



Harvest Harmonics Summary  
for  
Rice & Kyminasi Plants – Crop Booster™ Scientific Trial  
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Bihar, India  
2024  
In Association with Agboost Tech Consultancy, India ([agboost.in](http://agboost.in))



# Definitions

- DAP: Days After Planting.
- Demonstration Plot: in this study, the word is used to describe the crop area treated with KPCB.
- KPCB: Kyminasi Plants – Crop Booster™
- LAI (Leaf area index): measures the area of leaves in the plant canopy.
- RECI (Red Edge Chlorophyll Index): measures chlorophyll content in leaves.
- NDVI (Normalized Difference Vegetation Index): quantifies the health and density of vegetation using sensor data.
- Paddy: an irrigated or flooded field where rice is grown. (This word is sometimes used for rice in its natural, unprocessed state.)
- PAI (Plant Area Index): the total area of all above-ground plant parts per unit of ground area.
- Quintal: In India, a unit of weight equal to 100 kilograms. (In the USA, 100 lbs.)
- RECI (Red Edge Chlorophyll Index): measures chlorophyll content in leaves.

# Trial Details

## LOCATION

- Apna Khet Training Center
- KPCB\* Field coordinates: 26.622084, 85.582645
- Control Field coordinates: 26.621559, 85.586243

## CROP

- Rice

## TIME

- Planting Date: July 28, 2024
- Harvest Date: September 9, 2024

## IRRIGATION

- Type: Flood
- Schedule: every other day

## AREA

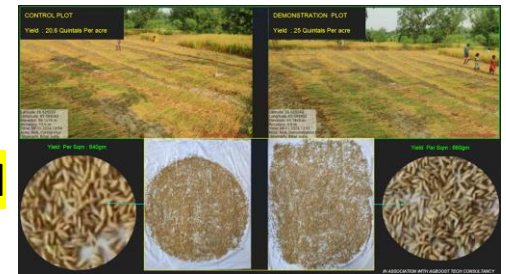
- KPCB: 0.85 acre
- Control: 1 acre



\* KPCB: Kyminasi Plants – Crop Booster™

# Results

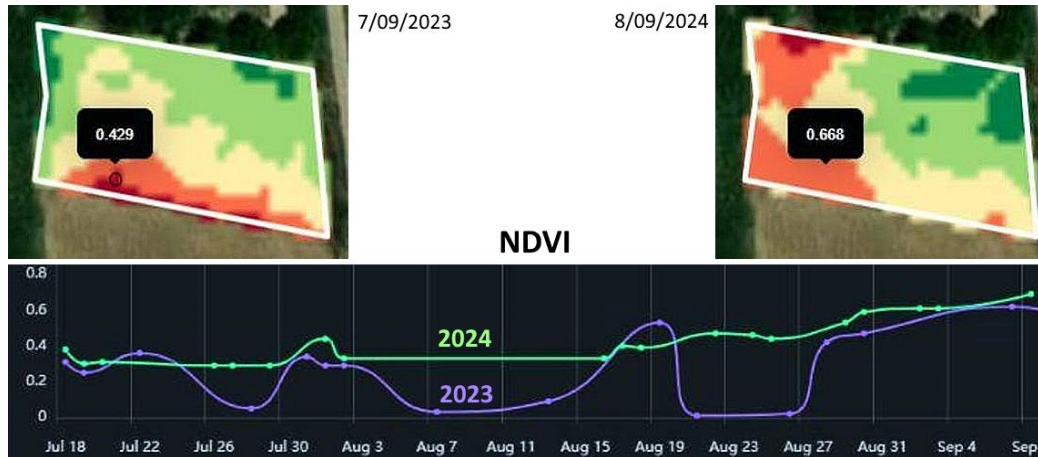
- **Yield:** At harvest, KPCB plot crop produced **21.4% higher yield (2.5 ton/ac)** than **Control (2.06 ton/ac)**. See page 19.
- 23 DAP\*: the KPCB plot crop had a **greater width**, and **more greenery** compared to Control. See page 9.
- 43 DAP: KPCB-treated crop demonstrated significantly **deeper green appearance**. See page 10.
- **53 DAP: The KPCB plot exhibited more lush greenery compared to the Control plot. Weed growth was greatly reduced** in the KPCB plot compared to Control. See page 13.
- **53 DAP: Control plot showed symptoms of disease, evident from the yellowing of leaves starting from margins, whereas the KPCB plot remained disease-free**. Page 13.
- 87 DAP: Root zone and stem analysis shows **more root and stem development** in KPCB vs. Control. See page 14.
- 87 DAP: The KPCB plot exhibited **increased tiller and panicle growth** compared to the control plot. See page 14.



\* DAP: Days After Planting.

# Results

Throughout the season: NDVI (see definition above) analysis revealed a statistically significant increase in rice crop health and productivity in 2024 season (with KPCB) vs. 2023 season (without KPCB). As seen in the graph below, the NDVI values during the 2024 season were highly stable throughout the season in comparison to the 2023 season when NDVI values fell several times to near-zero values.



Quoting the researcher's conclusion, this improvement is likely due to enhanced water use efficiency, increased chlorophyll content, and optimized nutrients uptake, highlighting KPCB's positive impact on rice crops. See page 11.

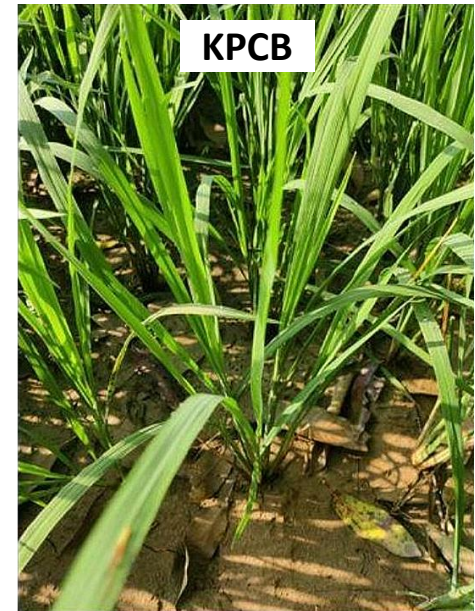
# Results – a Case for KPCB vs. Herbicides

As shown on page 13 below, the Control plot demonstrates two major weaknesses: (1) disease as seen in the leaves, marked by red circles, and (2) lots of weeds on the ground.

None of these is seen in the KPCB plot, even though no herbicide was used.

This phenomenon has been observed in cotton (India), papaya (Nepal) and other trials with KPCB. This brings a strong case against the use of herbicides, for several reasons:

- Money and labor wasted that could have been allocated to other treatments,
- Health of farmers and consumers,
- Soil health – herbicides disrupts soil health, while weeds support it.



POC : Paddy Crop: : 28th July 2024 to 15 Nov 2024

DEMONSTRATION PLOT

CONTROL PLOT



Coordinate : Long 85.5824, Lat 26.6225

Coordinate : Long :85.3510, Lat :26.3717

# RICE TRIAL

HH-Science  
Division-India-  
Trials : Apna Khet  
Bagan Foundation,  
Farm at Bihar

Rice Growth from  
July 28/7/2024.

Harvested Date :  
09/11/2024

IN ASSOCIATION WITH AGBOOST  
TECH CONSULTANCY



# RICE TRIAL

Foundation Apna  
Khet Baga,  
HH-Science  
Division-India-Trials  
Farm at Bihar

Paddy (Rice) Growth from  
July 28th to 19/8/2024.  
Days: **23**  
Irrigation Type: Flood

## OBSERVATION:

The demonstrated plot crop  
has a greater width size and  
more greenery compared to  
the control plot crop.



DEMONSTRATION PLOT



Photo Date : 9th Sep 2024

CONTROL PLOT



Photo Date : 9th Sep 2024

**OBSERVATION:**

- Paddy (rice growth) from July 28th to 09/9/2024.
- Plant Growth Days: **43**
- We are irrigating the paddy crop every alternate day using KPB (Harmonic Plant Booster) technology.

## High-Resolution Satellite Images: 2023–2024 Indices Comparison (NDVI Graph)



- NDVI analysis reveals a statistically significant increase in rice crop health and productivity this season vs. last year, following KPB implementation. This improvement is likely due to enhanced water use efficiency, increased chlorophyll content, and optimised nutrients uptake, highlighting KPB's positive impact on rice crops.

## High-Resolution Satellite Images: 2023–2024 Indices Comparison (Improvement in Chlorophyll Level)

**7/09/2023**



**8/09/2024**



4.00 – 4.50	Low amount of chlorophyll	3 %
3.50 – 4.00	Low amount of chlorophyll	37 %
3.00 – 3.50	Low amount of chlorophyll	41 %
2.50 – 3.00	Low amount of chlorophyll	12 %
2.00 – 2.50	Low amount of chlorophyll	7 %

5.50 – 6.00	Moderate amount of chlorophyll	10 %
5.00 – 5.50	Moderate amount of chlorophyll	19 %
4.50 – 5.00	Moderate amount of chlorophyll	17 %
4.00 – 4.50	Low amount of chlorophyll	29 %
3.50 – 4.00	Low amount of chlorophyll	22 %
3.00 – 3.50	Low amount of chlorophyll	2 %

### RECI (Red Edge Chlorophyll Index) Analysis

- 2023: Low chlorophyll levels across the entire farm (RECI value: 100%)
- 2024: Significant improvement in chlorophyll levels, moving from low (54%) to moderate (RECI value: 46% to moderate range)

CONTROL PLOT



Photo Date : 19 Sep 2024

DEMONSTRATION PLOT



Photo Date : 19 Sep 2024

**OBSERVATION:**

1. Paddy (rice growth) from July 28th to 19/09/2024.
2. Plant Growth Days: **53**.
3. The demonstration plot exhibits more lush greenery compared to the control plot.
4. Weed growth is significantly reduced in the demonstration plot compared to the control plot.
5. The control plot shows symptoms of disease, evident from the yellowing of leaves starting from margins, whereas the demonstration plot remains unaffected. (May be mild potassium deficiency; plants grow stunted and more susceptible to disease and other stress, such as drought.)

## EVALUATING ROOT GROWTH AT 87 DAYS ( Photos Date: 21/10/2024)



CONTROL PLOT



DEMONSTRATION PLOT

### OBSERVATION:

1. Paddy (rice growth ) from July 28th to 21/10/2024.
2. Plant Growth Days: **87.**
3. Demonstrated plots show more root and stem growth as compared to the control plot.
4. Farmers apply the same dosage of urea in both plots, and no fertiliser costs are saved.

# AI-Based Evaluating Canopy PAI/LAI (Plant Area Index/Leaf Area Index), Porosity and Growth

## CONTROL PLOT



SN	Parameters	CONTROL PLOT
1	PAI	0.944
2	COVER	0.681
3	Porosity	0.29

## DEMONSTRATION PLOT



SN	Parameters	DEMONSTRATION PLOT
1	PAI	1.066
2	COVER	0.681
3	Porosity	0.312

## EVALUATING (Tiller and Panicle ) GROWTH AT 87 DAYS ( Photos Date: 21/10/2024)

### OBSERVATION:

1. Paddy (rice growth ) from July 28th to 21/10/2024.
2. Plant Growth Days: **87**.
3. The demonstration plots exhibit increased tiller and panicle growth compared to the control plot



Tiller

Panicle with  
seed

CONTROL PLOT

DEMONSTRATION PLOT

## EVALUATING SEED STATISTICS



### Rice Crop Growth Statistics

SN	Parameters	CONTROL PLOT	DEMONSTRATION PLOT
1	GRAIN	938	766
2	WEIGHT	17gm 70mg	21gm 33mg
3	Panicle with seed	10	12
4	TILLER	10	13



# NDVI vs RGB Satellite Data Comparison and Correlation with Weather Data: Pre-Harvest Paddy Crop Analysis (5th Nov 2024)



### CONTROL PLOT

Yield : 20.6 Quintals Per acre



Latitude: 26.625233  
Longitude: 85.584362  
Elevation: 88.1±16 m  
Accuracy: 10.6 m  
Time: 09-11-2024 13:54  
Note: Alok, Control Plot  
Sitamarhi, Bihar, India

### DEMONSTRATION PLOT

Yield : 25 Quintals Per acre



Latitude: 26.625243  
Longitude: 85.584402  
Elevation: 64.14±8 m  
Accuracy: 4.8 m  
Time: 09-11-2024 13:51  
Note: Alok, Demonstration Plot  
Sitamarhi, Bihar, India

Yield Per Sqm : 640gm



Yield Per Sqm : 660gm



**OBSERVATION:**

1. Plant Growth Days: **104.**
2. Demonstration Plot : Paddy Crop Ready for Harvesting.
3. Yield Calculation Using a 1 m x 1 m Grid :
  - Demonstration Plot : 660gm
  - Control Plot : 640 gm

Note: Grain size has improved in Demo Plot with a 20g increase compared to the control, although no significant changes were observed.

4. The product (HHC) is not dependent on the number of acres; it depends on the last-mile irrigation reach in the field. Based on this, the number of microtransmitters to be installed will be decided.

5. No reduction in fertiliser.

Latitude: 26.622079  
Longitude: 85.582947  
Elevation: 70.43±7 m  
Accuracy: 11.6 m  
Time: 09-11-2024 14:57  
Note: Alok, Demonstration Plot  
Sitamarhi, Bihar, India

Powered by NoteCam

**DEMONSTRATION PLOT**