Evaluation of herbicide mixtures and manual weed control methods in maize (*Zea mays* L.) production

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Summary Field trials were conducted in 2015 and 2016 cropping seasons at the Teaching and Research Farm of Kwara State University in the southern Guinea savanna of Nigeria to evaluate some herbicide mixtures and manual weed control method in the production of maize. The study was based on the hypothesis that herbicide mixture plus one supplementary hoe weeding (SHW) at 6 WAS will minimise weed infestation and give higher maize yield. The experiment consisted of 10 treatments as follows: metolachlor + atrazine at 1.0 + 2.0 kg ai ha^{-1}, metolachlor + atrazine at 2.0 + 2.5 kg ai ha^{-1}, metolachlor + atrazine at 3.0 + 3.0 kg ai ha^{-1}, pendimethalin + atrazine at 1.0 + 2.0 kg ai ha^{-1}, pendimethalin + atrazine at 2.0 + 2.5 kg ai ha^{-1}, pendimethalin+ atrazine at 3.0 + 3.0 kg ai ha^{-1}, metolachlor + atrazine at 1.0 + 2.0 kg ai ha^{-1} plus one supplementary hoe weeding (SHW) at 6 weeks after sowing (WAS), pendimethlin + atrazine at 1.0 + 2.0 kg ai ha^{-1} plus one SHW at 6 WAS, hand weeding at 3 and 6WAS and a weedy check. These treatments were laid out in randomised complete block design with three replicates. Results showed that metolachlor + atrazine and pendimethalin + atrazine at 1.0 + 2.0 kg ai ha^{-1} plus one SHW at 6 WAS significantly reduced weed dry matter and weed density ($P<0.05$), had taller plants and larger leaf area ($P<0.05$), increased maize yield ($P<0.05$) and gave higher economic returns in both years of the study. Therefore, the two herbicide mixtures plus one SHW at 6 WAS are recommended as alternatives to two hoe weeding for maize production.

Keywords Agro-chemical, hoe weeding, economic returns.