Vasu Dabbaransi 2009: Effects of Magnesium Chloride on Some Photosynthesis – related Compounds in Maize (*Zea may* L.). Master of Science (Botany), Major Field: Botany, Department of Botany. Thesis Advisor: Associate Professor Wallop Arirob, Dr.Agr.Sci. 129 pages.

Two maize cultivars, a feeder maize (Nakhon Sawan 2; NS 2) and a sweet maize (Hawaiian Sugar Supersweet; HSS), were treated with different concentrations of $MgCl_2$. The most appropriate time to apply $MgCl_2$ at vegetative stage and reproductive stage was determined. After the beginning of both stages, the date for $MgCl_2$ treatment was designated as days 25 to days 31 which had a stable quantity of phosphoenolpyruvate carboxylase enzyme (PEPC). After $MgCl_2$ treatment, changes in photosynthesis-related compounds, i.e., chlorophyll *a* (Chl *a*), chlorophyll *b* (Chl *b*), and carotenoid, PEPC as well as sugar and protein, were evaluated. It was found that foliar application of $MgCl_2$ to either vegetative or reproductive stage of both feeder and sweet maizes grown in pots under partial shade condition led to random increases in all six photosynthesis-related compounds analyzed. The inconclusive effects of magnesium were likely due to the unfavorable growing conditions.

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