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Characteristics of inorganic nutrient absorption of potato (*Solanum tuberosum* L.) plants grown under drought condition

Gyeryeong Bak*, Gyejun Lee, Taeyoung Kim, Yonggyu Lee, Juil Kim, Samnyeo Ji

*Highland Agriculture Research Institute, National Institute of Crop Science,
5481 Gyeonggangro, Daegwallyeong, Pyeongchang-Gun, Gangwon-Do 25342 Korea*

Abstract

Global warming and climate change have been one of the most important problems last 2 decades. Global warming is known to cause abnormal climate and influence ecology, food production and human health. According to climate change model global warming is causing expansion of drought and increase of evaporation. Therefore, securing water in agriculture has been an important issue for crop cultivation. As potato is susceptible to drought, water shortage generally results in decrease of yield and decrease of biomass. In this research, we investigated characteristics of inorganic nutrient absorption and growth of plants grown under drought condition. Plants were sampled in sites of Cheong-ju and Gangneung, where the severity of drought stress were different. During the growth period in Gangneung, total rainfall in 2016 decreased by 50% compared with those in last 5 years average. Especially, there was almost no rain in tuber enlargement period (from mid-May to mid-June). On the other hand, the total rainfall in Cheong-ju was similar to those in last 5 years average. Inorganic components including K, Ca and Mg and plant growth factors such as plant length, stem length, leaf area index and plant biomass were investigated. Tuber yields in both areas were investigated at harvest. Growth period of plants was longer in Cheong-ju than that in Gangneung. Contents of all inorganic components were higher in plants grown in Cheong-ju than in Gangneung. The results were attributed to higher production of plant biomass in Cheong-ju. Considering the results, severe drought stress conditions in Gangneung accelerated plant aging and resulted in low plant growth. Although total yield was greatly reduced under drought stress the rate of commercial yield was not significantly different with non-drought conditions.

Keywords: potato plant, drought stress, nutrient absorption

Corresponding author*

Gyeryeong Bak

Address: 5481 Gyeonggangro, Daegwallyeong, Pyeongchang-Gun, Gangwon-Do 25342 Korea

Tel: +82-33-330-1950

E-mail: bgl1228@korea.kr