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IMPACT OF CHEMICAL FERTILIZERS AND ORGANIC MANURE ON VEGETABLES PRODUCTION AND HUMAN HEALTH

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Agriculture plays a vital role in the Indian economy. With 70 per cent of the rural households about 18% to the total GDP and employment to over 60% of the population as a largest provider of livelihood, horticulture, emerged as interactive passion of Indian agriculture which contributes 30.7 percent of agricultural GDP with only 8 percent of area allocated to horticulture included fruits, spices, plantation and vegetables etc. Production of Fruits and Vegetables in India currently pegged at level of 314.67 million tones (NHB, 2018).

Vegetables play a major role in daily human diet, since they are most important source of vitamins and minerals, are required for maintaining of good health. Since India's population is mostly vegetarian, vegetables are the most important component of vegetarian diet of Indian population. The present production in India is approx 187.5 million tones of vegetable from 10.1 million hectare of land .As far as vegetable consumption per capita per day is concerned at present it is below the requirement g/capita/day, where as according to nutritional experts it should not be less than 300g/capita/day. To fill up this consumption gap of vegetables, India need to enhance its vegetable production so as to make excess a minimum of 300 gm vegetable availability per capita per day .

The role of vegetables as an essential and supplementary food in our daily diet is important as they do not only adorn the dish but also enrich the health of human being. They are bulky food and form the main source of roughages in diet. Among the different groups of vegetables, the leafy vegetables occupy special importance for carotene (vitamin 'A'), ascorbic acid (vitamin 'C') and riboflavin (vitamin 'B2'). Vegetable helps in digestion of concentrated foods.

Fertilization increases efficiency and obtains better quality of product recovery in agricultural activities. It is one of the most important ways.

Modern systems of agriculture use large amounts of fossil fuel energy, water, chemical fertilizers and pesticides to produce huge quantities of crop or live stock. Mechanized and chemical based farming, commercial farming, contract farming and genetic farming swing biotechnology are the types of modern agriculture. Keeping in mind that the amount of land used for food production and changed very slightly over the past few decades, and may even have decreased in parts of the world due to urbanization, the nutrient load per unit area is steadily increasing. This is help to the improvement of food production and save the money. Globalization and the new market economy have influenced the dietary habits of the people in the developing countries. The new diverse demands of exotic species of crops, vegetables and fruits have introduced changes in the traditional agriculture patterns and practices. If we eat a lot, our body naturally bloats up and tells us to exercise and come back to shape. When we exercise too much, our body tells us to slow down and relax. If there is rain, we also get the Sun, each and everything works fine till a balance is maintained. And we all know the consequences of imbalance.

Role of NPK in Plant Growth

The three most important nutrients, without any one of which plants could not survive, are referred to as the primary macronutrients: Nitrogen (N), Phosphorus (P), and Potassium (K).

1. Nitrogen is a key component in many of the processes needed to carry out growth. In particular, nitrogen is vital to chlorophyll, which allows plants to carry out photosynthesis (the process by which they take in sunlight to produce sugars from carbon dioxide and water).
2. Phosphorus also plays a role in an array of functions necessary for healthy plant growth, contributing to structural strength, crop quality, seed production, and more. Phosphorus also encourages the growth of roots, promotes blooming, and is essential in DNA.
3. Potassium is also vital in a variety of other processes that contribute to growth and development. Potassium is often referred to as the “quality element,” because of its contribution to many of the characteristics we associate with quality, such as size, shape, colour, and even taste, among others.

Role of Organic Manure

The use of organic-based fertilizers in sustainable agriculture benefits farmers, growers, consumers and the environment in many ways. As empirically demonstrated, organic-based fertilizers help to:

- Boost both nutrient efficiency and organic matter content in the soil.
- The soil with organic matter that reduces dependency on chemical inputs.
- Restore and maintain soil fertility to nurture plant growth.
- Enhance the biological activity and biodiversity of soils.
- Enhance crop resistance to erosion by improving the soil's organic matter content.

Advantages & Disadvantages of Organic Fertilizers

➤ Advantage:

1. Balance the soil ecosystem, boosts plant health naturally
2. There are all natural.
3. The process of decomposition requires no chemical intervention.
4. Organic fertilizers don't upset the balance in the soil because they don't leave behind any artificial compounds.
5. Delivers nutrients in a slow, but sustainable rate.
6. They increase the crop yield and provide enough food to feed the large population.

➤ Disadvantages

1. They are expensive.
2. NPK directly affects plant growth by feeding the plant.
3. Long term use reduces the microbial activity and disturbs the pH of the soil.
4. The ingredients in the fertilizers are toxic to the skin and respiratory system.

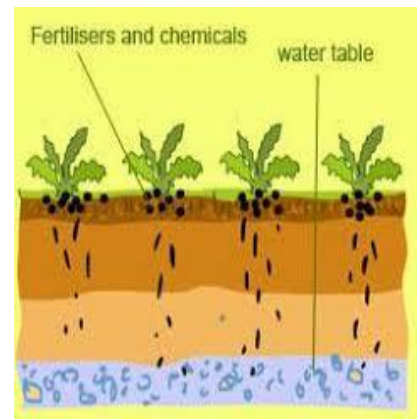
Effect of Chemical Fertilizers on Environmental Pollution

Pollution is contamination of air, water or soil by substance that are harmful to living organisms. In simple manner any direct or indirect alternation in any property, any component from the environment, which disturbs the original functioning of the same. This

change is also harmful to man or any living organism. Pollution means the substance in any form of matter. i.e. solid, liquid or gaseous which cause the pollution. A fertilizer is a natural or synthetic substance that is applied to soils to supply one or more nutrients essential to the growth of plants. They contain main plant macronutrients like N, P₂O₅, K₂O. they also contain secondary plant micronutrients Ca, Mg, S and micronutrients like Cu, Fe, Mn, Md, Zn, and B. in general, fertilizers can be categorized as organic fertilizers and chemical (or inorganic) fertilizers. Organic fertilizers are not used commercially due to lower productivity.

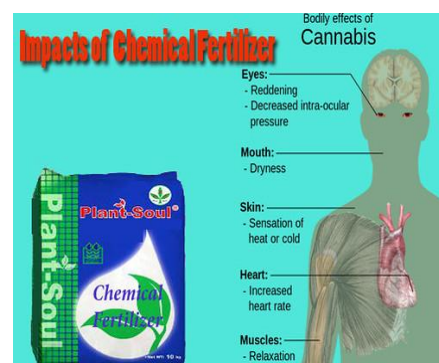
Effect of Chemical Fertilizers on Water Pollution

Water is the most essential component for human existence. The earth is called as ‘Blue Planet’ because of water which covers almost three fourth of earth’s surface. Water is not only essential for survival of all living things but is also the source of economic wealth and the creator of beautiful environment. Chemical fertilizers contain phosphates, nitrates that can actually be the main reason behind water pollution. Nitrate leaching particularly linked to agricultural practices such as fertilizing and cultivation. Irrigated agricultural land in some of the arid and semiarid regions, increased amounts of nitrate accumulation in the soil used and along with the evaporation of water. According to the conditions, nitrate accumulated leached in varying amounts. It reaches the depth of soil. In the soil, fertilizers converted to nitrate through nitrification by microorganisms. Due to negatively charge of nitrate can reach ground water.



Effect of Chemical Fertilizers on Human Health

Fertilizers are a mixture of toxic chemicals which are absorbed into the plants, leading toxins to enter the food chain via vegetables and cereals and water creating health affects increase and spread rapidly-contaminated water may contain high level of nitrates and nitrites, causing hemoglobin disorders. Heavy metals such as Mercury, Lead, Cadmium and Uranium have been found in fertilizers, which can cause disturbances in the kidneys, lungs and liver and cause cancer. Over 29 popular fertilizers tested positive for 22 toxic heavy metals, including silver, nickel,



selenium, thallium and vanadium, all directly linked to human health hazards. Ammonium Nitrate exposure causes other health problems such as eye and skin irritation, producing a burning sensation. Inhalation exposure can result in irritation of the nose, throat, and lungs. One can also experience nausea, vomiting, flushing of the face and neck, headache, nervousness, uncontrolled muscle movements, faintness and collapse. Potassium Chloride interferes with nerve impulses, and interrupts with virtually all bodily functions and mainly affects heart functioning. It can cause all kinds of gastric and stomach pains, dizziness, bloody diarrhea, convulsions, headaches, mental impairments, redness or itching of the skin of eyes.

Need to Use Organic Fertilizers

Organic fertilizers are fertilizers that are naturally produced and contain carbon (C). Fertilizers are materials that can be added to soil or plants, in order to provide nutrients and sustain growth. Typical organic fertilizers include mineral sources, all animal waste including meat processing, manure, slurry, and guano, plant based fertilizers, such as compost, and biosolids. There is also other a biotic non-chemical, fertilizer methods that meet the Principles of Organic Agriculture, which determines whether a fertilizer can be used for commercial organic agricultur

Conclusion

Today, use of fertilizers is seen as a necessary agricultural crop production, because soil restores nutrients. However, firstly soil analysis should be performed carefully. After then, fertilizer should be given to soil. The structure and chemical content of the soil should be identified and the most appropriate type of fertilizers should be selected. The most suitable method should be processed. Otherwise, the fertilizer should be noted that errors will result in the loss of both energy and finance. Fertilizing should be done in time, should not be inappropriate times. For example a heavy rainfall to the seasons, fertilization, and fertilizers water will mix with the surrounding soil by leaching. For this reason, fertilizer will be lost from soil, as well as pollution of surrounding water and therefore it will result in harmful. Use of excessive quantity of synthetic fertilizers is harmful for human health. High levels of nitrates and nitrites in chemical fertilizer may cause some diseases.

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