applied early in the growing season

APPLICATION & USE OF FERTIGATION

In developed countries like USA, UK, increasingly wide range of fungicides, herbicides, and insecticides are injected through drip and micro irrigation systems. The extent of this type of chemigation appears to be largely dependent on the crop type, and is more prevalent and sophisticated on row crops (vegetables and strawberries) than on trees and vines.

Drip and micro irrigation have a characteristic not shared by other irrigation methods— fertigation is not optional, but is actually necessary. Fertigation gives the only good way to apply fertilizers physically to the crop root zone for permanent crops. The application of fertilizers in the most essential part of plant provides the plant to avail the fertilizer in a proper manner. On high value drip irrigated crops, such as lettuce, tomatoes, and peppers, the level of fertigation management for achieving high yields and crop qualities appears to exceed what is found with other irrigation methods and crops.

Results from a 1984 Farm and Ranch Irrigation Survey by the USDA Economic Research Service indicate that fertigation in the United States has been prevalent for some time. That survey revealed that fertigation was availed on all of the major crops in the country to varying degrees (Hanon.B.et.al. 2006).

CONCLUSION

Ferigation offers a number of benefits. Modern and automated equipments can be used to increase the efficacy of fertigation process. The types of fertigation also opens a new arena to go through a customized fertigation process for each genous of plant species.

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