Backstory

Invasive species, weeds and pests, spread, deprive and destroy crops over time, going from one area to another. More than often, we see massive undertakings via drones and satellite imageries towards identifying invasive species, but tools are required by the farmer to control the information themselves. The task requires a farmer to take note of a potential invasive specimen (ex. Musk thistle or cereal aphid) within or around their Wheat/Barley field, where the modern tool, cellphone, consists of the parts to gather that required data via images and GPS. This agritech app adds another key tool for all farmers, new-to-technology to large-scale producers, to gather and enact on the potential threats that invasive species represent.

Our solution uses images, taken by a farmer, and pushes it through one of various highly accurate APIs geared for plant and insect species. This recognition path is critical to specifically identifying plant or insect species and getting their data point along with the time of observance, and geolocation for a geospatial time-series analysis. Thanks to GPS-link with images, within their metadata, locational data is simple to extract. This data is highly valuable towards determining moving invasions and crop loss estimates. Taken further, this data helps specify crop yields due to invasive species using real-time observations.

# Design goals

Our target farmer user ranges from the tech-initiate to production-superprovider; both being able to make use of minimal-cost observations in contrast to wide-scale satellite or drone imaging classification of invasive species.

# What we’ve done

Based on our target range, we have aimed to make our web application as simple to use as possible, along with a minimized footprint in storage requirements. The user, with an account, can return to find their collection, consisting of previous observations, to create time-based plot. In addition, using the species recognition functionality, the user can access the most up-to-date scientific data associated with each observation.

* Identify and map images taken on farm to species names, time, and location
* Store information to monitor movement of species over time in terms of direction, volume/concentration, speed
* Empower farmers to manage pest control in a proactive manner, significantly reducing crop damage and related costs

# What’s Next

Integrating APIs

Cloud architecture

As a web-based application, storage requirements are key towards user activity and functionality. Cloud architectures help significantly lower management costs towards maintenance and upkeep, and allow our app to run in a scalar value.

# Team Location

# Databases Used

Information and images of species were compiled from:

Croprotect: croprotect.com

CABI: www.cabi.org/isc/

iNaturalist: www.inaturalist.org

The data was used to classify species as pests or beneficials.