

River water qualities in different agricultural structure region

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I estimated nitrogen (N) flows in Omoigawa and Nakagawa river basins in 2000 in Tochigi prefecture in central Japan. Omoigawa was characterized as paddy rice-upland field area and Nakagawa was characterized as intensive livestock farming area. Residual N caused by agricultural production in Omoigawa was mainly caused by chemical fertilizer application and that in Nakagawa was mainly caused by livestock excreta. Residual N on agricultural production per farmland area was the same level (c.110kgN ha⁻¹) and occupation of farmland was also same level (c.17%). Because Omoigawa is smaller river basin than Nakagawa, residual N in Omoigawa was 2,093MgN and that in Nakagawa was 2,469MgN. Nitrogen flow in river water was divided into sewage derived N and non-point source derived N of which aimed to be mainly caused by agricultural production process. Non-point source N in Omoigawa was 2,467MgN and that in Nakagawa was 1,426MgN, in spite of smaller residual N in Omoigawa than Nakagawa. This difference might be caused by difference of source of residual N in each basin and chemical fertilizer derived N might be easier to leach out to water environment than livestock excreta derived N. This difference should be considered when vulnerability assessment for water environment. However, livestock excreta N will leach out in future, therefore I cannot say intensive livestock farming is not so easy to affect water environments and low impact and sustainable style rather than chemical fertilizer dependent agriculture. Further sustainability and low impact will realize complete N cycling in the river basin with least N input from outside.