

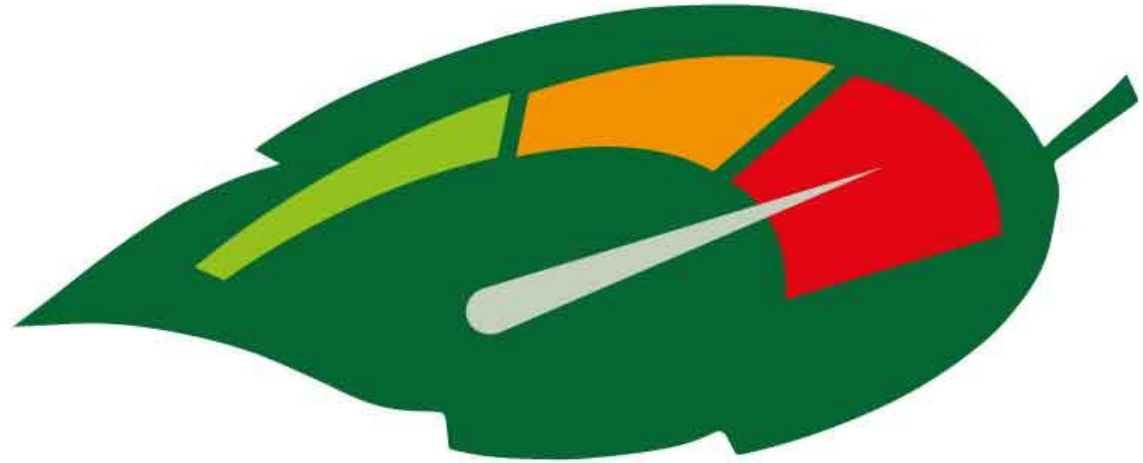
# BigData, AI & Robotics

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# RAPAGRA

PLANT HEALTH CHECK

# Mission

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We reduce crop loss & increase yields for farmers while minimizing usage of chemicals, fertilizer and water.

We keep the farmers to farm and work with nature.





# Case 1

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Each year farmers apply millions of tons of manufactured fertilizer, of which 40-80 percent is lost to the environment.

(USDA, The nutrient challenge 2023)

**Rapaqra will improve timing of spraying and effectiveness**



## Case 2: Coffee Berry Disease

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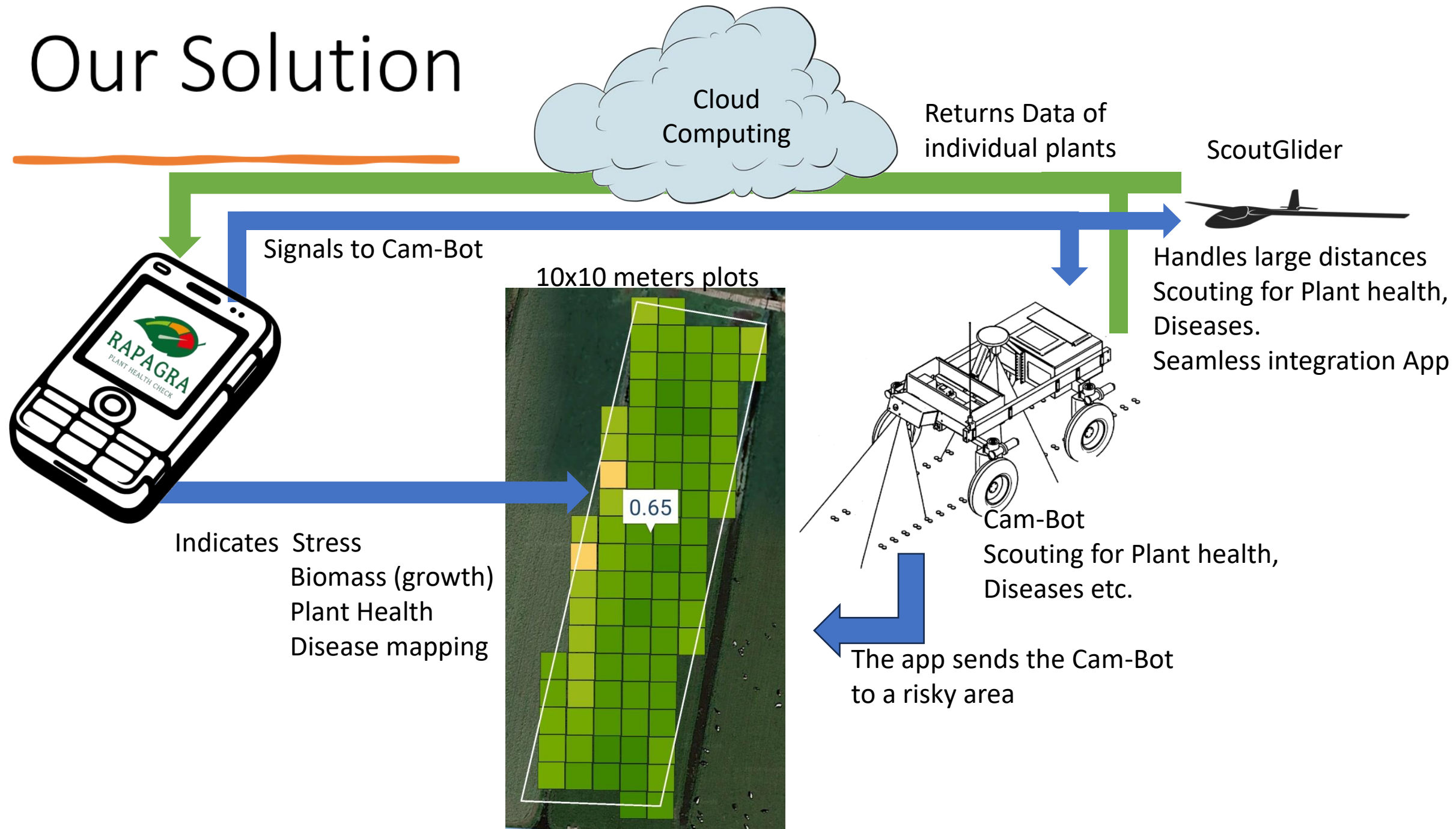
Coffee Berry Disease (CBD) is caused by a fungal plant pathogen (*Colletotrichum Kahawae*) in Arabica Coffee. If not detected and treated correctly and quick, it may cause 90% yield loss. Use of copper fungicides or removal are main solutions.

(MSU College of Agriculture, Michigan)





# Our Solution



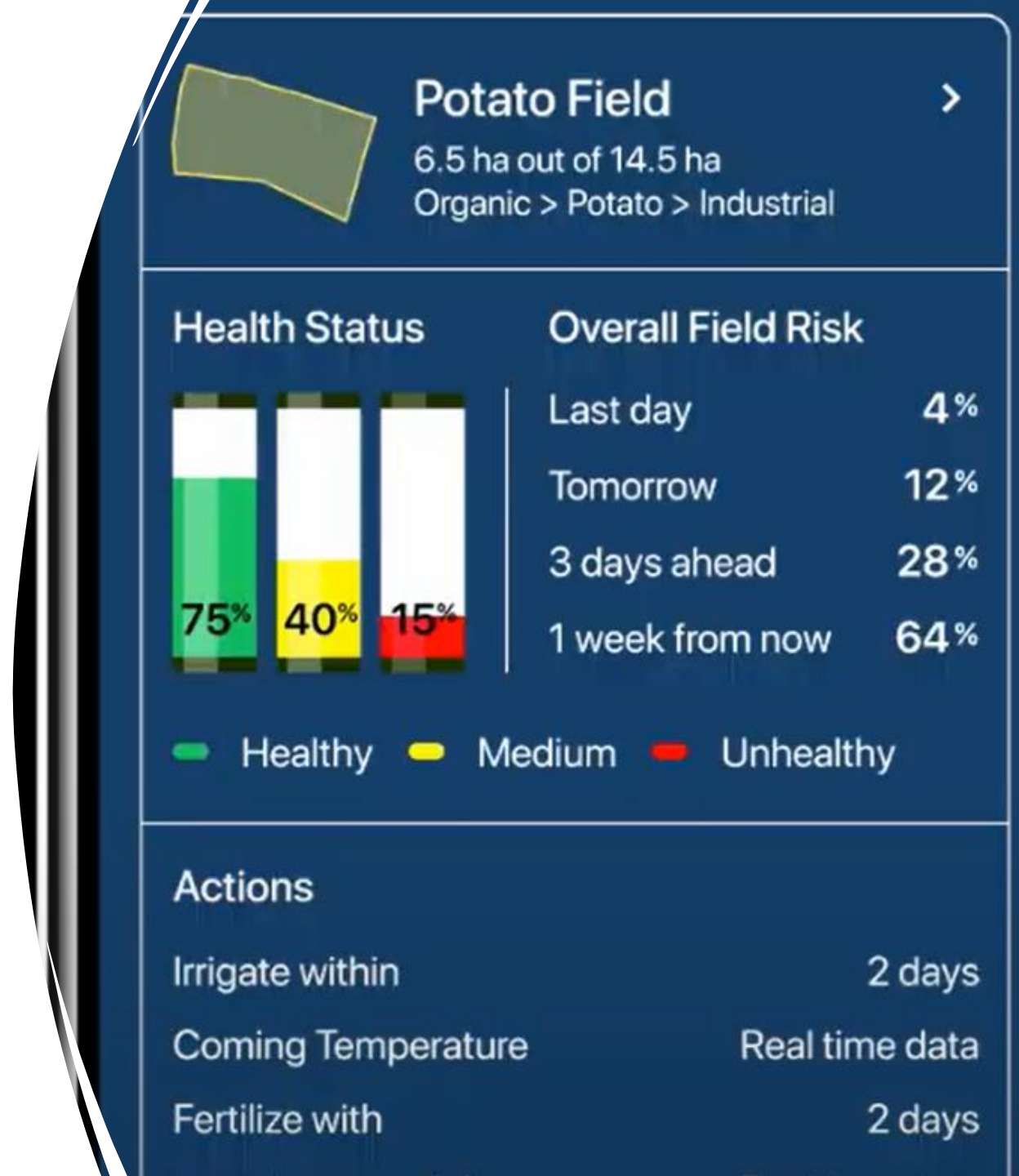
# In a nutshell

The **app** gives recommendations on:

- Fertilizing
- Spraying
- Irrigating

Leading to higher yields and lower costs

- The **Cam-Bot** and **ScoutGlider**
- Singling out the weak plants
- Monitoring Digital Twins
- Plant-based recommendations



# Why Rapagra?

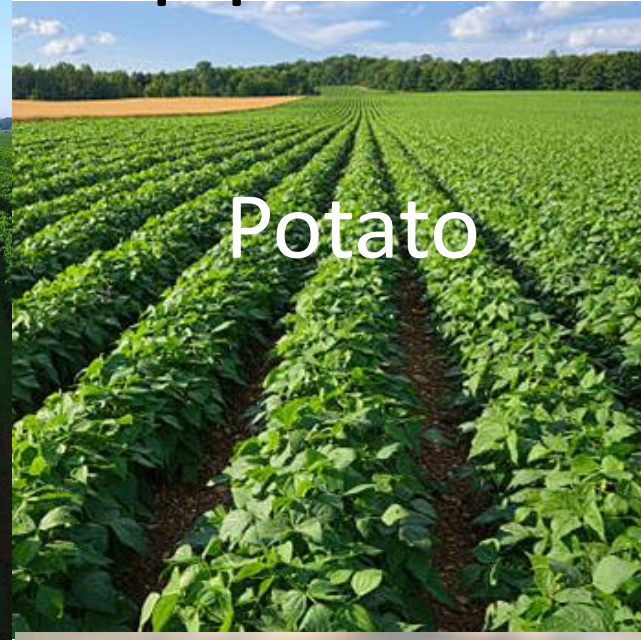
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- Scalable App with no additional IoT
- Complementary Scouting Robot driving in the night for field data on Coffee fields
- ScoutGlider for large fields
- Dynamic & Tailored recommendations to improve health & increase yields
- Forecasts impact of diseases in early stage
- Meshing data like Satellite, Drone, Meteorological, Soil & Plant-specific Data












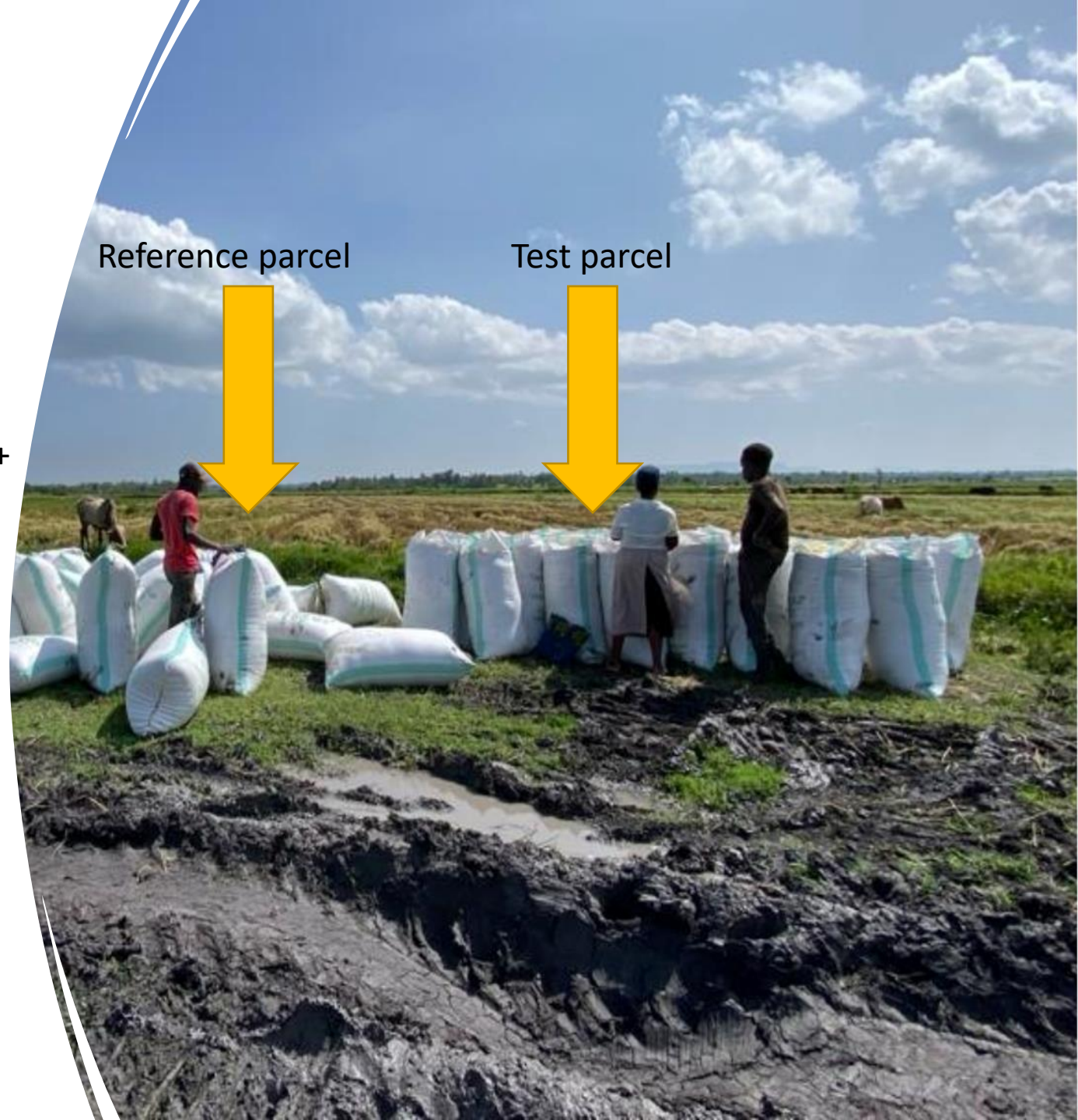
# Crops available in the app





# Impact

|   | APP    | APP+CamBot +<br>Glider |
|---|--------|------------------------|
| • Direct cost            | 20-30% | 30-40%                 |
| • Indirect cost          | 15-30% | 25-40%                 |
| • Yields                 | 10-20% | 15-35%                 |
| • Toxics                | 5-30%  | 15-35%                 |
| • Nutrient efficiency  | 10-25% | 20-45%                 |
| • Water efficiency     | 20-40% | 30-50%                 |
| • Labor costs          | 10-20% | 40-60%                 |



# Why Other remote sensing?

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- Irregularity of satellite data
- Plant health & disease monitoring per plant
- Field data need (temp/humidity etc.)
- Images under the (vulnerable) leaf and stem with CamBot
- Day-2-Day images from fields where risk is higher for diseases
- App=10x10m; Glider=2x2m; Cam-Bot=0,5x0,5m





# App Successes

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## Netherlands:

- Decrease in cost for diseases by 30%
- Labor decrease on spotting by 50% (incl Robot)
- Yield increase 5% on potato, asparagus, sugar beets



## Kenya:

- Yield increase 25% on rice 32 bags reference and 40 bags Rapagra app-managed



## Bangladesh:

- Decrease in cost for diseases by 44%
- Yield increase 50% on potato



A world map with a blue ocean background. Landmasses are shown in a naturalistic color palette of greens, browns, and tans. Numerous small, bright green patches are overlaid on the map, primarily concentrated in North America, Europe, and parts of Asia and Africa, indicating specific areas of interest or data points.

Rapagra monitors plant health  
and foresees impact of diseases

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