

# USAID: Bay Sa Waar Communities for Sustainable Agriculture 2018 – 2020



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**ASU** Arizona State University

**Global Locust Initiative**



Monitoring and Soil Amendments for Locust and Grasshopper Management:  
A Pilot Project in the Kaffrine Region of Senegal



## OVERVIEW

The Senegalese Grasshopper (*Oedaleus senegalensis*) is among the most severe pests of the Sahel. This species regularly attacks staple cereal crops which, combined with low soil fertility, reduces farmers' resiliency and food security. This project pilot introduced a sustainable methodology for locust management in the Kaffrine Region of Senegal: the use of locust biology to reduce crop damage. By leveraging research that illustrates strong soil-plant-locust interactions, this project proposes a novel long-term and community-based preventative strategy: setting up village-based soil amendment and locust monitoring programs to create environments unfavorable to locusts.

## LEAD INSTITUTIONS & PARTNERS

Funded by the U.S. Agency for International Development, Office of U.S. Foreign Disaster Assistance, Bay Sa Waar combines the specialized research skills of American and Canadian universities with local knowledge and expertise of Senegalese institutions. Our partner villages are distributed on a latitudinal gradient from Nganda in the south, to Gossas in the north.



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## COMMUNITIES



Kara Brooks



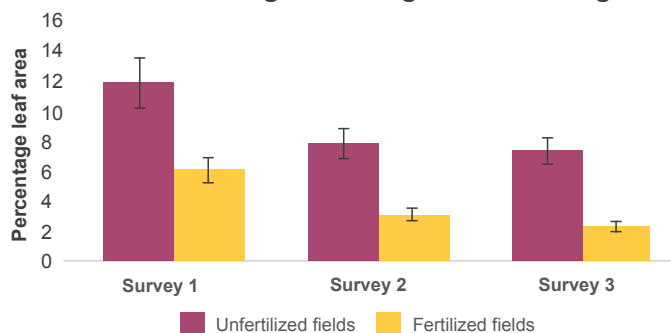


## SOIL AMENDMENT INTERVENTION



Improving soil quality has the objective of suppressing locust and grasshoppers (L&G) populations, reducing crop losses, and increasing yield. Our previous research shows that some L&G prefer plants low in nitrogen (i.e. unfertilized). Working with 100 farmers in Gossas and Gniby, we treated 100 fields with the recommended application of fertilizer to test if increasing plant nitrogen would keep pest populations low and crop yields high. **Preliminary results** show a decrease in overall damage to fertilized plants.

**Overall Average *O. senegalensis* Damage**

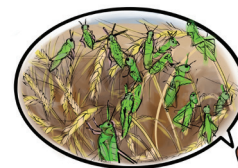


Average percentage of leaf area damaged by *O. senegalensis* in unfertilized and fertilized one-hectare fields in Gossas and Gniby.

## EARLY WARNING SYSTEM



We worked with women in five communities to develop a system for monitoring insects with light traps. Communities are along the migratory route of *O. senegalensis*, expanding the monitored range, and allowing targeted and efficient use of interventions, while empowering women to lessen the impacts of locusts. Women learned to monitor using light traps, identify grasshoppers, collect scientific samples, and report data to the government agency responsible for pest management, la Direction de la Protection des Végétaux or DPV.

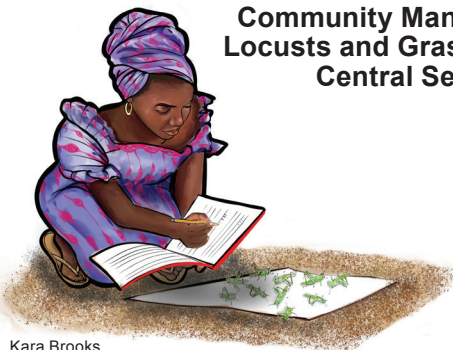


Kara Brooks

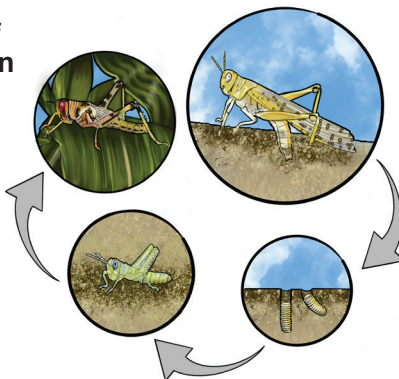
## BOOKLETS

[Illustrated booklets](#) were created to instruct farmers on how to identify relevant pest species, monitor and report their activity, and employ novel preventative techniques. These [resources](#) can serve as training tools should participants wish to share their knowledge. Illustrations by ASU graduate student Kara Brooks karabrooksart@gmail.com.

### Community Management of Locusts and Grasshoppers in Central Senegal



Kara Brooks



### Grasshopper and Locust Pests of Central Senegal: an Agriculturist's Guide

