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Relationship between organic pollution and the occurrence of toxic Phytoplankton species in the Lebanese coastal waters

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Aiming to evaluate the effects of organic pollution, environmental parameters and phytoplankton community were monitored during a two-year period (from April 2010 till March 2012) in the central coast of Lebanon in the Levantine Sub-basin. Data were collected for hydrological (temperature and salinity), chemical (nitrites, nitrates and phosphates), and biological (chlorophyll-a and phytoplankton populations) parameters. Our results show that temperature follows its normal seasonal and annual cycles, usually noted in the Lebanese coastal waters. Salinity presents spatial and temporal variations with low values (19.07 - 39.6) in the areas affected by continental inputs. Significant fluctuations ($P < 0.05$) of nutrients, Chl-a concentrations and density of total phytoplanktonic cells were observed between the sites and through the years. Moreover, a perturbation of the natural phytoplanktonic succession and an occurrence of toxic or potentially harmful algae were noticed in the polluted sites, reflecting the influence of wastewater effluents on the coastal seawater equilibrium and thus on the Lebanese marine biodiversity. This study sheds the light on the current environmental condition of few coastal areas which could facilitate the management of their pollution sources.

Keywords: Organic pollution, phytoplankton community, toxic algae, coastal water quality, Lebanon, Mediterranean Sea.