Japan Geoscience Union Meeting 2010
(May 23-28 2010 at Makuhari, Chiba, Japan)

AHW018-10 Room: Exibition hall 7 subroom 2 Time: May 28 11:30-11:45

Nutrient dynamics in agricultural irrigation pool

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To confirm the nutrient dynamics in agricultural irrigation pools, we measured stream flow discharge and nutrient concentration from upstream to downstream of Takaya River, which is the most contaminated tributary in the Ashida River basin, western Japan. There are some intake weirs, which dams up each stream, for agricultural irrigation in this river.
DN and DP fluxes estimated on the main stream by mass balance method suggest nutrient has been removed within the pool. It is suggested that assimilation by phytoplankton contributes significantly to removing dissolved nitrogen in the summer season, while denitrification contributes in autumn. In the summer season, denitrification coincides with nitrate assimilation by phytoplankton in the pool.
Diffusion of nutrient from sediment was estimated from pore water in the sediment. Consequently, seasonal variation of diffusion was confirmed. And, nutrient can diffuse from sediment throughout the year.

Keywords: nutrient, transport, irrigation pool, flood, denitrification