Integration Effects of Herbicide and Hand Weeding on Grain Yield of Soybean (*Glycine max* (L.) Merr.) in Assosa, Western Ethiopia

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Abstract

Soybean Glycine max (L.) Merr. is a popular and the miracle crop of the 21st century. A field experiment was conducted for two years (during main cropping season of 2013 and 2015) to examine the effect of integrating hand weeding and post-emergence herbicides on yield and yield components of soybean ((L.) Merry) at the main experimental [illegible]

respectively having soybean grain yield advantages of 2438.3 kg ha^{-1} (2.438 t ha^{-1}) and 2343.8 kg ha^{-1} (2.344 t ha^{-1}) (Table 2).

T e lowest grain yield was recorded under weedy check. Increase in grain yield in the herbicide treated plots was probably due to e f ective weed control of the broad leaf targeted weeds, which was complemented by hand pulling of non-targeted weeds species on the f eld. T is result agrees with the f ndings of Hassan et al. there was no signif cant di f erence in harvest index between the two tested herbicides. T is indicates that controlling weed in the early growth stage has an advantage than late application.

Moreover, this study showed that about four treatments were given a promising result when compared to the current national grain yield of soybean. For instance, pre-emergence Codal-Gold sprayed at 1.5 l ha^{-1} supplemented by hand weeding gave soybean grain yield of 2268.3 kg ha^{-1} (2.268 t ha^{-1}) in 2013 and 2541.1 kg ha^{-1} (2.541 t ha^{-1}) in 2015. Application of pre-emergence Codal-Gold at 2.5 l ha^{-1} supplemented by hand weeding gave a yield of 2438 kg ha^{-1} (2.438 t ha^{-1}) in 2013 and 2541.1 kg ha^{-1} (2.451 t ha^{-1}) in 2015 cropping season. T e application of pre-emergence Dual-Gold at 0.5 l ha^{-1} supplemented by hand weeding gave a yield of 2343.8 kg ha^{-1} (2.344 t ha^{-1}) in 2013 and 2376 kg ha^{-1} (2.376 t ha^{-1})

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