

CASE STUDY 4A: Integrated Water Management

Economic Valuation of Irrigation Water in *Chinampas* of Xochimilco and its Effect on CO₂ Fixation

Participants

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Introduction

The lake system in Xochimilco is characterized by chinampas, which are artificial islets delimited and stabilized by forest species. The chinampas are continuously fed with nutrients and organic matter provided by the flows of the canals (González et al, 2014), which has allowed the production of up to 3,311,969 tons of vegetables per year (Agricultural Information System for Consultation [SIACON], 2020), which represents a contribution to food security in Mexico City.

About 70% of groundwater extractions for urban supply comes from the Xochimilco-Chalco sub-basin. The supply and management of water are one of the main problems facing Mexico City, in which the drinking water service has not been able to fully cover the needs of its inhabitants (Martínez, 2016, Zapana et al, 2021, Rolland, 2010). The scarcity of water for agriculture and pollution from wastewater discharges have caused serious ecological damage and decreased yields in chinampas. The supply and management of water are one of the main problems facing Mexico City, in which the drinking water service has not been able to fully cover the needs of its inhabitants (Martínez, 2016, Zapana et al, 2021, Rolland, 2010).

Objectives

- Determining the agricultural value of water for chinampas
- Determine the opportunity cost of Xochimilco's water instead of being used for agriculture.

Hypothesis/Expected Outcomes

- Irrigation with treated water in the chinampas produces differentiated yields depending on the concentration and type of contaminants.
- Higher concentrations of pollutants decrease the value of agricultural production, and this reduction can be quantified.
- The contribution of treated water directly affects the ecosystem service of CO₂ fixation.

Figures/Tables

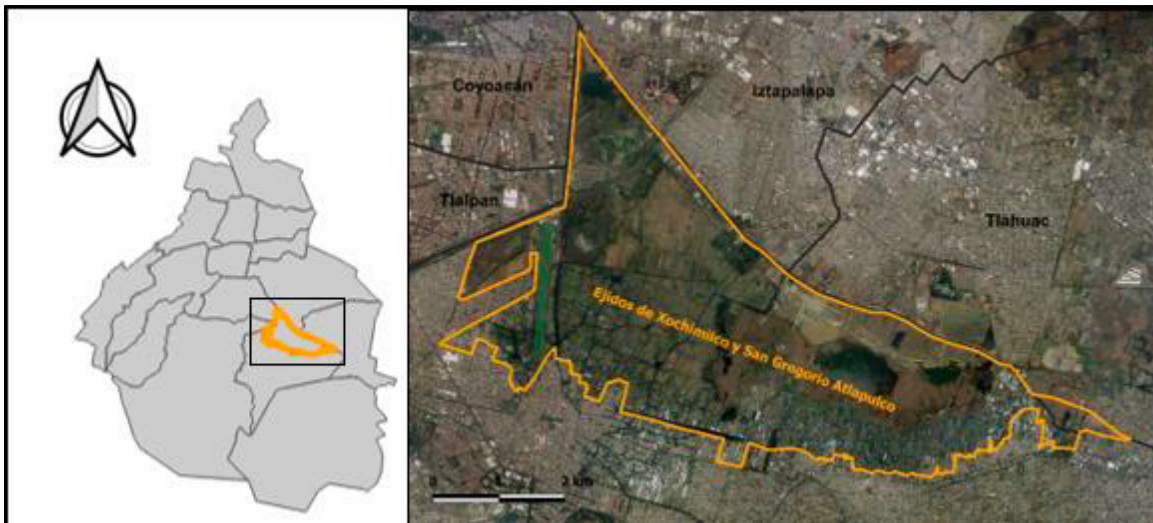


Figure 1. Spatial location of the ANP "Ejidos de Xochimilco and San Gregorio Atlapulco" (Source: National Biodiversity Information System 2021 <http://www.conabio.gob.mx/informacion/gis/>)