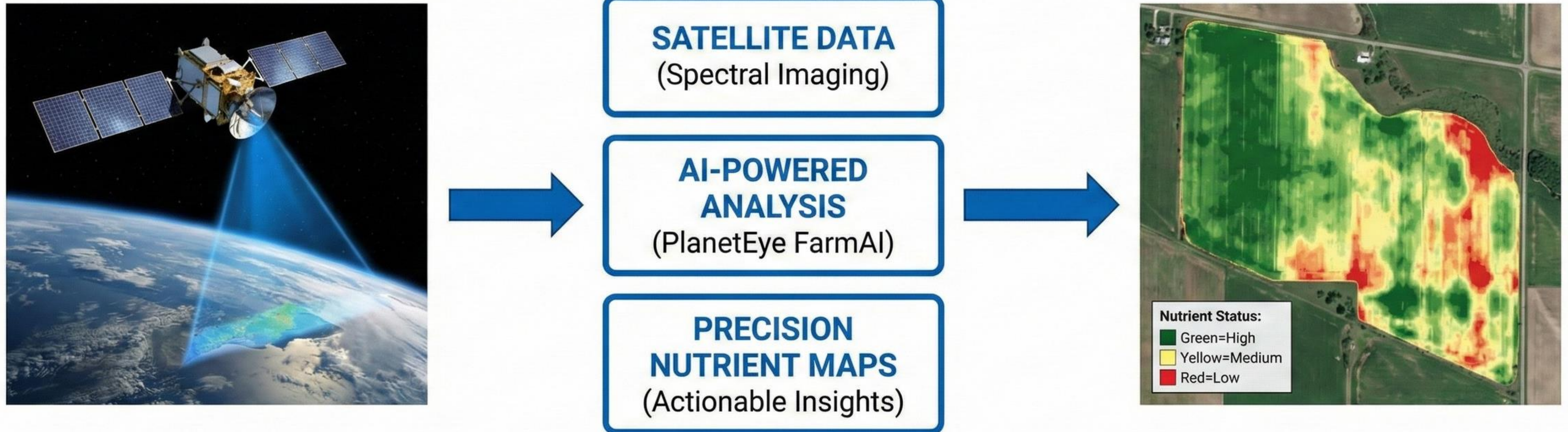
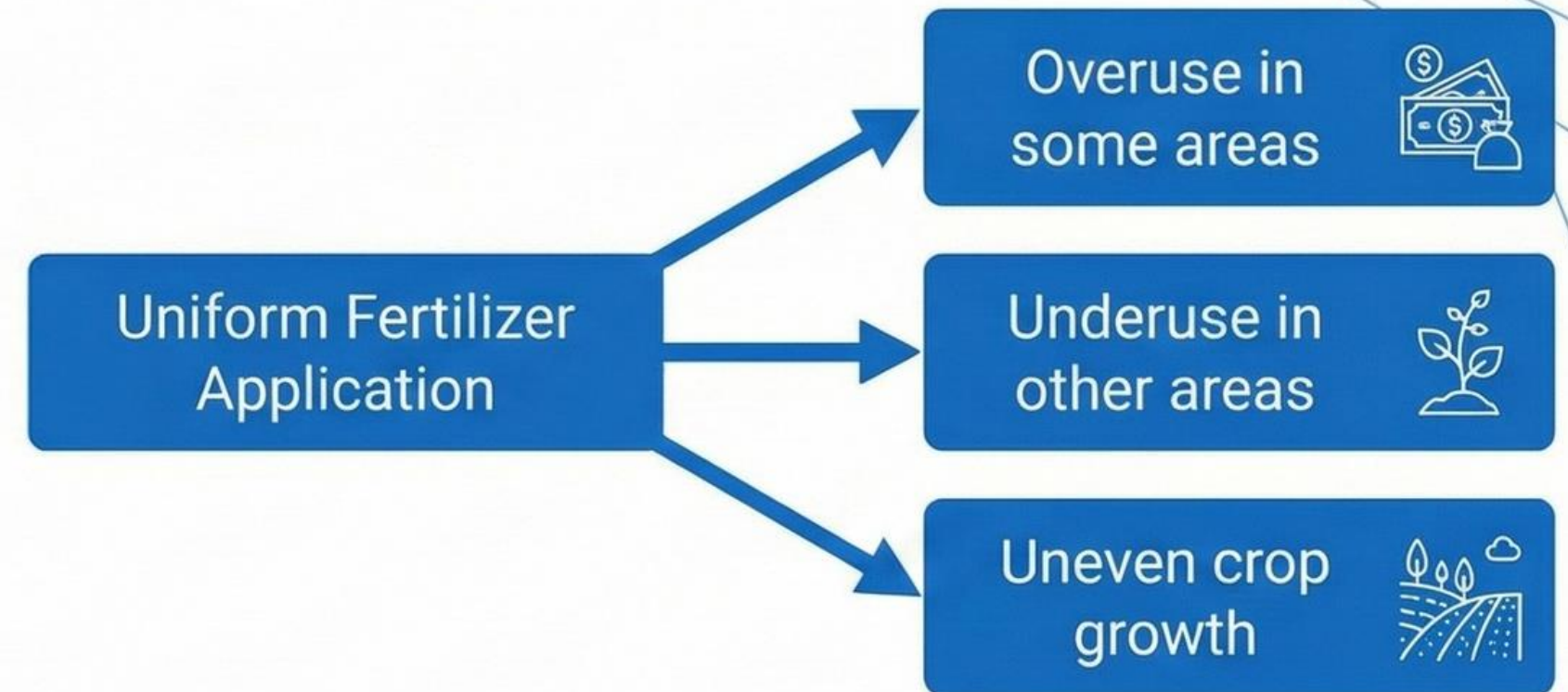


# Precision Nutrient Management Using Satellite and AI



# Introduction to Nutrient Management

Crops require a balanced nutrient supply for optimal growth. The challenge is uniform fertilizer application, which ignores field variability.



# Traditional Method of Fertilizer Application & Limitations

## Traditional Approach

Based on Experience  
/  
Routine



Uniform Application to  
Entire Field



Visual  
Symptom  
Check



Infrequent Soil Testing  
(Once/Season or  
None)



## Key Limitations



Time Consuming



Not Zone-Specific (Ignores Variability)



Symptoms Appear After Damage is Done



# Problems with Uniform Fertilizer Application

Uniform Application



## Economic & Yield Impact



- Wastage & Increased Input Cost



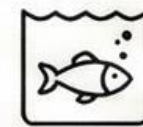
- Patchy Crop Growth & Reduced Yield Potential



## Environmental Consequences



- Nutrient Leaching into Soil & Water



- Environmental Pollution



# Importance of Proper Nutrient Management



Balanced crop growth



Strong root and shoot development



Better resistance to pests and diseases



Higher yield and better quality produce

# Major Nutrients Required by Crops

## Macronutrients (Primary)

Nitrogen (N)



Leaf growth

Phosphorus (P)



Root development

Potassium (K)








Overall plant strength

## Secondary & Micronutrients

-  • Sulfur
-  • Zinc
-  • Iron
-  • Magnesium
-  • Boron

**Each nutrient affects crop health differently.**

# Signs of Nutrient Deficiency in Crops

-  Yellowing of leaves
-  **Stunted** growth
-  Poor tillering/branching
-  **Uneven** crop height
-  Low vigor areas in the field



Symptoms Noticed

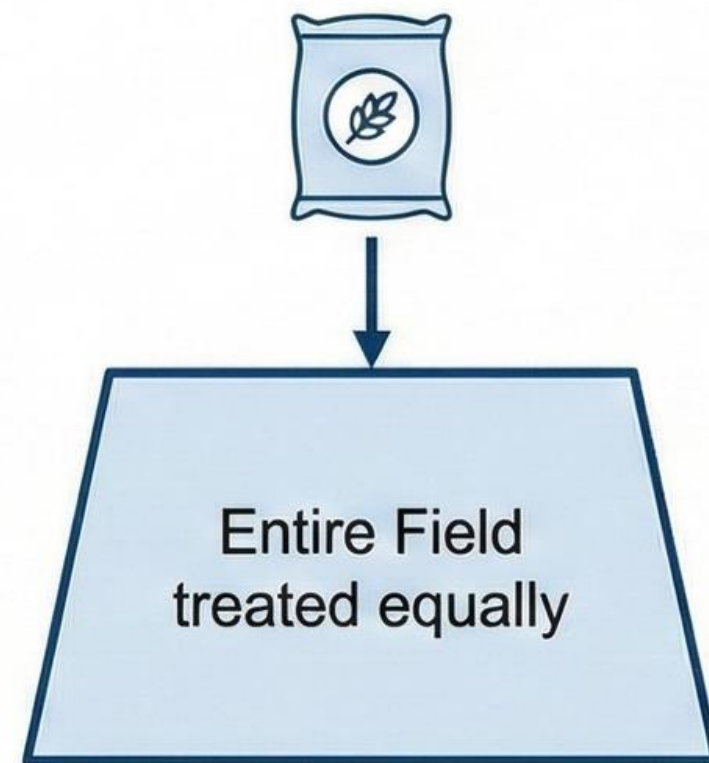


Yield Loss Has Started

# Concept of Precision Agriculture

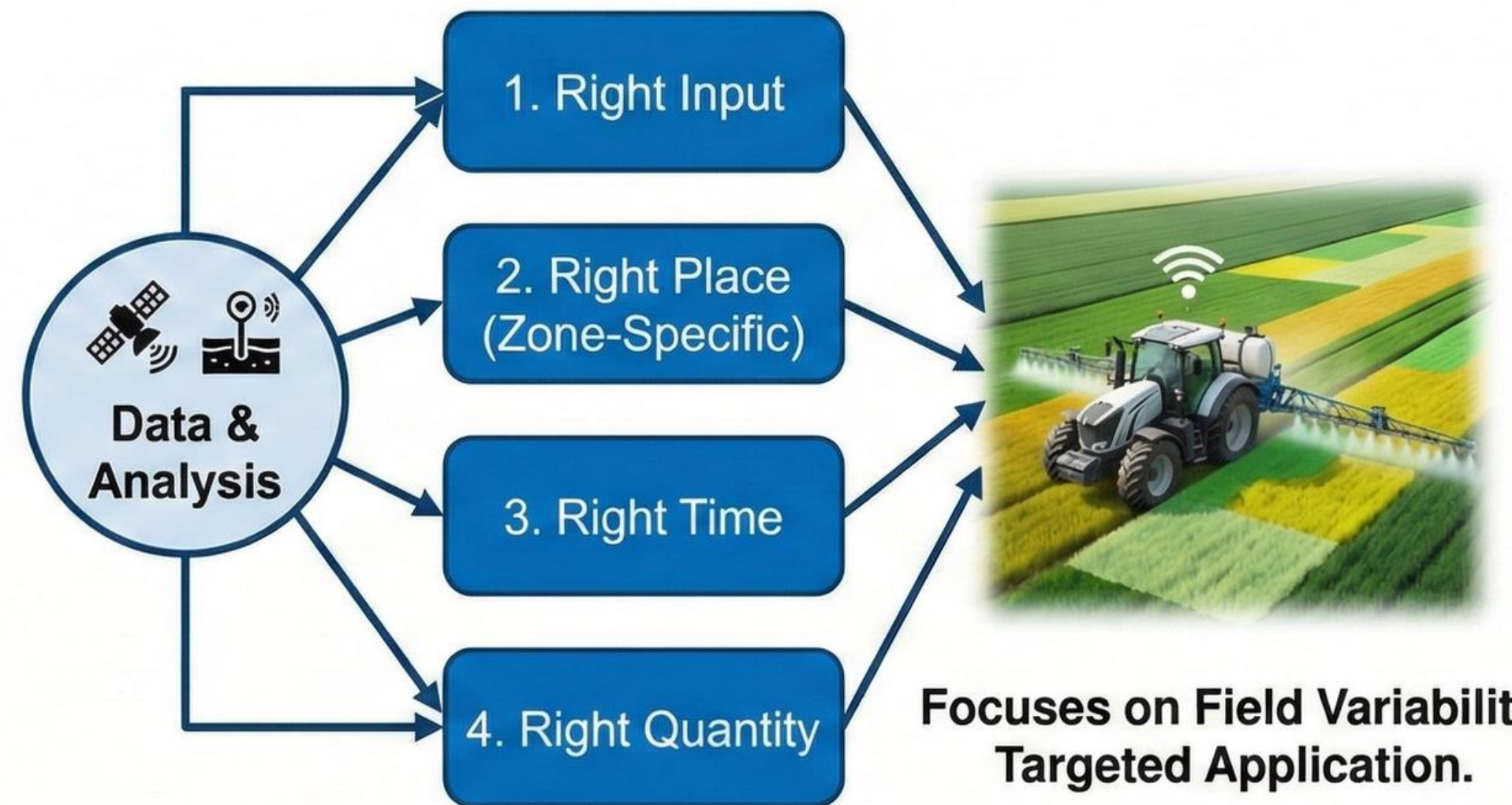
Right Input, Right Place, Right Time, Right Quantity – Addressing Field Variability

## Traditional Approach: Uniformity



**Ignores Variability.  
Uniform Application.**

## Precision Approach: Variability Management



**Focuses on Field Variability.  
Targeted Application.**

# Field Variability: Every Field is Not Uniform

## Even within a single farm



Soil fertility varies



Moisture varies



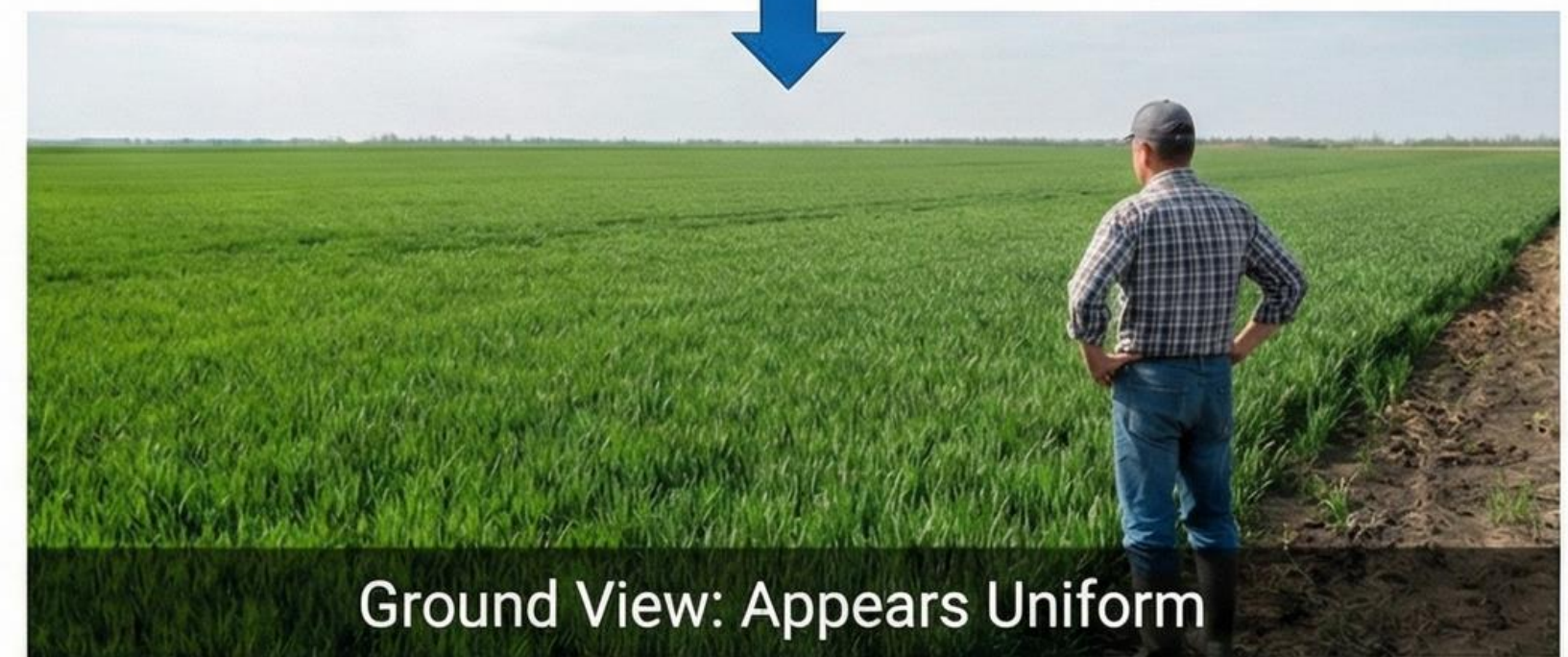
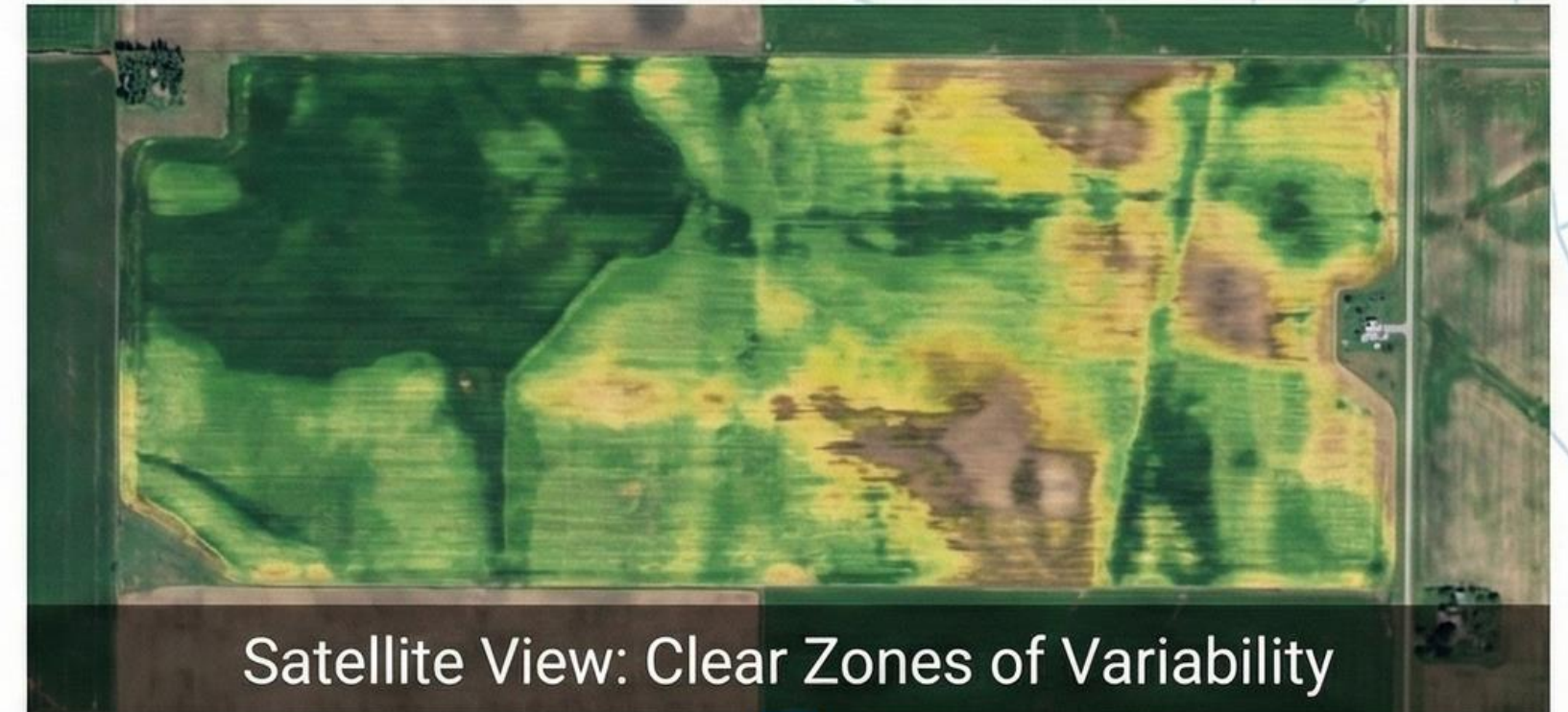
Crop growth varies



Nutrient uptake varies

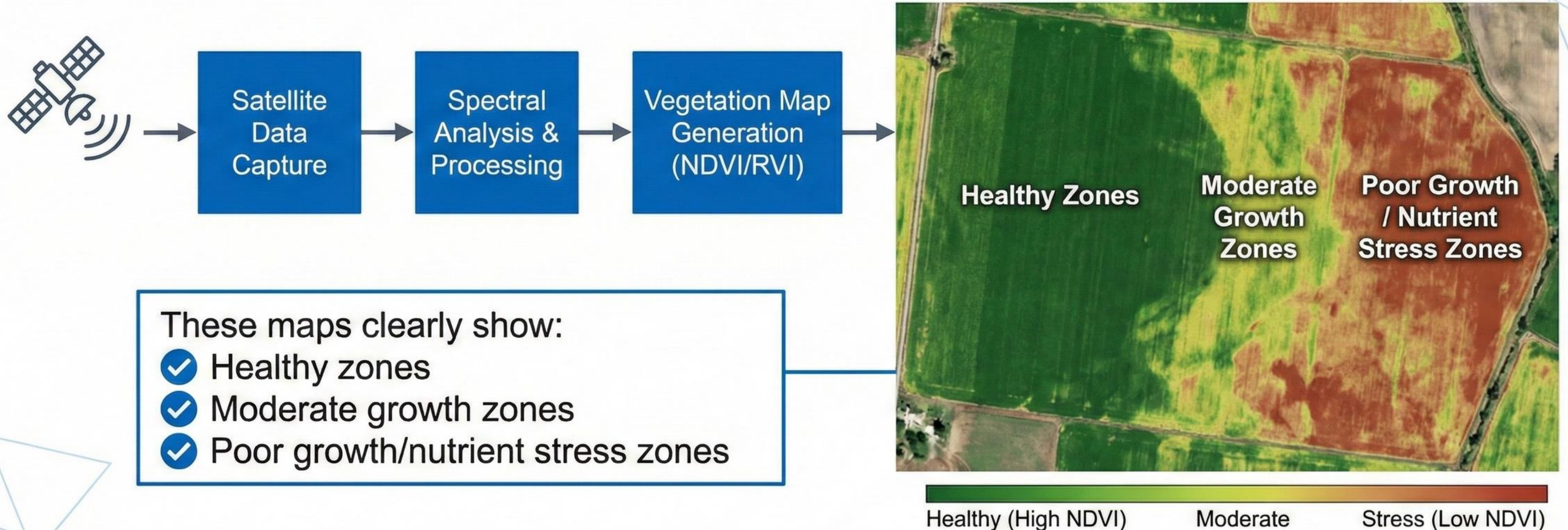


**This variability cannot be easily seen from ground level.**



# Role of Satellite Vegetation Maps

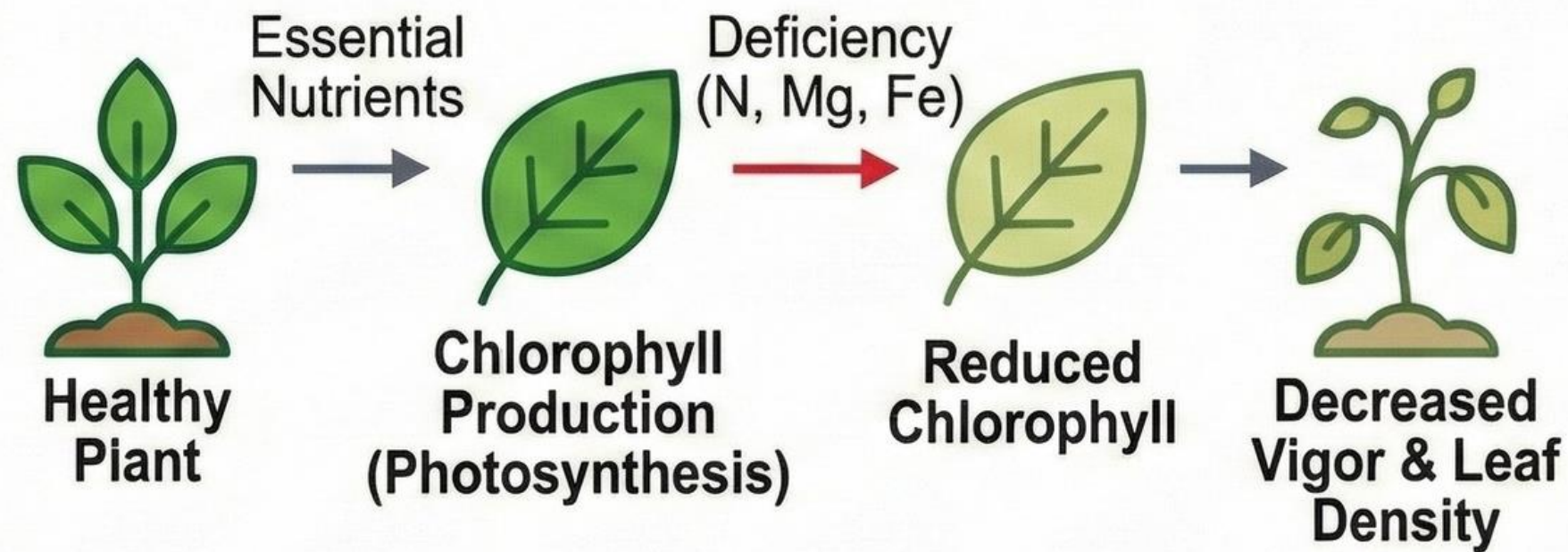
Capturing Crop Reflectance & Generating Insights (NDVI, RVI, etc.)



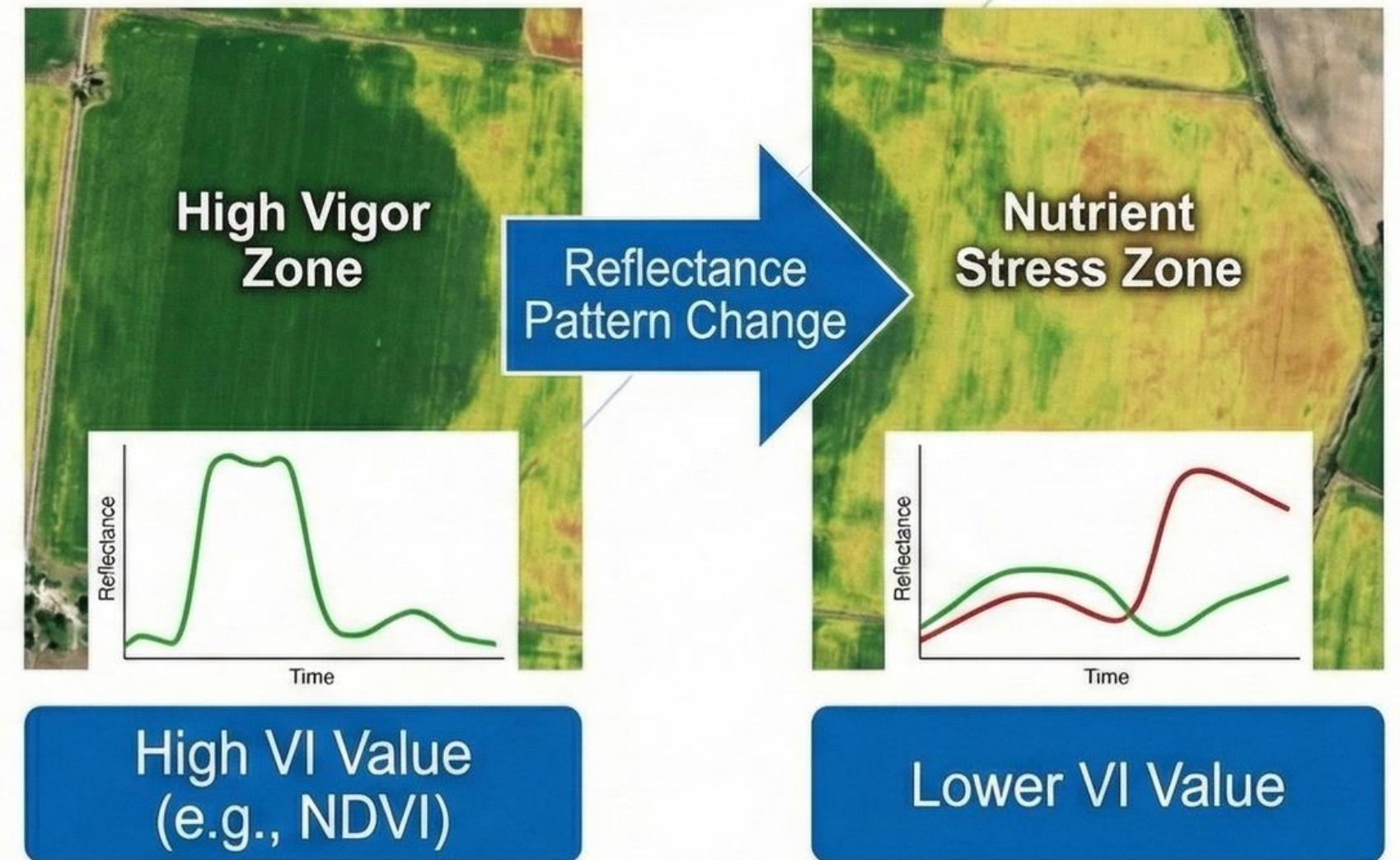
**Key Benefit: Actionable Insights Without Visiting the Field.**

# How Vegetation Maps Indicate Nutrient Stress

Linking Nutrient Deficiency to Chlorophyll Reduction & Reflectance Changes







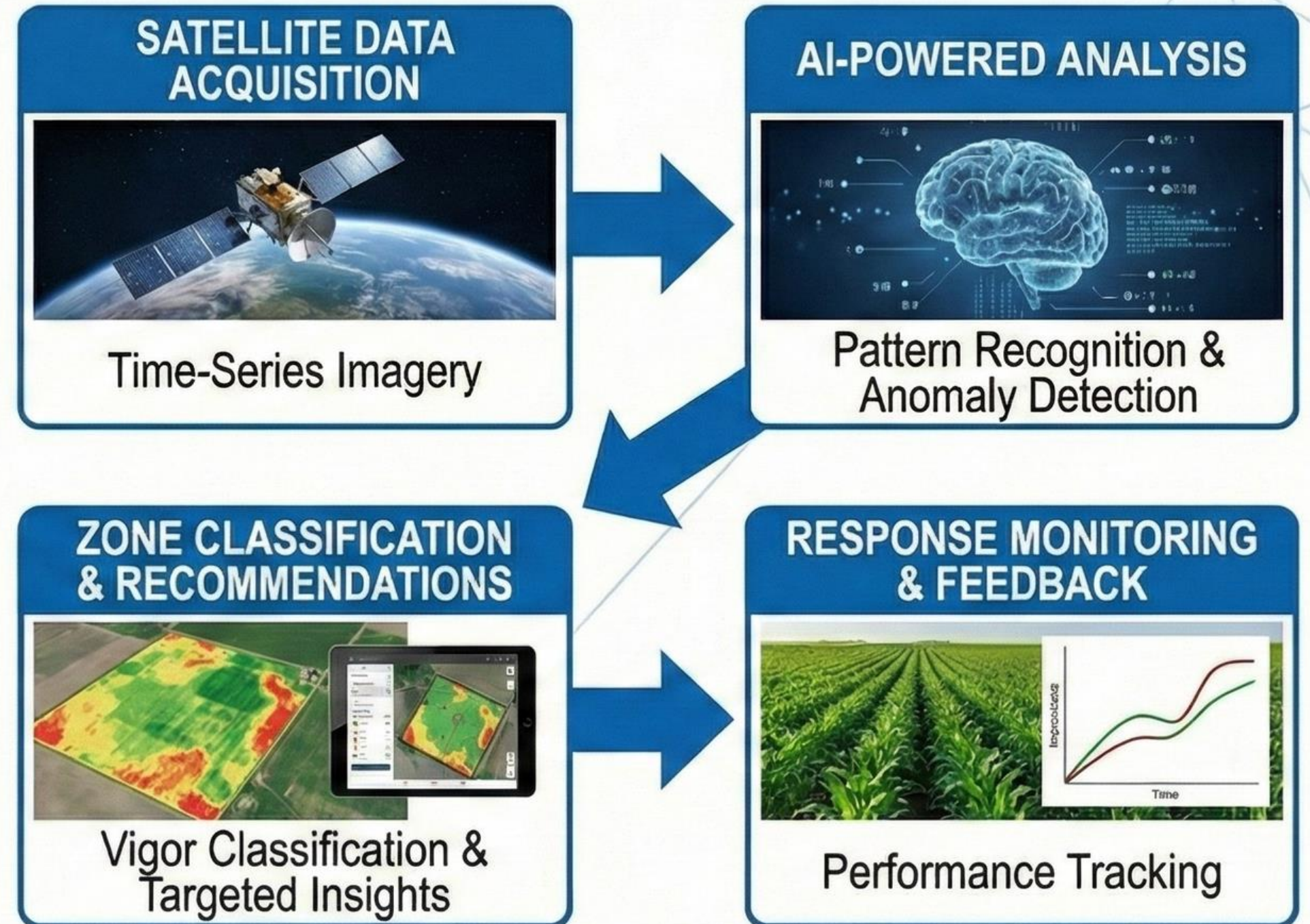
## Healthy vs. Nutrient-Deficient Zones



**Key Benefit: Early Detection of Nutrient Stress Through Spectral Reflectance Analysis.**

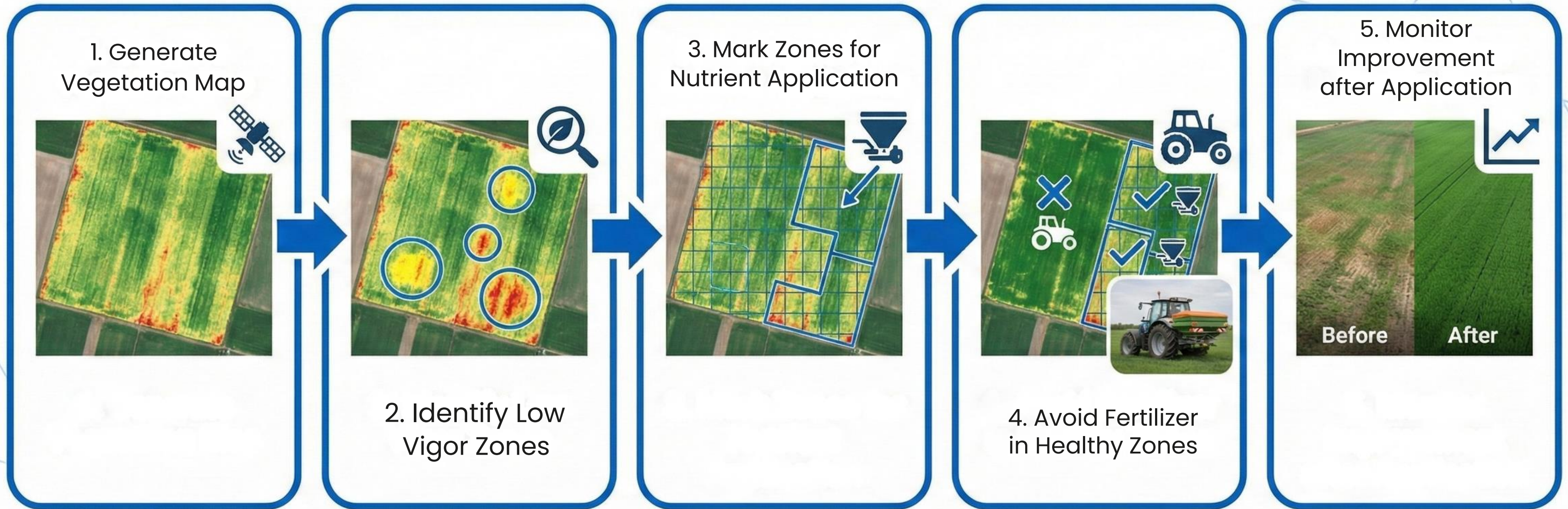
# Role of AI in Nutrient Management

-  Identify abnormal crop growth patterns
-  Classify zones based on crop vigor
-  Suggest areas needing attention
-  Monitor crop response after fertilizer application



AI Transforms Data into Precision Action for Optimized Nutrient Use.

# From Satellite Map to Fertilizer Decision



# Benefits to Farmers



## Reduced Fertilizer Cost

### Cost Savings

Optimized input use reduces expenses.



## Targeted Nutrient Application

### Precision Application

Nutrients applied only where needed.



## Less Field Scouting Effort

### Efficiency

Remote monitoring saves time and labor.



## Improved Crop Growth

### Better Crop Health

Uniform and vigorous plant development.



## Higher Yield Potential

### Increased Yields

Maximize production per acre.



## Scientific Decision Making

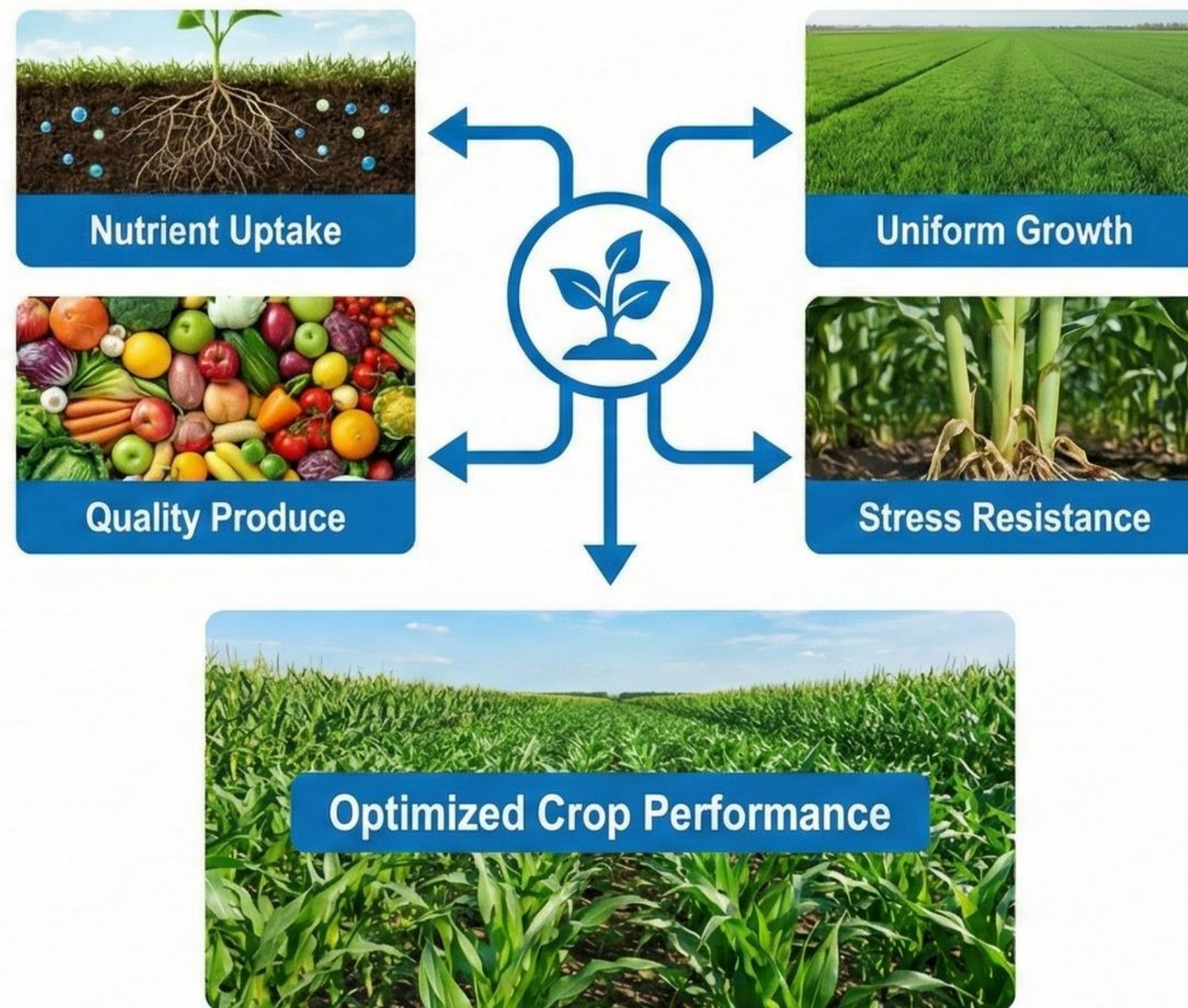
### Data-Driven Choices

Informed decisions based on analytics.



# Benefits to Crops

- Balanced nutrient supply
- Uniform crop growth
- Stronger plants
- Better resistance to stress
- Improved quality of produce



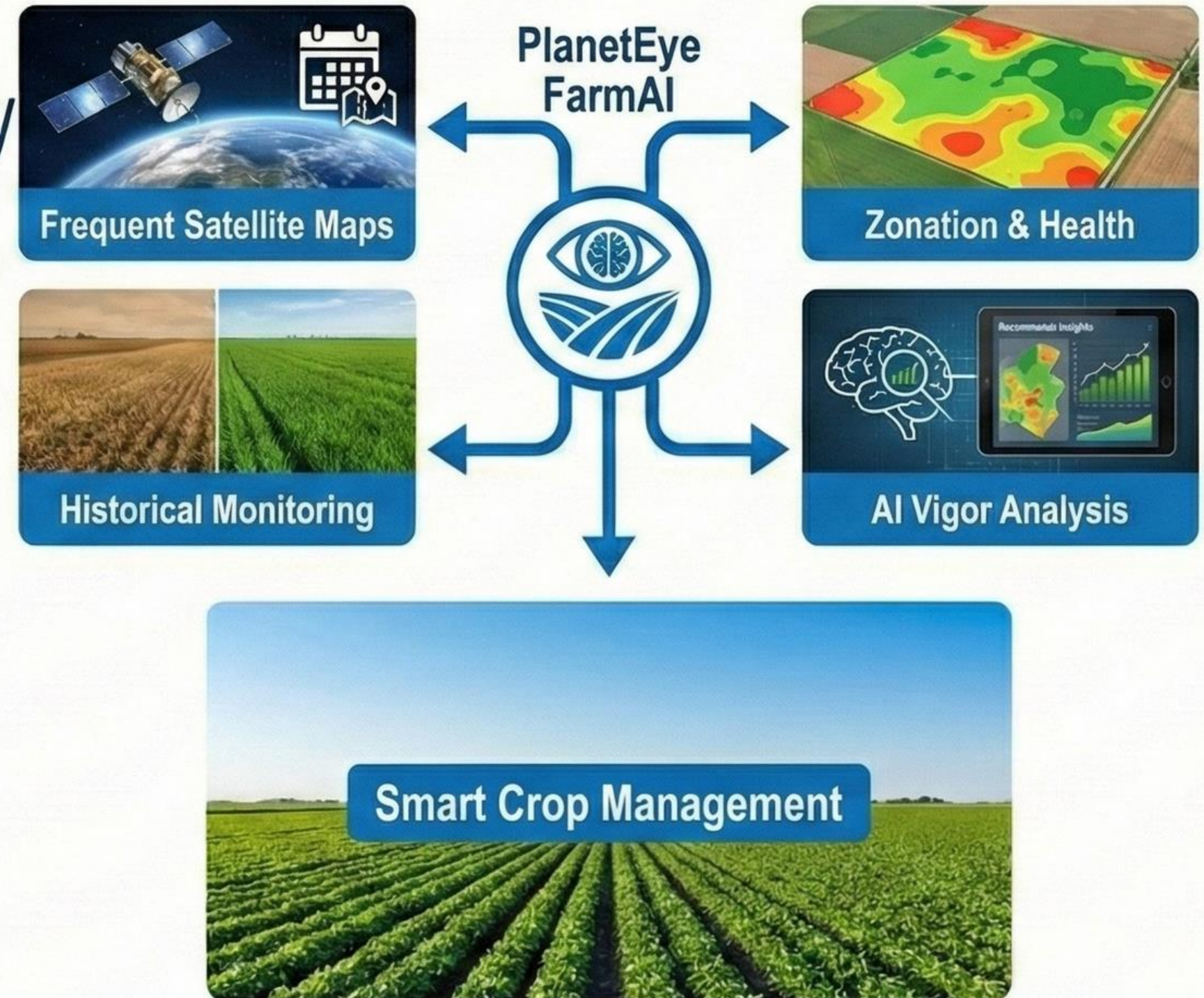
# Benefits to Environment

- Reduced chemical leaching
- Lower soil degradation
- Reduced water pollution
- Sustainable farming practice



# How PlanetEye FarmAI Enables This

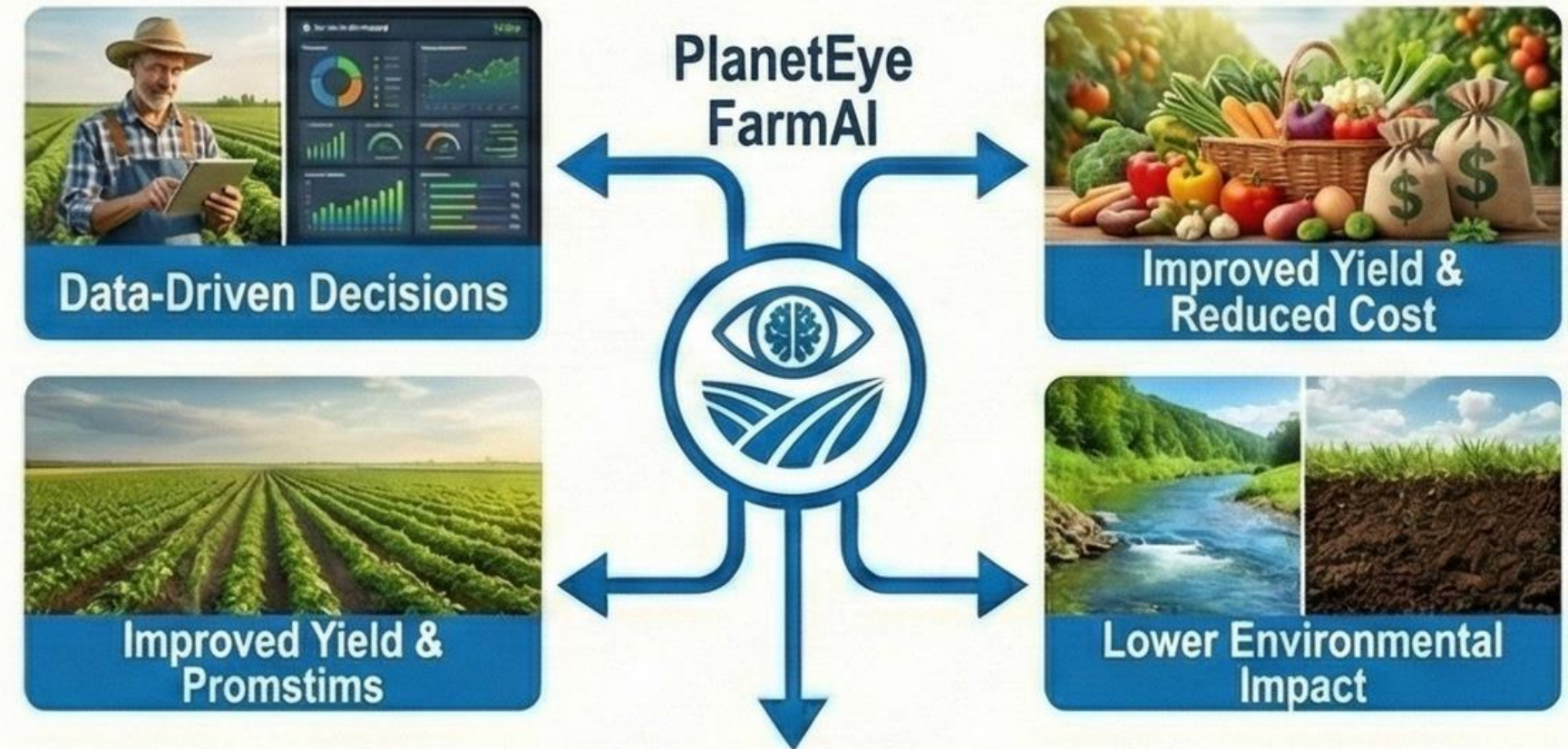
- Satellite vegetation maps every 5 day
- Field zonation based on crop health
- AI-based analysis of crop vigor
- Actionable insights for nutrient management
- Historical and current crop monitoring



# Conclusion



Precision nutrient management using satellite data is the future of farming.



# Thank You

## PlanetEye Farm AI



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