Can agroforestry facilitate sustainability in yerba mate production?
A synthesis of literature and recommendations through the lens of the UN SDGs.

Master of Science in Sustainability Management
University of Toronto Missisauga

Nigel Holgate

Supervisor: Dr. Jennifer Sumner
Advisor: Dr. Barbara Murck

What is Agroforestry?

Agroforestry is a system of agriculture where multiple crops are grown within the same plot of land in order to benefit from species interactions. It emerges as a sustainable alternative to monocrop agriculture, conserving soil quality, biodiversity and forests, while allowing greater income security.

What is Yerba Mate?

Yerba mate, or Ilex paraguariensis, is a species of the holly plant grown in South America. Its leaves are used to brew a caffeinated tea enjoyed in South America and globally, and is a $1bn industry.

United Nations Sustainable Development Goals

The UN SDGs are a set of 17 goals that aim to ensure society can end severe poverty, inequality and climate change, within the bounds of planetary capacity. Four of the most relevant goals to Yerba Mate Agroforestry Systems were examined in detail in this study: SDGs 1 No Poverty, 2 Zero Hunger, 13 Climate Action, and 15 Life on Land.

Purpose of Study

This study aimed to contribute to the lack of existing literature on yerba mate agroforestry and the SDGs. It also aimed to identify syntheses and trade-offs between the SDG targets and indicators to make recommendations for a more sustainable yerba mate industry. This can also help combat siloed policy-making. Resource conflicts, infrastructure requirements and ecosystem benefits and risks were quantified and evaluated for each of the 210 SDG target pairs.

2 ZERO HUNGER — Diversification of YM AFS crops leads to more income sources. Reduction of YM smallholder economic vulnerability, and increased food security. (Targets 1.2, 1.4 with 2.1, 2.2, 2.3, 2.a)

1 NO POVERTY

13 CLIMATE ACTION — Climate adaptation and resiliency measures implemented through YM agroforestry can aid in protecting crops and associated income from drought, flooding desertification and higher temperatures. (Targets 1.2, 1.4 with 13.1, 13.2, 13.3)

15 LIFE ON LAND — Sustainable forest management: protection of soil quality and biodiversity will alleviate poverty through greater YM AFS crop income yields. However, strict land conservation may limit YM AFS income opportunities. (Targets 1.2, 1.4 with 15.2, 15.3, 15.5, 15.6, 15.7, 15.9, 15.c)

Results

Most relevant SDG targets were found to have a positive relationship to YM AFS. The most synergistic SDG was SDG 15 Life on Land, whereas the least synergy was found with SDG 2. No SDG interaction was found to be a net trade-off, though numerous target interactions were trade-offs, specifically within SDG 2. The highest interaction scores were seen in SDG targets encouraging greater investment in agricultural research and sustainable ecosystem use.

Discussion

When properly managed, yerba mate agroforestry can effectively drive sustainability synergies and aid in meeting the SDGs. Conflicts between conservation and agricultural land use, must be managed - agroforestry emerges as an effective tool to do so. Further research is needed on interactions between other SDG targets as well as market valuation of ecosystem services within the yerba mate agroforestry space.