NitrifyingNitrifying microbial consortia were enriched from bark compost in a water system by regulating the amounts of organic nitrogen compounds and by controlling the aeration conditions with addition of $CaCO_3$ for maintaining suitable pH. Repeated enrichment showed reproducible mineralization of organic nitrogen via the conversion of ammonium ions (NH_4^+) and nitrite ions (NO_2^-) into nitrate ions (NO_3^-). The change in microbial composition during the enrichment was investigated by PCR-DGGE analysis with a focus on prokaryote, ammonia-oxidizing bacteria, nitrite-oxidizing bacteria, and eukaryote cell types. The microbial transition had a simple profile and showed clear relation to nitrogen ions transition. *Nitrosomonas* and *Nitrobacter* were mainly detected during NH_4^+ and NO_2^- oxidation, respectively. These results revealing representative microorganisms acting in each ammonification and nitrification stages will be valuable for the development of artificial simple microbial consortia for organic hydroponics that consisted of identified heterotrophs and autotrophic nitrifying bacteria.

Investigation of the transition of a nitrifying microbial community in relation to the transition of nitrogen in the organic hydroponic system.