

Kulinda Thanjun 2015: Utilization of Calcium Silicate with Iron and Zinc Deficiency in Soilless System on Growth and Yield Quality of Sweet Pepper. Master of Science (Soil Science and Management Technology), Major Field: Soil Science and Management Technology, Department of Soil Science. Thesis Advisor: Mr. Suphachai Amkha, Ph.D. 91 pages.

Sweet pepper seeds were primed with calcium silicate (CaSiO_3) at 0, 1, 2 and 4 g/L for 5 hours at room temperature as compared with non-primed seed. The experiment was completely randomized design (CRD) with 4 replications. The results showed that seed primed with CaSiO_3 2 g/L had early root initiation and highest germination index and germination percentage. Follow by, to investigated the effects of CaSiO_3 on sweet pepper seedling by using 2×6 Factorials in CRD experimental design as consist of 1) priming seed: (non-primed and primed seed with CaSiO_3 2 g/L), and 2) foliar application CaSiO_3 0, 1, 2, 4, 8 and 10 g/L on seedling at 14 days after sowing. The result showed that primed seed and applied CaSiO_3 4 g/L was excellent seedling growth. However, the optimum of Silicon (Si) on plant growth and yield quality of sweet pepper were observed. Sweet pepper was grown in nutrient solution system. Experiment was using 2×5 Factorials in Randomized Complete Block Design (RCBD) as consisted of 1) seedling (seedling of non-primed and seedling of primed seed with CaSiO_3 2 g/L + spray CaSiO_3 4 g/L) and 2) Si 0, 0.01, 0.1, 1 and 10 mg/L. The seedling with CaSiO_3 and add Si 1 mg/L into solution was the best of plant growth and yield quality of sweet pepper.

Furthermore, the effects of silicon combined with iron (Fe) and zinc (Zn) deficiency of sweet pepper in nutrient solution system. Experiment was using 2×3 Factorials in RCBD as consisted of 1) Si in solution (with Si 1.0 mg/L and without Si) and 2) nutrient deficiency (Fe deficiency, Zn deficiency and complete nutrient solution). Nutrient deficiency was applied at flowering until harvesting stage. The results showed that solution with Si had highest in plant height, fresh weight and fruit thickness as compared to without Si solution. Si added into solution combined with Fe and Zn deficient had better yield and fruit quality than without Si solution. The result showed the interaction between silicon solution with iron and zinc deficiency was decreased plant stress from nutrient deficiency. Si application with complete nutrient solution was the best yield and quality of sweet pepper.

Student's signature

Thesis Advisor's signature