

Response of maize (*Zea mays*L) inbred lines to different herbicide combinations

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Abstract

A field experiment was carried out at Agricultural Seed and Services Research Station in Zimbabwe to evaluate the response of maize inbred lines to different herbicide combinations. The trial was laid out in a 5×12 split plot design replicated three times. Herbicide combination was main plot factor with five levels; Hand-hoeing; metolachlor+ atrazine; metolachlor+ atrazine+ nicosulfuron; metolachlor+ atrazine+ halosulfuron and metolachlor +atrazine+ nicosulfuron+ halosulfuron. These combinations of herbicides have a broad spectrum activity and are able to control annual and perennial weeds with an inbred line as subplot factor with twelve levels; CML488, CML312, CML444, CML443, CML00001, CML395, CZL0610, CZL00003, CZL03014, L917 and N3.2.3.3. Data on germination, phytotoxicity, plant height, anthesis silking interval (ASI), ear height and grain yield were measured. There was a significant interaction ($p < 0.05$) between herbicide combination and maize inbred line on germination, plant height (week 2 and 4), phytotoxicity, ASI, ear height and grain yield. There was no interaction ($p > 0.05$) among herbicide combinations and maize inbred lines on plant height (week 12). That concluded metolachlor+ atrazine+ nicosulfuron and metolachlor +atrazine+nicosulfuron+ halosulfuron herbicides had a major effect on susceptible maize inbred lines. Inbred lines were grouped into three categories in relation to European Weed Research Council (EWRC) score, efficacy and survival rate into; tolerant (CML312, CML444, CML443 and CML00003), medium resistant (CML395, CZL0610, NAW5885 and CZL00003) and susceptible (CML488, CZL03014, L917 and N3.2.3.3). Therefore, the study recommends not using metolachlor+ atrazine+ nicosulfuron and metolachlor+ atrazine+ nicosulfuron+ halosulfuron herbicide combinations on susceptible maize inbred lines.