

## IMPACT OF CHEMICAL FERTILISER AND ORGANIC MANURE ON SOIL FERTILITY

Avhad Vinayak Shivaji

MES Abasaheb Garware College, Pune

### Article History

Received: 05/01/2024  
Accepted: 24/01/2024

Article ID: RRBB/215

### Corresponding Author:

E-Mail:  
[avhadvinayak2019@gmail.com](mailto:avhadvinayak2019@gmail.com)

### Abstract

Fertilizer is a substance added to soil to improve Plant. It is added to soil or land to increase its fertility. Fertilizer is food supplement for plants [3]. Fertilizer are substance that supply more of the chemical plant growth organic and element one or required for Fertilizer can be both Inorganic there are 16 that are absolutely necessary for plant growth 16 f element quantities. Out of these 10 are required in large while other 6 element are required in small quantity [2].

Organic fertilizer make better physical and biological activities of soil but they have comparatively low in nutrient content, so higher quantity is required for plant growth [4]. However, chemical fertilizer is usually immediately and fast containing all necessary nutrients that are directly available for plants [6]. But long term use and excess of inorganic fertilizers alone causes soil organic matter break down or degradation, soil acidity, and environmental pollution [8].

The objective of the present review is to excess use of inorganic fertilizers then causes increased soil pH the appropriate amount of use chemical fertilizer improve soil fertility

**Keywords:** Organic fertilizer; inorganic fertilizers; soil fertility; soil pH; adverse effects fertilizer

### Introduction

India is biggest Agricultural country in world. As per the Indian economic survey 2020-21, Agricultural employed more than 50% of Indian workforce and contribute 20.2% to country GDP [1]. Chemical fertilizer has been widely used to give maximum productivity of crops. The excess amount excessive utilization of Chemical Fertilizer play major role, directly and indirectly in changing environmental conditions [5].

Chemical fertilizer has helped to increase crop production. Fertilizers are chemical substance made from nitrogen phosphorus and potassium this are NPK. Sub is mostly use in Fertilizer because high nitrogen fertilizer can lead to more robust plant with more healthy leaves, and Steaks

and it is mostly use in growth of plant formation of amino acid and chlorophyll [10]. Phosphorus is also an essential nutrient help in required for Plant growth. It root development, Plant maturation and seed development one of the Phosphorus is most important element for plant life than the nitrogen and potassium [6]. Similarly potassium improve crop productivity [2]. Extra use of potassium beneficial to fruiting and Flowering plant

### Objective of Review

Every year a Farmer are continuous Cropping then, Soil fertility and resultant crop productivity can be decrease of nutrient. They are directly affect of crop yield. decrease of nutrient value then always decrease of crop yield. the plant and

crops they are need of different type of nutrient but continuous cropping nutrient level of soil is less hence need of fertiliser then use of recommended NPK fertilizer and organic manure have not sustained soil quality

**The following proposed review will be focused on this topic.**

- 1 To determine the advantage and disadvantages of chemical fertiliser and organic manure
- 2 To review of Impact of inorganic fertiliser and organic manure of soil fertility

**What Is Fertilize**

Fertilizer are a natural or chemical substance added in soil and they are use in growth of plant or crops and increase soil fertility[1]. most of the Fertilizer that commonly use In agricultural contain three basic plant nutrient nitrogen, Phosphorus and Potassium[7].

**There are two types of fertiliser**

- (i) Organic Fertilizers or organic manure
- (ii) Inorganic (chemical) fertilizers

**Organic fertilizer**

organic Fertilizer are Fertilizes that are naturallyProducedthey are includeCompost, liquid plant, manures, humic acid and seaweed extract [10].The Organic Fertilizer is a fertilizer that are derived Form Organic Sources, they Improve water movement into the soil and structureof soil[7].

vermicomposting is type of organic fertiliser .It is derived by composting organic waste by various species of earthworm example of organic fertiliser include composed ,animal manure ,compost ,sewage sludge ,food processing waste and municipal biomedical waste[10].

**Inorganic fertiliser**

Inorganic fertiliser are fertiliser that are produced in man-made and they are also known as mineral or commercial fertiliser mined from mineral deposits or manufacturer from synthetic compound[7].

The most of inorganic fertiliser there are some element include nitrogen, phosphorous ,potassium ,sulfur,calcium and magnesium fertiliser[9].

**Result**

Continuous use of chemical(inorganic) fertilizer can useful and harmful effect on soil fertility. The excess amount of fertilizer use then adverse effect or harmfuleffect they causes damages the plant and reduce soil fertility. Over use on chemical fertilizer can lead to soil degradation by reducing organic matter content. Disturbed soil microorganism and causing imbalance of essential nutrient.

Balancing the used of organic manure and chemical fertilizer can supportable approach to maintain or improve soil fertility. They specific result of such trial can vary depending on factor like climate change crop choice and soil type..

**Conclusion**

The impact of chemical fertilizer and organic manure on soil fertility is complex and depends on various factor including soil type, crop type and management practice. Inorganic fertilizer can provide instantaneous nutrient availability to plant but may lead to imbalances of nutrient and reduce soil organic matter after long time use of inorganic fertilizer. On other hand organic fertilizer or manure improve soil organic matter content and improve microbial activity encourage long term fertility and soil structure.

There are both chemical fertilizer and organic manure are long term studies and local conditions should quite the choice of fertilization method.

**Acknowledgement**

I would like to acknowledge MES Abasaheb Garware collage ,Pune .principal prof. Dr. Vilas ugale sir and vice principal Dr. Pramod sonawane sir and Head of department Dr. Shobha waghmode mam .

## REFERENCES

- Abbott LK, Murphy DV (2003). What is soil biological fertility? In: Abbott, L. K. and Murphy, D.V. (eds.) *Soil Biological Fertility- A Key to Sustainable Land Use in Agriculture*. Kluwer Academic Publisher, the Netherland. p 1-15.
- Acton DF, Gregorich LF (1995). Understanding soil health in the health of our soils: Towards sustainable agriculture in Canada. *Lands and Biological Resources Research*. Ottawa, Canada. pp. 452-46
- Adekiya AO, Ojeniyi SO and Agbede MT. (2012). Poultry manure effects on soil properties, leaf nutrient status, growth and yield of cocoyam in a tropical Alfisol. *Nigerian Journal of Soil Science*
- Agbede OO, Kalu BA. (1995). Constraints of small-scale farmers in increasing crop yield: farm size and fertilizer supply. *Nigerian Journal of Soil Science*, 11: pp 139 – 159
- Balloli SS, Rattan RK, Garg RN, Gurchan Singh, Krishna Kumari M(2000). Soil physical and chemical environment as influenced by duration of rice wheat cropping system. *Journal of Indian Society of Soil Science*, 48: 75-78.
- Bansal SK, Omanwar PK, Bhardwaj V (1980). Effect of intensive cropping and fertilization on organic carbon and total and available nitrogen in a soil from Pantnagar. *Journal of Indian Society of Soil Science*, 28: 519.
- Basel N, Sami M (2014). Effect of Organic and Inorganic Fertilizers Application on Soil and Cucumber (*Cucumis sativa* L.) Plant Productivity. *International Journal of Agriculture and Forestry*, 4, 166-170
- Bellakki, M.A., Badanur, V. P. and Setty, R. A. 1998. Effect of long-term integrated nutrient management on some important properties of a Vertisol. *Journal of Indian Society of Soil Science*, 46(2): 176-180.
- Beri V, Sidhu BS, Bahl G S, Bhatt AK (1995). Nitrogen and phosphorus transformations as affected by crop residues management practices and their influence on crop yields. *Soil Use Manage*, 11: 51-54.
- Berova M, Karanatsidis G, Sapundzhieva K, Nikolova V. (2010). Effect of organic fertilization on growth and yield of pepper plants (*Capsicum annuum* L.). *Folia Horticulturae Ann*. 22: pp 3-7.
- Preeti Nigam, Shobha Waghmode, Michelle Louis, Shishanka Wangnoo, Pooja Chavan and Dhiman Sarkar. Graphene quantum dots conjugated albumin nanoparticles for targeted drug delivery and imaging of pancreatic cancer. *J. Mater. Chem. B*, 2014, 2, 3190-3195, DOI: 10.1039/C4TB00015C.
- Omkar Pawar, Neelima Deshpande, Sharada Dagade, Preeti Nigam-Joshie, Shobha Waghmode. Green synthesis of silver nanoparticles from purple acid phosphatase apo-enzyme Omkar isolated from a new source *Limonia acidissima*. *J.of*
- Expt.Nanoscience.,doi.org/10.1080/17458080.2015.1025300, Published online: 27 Mar 2015. Graphene Foam: Next Generation Graphene Analogue, Butala Deepali and
- Waghmode Shobha, *Research Journal of Chemistry and Environment* Vol. 24 (8)August (2020), 1-11. Patil, U.D., Waghmode, S., Pingale, S.S. et al. Quinoline-infused graphene carbon cages: an ecofriendly approach towards environmental remediation. *Res Chem Intermed* 49, 4217–4237 (2023). <https://doi.org/10.1007/s11164-023-05098-0>.
- Shobha Waghmode, Pooja Chavan, Vidya Kalyankar, and Sharada Dagade. Synthesis of Silver Nanoparticles Using Triticum aestivum and Its Effect on Peroxide Catalytic Activity and Toxicology. *Journal of Chemistry*, Volume 2013, Article ID 265864, 5 pages, <http://dx.doi.org/10.1155/2013/265864>.

***Comparison Organic Manure and inorganic fertilizers[7].***

Organic	Inorganic
1)It is bulky and not easy to transport. 2)It is large non nutrient content. 3)It is cheaper cost is very lower . 4)It is No direct energy use in manufacture . 5)It is readily available  6)Its provides disposal of waste.	1)It is contents to transport . 2)It is high concentration of nutrients. 3)It is expensive. 4)It is direct energy use in manufacture. 5)Availability depend on production, Cost and Region. 6)It is create wastes in processing ,but can also utilize wastes from other manufacturing process .

***Advantages and disadvantages of organic fertilizer /organic manure[10].***

Advantages	Disatvantages
1)Improve soil structure 2)It is an sustainable and environmentally friendly. 3)Reduce fertilizer and pesticides.  4)Plant damage threat avoid. 5)Increase the water holding capacity in sandy soil. 6)It increase the number of useful micro organism in soil.	1)Not all product are equally. 2)It it low nutrient level.  3)DIY composed procedure is complicated. 4)It is not nutrient specific . 5)It is insoluble in water.  6)It can not stored beyond a period 1-2 month .

***Advantages and disadvantages of inorganic fertilizer[6].***

Advantages	Disadvantages
1)It is higher level of nutrient compare to organic fertilizer . 2)It is usually cheaper than organic fertilizer . 3)It is soluble in water hence they are more radily available for plant take up. 4)It is the improve ground cover and reduce water run off. 5)Minimize the risk of overgrazing and soil erosion. 6)Improving plant growth .	1)It is also increase the possibility of high salinity. 2)They can easily upset the entire eco system. 3)They are increase soil acidity.  4)It is contain toxic compound and acid that could affect plant growth. 5)Reducing the content of organic matter. 6)Excess use of this fertilizer lower quality of ground or surface water.