

## Abstract

This study analyzed the proximate composition and acceptability of four agro-industrial wastes i.e. coffee husks (CH), barley waste (BW), kitchen waste (KW), cattle manure (CM) and their mixture (M) by earthworms, *Eisenia fetida*. The acceptability was evaluated by placing *E. fetida* (buried in spent vermicompost) next to fresh and pre-composted test substrates (separated by 2mm mesh net), then counting the number of earthworms migrating from the old food to the new substrate after 1, 2, 12 and 24 hours. All the substrates had temperatures and pH within the optimum conditions of 20-30 °C and 5-9, respectively as required by *E. fetida* except for BW, which had a low pH of  $4.5 \pm 0.2$ . The moisture contents recorded in all substrates was below the optimum conditions of 80-90% required by *E. fetida*. In a dry matter basis, the BW had significantly high crude protein ( $17.87 \pm 1.63\%$ ) and lipid ( $8.43 \pm 0.93\%$ ) and was low in ash ( $7.23 \pm 1.07\%$ ) and fibre contents ( $18.73 \pm 1.42\%$ ). All the substrates had a C/N ratio below 20, an indication that they are suitable for producing mature vermicast with the potential to increase primary natural productivity in semi-intensive ponds. In the acceptability experiment, most earthworms moved towards M and CM substrates within the first and second hours, indicating high preference to M and CM compared to KW and CH. However, there was no significant difference ( $p > 0.05$ ) in the number of earthworms migrating towards all pre-composted substrates. The results showed that BW, KW, and CH has the greatest potential to promote vermiculture and improve aquaculture nutrition.