AMMONIUM SULPHATE

Ammonium sulphate is widely used as a sulphur (S) fertilizer, constituting about 50% of global S use. Within nitrogen (N) management, it is well known that ammonium-based fertilizers are subject to ammonia (NH_3) volatilization in soils with pH > 7, but this has been overlooked in decision making on S fertilization.

Uses of Ammonium Sulfate

Ammonium Sulfate finds its use in a wide range of industries. Some of its common uses are as follows:

- Used as a fertilizer
- Used as a reagent

Ammonium Sulfate is used as a reagent for molecular biology as it is a good precipitant agent for proteins.

- Used as insecticide
- Serves as a food additive

Ammonium Sulfate is recognized as a food additive. It is also used as an acidity regulator in flours and bread.

- Acts as a disinfectant

Ammonium Sulfate is used in the treatment of drinking water. It is combined with chlorine to generate monochloramine for disinfection.

- Used as disease controller

The United States uses Ammonium Sulfate in the preparation of vaccines.

- Salt preparator

It is used on a small scale to prepare Ammonium salts like Ammonium perSulfate.

- Used as a wood preservative

The hygroscopic nature makes it a wood preservative.

- Used for tanning leather
- Used as a flame retardant

ADVANTAGES OF AMMONIUM SULFATE FERTILIZER

- **High Nitrogen Content** – Nitrogen is an essential nutrient for plant growth, and ammonium sulphate fertilizer contains a high concentration of this nutrient. This makes it an excellent choice for plants that require high levels of nitrogen, such as leafy greens and grasses.
- **Acidifying Effect** – Ammonium sulphate fertilizer has an acidifying effect on soil, which can be beneficial for plants that prefer acidic soil conditions. This can help to lower the pH level of soil, making it easier for plants to absorb nutrients.
- **Improves Soil Structure** – Ammonium sulphate fertilizer can also help to improve soil structure by increasing the cation exchange capacity (CEC) of the soil. This means that soil can hold onto more nutrients, reducing the risk of leaching and runoff.
- **Affordable** – Compared to some organic fertilizers, ammonium sulphate fertilizer is relatively affordable. This makes it an excellent choice for gardeners on a budget who still want to provide their plants with the nutrients they need to thrive.

- **Long-Lasting** – Ammonium sulphate fertilizer provides long-lasting benefits to plants, as it slowly releases nutrients over time. This means that plants can continue to benefit from the fertilizer for several weeks after application.

Disadvantages of Ammonium Sulfate Fertilizer

- **High Salt Content** – Ammonium sulfate fertilizer has a high salt content, which can build up in the soil over time and harm plants. This can lead to stunted growth, nutrient deficiencies, and even plant death.
- **Acidifying Effect** – While the acidifying effect of ammonium sulfate fertilizer can be a benefit for some plants, it can also be a disadvantage for those that prefer neutral or alkaline soil conditions. It's essential to test your soil's pH level before using ammonium sulfate fertilizer to ensure that it's appropriate for your plants.
- **Potential for Over-Fertilization** – Like any fertilizer, ammonium sulfate fertilizer can lead to over-fertilization if not used carefully. This can cause plants to grow too quickly, become more susceptible to pests and diseases, and even harm the environment.
- **Can Release Harmful Gases** – When ammonium sulfate fertilizer is applied to the soil, it can release harmful gases such as ammonia and sulfur dioxide. These gases can harm human health and the environment, so it's essential to follow application instructions carefully and avoid over-application.
- **Unsustainable Source** – Ammonium sulfate fertilizer is typically produced from non-renewable sources of sulfur and nitrogen, such as oil and gas. This means that relying on ammonium sulfate fertilizer as a primary source of nutrients for plants may not be sustainable in the long term.Bottom of Form

FUELS

Fuels are materials that are burnt to produce a large amount of heat energy.

Any substance that upon combustion produces a usable amount of energy is known as fuel.

For example wood, coal, biogas, LPG, petrol, diesel, etc

FUEL GAS

Fuel gas is any one of a number of fuels that under ordinary conditions are gaseous. Most fuel gases are composed of hydrocarbons, hydrogen, carbon monoxide, or mixtures thereof. Such gases are sources of energy that can be readily transmitted and distributed through pipes

They are fuels found in nature or manufactured in gaseous state.

- They are generally clean fuels with relatively high output heat content and easily transportable.
- Examples- CNG, LPG, Hydrogen gas etc.

LPG is being used as fuel in cylinders in every household for cooking purposes. We use CNG as a gaseous fuel in our vehicles for transportation.

NATURAL GASE

Natural gas (also called **fossil gas, methane gas** or simply **gas**) is a naturally occurring mixture of gaseous hydrocarbons consisting primarily of methane in addition to various smaller amounts of other higher alkanes.

Low levels of trace gases like carbon dioxide, nitrogen, hydrogen sulfide, and helium are also usually present. Methane is colorless and odorless, and the second largest greenhouse gas contributor to global climate change after carbon dioxide. Because natural gas is odorless, odorizers such as mercaptan (which smells like sulfur or rotten eggs) are commonly added to it for safety so that leaks can be readily detected.

Natural gas can be found in underground geological formations, often alongside other fossil fuels like coal and oil (petroleum). Most natural gas has been created through either biogenic or thermogenic processes. Biogenic gas is formed when methanogenic organisms in marshes, bogs, landfills, and shallow sediments anaerobically decompose but are not subjected to high temperatures and pressures.

Thermogenic gas takes a much longer period of time to form and is created when organic matter is heated and compressed deep underground.

Natural gas is a fossil fuel and non-renewable resource that is formed when layers of organic matter (primarily marine microorganisms) decompose under anaerobic conditions and are subjected to intense heat and pressure underground over millions of years.

The energy that the decayed organisms originally obtained from the sun via photosynthesis is stored as chemical energy within the molecules of methane and other hydrocarbons.