

Seasonal variation of the stratified structure in agricultural reservoirs and its effect on the nutrient cycle

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Agricultural reservoirs have been used as important water resources in agriculture areas of little rain. Intensive agriculture increases the load of nutrients to surface water and groundwater, which usually causes serious eutrophication and phytoplankton blooms in small-scale reservoirs. For sustainable water use in agricultural areas, it is important to evaluate the cycles of water and nutrient in reservoirs. We aimed to examine on the seasonal variation of the stratified structure in agricultural reservoirs and its effect on the nutrient cycle. The seasonal variation of the stratification was examined using the multi-depths water temperature variation in the 4 ponds located on an island which is highly influenced by agricultural activity. DO, Chlorophyll-a, light photon, nutrients data were used for the evaluation of ecosystem condition. Water temperature was clearly different between the surface layer and the bottom layer from early spring to early autumn in some reservoirs characterized by relatively deep bathymetry or groundwater inflow from the bottom, which indicates that the thermal stratification was formed. Vertical profiles of Chlorophyll-a and DO show the significant seasonal variations from spring to winter period. However, these pattern were unique in the pond influenced by groundwater inflow.