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FERTILIZER POLLUTION

(Concerns and Solutions)

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ABSTRACT

To meet the increasing requirements for food, the superior productivity, and the superior quality goods requires per unit agricultural land. Nutrition of plant is one of the most important essential components to control the quality rate of nutrients in agricultural productivity and Soil, which affects the standard of the yield, enormous fertilization can cause very severe ecological issues such as reduction in biological variety, water quality degradation losses of micro-organism in soil and accumulation of Nitrate and sulfur and give and raise a problem such as greenhouse effect of global climate disruption. In this observation, the environmental and health problems caused by improper fertilization are demonstrated and solutions to this problem are provided.

Keywords: Inorganic fertilizers: farming, effect on ecosystem; Health concerns.

INTRODUCTION

After the industrialization, the increase in the growth of the fertilizer in agriculture, the use of inorganic fertilizers in agriculture including the increase in the growth of the product/unit in the crop production as a result to satisfy the demand of population Synthetic fertilizer has created many problems air pollution, soil pollution and water pollution. Synthetic fertilizer poses serious environmental constraints Such as Eutrophication water, loss of biodiversity, global warming soil and Plant Health problems, The Heavy metals present in fertilizers reach the food chain and can cause various problems to the livestock and humans.

According to keenes the global population is projected to rise by approximately 2.3 billion by 2020 and is anticipated to double by the year 2050.

This to reduce and eradicate the harmful effect of inorganic fertilizers on healthiness and habitat ecosystem, now a day a new farming practice has been developed called sustainable farming.

This chapter explain the Harmful effect of chemical fertilizer on water, soil, Human Health and environment and the possible sustainable solution which are to deployed in order to reduce of climate such constraint.

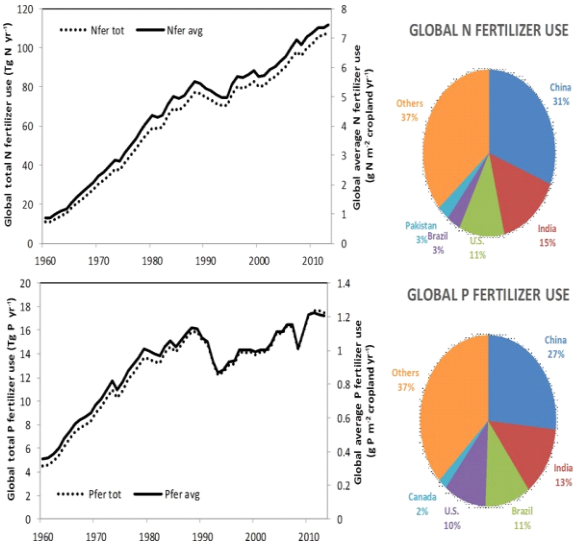

Figure-1-describe the changing trends in global nitrogen (N) and phosphorous(P) fertilizer usage over time, including both the total quantity used and the average application rate per year on agriculture. The Pie charts illustrates the distribution of N and P fertilizer usage among the top five fertilizer-consuming countries to the rest of the world in the year 2013

IMPACT OF CHEMICAL FERTILIZER ON NATURAL RESOURCES

Now a day population is excessively increasing, and to meet the increasing requirement for food is A great challenge. "The Synthetic fertilizer is beneficial for plant growth they provide all the essential nutrient, and this nutrient is a cheapest source of all the nutrient, In Synthetic fertilizer has Higher nutrient Content and highly soluble and hence easily available to crops and are required in less quantity, chemical fertilizers improve the soil fertility, which increases the yield of Crops and now it is not limited to the lack of nutrients of the plant. All advantages make fertilizers more acceptable than organic fertilizer but the world agricultural Systems are using large amount chemical fertilizers to get more production in the per unit area but many problems arise by using more doses than optimal or recommended quantities of these chemical and fertilizer. And leads to arise some problems like Environment pollution (soil air and water pollution). Chemical fertilizer is Harmful for all the living organism present in Soil Surface The harmful effect of chemical fertilizer can be divided into Damage to ecosystem including water pollution air pollution and soil pollution. Human, aquatic, amphibians, animal and threats to the life of plants.

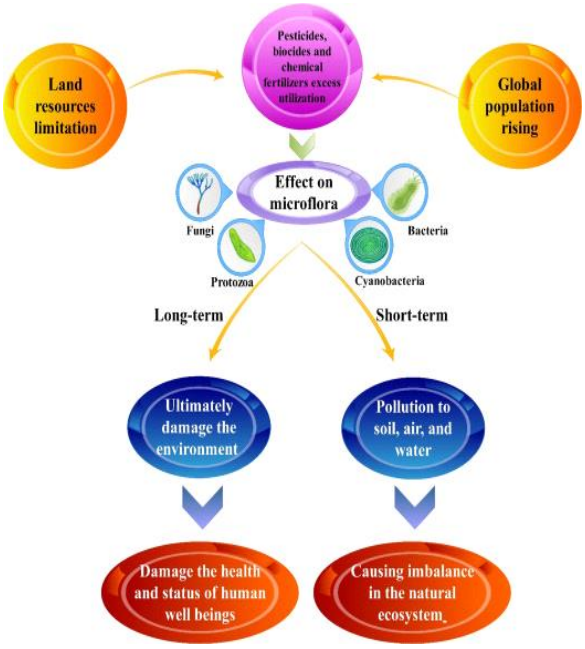

Fig.2. *The harmful effects of chemical substances on the ecosystem.*

EFFECT ON SOIL

According to research and Studies the effects of Chemical fertilizer on the Soil are not immediately obvious. Because due to their Components in the soil there is a strong buffering Capacity, from time to time it is Soil that pollution falls in fertility of Soil, due

to live response in the soil, the soil gets worst Balance of the Current element, In addition many harmful toxic, substances are collect in the vegetables and fruits cause harmful effects human and animals are fed.

The Soil structure is very important role play in Productivity, but overuse of fertilizers decorates the soil Structure.

High level of Sodium and potassium Containing fertilizer make-negative impact on soil ph.

The over use of fertilizer leads to acidification in Soil and Creates soil Crust problem reduce the organic matter in soil. Sandy soil is much more prone to soil acidification than Clay soil. If provide more fertilizer in soil leads to compaction layer and soil - degradation in the long term.

EFFECTS ON WATER

Fertilizer can have a Significant impact on the Water quality when the industries harmful water is dumped into the river, this pollute the river, lake etc., The excess amount of nutrient from fertilizers such as nitrogen fertilizer and phosphorous can lead to eutrophication Causing algal blooms gad ultimately degrading the water quality by Reducing the oxygen level and harmful effects on aquatic life and Harmful effect in Human Eutrophication in the bottom layer oxygen free environment as result not suitable for drinking and water Supply.

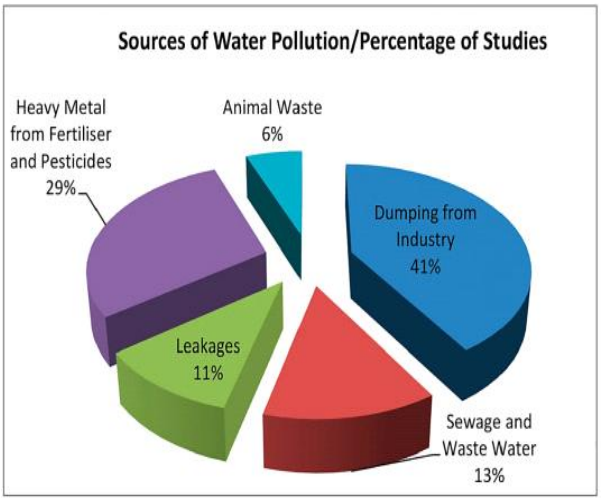

Fig.3.sources of water pollution

EFFECT ON AIR

In agriculture 60% of Anthropogenic are the dominant N20 emission and agricultural soil is the main sources. Major air pollutants from agricultural sector contribute to nitrous oxide, methane, Carbon-di-oxide in greenhouse gases.

Pathak etal. (2004) reported that fertilizer accounts for 77% of the nitrous oxide emissions from agricultural soil in India. Nitrogen fertilizer can be converted by soil bacteria into nitrous oxide. Nitrous Oxide (N20) has become the third Most important greenhouse gases after Co2 and CH4 and increased from 0.2 to 0.3%. each year the main concern regarding the emission of nitrous oxide has to do with the effect of global warming and the role of nitrous oxide in ozone destruction, that consequently leads to atmospheric holes Their exposing Humans and animals to excessive ultraviolet radiation. Some gases are responsible for ozone depletion and H2o vapor, Co2, CH4, H2S and CFC. Methane commissions from transplanted paddy field are also a serious concern, as methane is a most important note

play in greenhouse gas and its concentration is increased by the use of ammonium-based fertilizer, all these emissions contribute to global climate change.

EFFECTS ON HUMAN HEALTH

Nitrate bowel tract with body drinking water is absorbed in 4-12 how and ends by the Kidney The mechanism as well as the Salivary glands can concentrate nitrate as a result, the mouth is reduced to nitrite in the anaerobic environment stomach acid does not occur in infants younger than six months In this environment, nitrite reacts with hemoglobin in the blood and is reducer methemoglobin consists of nitrite in digestive System. The food produced using chemical fertilize has very adverse effect on the Human health as well as animal, some other disease like wheezing, lung infection is also the resulted deep inhaling and long-term exposure. other disease like homological toxicity, growth refoundation cognitive delay, and damage to nervous System are caused due to the exposure to alarms. Due to the Higher aluminum exposure asthma is caused together with Alzheimer's and bone disease

USING OTHER ALTERNATIVES IN PLACED CHEMICAL FERTILIZER

Continuous, the Overuse of the chemical fertilizer for long period of the time on same field may go to lead to reduce soil fertility, soil degradation loss of beneficial microorganism present in sold. We can use integrated use of different type of nutrients. Supplements such as organic manure, bio fertilizers and other slow release or controlled released fertilize, should be use.

Organic Manure: The use of organic fertilizer with chemical fertilizer, compared to the addition of organic fertilizer alone, has a higher positive effect on microbial biomass and soil Health These techniques maintain the soil fertility for long time and maintain soil Humus content be using Compost manure, Vermicompost, mulch manure etc.

Bio-fertilizer: are those substance they contain living microorganism and help to foot develop of root system and it also help in good seed germination,

A healthy plant contains a healthy rhizosphere which should be dominated by the beneficial microbes. Biofertilizer is totally different from chemical fertilizer as well as organic fertilizer and they do not directly Supply nutrients to the crop, and are cultures of Special fungi and bacteria.

The production technology for bio fertilizer is relatively Simple and installation cost is Very low Compared to chemical fertilizer

SLOW-RELEASE FERTILIZER

Organic low Solubilizing Compound for example urea formaldehyde board Is butyledene-diurea.

Fertilizers in which a physical baring Controls the Release for example the coated fertilized Coated with Organic polymer Coating that are either thermoplastic of resin and fertilizers Coated with inorganic material Such as sulfur or mineral based.

NANO FERTILIZERS

Nano-fertilizer is a modern approach to enhancing plants growth and Productivity, in this type of fertilizer active ingredients are present in nano-particle, allowing for betting absorption by plants and more efficiently nutrient delivery, they also help and improve to uptake nutrients reduce Harmful environmental impact. Increase the crop yield and maintain the soil fertility for long term.

Application Efficiency: Application of any fertilizer should be done at an economic rather than optimum rate. Also provide the application to the right amount right place and right time to reduce the adverse effect on both crop and the environment.

CONCLUSION

Today, the use of chemical fertilizer, is seen as essential agricultural technology, but soil restores nutrients and promotes the growth and yield of plants. But to reduce various types of Hazardous due to excessive use of fertilizer, first of all soil testing and analysis Should be properly done and then give fertilizer in the soil Because all type of fertilizer is not good for soil. if the soil testing is done use the proper recommended dosage were used in Soil, Therefore to ensure both the enhance and sustainable agricultural production and to save the environment, integrated use of different types of nutrient supplements such chemical fertilizer, organic manure bio fertilizer and use slow released or controlled released fertilizer should be used To eliminate the uses of pollutants Nitrogen Should be adopted by using organic manure Nano fertilizers which make greater role to increasing the crop production will reduce the cost of fertilizer for crop production and minimization of Environmental polluted.

REFERENCE

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