Review

Subsection: Chemistry of Silicon and its Compounds. Reference Object Identifier - ROI: jbc-02/15-43-9-17 The article is published as a material of correspondence participation in International Scientific Forum "Butlerov Heritage-2015". http://foundation.butlerov.com/bh-2015/

Submitted on October 21, 2015.

The influence of silicon fertilizers on plants and soil

© Vladimir V. Matichenkov,¹* Elena A. Bocharnikova,² and Yana³ M. Amosova

¹ Institute of Basic Biological Problems Russian Academy of Sciences. Pushchino, 142290. Russia. *E-mail: vvmatichenkov@rambler.ru*

² Institute of Physicochemical and Biological Problems in Soil Science RAS. Pushchino. 142290. Russia. *E-mail: vvmatichenkov@rambler.ru*

³ Faculty of Soil Science of MSU Named after M.V. Lomonosov. Moscow, 119899. Lenin hills. Russia.

*Supervising author; ⁺Corresponding author

Keywords: amorphous silica, silicon fertilizer, rice, sugarcane, wheat, barley, oats, rye, sunflower, maize, sugar beet, clover, tomatoes, cucumbers.

Abstract

This review summarizes data on the influence of silicon fertilizers on plants and soils. A history of these investigations is shortly described. Silicon fertilizers have been shown to benefit the productivity of cultivated plants directly via enhancing plant tolerance to biotic and abiotic stresses and indirectly via improving the soil fertility, optimizing the soil phosphate regime, reducing the toxicity of Al and heavy metals as well as improving soil physical properties.

Content

1. Short history of the study of silicon role in the soil-plant system

- 2. Silicon influence on plants
- 3. Silicon fertilizer influence on soil fertility