Cropin

# The Crunch Heard Around the World:

## How Cropin Helped PepsiCo India Maximize Potato Yield through Remote Sensing & Predictive Intelligence

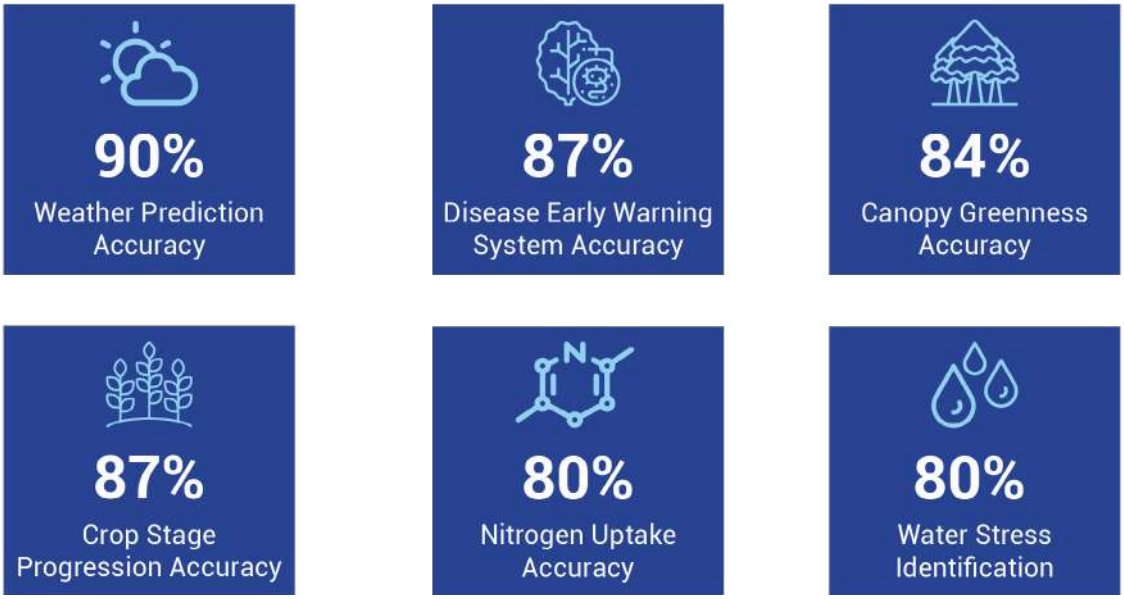
## A Potato Grower's Journey to Increased Yield & Operational Efficiency

Let's be honest – who can resist digging into a fresh bag of Lays? Exactly. Now imagine the pressure of being a massive food processor like PepsiCo, responsible for churning out those irresistible chips and other delicious potato-based treats that keep millions craving for more.

That's the reality for PepsiCo, a global powerhouse with a reach that boggles the mind: over a billion people worldwide consume PepsiCo products every single day! But here's the interesting part: despite its immense size and brand recognition, PepsiCo prioritizes local production and responsible sourcing of ingredients.

PepsiCo, a household name synonymous with fun, flavorful snacks, earned its reputation by consistently innovating and catering to its consumers' unique tastes and preferences. Manufacturing crispy potato chips requires dedication and high-quality ingredients. The first and biggest task is to get high-quality potatoes, and lots of them, to keep those snack shelves stocked for young and old alike.

At Cropin we understand the dedication it takes to maintain such a high standard, and we're excited to share a story about how we helped PepsiCo India achieve even greater success.



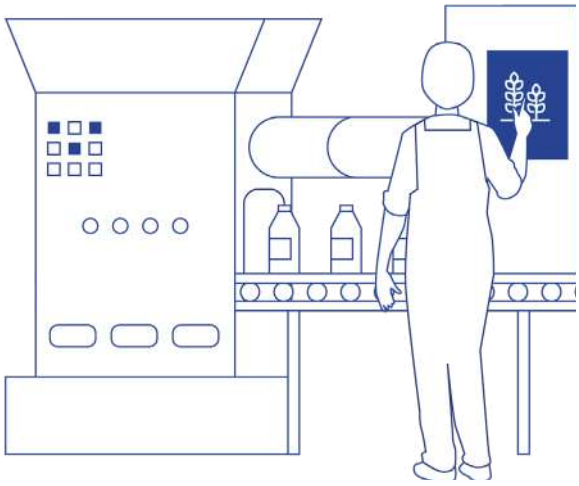

**Industry:** Food processing company

**Location:** India & Pakistan

**Crop:** Potato

**Solution Area:** Real-time monitoring (predict yield estimation, analyze crop health, optimize water usage & provide disease early warning alerts); enhance yield.

**Product Used:** Cropin Grow, Cropin Intelligence (Plot-level)



## A Quest for a Guardian

Potato farming is a complex and unpredictable endeavor. Mother Nature often throws curveballs in the form of droughts, floods, diseases, and unpredictable weather, which can wreak havoc on yields. This challenging scenario, common among procurement experts, demands a unique solution: constant real-time monitoring - a guardian for your harvest!

Here's the story: PepsiCo, a global major and household name for its tasty Lays chips, needed a steady flow of high-quality potatoes for its products. To this end, it had to digitize, monitor, and manage its contracted farm operations to gain real-time information on crop stage, yield, and potential disease threats.

## Unveiling the Invisible: Cropin's Data-Driven Approach to Potato Success

PepsiCo chose to partner with Cropin to gain intelligence with no digging, just some serious remote sensing data fed onto advanced AI/ML models. A pilot was conducted across 500 hectares each in India and Pakistan. With our unique 'Plot-level Intelligence,' we provided PepsiCo with a predictive intelligence-powered geospatial view of its farms through live, interactive dashboards, also available on a user-friendly mobile app that covered:


Our solution provided sub-5m-level granular and actionable insights at a plot level for improved farm operations across all contracted farms. It empowered PepsiCo field teams to monitor farms in near real-time and make data-driven decisions remotely, which, in turn, positively impacted profitability. And more importantly helped them proactively engage, advise and showcase more value from the business engagement with PepsiCo.

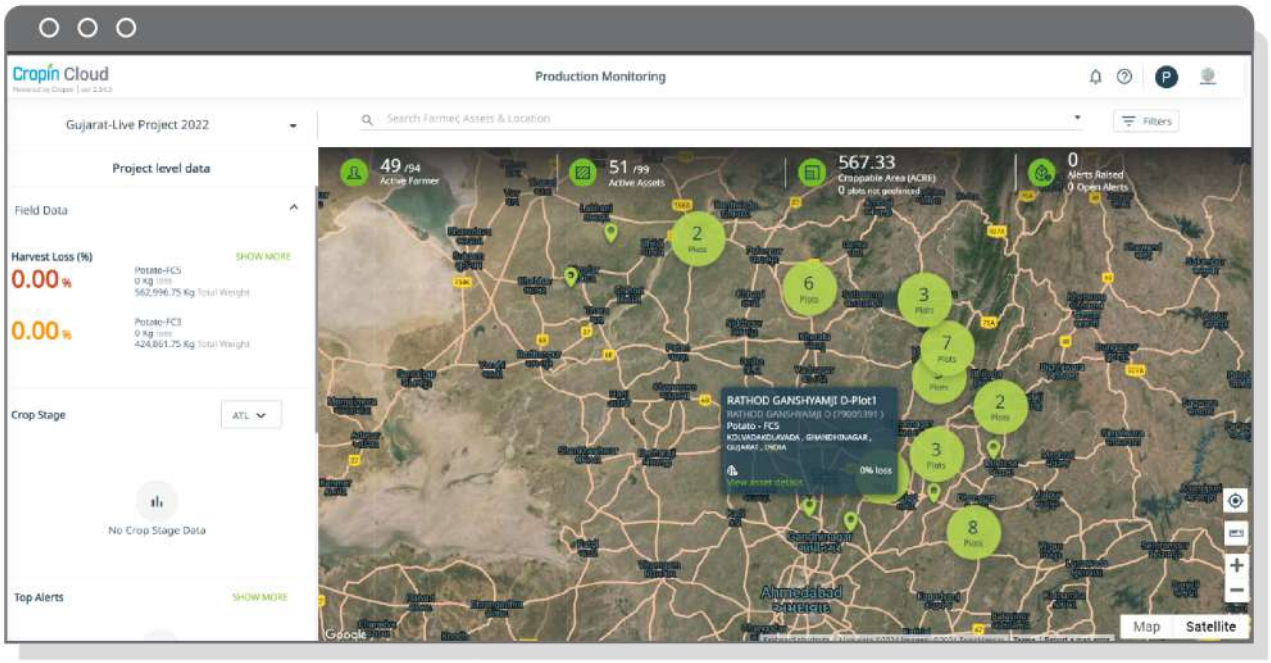



*Fig 1: Plot-level Intelligence dashboard depicting field data*


*Fig 2: Plot-level Intelligence dashboard depicting plot intelligence & advisory*

## Seeing is Believing (with Near Real-time Monitoring)

With Cropin, Pepsico could see exactly how the potatoes were growing, down to the plot-level and even accurately estimate the crop growth stage transition of the potato crop under the soil.

**Forecast yields up to 45 days in advance:** There was increased confidence in estimating expected potato yield before harvesting started. With valuable insight into yield and harvest date prediction, PepsiCo could better plan inventory, supply chain readiness and make informed decisions. Our AI/ML models consolidated and computed intelligence from historical weather and satellite imagery data to identify patterns and correlations to better understand the factors influencing potato crop yields (most importantly for their specific potato variety), like weather conditions and disease pressures, even at plot and pin code levels.

**Save precious water:** Cropin pinpointed areas where thirsty plants needed a drink and others that were just fine. No more wasted H2O! We helped monitor crop water stress and plan irrigation scheduling that optimized water usage during a specific crop stage.

**Identify problems before they become disasters:** Our "Canopy Water Stress" tool acted like a sixth sense, detecting potential issues like faulty sprinklers before they impact yield. Disease early warning system was akin to a boon. It predicted heightened disease and pest attack probability well in advance, providing actionable insights to avert large-scale crop loss.

**Track growth remotely:** The "Crop Progression Model" tracked the potato's lifecycle, from tiny sprouts to full-grown plants ready for harvest. This meant the right farm practices were applied at the right time. This turned out to be critical considering the early maturity cycles that were observed due to the rising temperature in the areas of cultivation.

Thus, remote monitoring enabled by Cropin helped Pepsico with procurement planning and maximizing productivity, ensuring a reliable and sustainable supply of high-quality potatoes for its products.

## Here, we provide some snapshots of ground reality

We all know the frustration of unpredictable harvests. You plant, you nurture, you cross your fingers and hope for the best. But what if you could change this and actually see what's happening with your crops down to a sub-5mx5m pixel at every individual plot?

That's exactly what Pepsico also desired and achieved when it partnered with Cropin. Let's explain how we used satellite indices to help Pepsico monitor its crops every day.

The **Canopy Greenness Index** from our Plot-level intelligence dashboard shows the variation in the green vegetation in the crop. Here's a real-life example: The tool identified a specific patch with stressed plants through remote monitoring. By analyzing the "Canopy Greenness Index," it was discovered that there was a slight elevation in that area, meaning the sprinklers weren't providing water to the plants in this area. Pepsico's field team worked with the farmer to quickly rectify the issue with this intelligence to avoid potential crop loss.


*Fig 3: Plot-level Intelligence dashboard depicting Canopy Greenness*

In another real-life example, our **Canopy Water Stress** helped the agronomist and grower identify a faulty sprinkler in a patch highlighted by a stressed area. The Canopy Water Stress Index shows water stress in vegetation accounting for the crop stage. In this case, it revealed an area that showed a slight deviation and risk to the crop's health due to water stress. Through active remote monitoring, Pepsico's field team rectified the faulty sprinkler in that area and avoided crop loss.


*Fig 4: Plot-level Intelligence dashboard depicting Water Stress*

Growth monitoring made easy: We all know climate change can shake things up in the field, and drastically, too! Crops are maturing at different rates than ever before. Cropin's Crop Progression Model has emerged as a game-changer in this area.

Our remote sensing tool monitors various stages of your crops, giving you valuable intelligence into whether they're maturing early or late due to unpredictable weather. This knowledge is true power in potato cultivation! Accurate identification of Crop Stage Progression is vital to taking the right actions at the right time.

For example, if you're growing potatoes for seed, dehaulming is a crucial step at a specific stage. The Crop Progression Model can predict that stage exactly, ensuring you don't miss the window. In the case of Pepsico, the model accurately predicted that its potato plot was in the 'Tuber Bulking Stage,' which perfectly matched the on-ground observations. This allowed them to make quick decisions and take the necessary steps to maximize yield.


*Fig 5: Crop Progression*

## Disease? We helped our client bid adieu!

**Facing the Field's Challenges, Together:** Pepsico partnered with growers, many of whom were smallholder farmers struggling with planning interventions and management strategies during the growing season. It's a constant battle against unpredictable weather, pests, and diseases – all of which are becoming more severe due to climate change. These threats can devastate crops, leading to lost yield and wasted resources.

**Forecasting Foes, Not Just Weather:** That's where Cropin's Disease Early Warning System comes to the rescue. Our innovative tool goes beyond weather forecasting, providing insights into potential disease outbreaks a full ten days in advance. This allows farmers to plan their risk mitigation strategy and take action before problems arise.


*Fig 6: Disease Early Warning System (DEWS)*

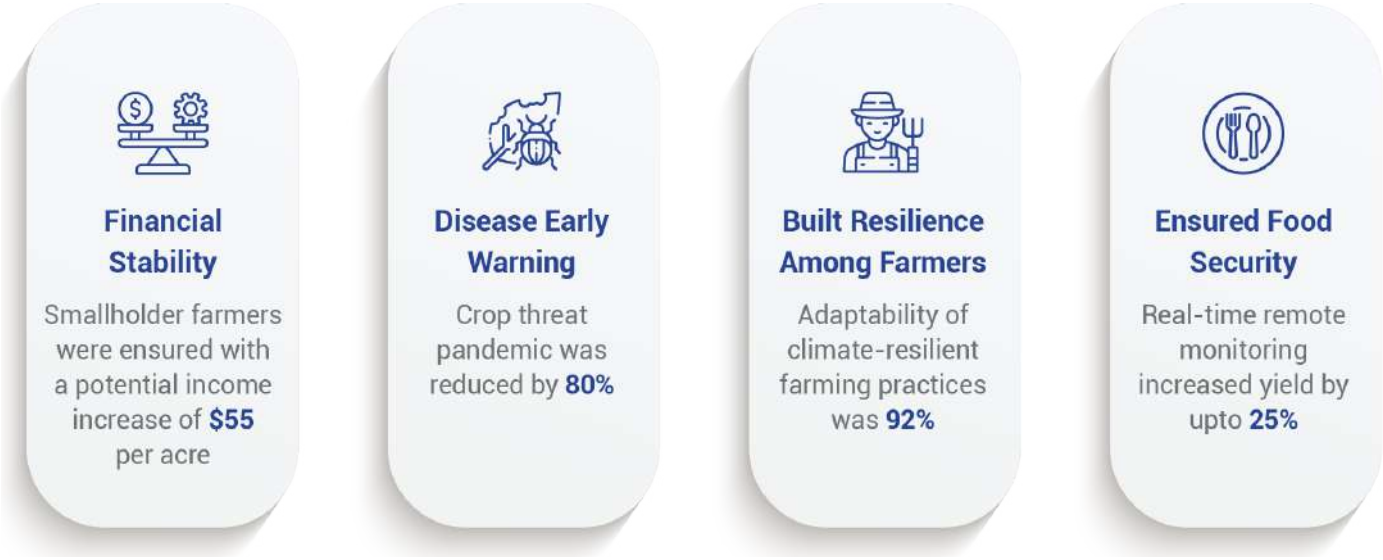
Think of it like having a heads-up, an intelligence that can proactively scout for early signs of disease and implement targeted management practices. No more heavy-handed pesticide schedules! Cropin helps farmers use these chemicals strategically, minimizing waste and promoting a more sustainable approach. This intelligence helped PepsiCo protect its harvests.

**Case in Point: Early Detection, Big Impact**

Let's imagine this: A disease, such as blight, is predicted to occur with a high probability (over 70%) in the next 15 days. Our platform recommends applying preventive sprays to the plot to mitigate this disease risk. Thus, our Disease Graph helps farmers implement targeted treatment plans, minimizing the impact on their crops and reducing blanket schedule spray. This approach saves resources and improves overall productivity and quality.

## The PepsiCo Impact

PepsiCo contracted with 27,000 Indian farmers to procure potatoes for its Lay's brand. It partnered with Cropin and trained our AI with data from the last four years across over 3000 hectares of Lay's contracted farms. The intervention ensured




## The Future's Bright

The results were so impressive that Pepsico is rolling out Cropin's plot-level intelligence solution to cover more of their contract farming operations in India. Cropin's solution enabled in five regional languages, will empower thousands of farmers with real-time crop monitoring and management. It's a win-win for everyone: better yields, happy farmers, and delicious potato-based treats.

This isn't just for corporate giants like Pepsico. We're bringing the same technology to every player in the food value chain. We have the playbook and the technology and have shown results. So, if you're tired of playing the predicting game in procurement for your food processing needs, let's chat and see how we can help you score a touchdown for your farms across the globe!

**Here's the takeaway**: Don't let unpredictable weather and diseases call the shots. Take control with Cropin's real-time monitoring and predictive intelligence.

# Maximize your Yield and Optimize your Operational Efficiency with our Comprehensive Plot-level Intelligence.

**Book an Appointment Now!**

## About Cropin

Founded in 2010, Cropin is the world's most advanced AI Platform for Food and Agriculture. Cropin Cloud, the world's first industry cloud for agriculture, has computed 10% of the world's cultivable lands. Implemented by over 250+ enterprises, Cropin empowers stakeholders to make informed decisions that enhance farming efficiency, productivity, and sustainability. Our teams are spread across India, The United States, Italy, The Netherlands, and Brazil. We have digitized 30 million acres of farmlands and positively impacted over 7 million farmers worldwide. Our crop knowledge graph, spanning 350 crops and 10,000 varieties in 103 countries, powers the Cropin Cloud. We are at the forefront of uniting agribusinesses, development agencies, international organizations, and governments to leverage Agtech systems to transform global food systems and attain climate goals. Cropin is backed by Google, Bill & Melinda Gates Foundation, ABC Impact, and Chiratae Ventures, among other notable investors.

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