



Chemical Fertilizers: Sin and Curse for Agriculture

(Pramod Kumar Sharma¹, Rekha Gurjar², *Mukesh Prajapat³ and Anshul Sharma⁴)

¹Rani Lakshmi Bai Central Agricultural University, Jhansi, Uttar Pradesh-284003

²Sri Karan Narendra Agriculture University, Jobner, Rajasthan-303329

³Indira Gandhi Krishi Vishwavidyalaya, Raipur, Chhattisgarh-492 012

⁴Apex University, Jaipur, Rajasthan-302018

*Corresponding Author's email: mukeshprajapat0743@gmail.com

Abstract

Chemical fertilizers are commonly used in the world of intensive agriculture. These fertilizers are hardy and powerful because they are artificially made from soil essential macronutrients such as nitrogen, phosphorus and potassium. It may contain potassium, ammonia, etc. These fertilizers can be applied in a variety of ways, either mechanically or by hand. In addition to all these essential aspects, what are the advantages and disadvantages of chemical fertilizers?

Sin of chemical fertilizers - The versatility of chemical fertilizers cannot be denied. Chemical fertilizers have properties that meet the high expectations and needs of intensive agriculture. Below are some of the benefits that this type of product offers.

Increased production per hectare - Chemical fertilizers improve the space and land available for farming. Due to their high macronutrient contribution, these increase yields per sown hectare and help plants reach their full potential. These fertilizers not only enhance the uptake of nutrients from the soil, but also increase root depth up to 1 meter. This makes the plants noticeably stronger and allows them to be completely watered from groundwater (Mikhailouskaya *et al*, 2009).

Reaction to critical cultivation scenarios - When serious crop problems arise and the plants do not seem to be growing properly, chemical fertilizers can quickly solve the problem. It can increase the health and well-being of plants. This practice consists of diluting the fertilizer with water and applying it directly to the plant area.

Adaptability to specific needs - These fertilizers have different chemical properties as well as accurate indicators of different nutrients, substances and values. As a result, you will find items on the market that are tailored to your needs, with the exact values and characteristics that meet your needs in a particular scenario or cycle phase.

Curse of chemical fertilizers - In the previous paragraph, we showed the great potential of chemical fertilizers. However, be aware that intensive use of chemical solutions for fertilization can have serious consequences.

Therefore, there is a need to identify balance points to supplement with fertilizers and organic chemicals, to regularly analyze soils and plants to ensure that various values are optimal, and to detect negative reactions in real time. Below are some of the consequences and drawbacks of careless and overuse of chemical fertilizers, Fasusi, et al 2021.

Soil degradation - Excessive use of fertilizers can alter acidity significantly, saturate the soil with macronutrients, or alter the soil to the point of losing its sensitivity and ability to absorb various nutrients.

Groundwater contamination - Too much fertilizer can get into the area below the root zone and infiltrate the groundwater.

Salt burns - These burns indicate overuse of chemical fertilizers. Fertilizers with a high salt content and chemicals such as sodium nitrate require the most attention or aftercare to avoid salt burns.

Excessive growth - Excessive and uncontrolled application of chemical fertilizers can cause plant rates and growth to exceed typical norms. At this point, far from improving productivity, yields and crop survival are jeopardized increase.

Conclusion

Chemical fertilizers are valuable allies in intensive agriculture, but they can also affect production cycles, soils and surfaces if not managed and applied effectively. The combination with organic fertilizers, regular observation and the pursuit of rationality in general are key factors for a safe and sustainable increase in productivity Pravin Vejan et al 2021. The best way to avoid these shortcomings is to use high-efficiency fertilizers applied according to the 4Rs of nutritional management (right source, right amount, right time, and right place). Haifa's fertigation and controlled-release fertilizers are ideally suited to be applied using the 4R principles to minimize environmental damage while meeting the economic needs of farmers.

References

1. Mikhailouskaya, N., Bogdevitch, I., 2009. Effect of biofertilizers on yield and quality of long-fibred flax and cereal grains. *Agron. Res.* 7, 412–418.
2. Fasusi, O.A., Cruz, C., Babalola, O.O., 2021. Agricultural sustainability: Microbial biofertilizers in rhizosphere management. *Agriculture* 11, 163
3. Pravin V., Tumirah K., Rosazlin A., Noraini A., 2021. Controlled release fertilizer. A review on developments, applications and potential in agriculture. *Journal Of Controlled Release* 321-334.