

Effect of different fertilizer formulations on control of postharvest diseases of capsicum (*Capsicum annuum*)

Postharvest decay results in major losses of fruits and vegetables. Although synthetic fungicide treatment has been the main method for controlling postharvest diseases, there is growing international concern over the indiscriminate use of synthetic fungicides on crops because of the possible harmful effects on human health and the emergence of pathogen resistance to fungicides. Thus there is worldwide trend to explore new alternatives in order to reduce the use of synthetic fungicides. Among the proposed alternatives proper fertilizer application at the pre-harvest stage to control postharvest diseases has emerged as a promising alternative method. Many research findings have revealed significant impacts of pre-harvest potassium (K) application on postharvest fruit quality including minimization of disease susceptibility.

Therefore, this study was carried out to ascertain the effect of potassium fertilization on control of postharvest diseases of *Capsicum annuum* (Solanaceae) which is a widely grown, nutrient rich vegetable crop in tropical countries and has a high consumer demand worldwide.

The study was conducted in two phases. At the first, inorganic fertilizers were used to change the K levels. Plant height, girth and K content in the leaves were measured at the pre-harvest stage and pod weight (yield), pod length, pod diameter and K content in the pods were measured at the harvesting stage. Natural disease infection, visual quality rating and other physico-chemical parameters were analyzed during the storage. Pods from different K level were inoculated with *Colletotrichum capsici*, the major causative agent of anthracnose, and infection frequency and lesion length was recorded up to 7 days. At the phase 2, the K level identified as the best treatment in the phase 1 was used as one treatment (control) and glirizidia- cattle manure mixed compost combined with/without inorganic fertilizers were used as other treatments. Data gathered were same to the phase 1.

Results revealed that there was no significant difference among treatments in plant height and girth. However, quality attributes of capsicum coming from different K levels differed significantly thus increased levels of K reduced the disease development in pods and shelf life was also extended. Applying the twofold amount of K over the recommendations of the

Department of Agriculture reduce the disease development remarkably and extended the shelf life for 10 days where it was 4-6 days in the other treatments. There was no marked difference in total soluble solids, titratable acidity and pH among the treatments during the storage. Results from the phase 2 have shown higher pod quality with organic fertilization and shelf life was extended up 14 days compare to the 10 days of inorganic fertilization.