

Study of aerobic transformation of lignocelulosic waste: coffee (*Coffea arabica* L.) and stem of guinea grass (*Panicum maximum*)

C. Madrid ¹, V. Quevedo ¹ y E. Andrade ¹

Abstract

The composting parameters and composts characteristics were measured. The composts were elaborated with: coffee husks (C), stem of guinea grass (*Panicum maximum*) (G), waste of fruits and vegetables (FV) and rabbit manure (RM). These residues were mixed in the following proportions: t_1 (2/3 C + 1/3 RM), t_2 (1/3 C + 1/3 FV + 1/3 RM), t_3 (1/3 G + 1/3 FV + 1/3 RM). The temperature was measured during composting. After 84 days of composting it was determined: organic carbon, total, nitric, amoniacal and organic nitrogen, C/N ratio, pH, electric conductivity and the germination index of mastuerzo (*Lepidium virginicum*). In t_1 and t_2 the organic carbon (25,91; 24,34 %) and total nitrogen (2,33; 2,05 %) were higher with respect t_3 and t_4 (20,69; 15,24 %) and (1,70; 1,25 %) respectively this indicates lower biodegradability of organic carbon and loss of amoniacal nitrogen in the coffee husk composts. In t_2 , t_4 the addition of FV increase the carbon oxidation and volatilization of nitrogen with respect to t_1 and t_3 . In the end of composting (84 days) the lowest temperature, pH values between 6,9 and 7,3 and the germination index ³ 50 indicates the maturation and adequate agricultural quality of the composts; however, the low C/N ratio (11-12) and the salinity levels (4,06 to 5,89 mS/cm) suggest the opposite.

Key words: Bioprocess, aerobic, composting, coffee husks, guinea grass, germination, radicular growth, organic manure.

Recibido el 12-11-1999 ● Aceptado el 27-04-2001

1. Universidad de los Andes. Núcleo "Rafael Rangel". Dpto. Cs. Agrarias. Trujillo. Edo. Trujillo oficina de Investigación y Postgrado., Avenida Carmona. Telefax: 072 - 362177 Villa Universitaria El Prado. 072 - 711230 - 711951. Proyecto de Investigación CDCHT - ULA . Código NURR - C - 203 -96- 02 - F