Vechür Aviation Artificial Intelligence and Agricultural Technologies Co.

VECHUR

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IS A VECHUR BRAND

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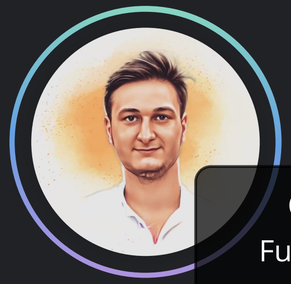
Our Team

Ali Furkan KAMALI
General Manager
Electrical Electronics Engineer

Umut SERT
R&D and Innavation Leader
Electrical Electronics Engineer

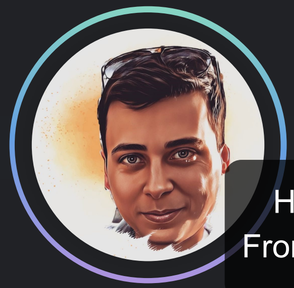
Akif Tayfun HEREN
Business Development
Mechanical Engineer

Ömer ŞAHİN
Full Stack Developer



Cihat ŞENGÜN
Full Stack Developer

Hüseyin GÖÇER
Art Director



Hakan SALTAN
Frontend Developer

SUBJECT AND PURPOSE OF THE PROJECT

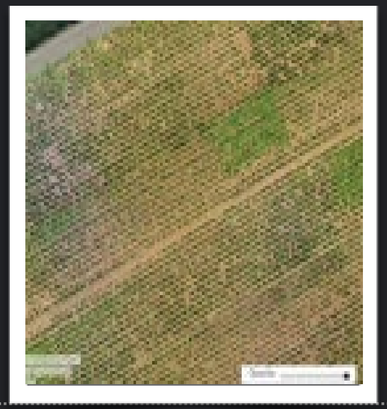
DEVELOPMENT OF AL- ASSISTED ANALYSIS SOFTWARE FROM SATELLITE AND DRONE IMAGES IN AGRICULTURE FOR INCREASING THR PRODUCT YIELD

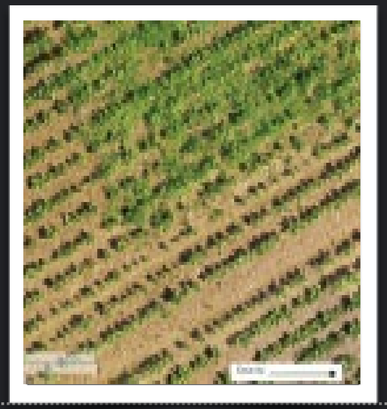
PROJECT AIM

Our cutting-edge entrepreneurial project aim to be able to leveraging artificial intelligence to develop advanced software that utilizes both RGB and multispectral images captured from satellite and drone technology, specifically for use in agriculture. Our software is capable of analyzing a variety of critical factors including harvest periods, plant growth, yield estimations, moisture levels, plant health, plant density, and leaf area. With the aid of our innovative software, farmers and agricultural professionals can make informed decisions and optimize crop yields, ultimately leading to increased profitability and sustainability in the industry.

Material and Methods

Systems to be used in the development of the analysis system





METHOD

Artificial intelligence
Data analysis
Deep Learning
Orthomosaic Imaging
2D Mapping

TOOL

RGB Drone
Multispectral Drone
Satellite

Motivation and Benefits

MOTIVATION

- Developing sustainable farming practices
- Reducing dependency on external software
- Water scarcity
- Increasing Population
- 2023 and 2050 targets of our country

BENEFITS

- Increasing crop yield and quality
- Reducing the use of chemicals
- Estimating annual yield
- Saving water
- Training of qualified personnel
- Developing value-added products in line with the national technology move

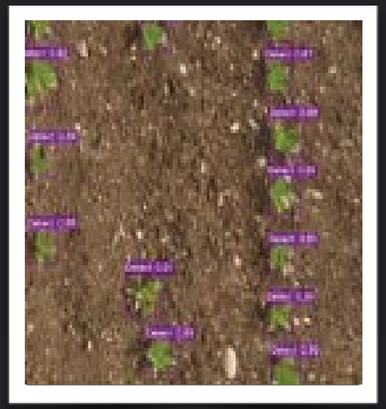
Products and Innovations

INNOVATIVE

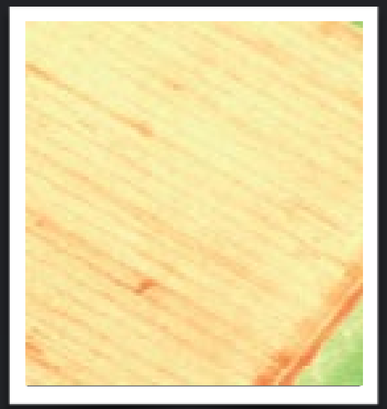
- Artificial Intelligence Based
- Phytosanitary Analysis
- Developing Plant Type-Specific Big
- Data Infrastructure and Algorithm
- Development of Customer-Specific
- Analysis Systems
- Artificial Intelligence Based Anomaly detection
- Creating a visual-based decision support system
- for farmers

PRODUCT

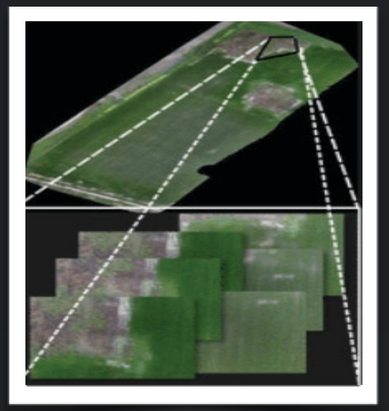
- Plant Health
- Plant Growth Analysis
- Determination of the Harvest Period
- Moisture Analysis
- Tassel Count
- Plant Density Analysis
- Yield Forecast
- Plant Area Analysis
- Mapping



Plant Count and Density



Plant Health



2D Mapping

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TECHNOLOGY AND METHODS TO BE USED

TECHNOLOGIES

- Satellite and Drone, Photography Systems
- Data Processing, Data Replication and Data Analysis Structures
- Multispectral analyzes such as NDVI, NDRE, MSAVI
- Deep Learning Based Object Classification, Object Detection and Object Segmentation models
- Large Visual Imaging Systems

METHODS

- 2D Mapping, Image Fusion
- Artificial Intelligence Project Lifecycle
- Data collection and analysis
- EDA Creation
- Creation of interface and web-based
- environments for deployment
- Plant Density Analysis

TECHNICAL TOOLS

- Trello
- Agile Project Management
- github
- CloudShare
- Python, JavaScript, HTML, CSS
- Languages OpenCV, Pytorch, Tensorflow,
- Numpy, Pandas Libraries

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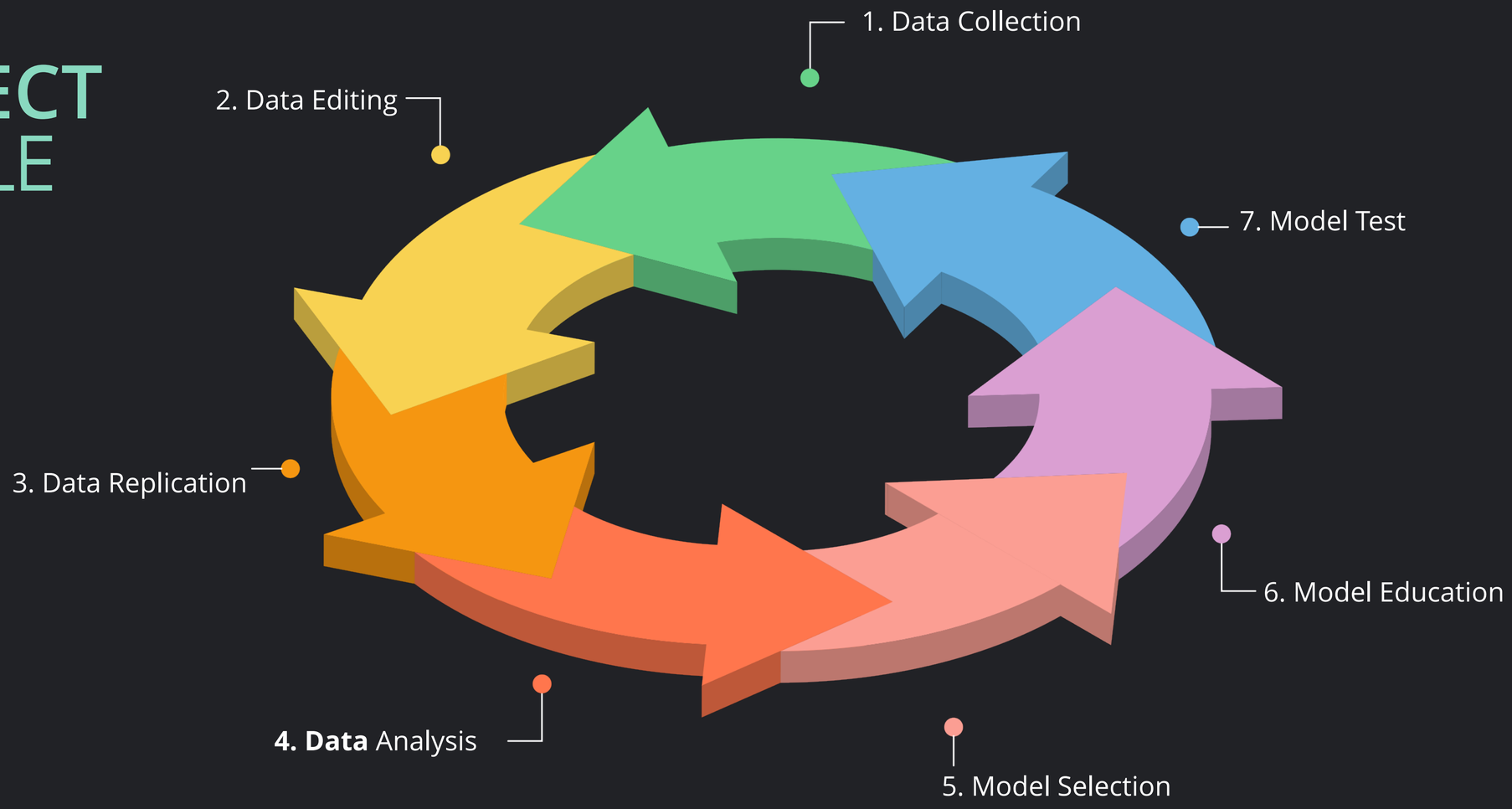
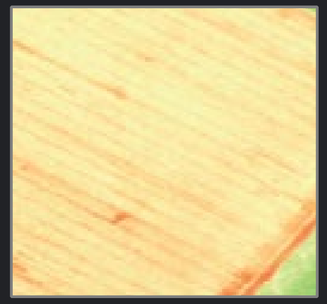
AL PROJECT LIFE CYCLE



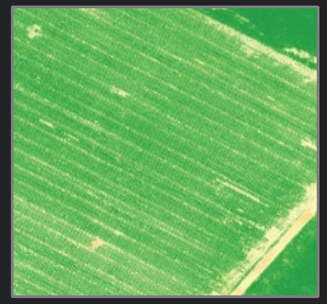
The Need For Artificial Intelligence

Use of agricultural ındex required the development of the project

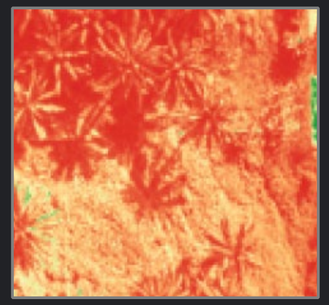


NDRE

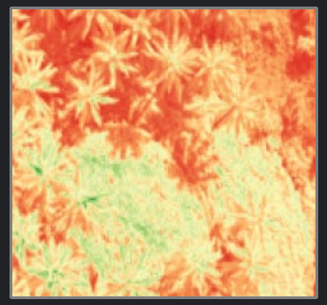
NDVI



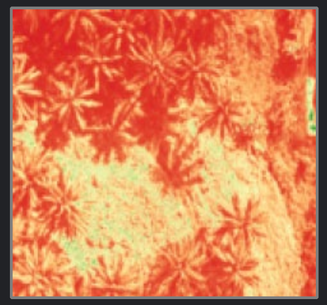
MSAVI



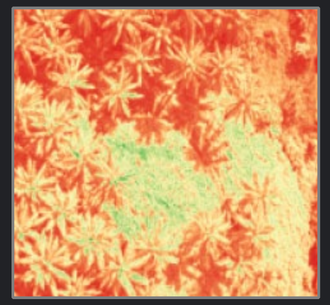
RED



NIR



GREEN



RE

INDEX

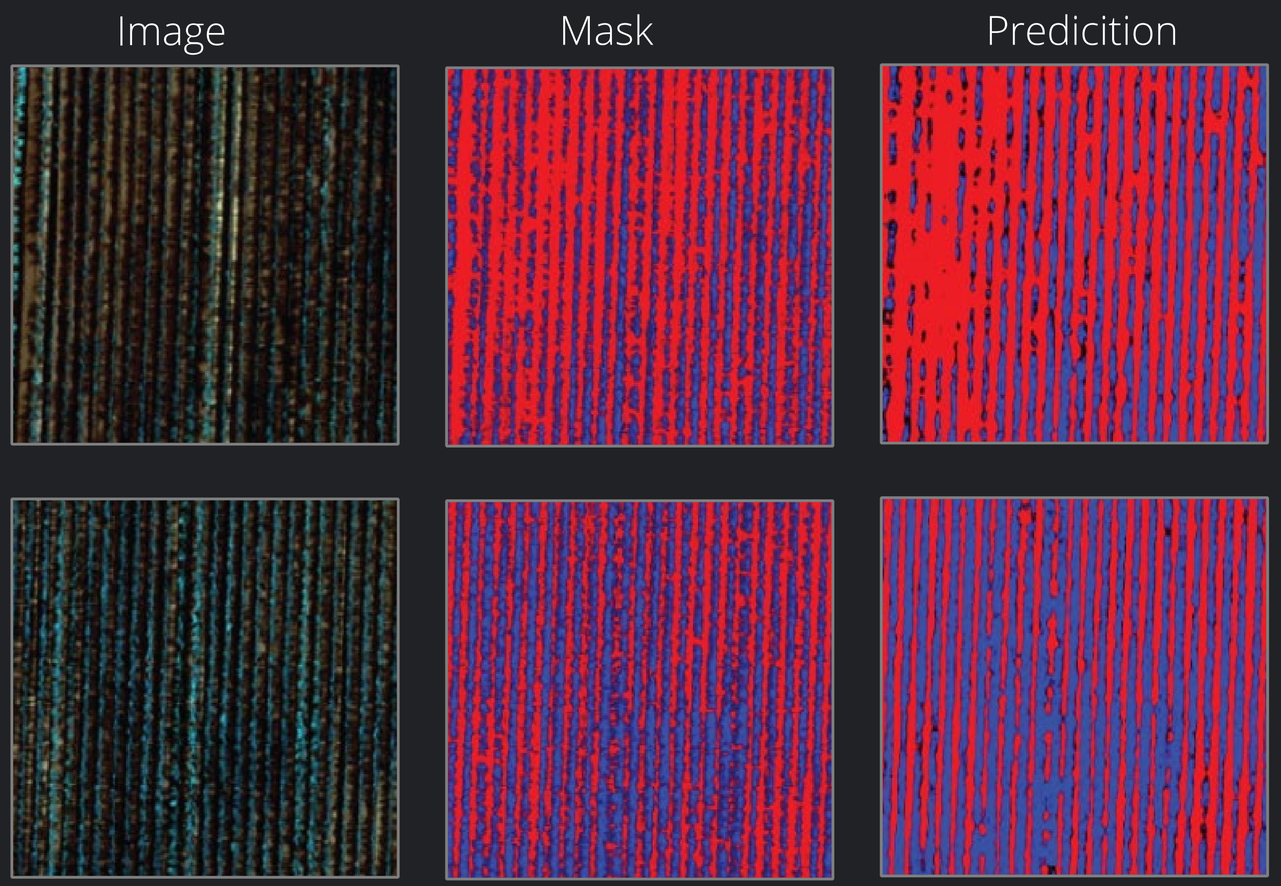
(NDVI) Normalized plant difference ındex
(NDRE) Infrared normalized plant difference ındex
(MSAVI) Modified soil difference ındex

APPLICATION

Phenotying, Water stress, Soil moisture
Crop yield, Biomass, Didease
Crop yield, Biomass, Water stress

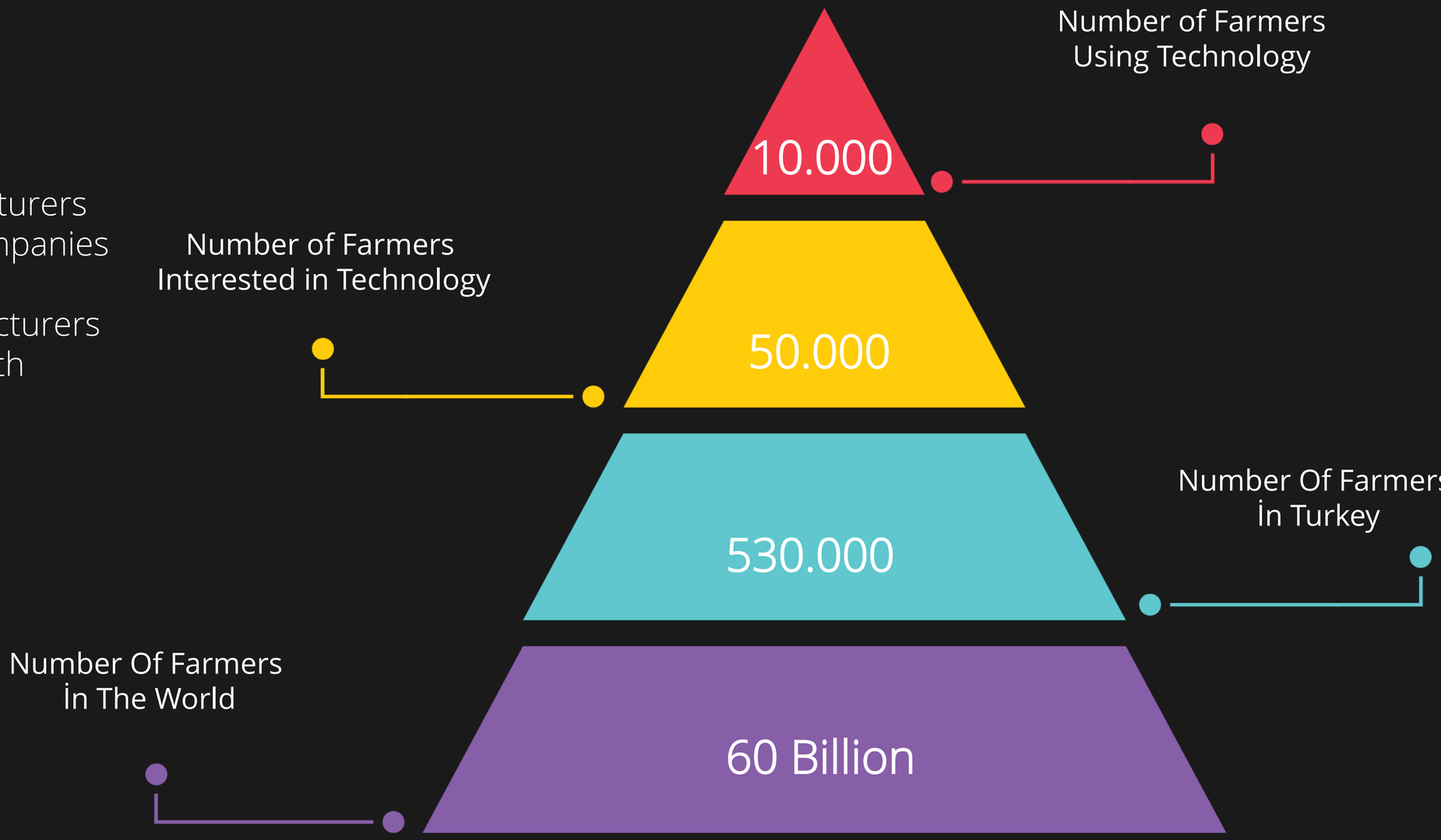
The Need For Artificial Intelligence

Multispectral artificial intelligence test results



Target Customers and Market Size

- Seed producers
- Fertilizer manufacturers
- Pharmaceutical manufacturers
- Industrıal agriculture companies
- Farmers
- Agriculture dron manufacturers
- Companies that spray with drones



Our aim of Licensing

At the end of the Project, the products will be
Presented as a package and transferred to the customer.

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STARTER PACKAGE
1.500 ₺ / Month

- Data visualization
- Plant count
- Mapping
- Plant health
- Moisture analysis

BUY

MEDIUM PACKAGE
3.000 ₺ / Month

- Starter package features
- Data analysis
- Plant density analysis
- Tassel count
- Determination of harvest time

BUY

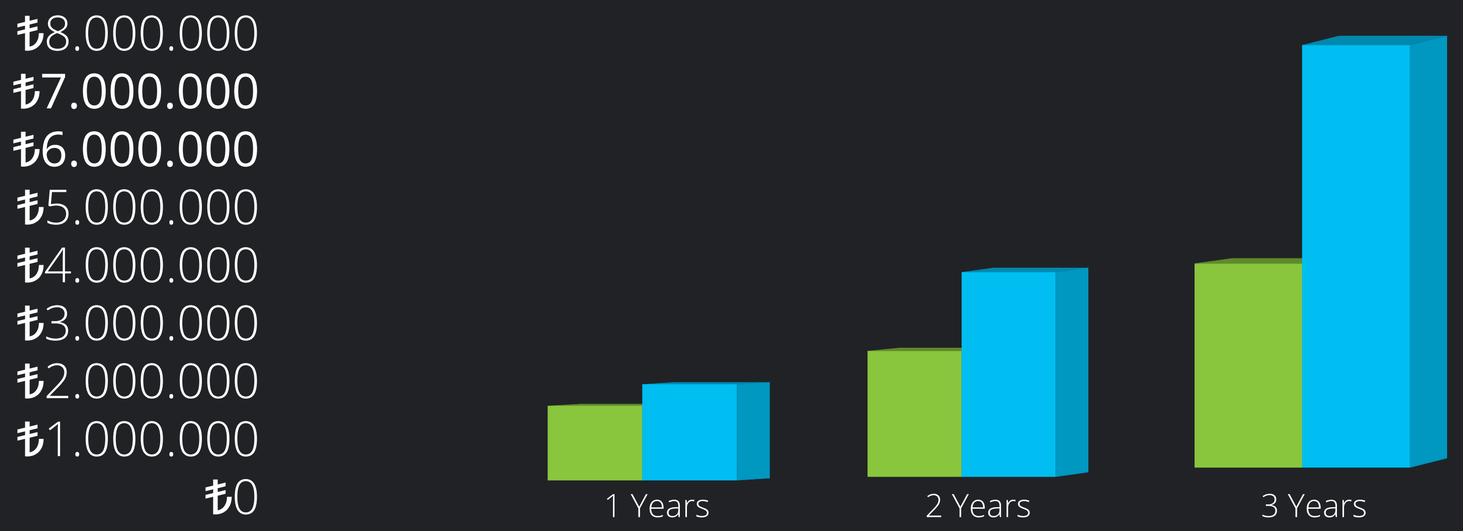
EXPERT PACKAGE
4.500 ₺ / Month

- Medium package features
- Data support advice
- Yield forecast
- Plant area analysis
- Plant growth analysis

BUY

Sales Targets 3 Years of Projection

3 years of Domestic sales- Internation sales targets



	1 Years	2 Years	3 Years
Domestic	₺1.080.000	₺2.160.000	₺3.600.000
International	₺1.440.000	₺3.600.000	₺7.200.000

Competitor Analysis

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Drone based analysis	✓	✓	✓	✓	✗	✓
Satellite based analysis	✗	✗	✗	✓	✓	✓
Plant health	✓	✓	✓	✓	✓	✓
Plant density analysis	✓	✓	✓	✗	✗	✓
Harvest analysis	✗	✗	✗	✗	✓	✓
Plant growth analysis	✗	✗	✗	✗	✓	✓
Weed detection	✓	✓	✗	✗	✗	✗
Yield forecast	✗	✗	✗	✗	✓	✓
Leaf area analysis	✓	✓	✗	✗	✗	✓
Tassel count	✓	✗	✗	✗	✗	✗
3D mapping	✗	✗	✓	✓	✗	✗
Plant damage analysis	✗	✓	✗	✗	✗	✗
Plant rollover analysis	✓	✓	✗	✗	✗	✗
Price ranger	500-4000$ years	2$ for each Analiysis per acre	1788-7188$ years	1500$ years	Bid procedure Price provided	1000-3000$ years

5 Year Business Plan Projection

2011
Teknofest competition team establishment

2020-22
7competition and 1 prize and 6different category ın first 10

2022
2022 Start-up establishment
2022 KOGEB enterpreneurship project

2023
Maize and sunflower based analysis

- Planet health
- Planet growth analysis
- Determination of the harvest Period
- Moisture analiysis
- Yield forecast
- Plant area analysis

Web based online anlysis system deployment

2024
- Wheat beet and rice anlysis
- Disease detection research and al model development
- Web based decision support system for agriculture

2025
- Drone integration of platform
- Local pesticide spraying application for drones
- Integration through platform

2026
- Fruit and vegatables analysis
- Yield analysis
- Decision support system development
- Agriculture hyperSpectral drone develoment

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