

**Project Report: Harvest Intel – Smart Agriculture Platform**

**Project Title**

**Harvest Intel – Bridging Traditional Farming with Modern Agricultural Insights**

**Group Members and Roles**

* **AANEYA SHOKEEN** – *Team Leader & Frontend Expert*
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**1. Introduction**

The global agricultural landscape is undergoing a digital transformation as technology integrates with traditional practices. Farmers are now presented with the opportunity to leverage real-time data, artificial intelligence, and predictive analytics to boost crop productivity, manage resources efficiently, and adapt to changing climatic conditions.

**Harvest Intel** is an advanced agri-tech platform that provides farmers and agricultural stakeholders with critical insights into crops, soil conditions, weather patterns, yield predictions, and market trends. It supports data-backed decision-making to drive smart, sustainable, and profitable agriculture.

**2. Website Overview & Key Features**

**A. Total Crop Analysis**

A comprehensive overview of all major and minor crops, including health metrics, seasonal trends, disease detection, and performance forecasting. The ML-powered system uses historical data and real-time inputs to provide smart recommendations.

**B. Average Soil Moisture**

Real-time tracking and visualization of soil moisture levels across various regions and crops. This data is essential for irrigation planning and water resource management.

**C. Weather Trend**

Weather APIs are integrated to display short-term and long-term climate patterns, including temperature, humidity, rainfall forecasts, and drought alerts.

**D. Predicted Yield**

Machine learning models are used to estimate crop yields based on variables like soil data, rainfall, crop variety, and fertilizer use, helping farmers plan harvests and sales.

**E. ML Feature for Crop Analysis**

Artificial intelligence assists in detecting crop diseases, identifying deficiencies, and recommending corrective actions. Image-based ML models help farmers analyze crop health through simple uploads.

**3. Reports & Analytics**

The Reports & Analytics section offers advanced visualization and filtering tools to monitor farm performance over time.

**Key Filters:**

* **Time Period**: Daily, weekly, monthly, and seasonal reports
* **Crop Type**:
  + All Crops
  + Wheat
  + Rice
  + Cotton

**Data Visualization Includes:**

* Crop health trend charts
* Moisture vs. yield graphs
* Weather impact timelines
* Profitability insights based on season and crop type

**4. Service Modules**

1. **Crop Analysis** – Crop health monitoring and disease detection
2. **Soil Analysis** – Nutrient analysis, pH, and moisture tracking
3. **Weather Forecasting** – Real-time weather and climate predictions
4. **Irrigation Management** – Smart water scheduling and conservation suggestions
5. **Pest Control** – Identification and control methods via AI diagnosis
6. **Market Analysis** – Real-time mandi price updates and demand trends

**5. Subscription Plans**

| **Plan** | **Features** | **Price** |
| --- | --- | --- |
| **Basic** | Access to crop/weather analysis, limited reports | ₹100/month |
| **Professional** | Full access to all services, ML features, personalized insights, and analytics | ₹300/month |

Each plan includes multi-language support, offline capabilities, and mobile compatibility.

**6. Help Centre**

To ensure accessibility and ease of use, the **Harvest Intel Help Centre** provides the following support features:

1. **Knowledge Base** – Detailed articles on government schemes, subsidies, and agricultural policies
2. **Video Tutorials** – Instructional videos on how to use each feature, available in regional languages
3. **Live Support Calling Feature** – Direct helpline for technical or agricultural assistance

**7. Technical Stack and Architecture**

* **Frontend**: React.js
* **Backend**: Django (Python)
* **Database**: PostgreSQL
* **APIs Integrated**:
  + Indian Meteorological Department (IMD) for weather
  + Agmarknet for market prices
  + Custom ML models for image recognition and yield prediction
* **Deployment Platforms**: Heroku or PythonAnywhere
* **Security**: User data is encrypted, and secure authentication protocols are in place.

**8. Benefits to Farmers**

* Real-time and science-backed agricultural insights
* Enhanced crop yield forecasting
* Improved soil and water management
* Access to market prices and government schemes
* Multilingual support for better accessibility
* Smart AI tools for pest and disease detection
* Affordable plans with offline capabilities

**9. Conclusion**

**Harvest Intel** is a next-generation agricultural intelligence platform built to empower farmers with accurate, real-time insights. By integrating traditional farming knowledge with modern technologies like machine learning, weather forecasting, and market analysis, it offers a sustainable and profitable future for the farming community. With affordable pricing, farmer-centric support, and robust technical architecture, **Harvest Intel** is set to transform the way agriculture is managed and understood.