

## **Impact of horticulture at no-till system on soil organic matter in the Atlantic Forest biome**

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### **Abstract**

Horticulture in the hilly region of Atlantic Forest biome is leading to land misuse reducing the

productive capacity of soils due to decreasing soil organic matter content and soil nutrients. A field study was carried out to investigate the effect of horticulture at no-till system (SPDP) on soil organic matter pools in the hilly region of Atlantic Forest biome. Three family farmers with

3, 5 and 9 years of SPDP were selected. For each area in SPDP, 1 forest area and 1 area under conventional system (SPC) were selected, geographically close, as comparatives. Soil sampling

was carried out in August 2019 at depths of 0-10 and 10-20 cm. The variables analyzed were total organic carbon (TOC), total nitrogen (NT), mineralizable nitrogen (Nmin), C and N in the

microbial biomass (CBM and NBM). Areas with 5 and 9 years of SPDP had greater amount of

TOC and NT than areas in SPC at both depths and did not differ from the reference forest at the depth of 10-20 cm. The Nmin of area with 5 years of SPDP was higher to the area in SPC at

both depths. The CBM of area with 5 years of SPDP was superior to the area in SPC and did not

differ from the reference forest at a depth of 0-10 cm. The NBM was not increased by the SPDP in relation to SPC, but their contents were lower than the contents of reference forest.

It

is concluded that SPDP may improve soil organic matter pools and N cycling in the soil-plant system, enhancing the production of horticulture in the region. No-till horticulture system is a strategy to sequester and increase soil C in the hilly Atlantic Forest biome. This system should

be encouraged to the farmers in order to improve soil quality in the region.

**Keywords:** microbial biomass, carbon, nitrogen, mineralizable nitrogen.

**Financing:** Fapes, Incaper, Union of rural workers and family farmers in Santa Maria de Jetibá,

UFES.

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