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An investigation of the Environmental Effects of Bauxite Dust on the Growth, Development, and Production of Pak Choi crops in the West Watooka Area

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The purpose of this study was to examine the association between agricultural cultivation and bauxite dust in the West Watooka, Wismar environment. The study sought to determine whether bauxite dust affects the growth of *Brassica rapa subsp. Chinensis* (pak choi). An experiment was conducted with 160 pak choi plants cultivated in five locations throughout the West Watooka farming community, with each location having one control and one experimental group, and the data collected was to see how dust affects plant height, number of leaves, area of leaves, mass of the final product, and chlorophyll analysis of the leaves. It was discovered that bauxite dust had an impact on the index crop's growth, development, and yield. The impact of the dust cover on the leaves resulted in reduced synthesis of the chlorophyll content. This affected the number of leaves, size of the leaves, and the final weight of the crop. The control groups across the five (5) sites produced an average difference of 22.64% more leaves than the experimental groups for average dust coverage of 63.4% across the 5 sites, while the comparative analysis of the difference of area revealed that the control group had 13.25% more leaf area than the experimental group for an average of 63.4% leaf coverage across all sites. It was clearly revealed by the results that there was a difference of 24.63% more weight for the control group than experimental group dust coverage of 63.4%. Lastly, there was a 12.11% increase in the chlorophyll of the control group when compared to the experimental group. While more research needs to be done to replicate these results, it may be necessary for farmers to explore coping mechanisms/best practices available to mitigate the effects of the bauxite dust on crops such as pak choi.

Keywords: Bauxite dust, *Brassica rapa,* leaf coverage, chlorophyll