

## Carbon metabolism and nutrient balance in a hypereutrophic semi-intensive fishpond



Eutrophication and nutrient pollution is a serious problem in many fish aquaculture ponds, whose causes are often not well documented. The efficiency of using inputs for fish production in a hypereutrophic fishpond (Dehtář), was evaluated using organic carbon (OC), nitrogen (N) and phosphorus (P) balances and measurement of ecosystem metabolism rates in 2015. Primary production and feeds were the main inputs of OC and contributed 82% and 13% to the total OC input, respectively. Feeds and manure were the major inputs of nutrients and contributed 73% and 86% of the total inputs of N and P, respectively. Ecosystem respiration, accumulation in water and accumulation in sediment were the main fates of OC, N and P, respectively. They accounted for 79%, 52% and 61% of OC, N and P inputs. The efficiency of using OC, N and P inputs to produce fish biomass was very low and represented 0.9%, 25% and 23% of total OC, N, and P inputs, indicating an excessive phytoplankton production and overdosing of fish feeds and manure.

Dehtář pond was slightly autotrophic and phosphorus availability did not limit the phytoplankton growth. The low efficiency of using inputs was attributed to the low digestibility of raw cereals grain used as feed and the inability of planktonic food webs to transfer the primary production to fish due to high predatory pressure of fish stock on zooplankton. The primary production is an important input of OC in semi-intensive fishponds and should be considered in evaluations of fish production efficiency.

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