ABSTRACT

Weed management through that minimizes soil disturbance is a crucial strategy for supporting sustainable soybean cultivation systems. However, the use of herbicides in combination with organic matter derived from cattle manure for weed control and its impact on successful soybean growth is not yet fully understood. This study aims to investigate the effectiveness and persistence of herbicides applied with cattle manure, as well as their interactive effects on weed shifts, weed growth, and soybean yield. The study was conducted at the Experimental Farm of SMKPP Paya Lipah Village, Peusangan District, Bireuen Regency, Plant Pests and Diseases Laboratory, Faculty of Agriculture, Malikussaleh University, Reuleut, and the Soil and Plant Laboratory, Faculty of Agriculture, Syiah Kuala University, Banda Aceh, from April to September 2025, using a two-factor Randomised Block Design (RBD) with three replications. The first factor was the type of herbicide at three levels (control, metolachlor, and pendimethalin), and the second factor was the application of cow manure at three levels (0, 10, and 15 tons/ha, or equivalent to 0, 6, and 9 kg/plot). The results of the study showed that the a highly significant interaction effect between herbicide type and cattle manure application on the percentage of controlled weeds at 28 days after planting (DAP), weed population at 42 DAP, weed dry weight at 21 and 42 DAP, soybean plant height at 28, 35, and 42 DAP, number of pods per clump, seed weight per plot, 100-seed weight, and yield per hectare; significant effects were also observed regarding the percentage of controlled weeds at 21 DAP, weed population at 21 DAP, and plant height at 21 DAP, with the best combination found in the treatment using pendimethalin herbicide and cattle manure application at 15 tons/ha (9 kg plot^{-1}).

Keywords: Weeds, Management, Organic Matter, Legumes and Yield