

GLASS FERTILIZER - A HISTORICAL OVERVIEW

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India lives in villages and not in Towns” – as uttered by M.K. Gandhi. Farmers are the backbone of our Society——— their interest should be the prime area where Govt. should focus.

Large scale applications of fertilizer nitrogen (N) have also shown deleterious effects on groundwater quality, especially its nitrate content, which is harmful to health .Furthermore, gaseous losses of N as NH₃ and NO_x resulting from N fertilization have adverse effects on the environment. Therefore, the goal of all agriculture has to be to “increase food-grain production with the minimum and efficient use of chemical fertilizers”. This calls for a sincere effort on the part of agricultural scientists including extension workers to increase the efficiency of fertilizers applied in the farm fields. Glass fertilizers are new type of advanced and controlled released fertilizer and made of glass matrixes with macro elements (K, P, Mg, S, Ca) most useful for plants and also incorporated with microelements (B, Fe, Mo, Cu, Zn, Mn) which are important to the growth and development of crops or plants. The quantity of the microelements incorporated in the glass as oxide in the range 1-5%. The use of glass fertilizers offers lot of advantages: due to low or controlled solubility it avoid underground water pollution; the soil pH can be regulate by the pH of the glass matrix; do not release acid anions (Cl⁻, SO₄²⁻) which are harmful for plants so there is no risk of soil burning when they are incorrectly dosed; in a single type of fertilizer can be embedded almost all useful elements for plants; the controlled rate of solubility in water can be adjust easily by changing the composition of glass matrix. Though the technology is well-established one in international level, the R & D and application of the same in Indian context is poor. It was shown that after the application of the glass fertilizer, the growth and production of the khariff paddy was better than the normal application of the conventional fertilizers. Mössbauer spectrum of one glass fertilizer containing 5 weight percent Fe₂O₃ showed a doublet signifying the presence of nitroprusside (doublet) in comparison to ferrocyanide (Singlet)¹
