**Ecosystem Type: AGROECOSYSTEMS**

**Category: Climate Stabilization**

1. **Materials**

***Supplier*** – Agroecosystems provide materials that stabilize the effects of chemicals, such as carbon and nitrogen, on climate change (Janzen et al., 2003). For example, agroecosystem habitats such as shade-grown coffee provide materials that reduce levels of greenhouse gases because of their ability to sequester carbon dioxide (Polzot, 2004). Potential carbon sequestration by agroecosystems is 1.2-3.1 billion tons of carbon per year (Lal, 2011).

***Driver*** – not applicable

***Demander*** – not applicable

1. **Nutrition**

***Supplier*** –not applicable

***Driver*** -not applicable

***Demander*** - not applicable

1. **Energy**

***Supplier*** –not applicable

***Driver*** -not applicable

***Demander*** - not applicable

1. **Mediation of Waste, Toxics, and Other Nuisances**

***Supplier*** – not applicable

***Driver*** – not applicable

***Demander*** – not applicable

1. **Mediation of Flows**

***Supplier*** – The flow of materials within agroecosystems such as nutrient fertilizers can help maintain climate stabilization. For example, wastes from livestock can be used to fertilize crops, rather than flowing into a nearby waterway or emitting gaseous elements into the air (Zhiping and Dawson, 2004). Further, these ecosystems control the microclimate of surrounding habitats because of the ability of the species to control the biophysical process of cycling water (Coates et al., 2013). This occurs because the plants uptake water from the soil through its roots, which transpires back into the atmosphere, simultaneously cooling the habitat.

***Driver*** – not applicable

***Demander*** – no literature review available at this time

1. **Maintenance of Physical, Chemical, and Biological Indicators**

***Supplier*** – Agroecosystems increase evapotranspiration, which helps to control the microclimate of surrounding land (Dabney, Delgado, and Reeves, 2007). Agricultural species also fix nitrogen, which can help increase the amount of carbon sequestered into the soil to reduce overall greenhouse gas emissions (Janzen et al., 2003).

***Driver*** – not applicable

***Demander*** – not applicable

1. **Spiritual, Symbolic, Religious, and Social Experiences**

***Supplier*** — not applicable

***Driver*** – not applicable

***Demander*** – not applicable

1. **Physical and Intellectual Interactions w/ Biota, Ecosystems, and Land/Seascapes**

***Supplier*** –not applicable

***Driver*** – not applicable

***Demander*** - not applicable

**Sources:**

Coates, D. et al. (2013) Water-related Ecosystem Services and Food Security. In Boelee, E. (Ed.) *Managing Water and Agroecosystems for Food Security.* Boston, MA: Library of Congress Cataloging-in-Publication Data.

Dabney, S.M., Delgado, J.A., and Reeves, D.W. (2007) Using Winter Cover Crops to Improve Soil and Water Quality. *Communications in Soil Science and Plant Analysis, 32*(7-8), 1221-1250. <https://doi.org/10.1081/CSS-100104110>. [abstract only]

Janzen, H.H. et al. (2003) The fate of nitrogen in agroecosystems: An illustration using Canadian estimates. *Nutrient Cycling in Agroecosystems, 67*(1), 85-102. <https://doi.org/10.1023/A:1025195826663>. [abstract only]

Lal, R. (2011) Sequestering carbon in soils of agro-ecosystems. *Food Policy, 36*(Supplement 1), S33-S39. <https://doi.org/10.1016/j.foodpol.2010.12.001>.

Polzot, C. L. (2004) *Carbon Storage in Coffee Agroecosystems of Southern Costa Rica: Potential Applications for the Clean Development Mechanism.* Unpublished master’s thesis, York University, Toronto, Ontario, Canada.