

ABSTRACT

Nigeria's savanna soils where sorghum (*Sorghum bicolor* L. Moench) is majorly produced are characterized by a lot of challenges. Hence, field experiments were conducted in 2018 and 2019 on sole and combined effects of *Panicum maximum*, *Tithonia diversifolia*, and poultry manure (PM) on soil physico-chemical properties, growth, yield, and proximate contents of sorghum. The treatments were: 10 t ha⁻¹ *Tithonia* leaves, 10 t ha⁻¹ *Panicum* leaves, 10 t ha⁻¹ PM, 5 t ha⁻¹ *Tithonia* leaves + 5 t ha⁻¹ *Panicum* leaves, 5 t ha⁻¹ *Tithonia* leaves + 5 t ha⁻¹ PM, 5 t ha⁻¹ *Panicum* leaves + 5 t ha⁻¹ PM (*Panicum* + PM), control. The treatments were arranged in a randomized complete block design with three replications. Green manures and PM either sole or combined reduced sorghum's grain fiber, fat and carbohydrate, soil bulk density and increased porosity, moisture content, soil organic matter (SOM), nutrient content, growth, yield, and moisture, ash and protein contents of sorghum compared with the control. When manures were combined, *Panicum* + PM has the highest value of these parameters but the least of grains fiber, fat, carbohydrate, and soil bulk density. The increased growth, yield, and quality of sorghum credited to *Panicum* + PM was owed to improved soil physical and chemical properties and also due to the fact that slowly decaying *Panicum* may allow retention of released nutrients from rapidly decomposing PM within the rooting zone. The study revealed that locally available organic materials can be recycled in improving soil and crop productivity especially when they are combined.