AgBoost
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Comparative Soil Fertility Assessment (2023–2025) Based on Government Soil Health Cards.

- Pilot Project under Apna Khet – Sitamarhi, Bihar, India
- Implemented by AgBoost Tech Consultancy, India

1. Project Background

In partnership with Apna Khet and the progressive farmer Mr. Alok Kumar, AgBoost Tech Consultancy initiated a Proof-of-Concept (PoC) project in November 2023 to evaluate the impact of Harvest Harmonic Micro-Transmitter Sensors on soil health, crop performance, irrigation efficiency, and long-term farm sustainability.

Mr. Alok Kumar owns approximately 5 acres of agricultural land in the Sitamarhi district, Bihar, where he cultivates wheat and mango orchards. His openness to innovation and collaborative approach provided an excellent platform for field-scale experimentation and long-term monitoring.

2. Technology Installed

Harvest Harmonic Micro-Transmitter Sensors (7 units)

Installed externally on the irrigation pipelines, these sensors operate on the principle of water-wave frequency modulation, transmitting harmonic signals through irrigation water.
The objective is to improve:

2.1.Root-zone nutrient absorption
2.2.Soil microbial activity
2.3.Soil aeration and carbon accumulation
2.4.Water-use efficiency
2.5.Plant metabolic processes (photosynthesis, nutrient translocation, etc.)

3. Irrigation Methods Used

The farmer used both irrigation systems during the observation period:

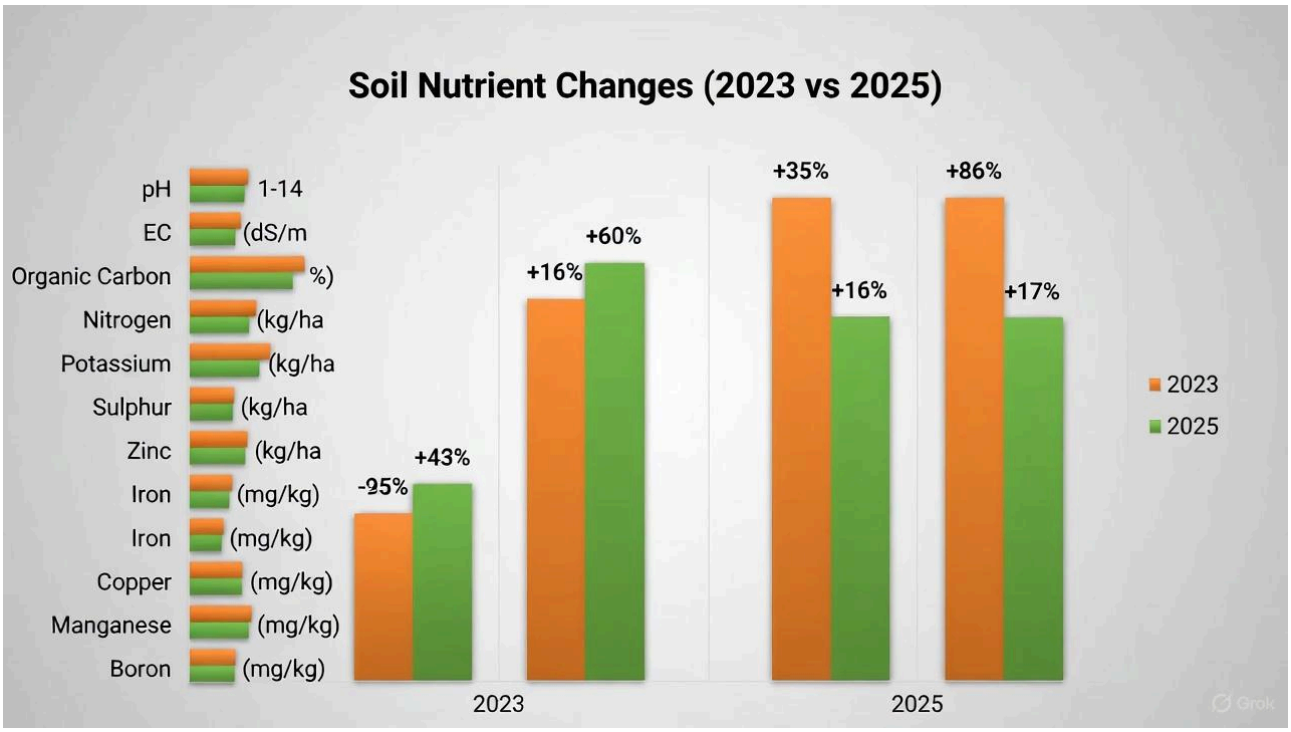
3.1.Drip Irrigation (for mango orchard)
3.2.Flood Irrigation (for Rice/wheat crop)

4. Executive Summary

This report presents a comparative analysis of soil health parameters before and after the implementation of Harmonic Crop Booster Sensor technology at Apana Khet ,Sitamanhi District , Bihar, India. Soil data from March 2023 and November 2025 indicates significant improvement in organic carbon content, enhanced micronutrient availability, and overall soil biological activity. These improvements contribute to better long-term soil fertility and sustainability.

5. Soil Test Data Comparison (For reference, please find the attached soil test reports for both years.)

SN	Parameter	2023 (Before)	2025 (After)	Change
1	pH	7.60	7.46	-0.14 (Improved)
2	EC (dS/m)	0.22	0.21	Stable
3	Organic Carbon (%)	0.39	0.46	+18% (Significant improvement)
4	Nitrogen (kg/ha)	142	112	-21%
5	Phosphorus (P_2O_5 kg/ha)	35.77	38.03	+6.3%
6	Potassium (K_2O kg/ha)	332	316.16	-4.8%
7	Sulphur (ppm)	10	10.22	Stable
8	Zinc (ppm)	0.56	0.71	+26%
9	Iron (ppm)	2.20	2.86	+30%
10	Copper (ppm)	0.71	0.78	+10%
11	Manganese (ppm)	11.6	11.12	-4%
12	Boron (ppm)	0.31	0.36	+16%



6. Scientific Interpretation

The organic carbon content increased from 0.39% to 0.46%, an improvement of 18%, which indicates enhanced microbial activity, improved soil structure, and greater carbon sequestration. Micronutrient availability (Zn, Fe, Cu, B) showed significant gains, with iron increasing by 30% and zinc by 26%. These increases suggest improved nutrient cycling driven by biological activation. Phosphorus availability improved by 6.3%, partly due to pH correction from 7.60 to 7.46. Nitrogen and potassium reductions are normal due to crop uptake.

7. Soil Fertility Assessment

Overall soil fertility improved due to enhanced organic matter, nutrient availability, and improved soil chemistry. The Soil Improvement Index is calculated at 4.1/5.0, indicating strong positive impact from the Harmonic Soil Booster technology.

8. Conclusions

The Harmonic Crop Booster Sensor has demonstrated measurable improvement in soil biological and chemical properties over the 24-month period. **The rise in organic carbon, enhanced micronutrient availability, and improved phosphorus solubility indicate healthier soil capable of sustaining higher productivity.** These findings support continued use of biological soil enhancement technologies for long-term regenerative agriculture.