# Robotic Arm for Bio-Defence Collection

**Status:** Available

**Group Members:**

**Sponsor(s):** Ecoation Innovative Solutions Inc.

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## Project Description

Ecoation Innovative Solutions is collaborating with IITA, UIUC, MSU, USAID, SAWBO and Bill & Melinda Gates' Foundation to develop a precision integrated pest management for small farms in West Africa.

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This project is a collaborative effort between Ecoation Innovative Solutions Inc., Point Blue Technologies Ltd., University of Illinois at UrbanaChampaign, Michigan State University, Scientific Animations Without Boarders (SAWBO), International Institute of Tropical Agriculture (IITA) in Cotonou, Benin, USAID and Bill & Melinda Gates Foundation.

There are more than the 10 million resource poor cowpea farmers in five West African countries (Benin, Burkina Faso, Ghana, Niger and Nigeria). This project will provide the initial basis for a long term sustainable effort to address insect pest attacks that currently reduce cowpea grain yields by over 50%. The long term vision of this project is a precision integrated pest management platform that leverages digital systems, and incorporates traditional and novel approaches including biological controls, local biopesticides, new cowpea varieties, and other management practices to addresses farmers' needs for safe, sustainable and costeffective management of cowpea pests. Considering the lack of infrastructure in the region (electricity and connectivity), the project seek to develop an alternative solution for providing educational information to small villages and fight pests.

We want to sponsor a research projects related to pest control in rural villages in Africa and collecting safe bio-defence agents. The company will make available its laboratory as well as electronic parts and tools to the teams. These project is expected to be 4-6 month . We are looking for students with programming and mechanical / mechatronics background with knowledge of embedded design and raspberry pi programming, serial communication, python, and web app and server development.

Bio-Defence Collector

Objective: to design and develop a manually operated device to release/collect and monitor the activity of the bio-defence agents against cowpea pests in West Africa.

Background: EIS is developing a device that allow experts to collect bio-defence agents from tree crowns in African villages.

Expected Technical Background: This project requires knowledge of mechanical design , robotics, energy management and programming.

Resources Available: The team will have access EIS parts and electronics. There might be a possibility to arrange trials at IITA in Cotonou, West Africa, Benin. You will have access to EIS laboratory and EIS experts (CTO and Chief Hardware Engineer) for technical advise.

Time preference: We need to deliver by June 2016.

Deliverables: We expect to receive a functional prototype of the device by the end of the project. The bio-defence launcher should allow you to do the following tasks:

1) release parasitoids on the crown of trees up to 15m.
2) collect about 20 cm long panicles of flowers (need to be cut carefully and bagged individually) on the same trees at same height as above.
3) operate a small video camera to observe what the parasitoids are doing in those inflorescences on the tree.