Title: Glyphosate-based herbicides on weeds management and maize performance under conservation agriculture practices in eastern Kenya

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Abstract:

A three-season research study was conducted at Embu Agricultural Research Station farm to determine the effect of glyphosate-based herbicides on weeds management and maize (Zea mays L.) performance under zero-tillage conservation agriculture practice. Glyphosate herbicide sprays were prepared from Roundup Turbo product at the rate of 2.5 L ha$^{-1}$ and Roundup Weathermax at 1.5, 2.5 and 3.0 L ha$^{-1}$ rates. Significant (p $\leq$ 0.05) differences in weeds management were observed under the tested rate of Roundup Turbo compared to un-weeded control plots. The average grain yield from conventionally tilled plots was 3.6 t ha$^{-1}$. This did not differ significantly from those of herbicide-managed plots. Low-grain yield (0.1 t ha$^{-1}$) was observed from un-weeded plots compared to those from zero-tilled plots that had also exhibited significantly (p $\leq$ 0.05) higher net-benefits. The study concluded that the application of herbicides improves weeds control and maize performance.

Keywords: zero tillage; conventional tillage; glyphosate herbicides; weed control; maize performance; net benefits; weed management; conservation agriculture; Kenya.

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