



THE UNIVERSITY OF BRITISH COLUMBIA

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2020 

AGROBOT

UBC AgroBot Engineering Student Design Team | Vancouver, BC

PROBLEM



Agrochemical Toxicity

Damage environment and human health



Weed Management

Relies heavily on labour



Increased Care Time

Farmers need to be constantly aware of farm conditions

As demands for our growing population increase along with scarcity of natural resources and threats of environmental concerns, there is a pressing need for innovations in agriculture, to be more productive yet sustainable - **a future proof way of farming.**

SOLUTION



Targeted Application

Eliminates excess pesticide usage



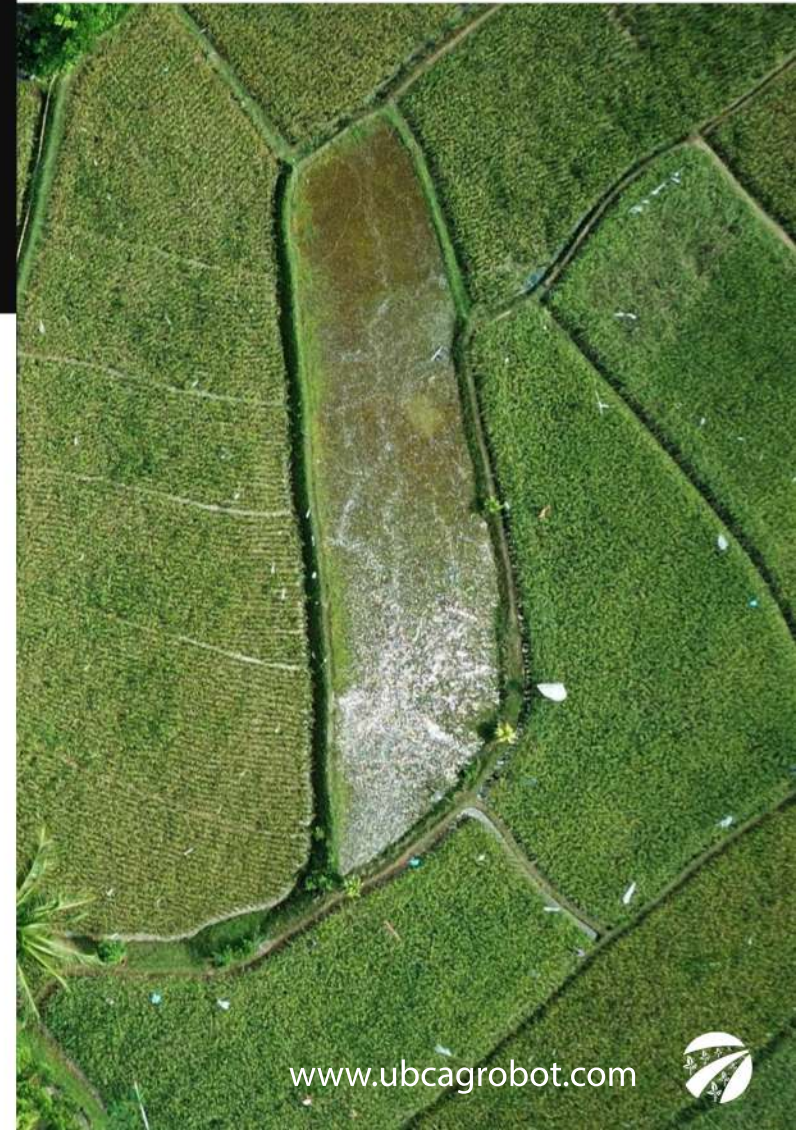
Automated Extermination

Requires less manpower to remove weeds



Data Collection

Provides insight on crop health allowing easier management

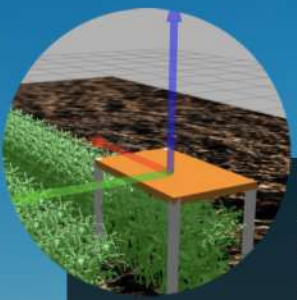


About Our Team

Started by few students in the summer of 2019 with a shared passion for innovation and sustainability, AgroBot hopes to help accelerate the implementation of automation and robotics in farming. We aim to build a fully autonomous robot capable of analyzing its environment and performing targeted weeding, fertilizing and soil analysis through the use of advanced robotics, image recognition and machine learning. Today, AgroBot is an official engineering design team at UBC with an interdisciplinary, 30-member team.



Project Outline



Autonomous Navigation

Navigating through rows of crops and ensuring safety of surroundings with the assistance of depth sensors.



Precision Extermination/Feed

Omnidirectional nozzles perform targeted herbicide spraying or fertilize crops. Additional rotating blades remove stubborn weeds.



Camera

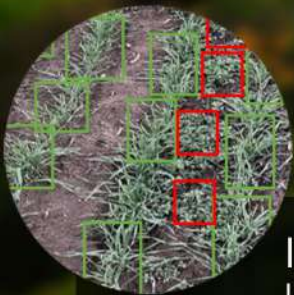
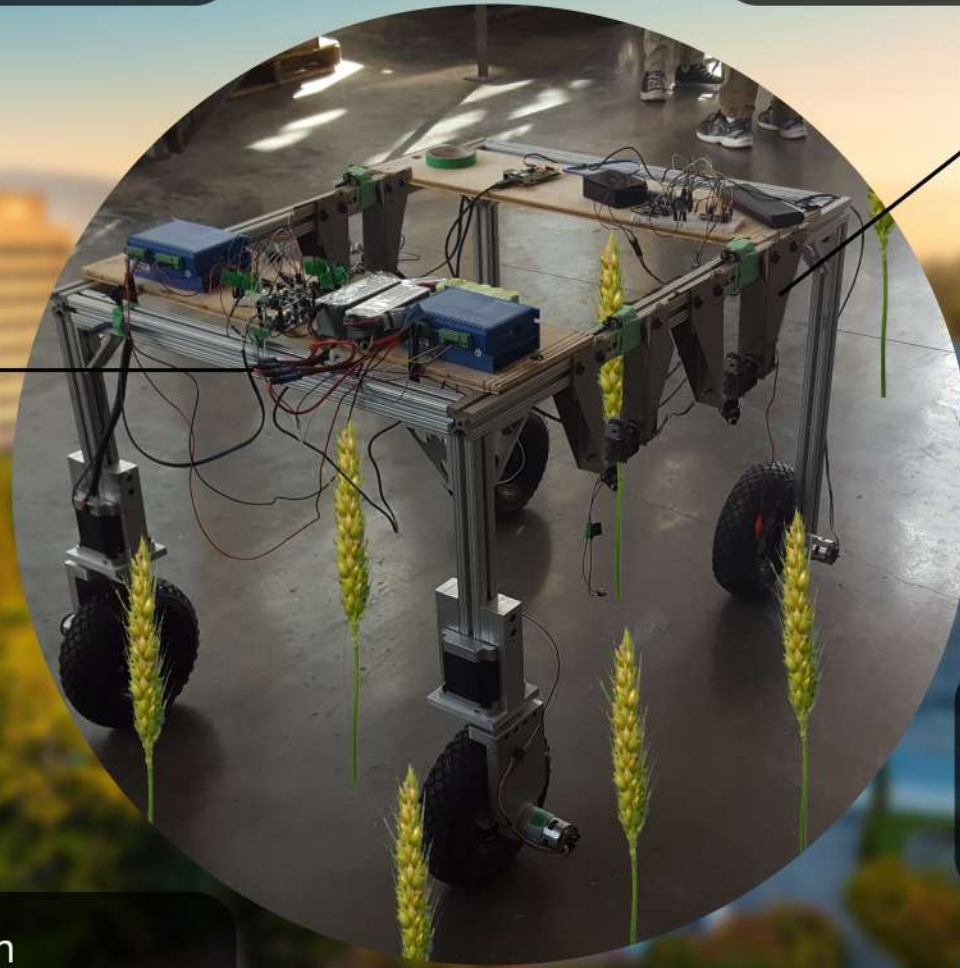


Image Recognition

Identifying location of crops and weeds as well as monitoring crop health using machine learning algorithms.

Chassis

Housing for all components and powertrain for navigation in a farm environment.



Competition



The AgGrowBot Competition is an international student competition hosted by the Purdue University, a world leader in agtech, to encourage new innovations in agriculture. Teams compete to build autonomous agricultural robots capable of different innovative tasks or design a novel ag-device, which will be judged by experts from leading companies in the field. The competition will also include Generation-Ag Day, an educational event where competing teams can spark interest of younger students in the agricultural tech industry. (<https://ag.purdue.edu/aggrowbot/>)



Budget

*A more detailed breakdown can be given upon request

Workplace & Tools \$7345

- Machining costs
- Tools (screws, solder, ect)
- 3D & PCB printing

Competition \$13 000

- Competition Fees
- Travel - Roundtrip to Indiana
- Accommodation & Food

Instrumentation \$7890

- Cameras
- IMU & GPS sensors
- General electrical (Arduino, breadboards, & circuitry)



Chassis \$6400

- Aluminum extrusions (Frame)
- Motors, Wheels & Batteries
- Panels, Mounts & Suspension

Extermination \$1640

- Pumps, tank, electronic valves
- Exterminating mechanism (Omni-directional Nozzle)



Sponsors | Benefits

LEVEL	Diamond \$2500+	Gold \$1000+	Silver \$500+	Bronze \$100+
Logo on Website				
Logo on Promotional Materials				
Logo on Apparel				
Extra	[1]	[2]	[3]	

AgroBot reaches out to a wide range of audience through social media, outreach events and competition. Social media posts are made on a continuous basis on project updates and competition status while providing coverage for our partnering sponsors. The AgrowBot Competition can provide our sponsors great exposure to the agricultural and tech sector in academia, and industry.

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- [1] Logo on competing robot (incl. [2],[3])
 - [2] Social media coverage throughout the year (incl. [1])
 - [3] Exclusive tour with the team

CONTACT US



UBC AgroBot's success relies on our kind sponsors, your contribution will help support the future of sustainability and engineering students who have a passion for making a change. Please feel free to contact us with questions regarding AgroBot, or to discuss a potential sponsorship. Thank you!

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