ingredient in aquaculture feeds due to its richness in Essential Amino Acids (EAA), the profile of which corresponds remarkably well to the needs of fish (Médale et al., 2013). However, according to Vodounnou et al (2025), the high cost of fish meal, coupled with its unavailability and variable quality on the local market, does little to improve the economic profitability of aquaculture. There is therefore an urgent need to find alternatives to fish meal for use in aquaculture. Increasingly, both plant and animal protein sources are being used as partial or total substitutes for fish meal (Médale et al. 2013; Djissou et al., 2020). The use of animal protein sources (termites, maggots and earthworms) and plant sources (peanut, sunflower and soybean cakes, bean meal and brewer's yeast) in aquaculture as substitutes for fish meal has thus been initiated (Gougbédji et al., 2020; Atchamou et al., 2024; Djissou et al., 2016) in several species, including *Clarias gariepinus*, with variable performance.

Clarias gariepinus is an omnivorous species with carnivorous tendencies and a high growth and economic potential. In Guinea, this species of great piscicultural interest is one of the species that fish farmers are most familiar with. Nevertheless, its production faces a number of difficulties, including the high cost and quality of the feed used, which is crucial to the development of the industry.

In replacement of the fish meal, the proteinic sources must bring the ten essential amino acids (EAA) required for fishes (Médale et al., 2013). To satisfy the essential amino acids requirements for *Clarias gariepinus* fingerlings, the experimental diets without fish meal based on a mixture of earthworm and maggots (proteinic sources) were tested on *Clarias gariepinus* (Djissou et al., 2016; 2025) and *Oreochromis niloticus* (Djissou et al., 2020) with good performances of growth and feed utilization for the pre-growing of fingerlings in Benin. This study was therefore initiated with the aim of promoting fish farming by developing a high-performance local feed that is free of fish meal and fish oil, and at a lower cost for the growth of fingerlings in Guinea.

2 Methodology

2.1 Experimental set-up

The experiment was carried out in an open circuit in six (06) circular above-ground concrete tanks, completely randomized, with a total volume of 0.5 m^3 each with of water supplied by borehole and a compressor (FIAC, axair 100L 2CV 10B 230 V) at a flow rate of 3 L min^{-1}. Half of the surface of each tank was covered with a screen to prevent direct sunlight penetration and, above all, the development of chlorophyll algae under the effect of solar radiation. A total of 600 *Clarias gariepinus* fingerlings, with an average initial weight of 4.39±0.07 g, were placed in the tanks at a stocking density of 100 fingerlings per tank. The fingerlings (tested with three replicates) were acclimatized for one week before starting the trial.

2.2 Obtaining the protein sources used to replace fish meal

The rearing of alternative animal protein sources was conducted at the experimental site. Earthworms (*Eisenia foetida*) were reared for 90 days (one production cycle) on a pig-manure substrate following the method described by Vodounnou et al. (2016). Maggots (*Musca domestica*) were reared on a substrate composed of soybean meal and chicken viscera, according to Odjo et al. (2018). Earthworm and maggot meals were processed in the same manner as the chicken viscera: the biomass was washed, drained, and gently cooked over low heat, then dried and ground into flour. The resulting meals were sealed in airtight plastic bags and stored under refrigeration until use.

2.3 Bromatological analysis

Diet T1 was analyzed according to AOAC (2005) procedures. Amino acids from diet were analyzed with a Waters HPLC method. These amino acid analyses were carried out using the method previously described by Bosh et al. (2006). Aminobutyric acid was added as an internal standard prior to hydrolysis. After experimentation, proteins, lipids and ash of 20 homogenized carcasses of fish taken randomly after 3 days from experiment in each diet. Crude protein (%N X 6.25) was determined by the Kjedahl method, fat by the hot method (Soxhlet type) and ash after incineration of the samples in a muffle furnace at 550 °C for 12 hours.

2.4 Feed formulation, manufacture and feeding frequency

The batches *of C. gariepinus* were fed two different diets during this experiment. The control diet T0 (*Gouessant*) is