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Commentary

Innovative aspects of over fertilization and applications of fertilizers on crops

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DESCRIPTION

Over fertilization is another problem that crops may experience. If fertilizers are continued to be applied together with reclaimed water, this could happen as a result of waste water reuse. Excessive vegetative growth, delayed or uneven maturity, and poor crop quality are all symptoms of over fertilization. Excess nutrients might be harmful, so it's crucial to employ fertilisation devices carefully. Fertilizer burn occurs when too much fertilizer is administered, causing the plant to be damaged or even die. Fertilizers have a tendency to burn differently depending on their salt index.

Application of fertilizers

Fertilizers are commonly used for growing all crops with treatment rates varying based on the soil fertility, which is determined by a soil test and according to the particular crop. Legumes, for example, fix nitrogen from the air and don't require nitrogen fertilizer in most cases.

Solid *vs* liquid

Fertilizers are administered to crops as both solid and liquid fertilizers. Approximately 90% of fertilizers are used as solids. Urea, diammonium phosphate, and potassium chloride are the most often used solid inorganic fertilizers. Granulated or powdered solid fertilizer is the most common type. Solids are frequently present as prills, or solid globules. Anhydrous ammonia, aqueous ammonia solutions, aqueous ammonium nitrate solutions, and urea solutions are all examples of liquid fertilizers. These concentrated materials can be made into a concentrated liquid fertilizer by diluting them with water. Advantages of liquid fertilizer are its more rapid effect and easier coverage. The addition of fertilizer to irrigation water is called "fertigation".

Urea

Urea is very water soluble, making it ideal for use in fertilizer solutions (in combination with ammonium nitrate: UAN), such as 'foliar feed' fertilisers. Granules are chosen over prills for fertilizer application because of their narrower particle size dispersion, which is advantageous for mechanical application.

Urea is typically applied at rates of 40 to 300 kg/ha (35 to 270 lbs/acre), however this varies. Leaching losses are lower in smaller applications. In the summer, urea is frequently applied soon before or during rain to reduce losses due to volatilization (a process wherein nitrogen is lost to the atmosphere as ammonia gas).

Because of the high nitrogen content of urea, it is critical to ensure a uniform dispersion. Drilling must not come into contact with or be too close to seed to avoid germination harm. Urea dissolves in water and can be sprayed or irrigated *via* irrigation systems.

Urea is frequently sprayed to grain and cotton crops during the last cultivation before planting. Urea can be side- or top-dressed during the growing season in high rainfall locations and on sandy soils (where nitrogen can be lost by leaching) and if good in-season rainfall is forecast. On pasture and feed crops, top-dressing is also popular. After planting, urea is side-dressed and applied to each ratoon crop in sugarcane cultivation. Because it absorbs moisture from the atmosphere, urea is often stored in closed containers. It's harmful to take too much urea or put it near the seed.

Fertilizers with a slow or controlled release

A Controlled-Release Fertilizer (CRF) is a granular fertilizer that progressively distributes nutrients into the soil (i.e., with

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a controlled release period). Controlled-release fertilizer, also known as controlled-availability fertilizer, delayed-release fertilizer, metered-release fertilizer, or slow-acting fertiliser, is a type of fertilizer that releases nutrients gradually. CRF is a term that usually refers to nitrogen-based fertilizers. Slow and controlled-release fertilizers account for approximately 0.15 percent of the fertilizer market (562,000 tonnes) (1995).

Foliar application

Foliar fertilizers are applied to the leaves directly. This method is nearly always used to apply water-soluble straight nitrogen fertilizers, and it is particularly efective for high-value crops like fruits. The most frequent foliar fertilizer is urea.