

Effects of Fungicides application and Weed Management Methods on Performance of Groundnut (*Arachis hypogea*)

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Groundnut (*Arachis hypogea*) is one of the grain legumes that is widely grown in Malawi. However, productivity is constrained by a number of biotic and abiotic factors including weeds, diseases, unpredictable rainfall; and agronomic practices (eg plant density and poor weed management). Decisions on investments in weed and disease management require information on costs and benefits of the intervention. Field studies were conducted in 2019/2020 and 2020/2021 at two locations in Lilongwe, Malawi to evaluate the effects of fungicides and weed management practices on performance of two varieties (CG9- Virginia type; and Chitala-spanish variety) of groundnut at different densities. The soils are generally medium textured ranging from sandy clay to sandy clay loams; and with low to medium levels of soil organic matter.

In the fungicide trial, the treatments included fungicide application and control (no fungicide). Results showed that application of fungicides reduced leaf spot and improved general plant health especially in Chitala variety; and also increased grain yield of the two varieties by 25-33%. For the herbicide trial, there were four weed management treatments as follows: pre emergence herbicide only, post emergence herbicide only; pre and post emergence herbicides, and untreated. In the first season, results on grain yield showed that at Horizon site, application of herbicides increased grain yield of chitala variety by 67-103% and 32-48% over the untreated (control) at low and high densities respectively; and high density only for CG9 by 44-98% compared to the untreated. Similar results were observed at Chitedze site where herbicide application increased grain yield by 14-43% in Chitala variety. However, no differences were observed among the herbicide treatments. For the second season (2020/21), results on grain yield will be available in June 2021. In this paper, we also present results on costs associated with different weed management methods and implications on investments in weed management.