ABSTRACT

Ammonia-oxidizing bacteria (AOB) are essential in the biogeochemical cycling of nitrogen as they catalyze the rate-limiting oxidation of ammonia into nitrite. Since their first isolation in the late 19th century, chemolithoautotrophic AOBs have been identified in a wide range of natural (e.g. soils, sediments, estuarine, and freshwaters) and man created or impacted habitats (e.g. wastewater treatment plants and agricultural soils). However, little is known on the plant-species association of AOBs, particularly in the nutrient-starved fynbos terrestrial biome. In this study, we evaluated the diversity of AOBs in the plant canopy of three South African fynbos-specific plant species, namely Leucadendron xanthoconus, Leucospernum truncatulum and Leucadendron microcephalum, through the construction of amoA-gene clone libraries. Our results clearly demonstrate that plant-species specific and monophyletic AOB clades are present in fynbos canopy soils.