4.1.1 Harrison A. Mbamba (1992). Efficacy of herbicides for weed control in soyabean (*Glycine max* (L.) Merr) cropping systems of Zambia. (Supervisor: Dr. W. Schmidt)

A trial was conducted at two sites, Lilayi Farm using no-tillage system and Ellensdale Farm using conventional tillage. The objective was to assess the efficacy of new herbicides under Zambian conditions so as to provide recommendations for effective herbicides. Ten treatments were used at both sites: three pre-emergence treatments (metribuzin plus metolachlor, oxadiazon and oxadiazon plus metolachlor) and five post-emergence treatments (fomesafen plus fluazifop-butyl, bentazone plus fluazifop-butyl, bentazone plus acifluorfen, acifluorfen plus fluazifop-butyl and bentazone plus fenoxaprop-ethyl). Other treatments were no weeding and hand hoe weeding at 2 and 4 weeks after planting. Pre-emergence herbicides were applied soon after planting, while post-emergence herbicides were applied 22 days after planting. At Lilayi, pre-emergence herbicides gave excellent control of weeds for the first three weeks after planting; thereafter new weeds particularly broadleaf weeds emerged and competed with the crop. Fomesafen and acifluorfen gave good control of all broadleaf weeds but the effect lasted only the two weeks following application after which new weeds emerged. Inadequate crop cover formation during the first six weeks of crop growth also encouraged the growth of new weeds which competed with the crop, resulting into low yields. At Ellensdale Farm, metribuzin plus metolachlor gave a season-long complete control of both broadleaf and grass weeds; while the other pre-emergence and the post-emergence herbicides gave good control of most weeds found in the experimental plots. Oxadiazon and bentazone gave poor control of Bidens pilosa L. and Amaranthus hybridus L. respectively.