

## Food life cycle assessments

### Award Year:

2018

### Principal Investigator:

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### Associated Program:

[Postdoctoral Fellowship Program 2018](#) [1]

Waste produced by the food production, transport, and consumption process is a global problem. It is critical to quantify food waste and its environmental impacts throughout the food supply chain and across spatial scales, so that policymakers can determine how to prioritize reduction efforts. Life cycle impact assessment (LCIA) is a promising tool for this task, but current LCIA implementations are rarely spatially explicit, often ignore or incorrectly estimate impacts on biodiversity resulting from land-use change, and lack the means to incorporate their output into statistical or predictive models. I will develop and implement a new LCIA framework for the food production chain with an associated predictive model that will address all these shortcomings. The method will quantify food waste throughout the supply chain and associated impacts on biodiversity and ecosystem functioning. It will (1) account for variation across space and can be fit at different spatial scales, (2) correctly estimate biodiversity loss due to land use change, and (3) interface with an open-source tool that can produce visualizations and statistical analysis of outputs and incorporate the output into a predictive model. The predictive model will use a hierarchical structure to characterize uncertainty and will account for multiple interacting drivers and impacts at each stage of the production chain and across spatial scales, including biodiversity impacts, land use change, and eutrophication. I will develop and publish an R package that will allow users to implement the LCIA modeling framework.

### Associated SESYNC Researcher(s):

[qread](#) [2]

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[1] <https://www.sesync.org/opportunities/research-fellowships-postdoctoral-fellowships/postdoctoral-fellowship-program-2018>

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