

## Nitrate concentrations of groundwater and surface water in Sao Paulo State, Brazil.

### The reasons why they are low.

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Brazil, located in the tropical and subtropical zone of South America, is the second largest country of agricultural exports in the world. Sao Paulo State is one of large economic states and produces sugar cane, oranges, coffee, eucalyptus and so on. In Sao Paulo State, arable land (mainly sugar cane), pasture, forests, forestry (mainly eucalyptus) cover about 65 (22), 10, 8, 4 per cents of the area, respectively. Through the field surveys and observations from 2011, literature reviews and analyses of nitrogen balances of land uses, the followings are identified:

Nitrogen, mainly nitrate, in water body in Sao Paulo, is commonly low, except around the downstream area of large cities; Application of N fertilizer is generally less than other countries such as Australia, for example, N-fertilizer application to sugar cane is generally 80-120 kg N ha<sup>-1</sup>yr<sup>-1</sup>; Fertilizer efficiencies are relatively high; Vinasse, liquid wastes of ethanol production from sugar cane, is recycled to sugar cane field and promotes BNF in the soil; Leaching from the cultivated lands with acidic soil is much less, which means riverine export is also low, while accumulation of nitrogen (SOM) in the soil is generally large; Many agricultural products are exported to foreign countries, that is, excess nitrogen seems to be reduced within Brazil; Eucalyptus plantation and riparian forests can uptake reactive nitrogen from environments; Soy bean can fix nitrogen as much as 170 kg N ha<sup>-1</sup>yr<sup>-1</sup> or more under better conditions.

As the conclusion, combination of above-mentioned favorable natural and social conditions in the region keeps nitrogen of the water environments lower, though risks of degrading land and water environments are not necessarily eliminated.

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