

Greenhouse Trial – The effect of Potassium (K) applied as a foliar application (November 2014)

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Introduction

Potassium (K) is known to be an important element as it plays a big role during all plant growth stages, however, it is specifically important during the late reproductive stage of fruit ripening for sugar and colour accumulation in fruit crops and grain fill in grain and oil seed crops. Sufficient availability of potassium in the plant, especially in the fruit/grain fill stage, is crucial to transport and store photosynthate and to boost protein content in grain and legume crops. Potassium also contributes to colour formation and sugar accumulation in fruit crops like red grapes and apples. Potassium, therefore has a direct influence on crop quality and yield. In general, K improves photosynthesis and protein synthesis with resulting yield and quality benefits.

Motivation for doing the trial

To determine the effect of K-Train (23%K m/v, 18%K m/m) foliar nutrient spray program on plant growth as well as to determine the optimum application concentration.

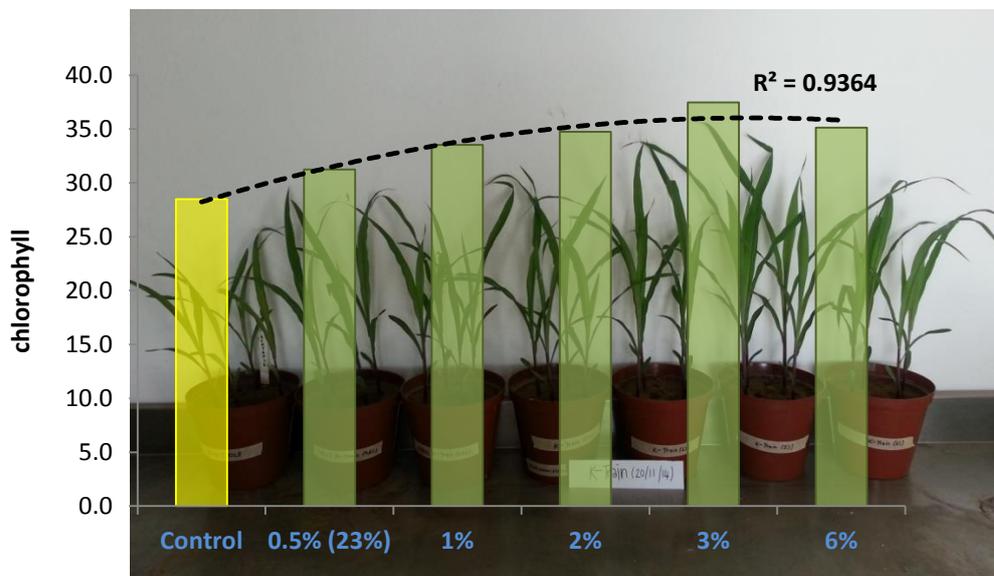
Treatments

**K-Train** is a water soluble biological organic acid chelated potassium (K) product. Both soil and leaf applications of the product is efficiently taken up and metabolized by the plant. K-Train was applied as a foliar spray at different concentrations to determine optimal concentration efficiency.

Results

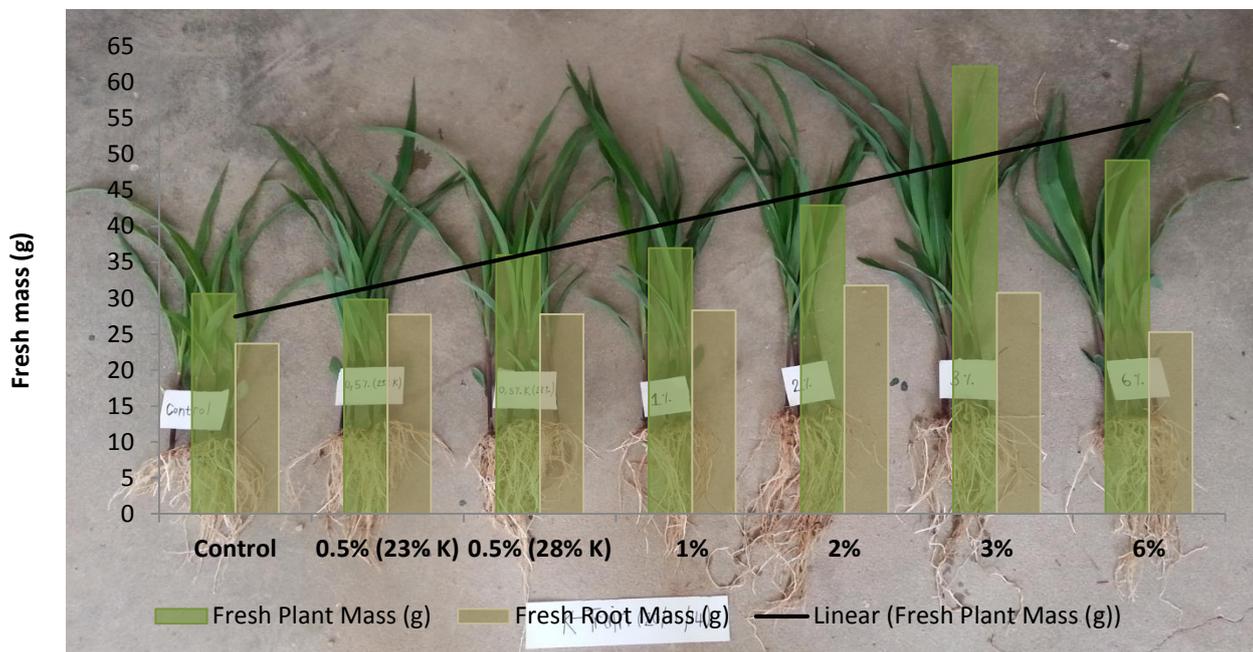
***Increase in chlorophyll content.***

The larger leaf area and higher **chlorophyll content** for the treated plants has a direct effect on the plant's ability to photosynthesize optimally and will affect the plant mass and production directly.



### **Improved growth.**

Enhanced top and root growth could visually be observed as is illustrated in the photograph below. At a spray concentration of 6%, K-Train started to inhibit growth. It is therefore recommended that foliar applications rates of K-Train should not exceed a concentration of 3%.



### **Conclusion**

K-Train foliar sprays at the correct spray concentration will result in enhanced growth, leaf area and chlorophyll content and ultimately contribute to better yield and quality including storage life. The most appropriate growth stage to apply K-Train in all **fruit crops** will be approximately 2 – 3 weeks after flowering, especially where potassium shortages are expected or confirmed by soil analysis. The application can be repeated 14 to 21 days later. In **grain crops** the best time for application will be at flag leaf stage in wheat, barley and other small grain crops and just when the plume in maize starts showing. If aerial sprays can be done, the application on grain crops should be made just after flowering at the beginning of grain fill.

The efficiency of **K-Train** can be attributed to the specific components in the product:

- A high concentration of readily available water soluble potassium (181g/kg or 236 g/l K),
- K-Train is a water soluble biological organic acid chelated potassium and therefore contains no nitrogen, sulfur or chloride and can be used effectively as a foliar spray during the late fruit development stages.

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