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## **BALANCE OF PHOSPHORUS IN TWO DIFFERENT TYPES OF CYPRINIDS POLYCULTURE PONDS**

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### **Abstract**

In order to limit the impact of industrial aquaculture activity on the environment and therefore, to be able to compete with recirculating aquaculture systems, pond based production systems must improve their sustainability by implementing innovative technical and technological solutions. The present study aims to identify the balance of phosphorus in two cyprinid polyculture ponds based production systems, by applying different rearing technologies and technical solutions. The design of present experiment consists in two ponds (PCP and CP-PP), stocked with common carp (CC), silver carp (SC), bighead carp (BC) and grass carp (GC), where different fish rearing technologies were applied. Also, in case of CP-PP, split-pond technique, together with a particular hydraulic regime was used. The phosphorus input through administrated feed was 165% higher in the case of PCP, compared to the CP-PP. The results obtained by using Sankey diagram revealed higher percentages of phosphorus accumulation in water (> 1000%) and sediments (> 15%), in the case of PCP pond, compared to the CP-PP pond. However, higher percentages of phosphorus accumulation in fish biomass were registered at PCP pond (>8% in CC, 500% in SC, 150% in BC and >118% in GC). As a conclusion, by applying split-pond technique, together with a particular hydraulic regime and fish rearing technology, phosphorus footprint of cyprinid polyculture ponds can be reduced, by decreasing the concentration of this element in output water and sediments.

*Key words:* fish rearing technologies, phosphorus balance, phosphorus footprint, ponds cyprinid aquaculture, sustainability

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