

ABSTRACT

The phenomenon of rapid algal blooms in response to nutrient overloads has been adapted to treat synthetic domestic wastewater. Various algal consortia collected from several eutrophied water bodies were subject to high density algal culture (upto 10^6 - 10^7 cells/mL) and screened for rapid algal growth, pollutant removal, nutrient recovery under mixotrophy and auto-flocculation. When tried in laboratory scale algal ponds, these algal consortia showed growth rates between 0.15 and 1.07 d^{-1} . Results indicate that *Chlorella* occurred frequently among most consortia although not always the largest in number. While individual algal species varied in growth rates among these consortia, the log phase for most of these algae lasted 4-5 d after which the algal species began to flocculate between day 5-8 at different rates. The flocculation stage lasted between Day 6-8 wherein about 65% cells flocculated during monsoon and over 90% in winter. Although over 90% removal of N and 80% removal of P occurred in this period, the net N and P harvested as flocculated algae ranged from ~30-50% and ~40-70%, respectively. A consortia approach, wherein algal cells auto-flocculate after reaching a high cell density and nutrient removal provides an easy, low energy and sustainable approach to simultaneous wastewater treatment as well as energy and nutrient recovery from domestic wastewaters.