

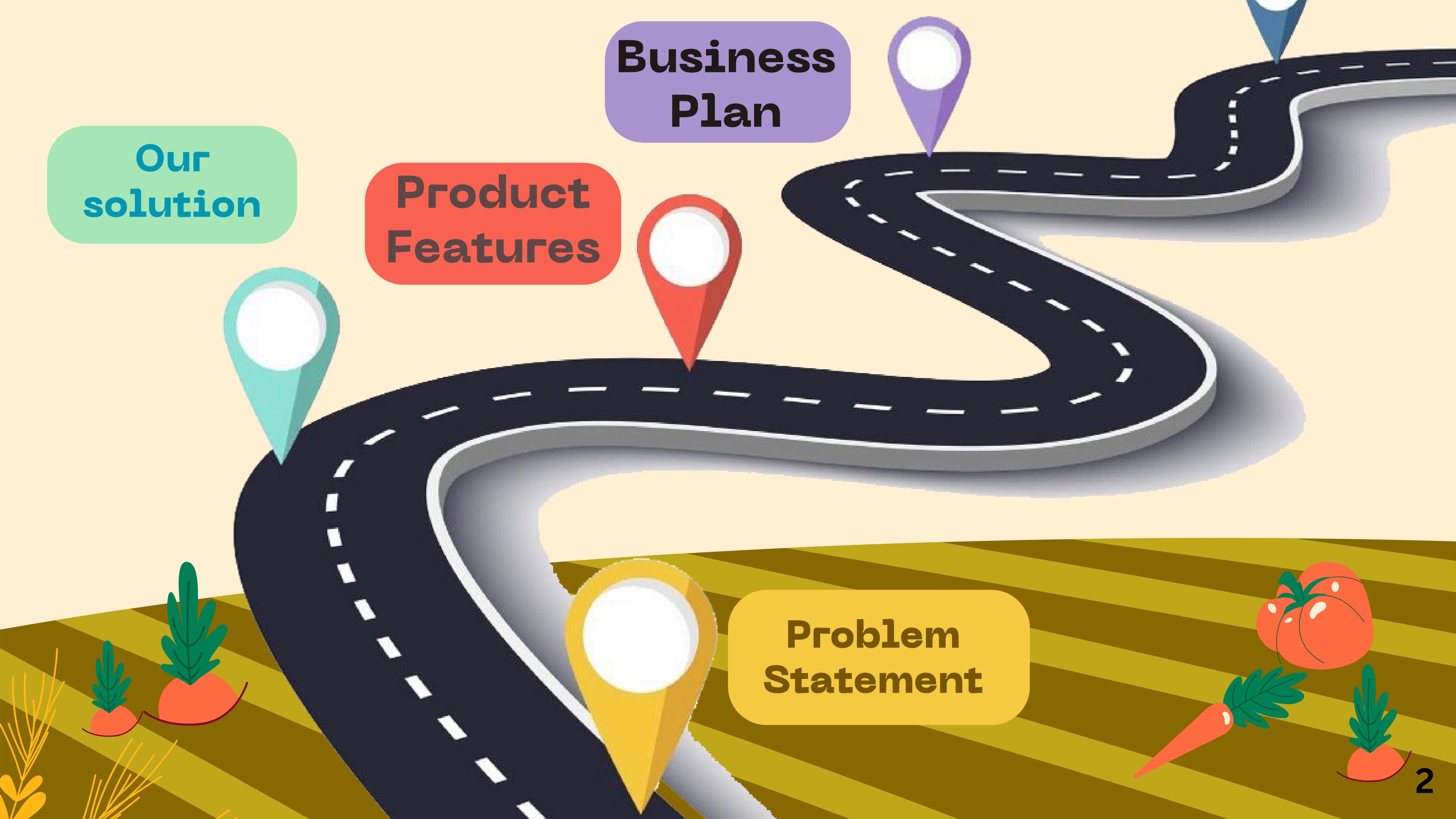
TEAM1: AGRIVISION

Cultivating Innovation for Safer,
Healthier Sustainable Food



HACK4EARTH





Business Plan

Our
solution

Product
Features

Problem
Statement



Problem statement

Farmers are struggling with crop diseases that threaten food safety and compromise their yields.



Crop and livestock pests,
diseases and infestations



Sustainable

Pests and disease

livelihoods globally. Every year, up to 40 percent of crops are lost due

to plant pests and diseases. FAO promotes sustainable and

ecological approaches including integrated pest management to

prevent and control the potential impact of pests and diseases

through continuous monitoring, early warning, prompt response,

innovative and environmentally-friendly preventive control strategies.

Crop Diseases: The Nightmare of Every Farmer

27 avr. 2017 — More pre

average yield losses of 2



CABI.org

<https://www.cabi.org> › Projects

Global Burden of Crop L

Worldwide, an estimated 20-40% of

MARKET TREND

contains that crop diseases ca

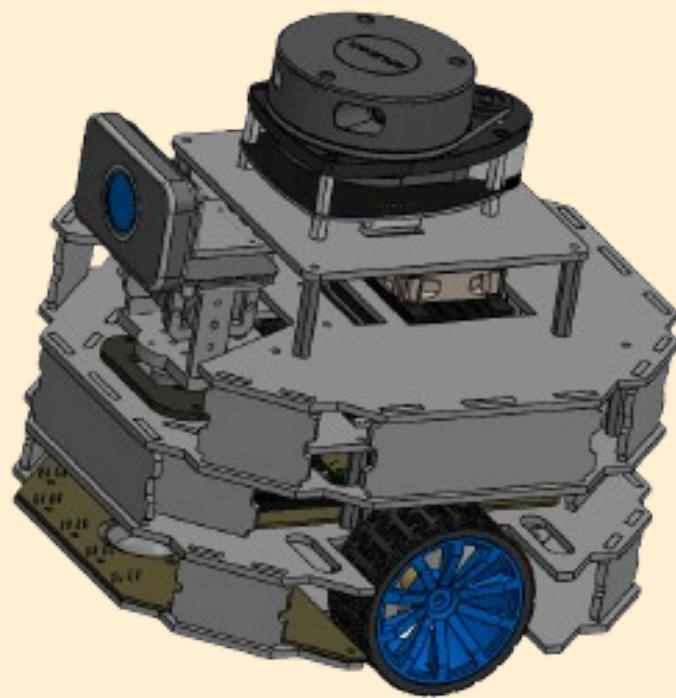
diseases. Los



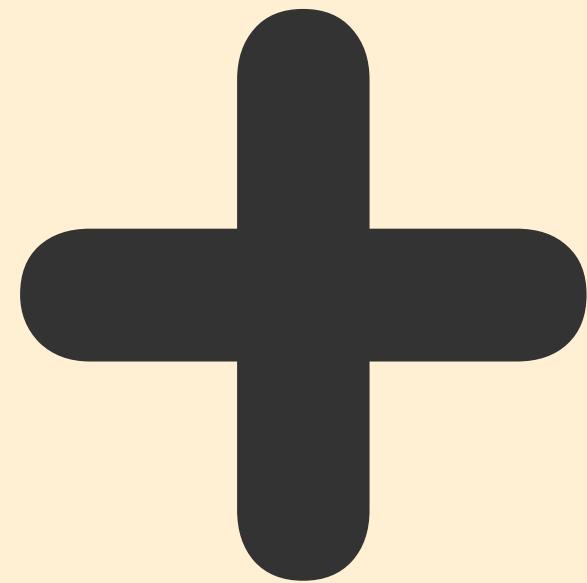
Plant diseases are a nightmare for farmers, and the statistics clearly show why.

Many studies and articles highlight how these diseases can severely impact crop yields, leading to financial losses and threatening food security.

OUR SOLUTION



FarmEye
Autonomous Robot

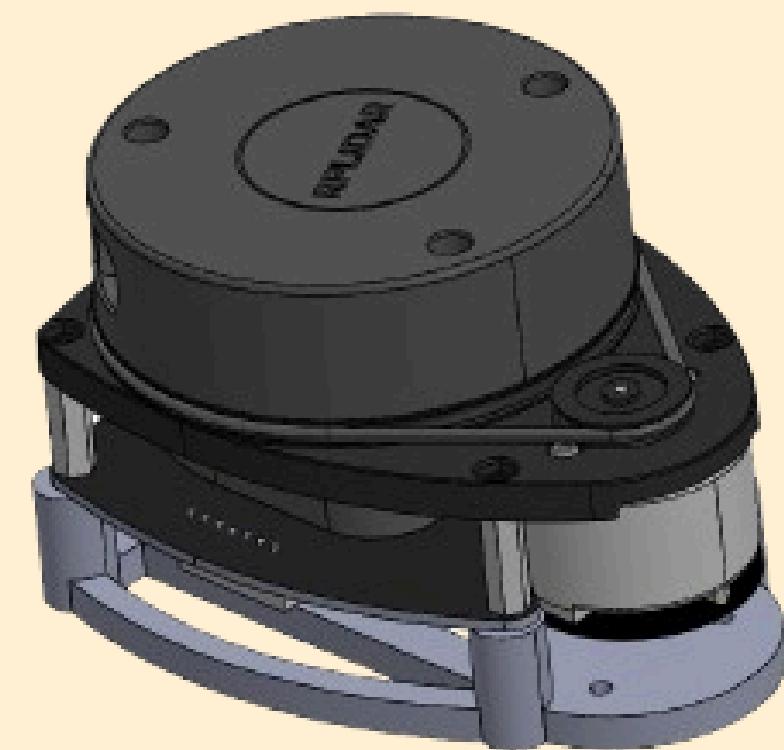


FarmEye
Mobile Application

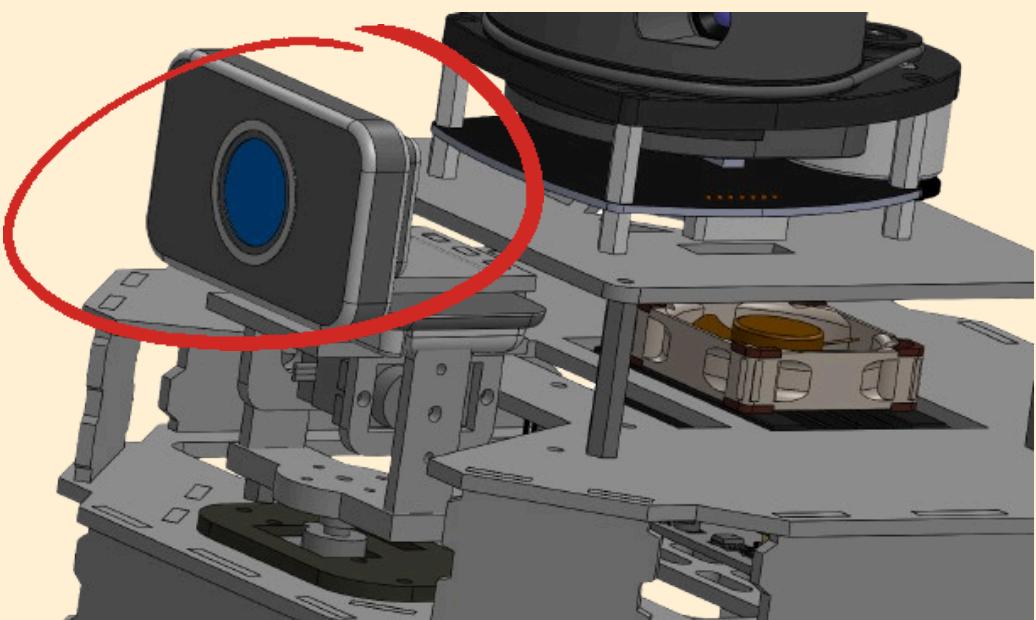
PRODUCT FEATURES:

FarmEye Autonomous Robot Main Parts

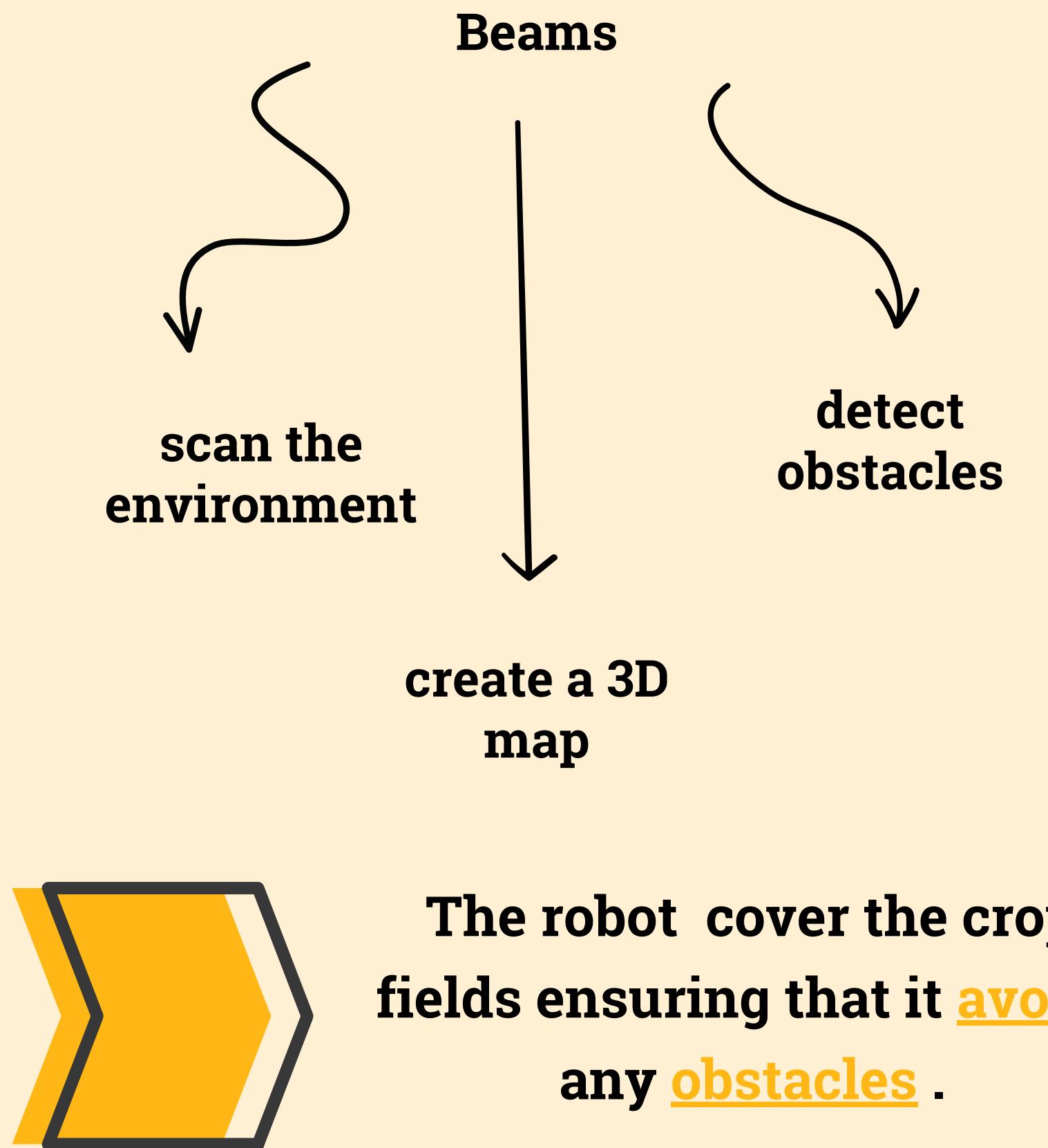
LIDAR



CAMERA



HOW The LIDAR works?



Adjustable Camera Functionality

Camera

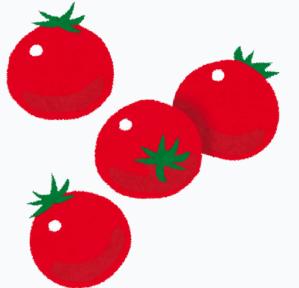


Adjustable support

captures images at various heights



beneficial for diverse crops



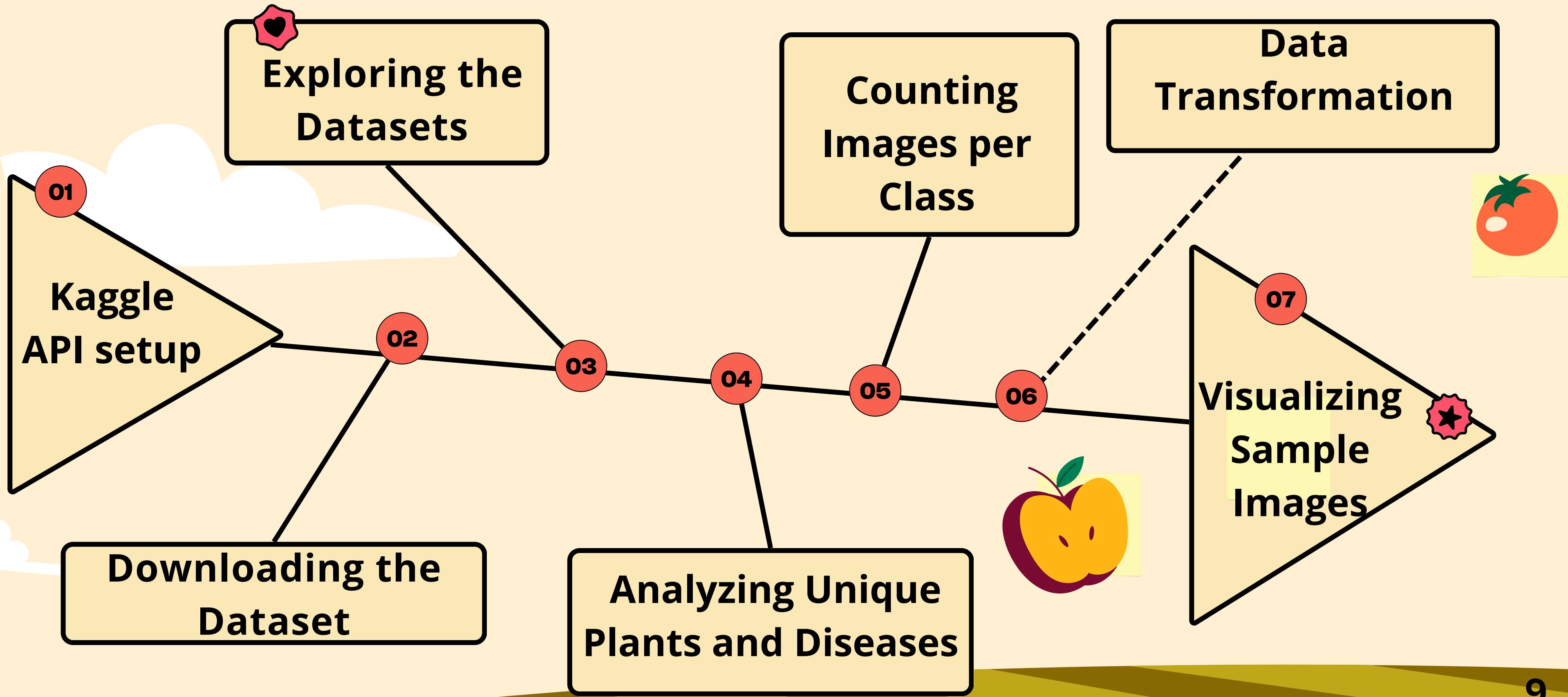
camera positioned closer to the ground

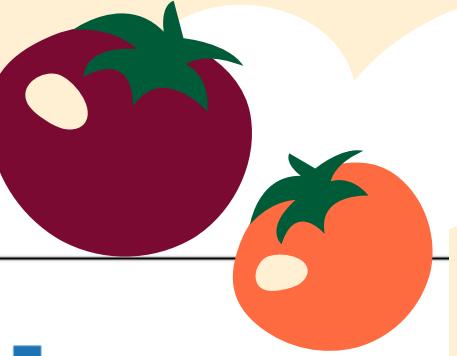


camera adjusted upward for proper visibility

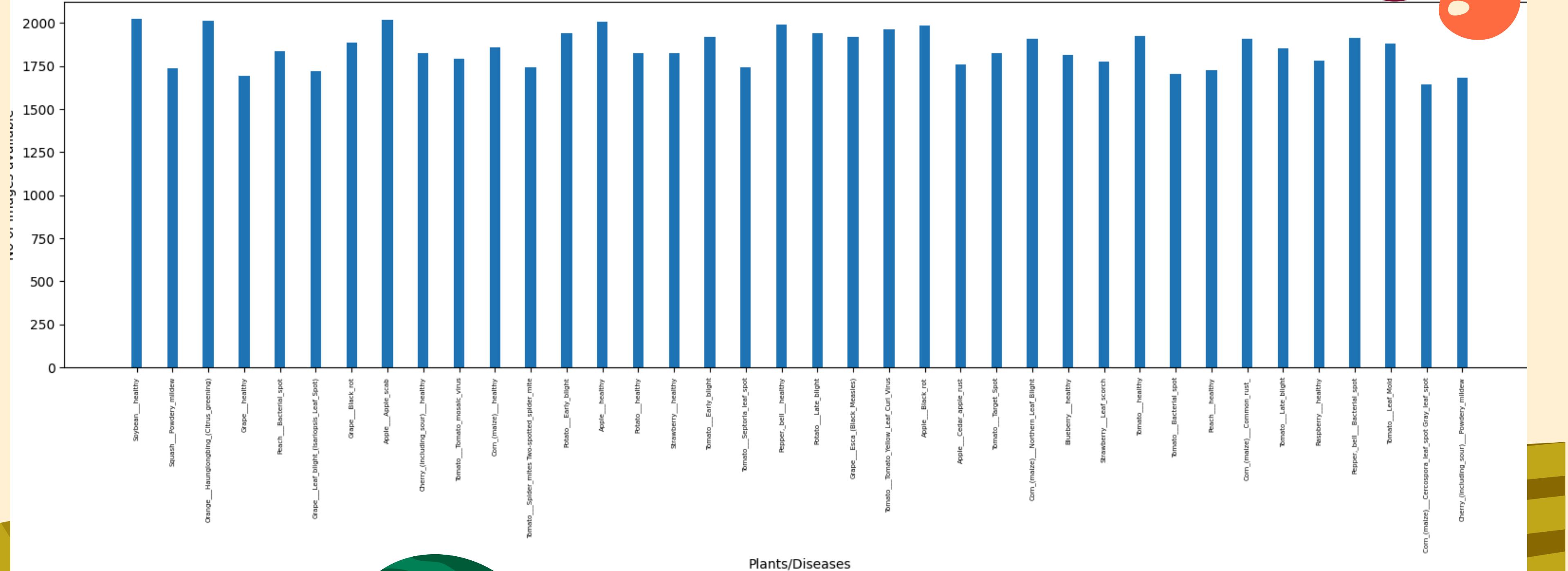


DATA PREPROCESSING



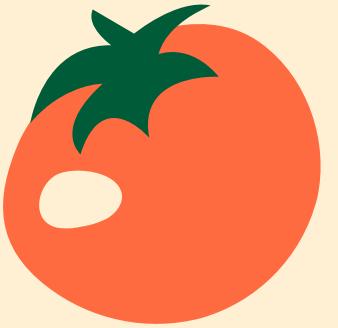
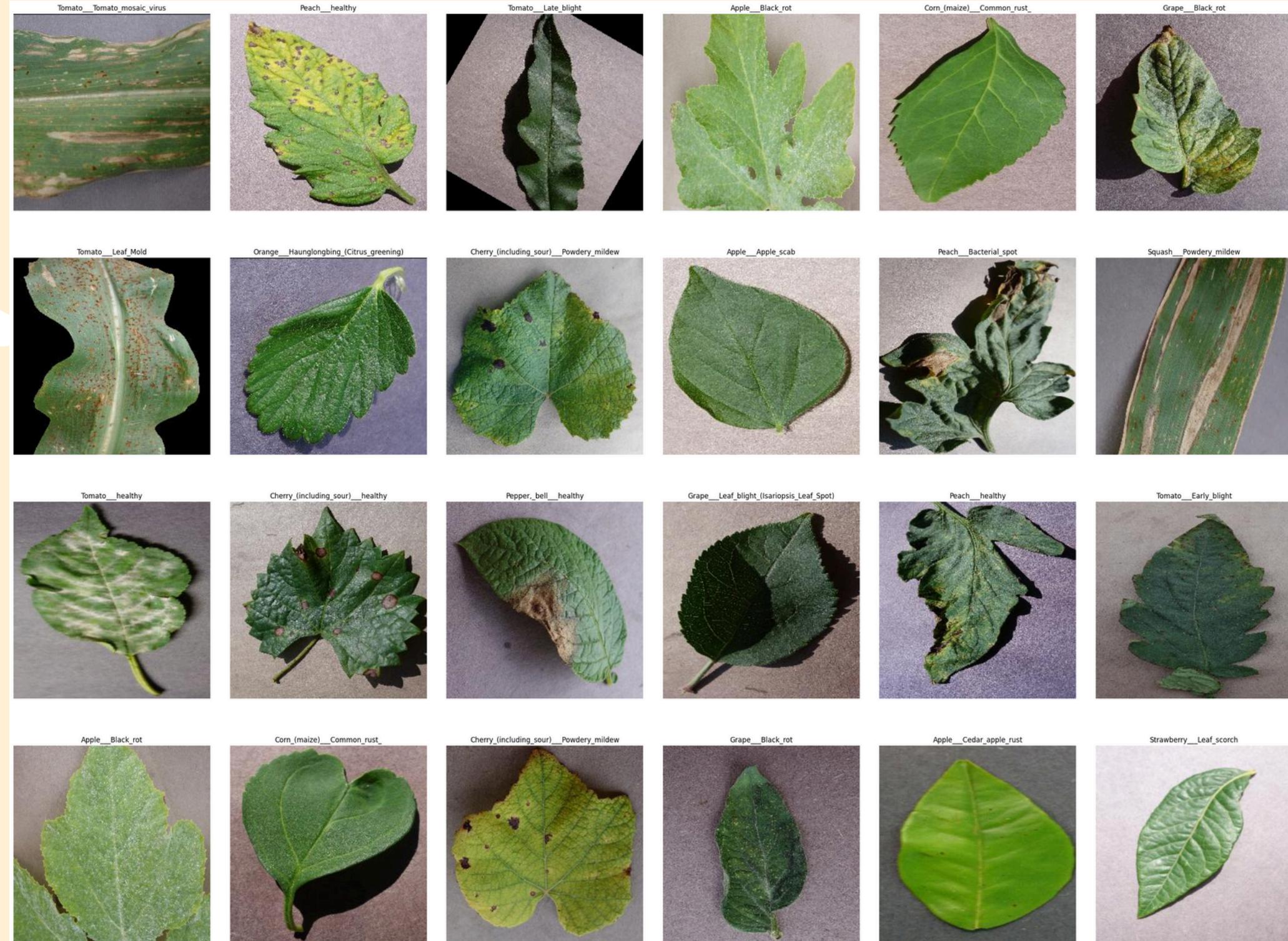


Images per each class of plant disease





Visualizing Sample Images



MODEL DESCRIPTION



Convolutional Layers

Input images
Shape (128, 128, 3)

32 filters of size 3x3
with ReLU activation

The number of filters
increases
to 64, 128,
256 & 512

**extraction of
complex
features**

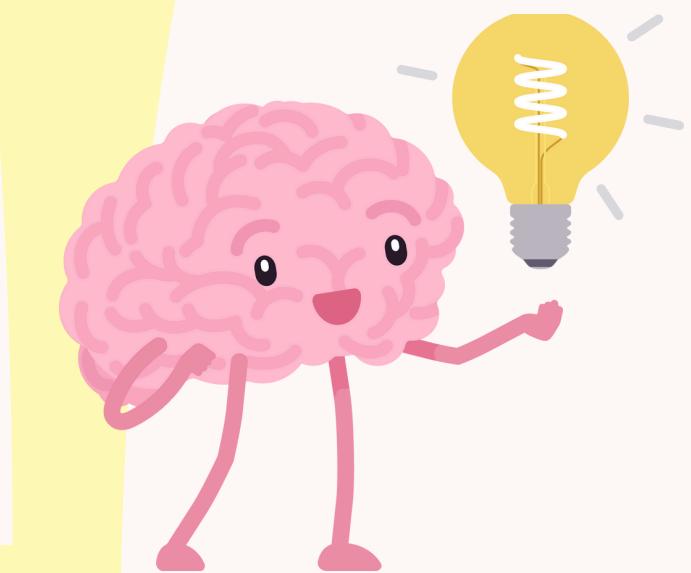


Max-Pooling Layers

*convolutional
block*

*2x2 max-pooling
layer*

reduce
dimensionality
highlight
significant
features



Dropout Layers

*disables some
neurons during
training*

**prevent
overfitting**

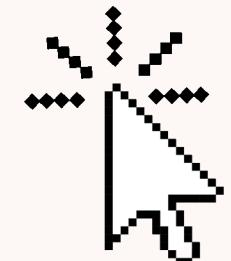


Dense Layers

first dense layer



*1500 neurons with
ReLU activation*

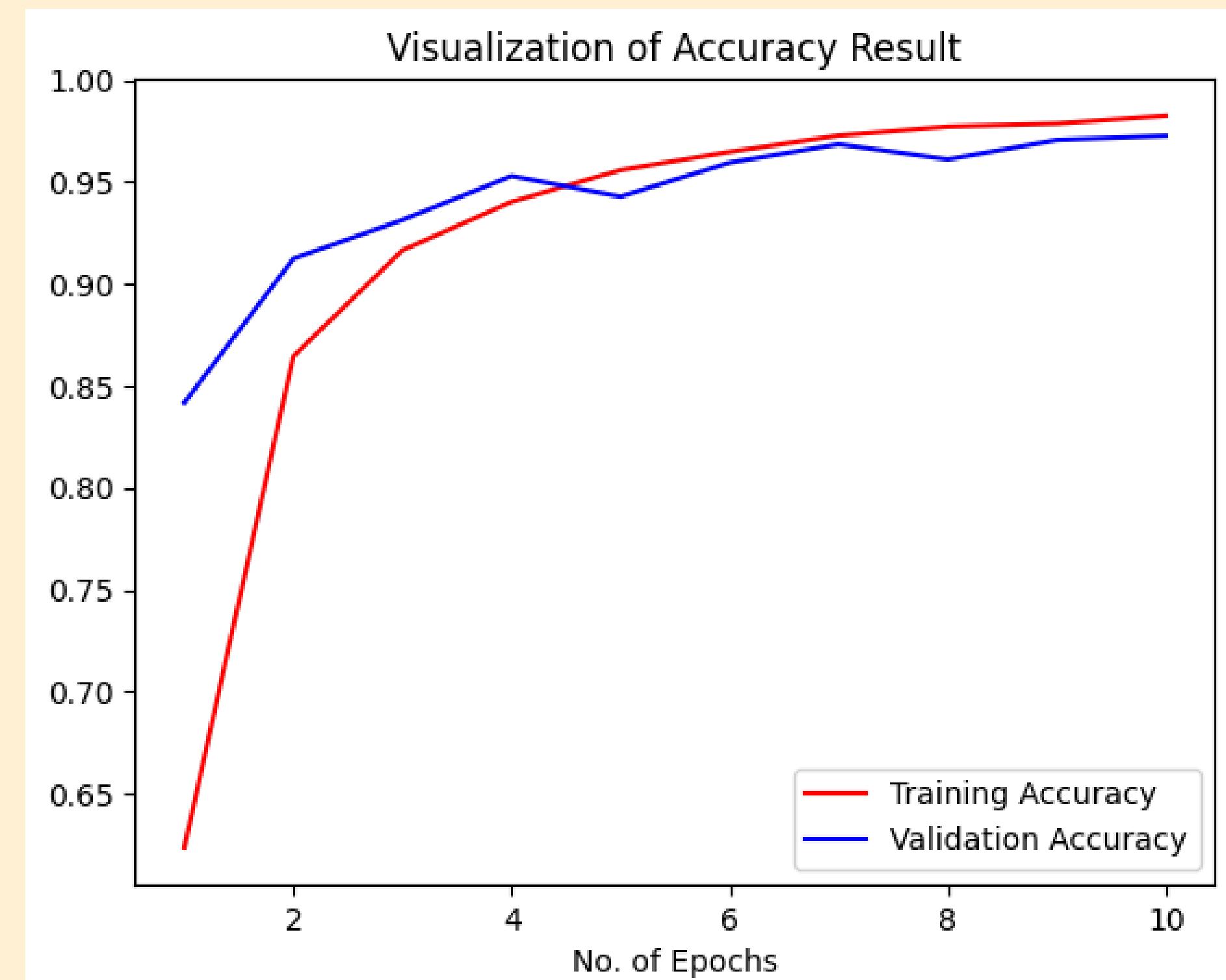


*Took flattened
image features as
input*

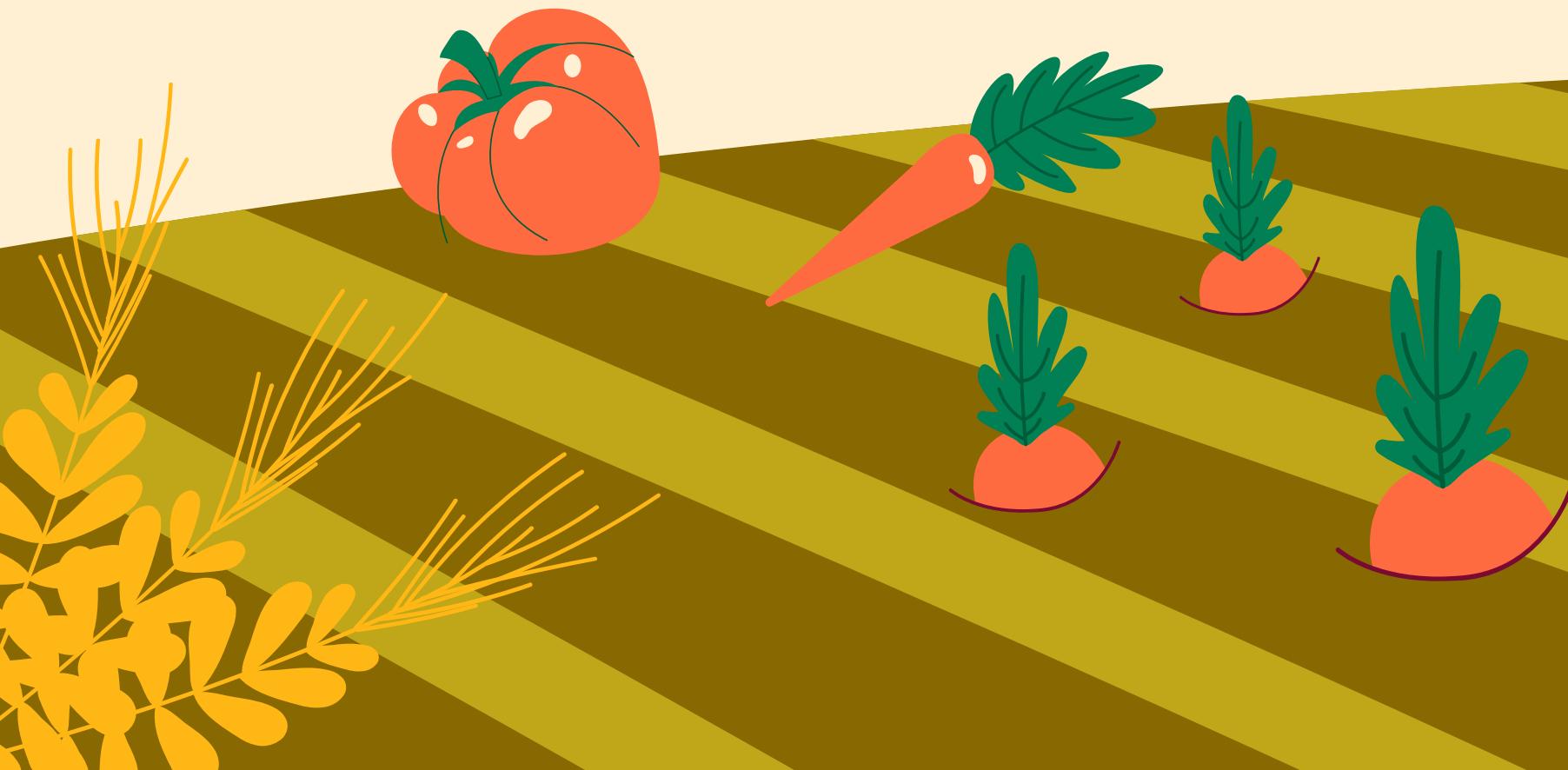
*output layer has
38 neurons with
softmax activation*

Results

Both training and validation accuracy steadily improve and converge around 95-97% over 10 epochs, with minimal overfitting.



Business model Canva



Key Partners	Key Activities	Value Proposition	Customer Relationships	Customer Segments
<ul style="list-style-type: none">Agricultural Research Institutes: These institutions can provide valuable data and insights on plant diseases and help with validation of your robot's disease detection capabilities.Farmers and Agricultural Cooperatives: Direct partnerships with farming communities will give you practical feedback and access to real-world testing environments.Plant Disease Experts: Specialists who can contribute to improving the disease detection algorithms and ensure accuracy.	<ul style="list-style-type: none">Robot Development: Design and build with LiDAR and camera.Disease Detection Algorithm: Develop and train AI models.Mobile App: Create app for real-time reports.Field Testing: Test in real environments and improve.Partnership Management: Collaborate with suppliers, farmers, and experts.Maintenance and Support: Provide technical support and updates.	<ul style="list-style-type: none">Accurate Detection: Early plant disease detection with AI and sensors.Real-Time Monitoring: Remote field monitoring via mobile app.Cost Efficiency: Reduces pesticide use and saves costs.User-Friendly: Simple app interface with actionable insights.Sustainability: Promotes healthier crops and reduces waste.	<ul style="list-style-type: none">Personalized Support: Help with setup and troubleshooting.Community Building: Online platform for user tips and experiences.Feedback Channels: Open communication for product improvement.24/7 Support and After-Sales Service.Intuitive User Interface.	<ul style="list-style-type: none">Farmers: Small and large-scale, seeking early disease detection.Agricultural Cooperatives: Investing in tech for multiple members.Agribusinesses: Large-scale farming operations needing monitoring tools.Agri-Tech Companies: Potential partners for tech integration.Research Institutions: Universities and organizations for plant disease studies.
	<h3>Key Resources</h3> <ul style="list-style-type: none">Technology & Hardware: LiDAR, cameras, and the robot.AI & Algorithms: Powering plant disease detection.Mobile App: Enables real-time monitoring and alerts.Data: For model training, refinement, and updates.		<h3>Channels</h3> <ul style="list-style-type: none">App Store / Google PlayDigital Marketing (website, social media)Online Advertising and Awareness Campaigns	
	<h3>Cost Structure</h3> <ul style="list-style-type: none">Maintenance & UpdatesMarketing & SalesPartnership Costs		<h3>Revenue Streams</h3> <ul style="list-style-type: none">Direct Sales: Revenue from selling the robot and app.Subscription Model: Ongoing access to premium features, updates, and support.	

SUSTAINABLE DEVELOPMENT GOALS



FOR THE GOALS

01
NO POVERTY



02
ZERO HUNGER



03
GOOD HEALTH
AND WELL-BEING



04
QUALITY EDUCATION



05
GENDER EQUALITY



06
CLEAN WATER
AND SANITATION



07
AFFORDABLE
AND CLEAN ENERGY



08
DECENT WORK AND
ECONOMIC GROWTH



09
INDUSTRY, INNOVATION
AND INFRASTRUCTURE



10
REDUCED
INEQUALITIES



11
SUSTAINABLE CITIES
AND COMMUNITIES



12
RESPONSIBLE
CONSUMPTION AND
PRODUCTION



13
CLIMATE ACTION



14
LIFE BELOW WATER



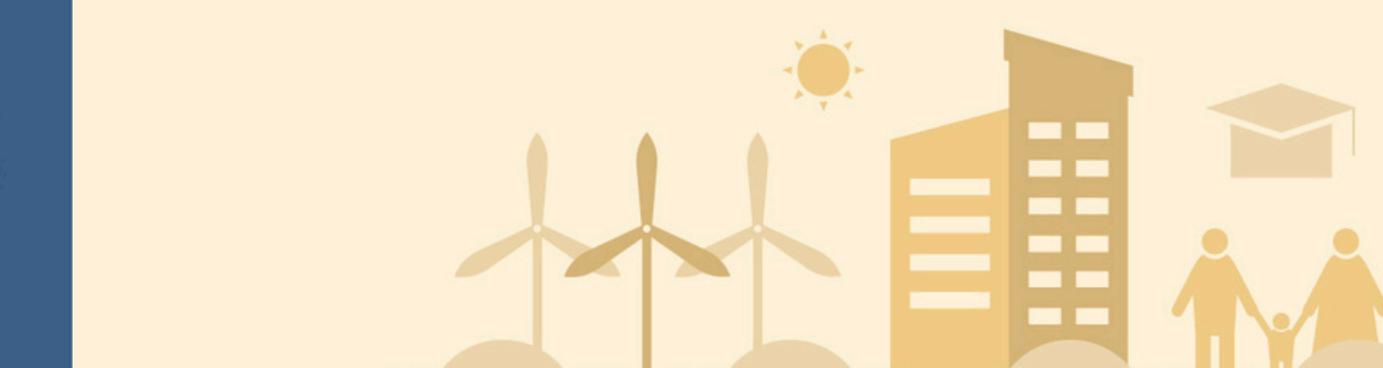
15
LIFE ON LAND



16
PEACE, JUSTICE AND
STRONG INSTITUTIONS



17
PARTNERSHIPS
FOR THE GOALS

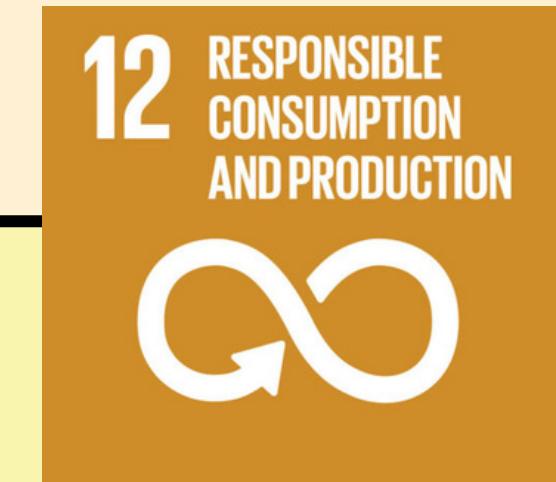


SUSTAINABLE DEVELOPMENT GOALS (SDGS)

- ✓ Detect plant diseases early
- ✓ Improve crop yields
- ✓ Reduce food loss --> food security.



✓ healthier crops with fewer diseases
→ well-being of both farmers and consumers



- ✓ Early disease detection
- reduce waste & the overuse of chemicals



Optimize agricultural processes

Reduce chemical usage



lower the environmental footprint of farming



Climate change mitigation



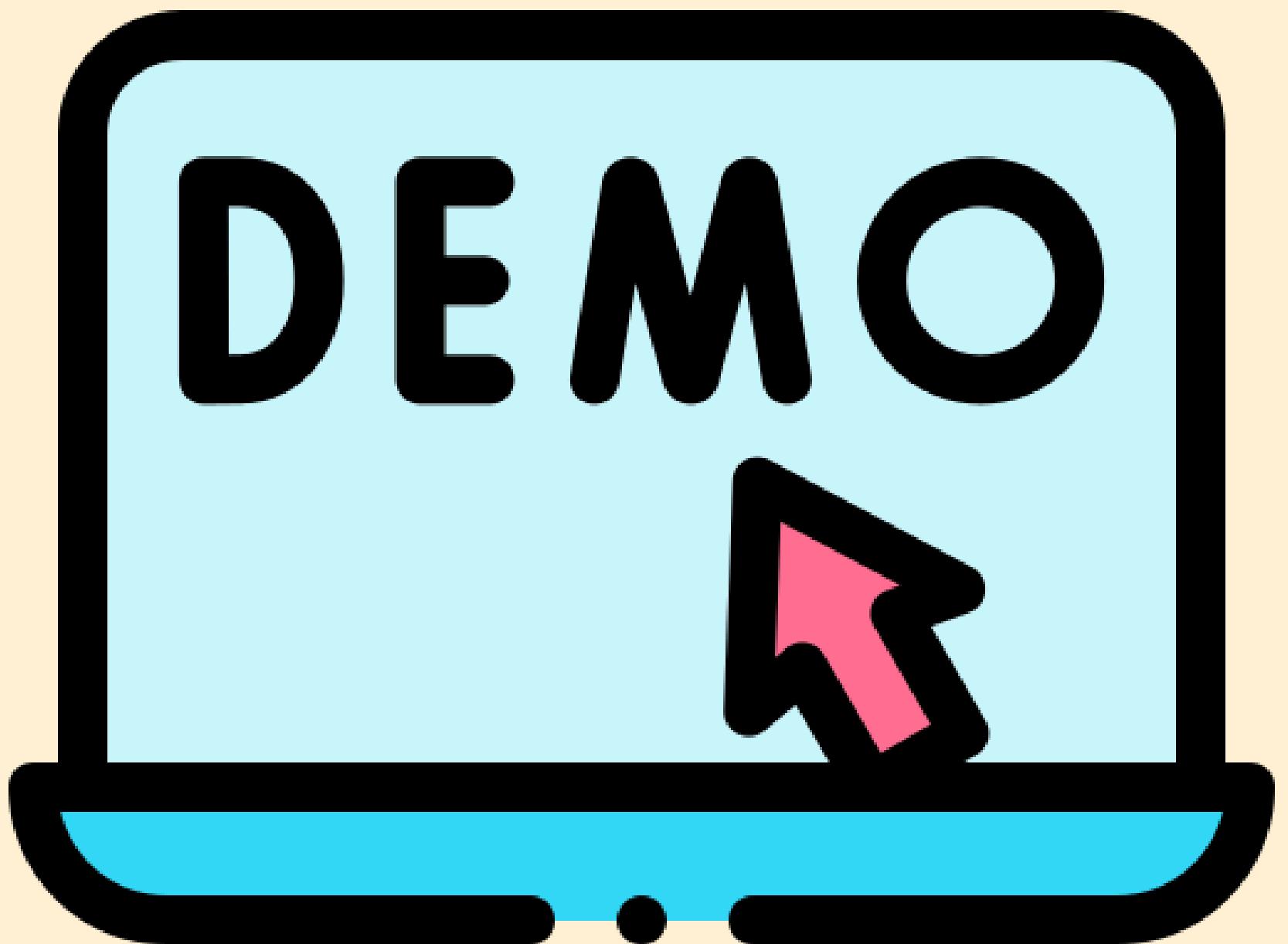
promote the protection of plant health

support biodiversity and sustainable use of ecosystems.



OUR MARKET STRATEGY





OUR TEAM



Maram Boufaroua



Israa Samaali



Siwar Gharbi



Roua Lagha

