🌱 PLANT GROWTH ANALYSIS PROJECT REPORT

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📋 PROJECT OVERVIEW

> This project analyzes the impact of environmental factors (temperature, humidity, soil type, fertilizer) on plant growth using Power BI. The dashboard provides actionable insights for optimal plant cultivation.

Project Title	Plant Growth Analysis Dashboard
Tools Used	Power BI Desktop, DAX, Power Query, GitHub
Dataset Source	Kaggle - Plant Growth Data Classification
Records	100 plant growth observations
Project Duration	[Start Date] to [End Date]

📈 KEY INSIGHTS & FINDINGS

🎯 Optimal Temperature Range

20-30°C yields maximum plant growth
Plants in moderate temperature range show 90% higher growth compared to extreme temperatures.

💧 Best Humidity Level

50-70% humidity is ideal for growth
Moderate humidity conditions result in optimal plant development and health.

🏆 Winning Combination

Moderate Temperature + Medium Humidity = Peak Performance
This combination produces maximum growth milestones across all plant samples.

✅ Success Rate

90.91% plants thrive in optimal conditions
Only 9.09% plants show sub-optimal growth due to unfavorable environmental factors.

🔧 METHODOLOGY & IMPLEMENTATION

1. Data Preparation

- Imported CSV dataset into Power BI
- Verified data quality (no missing values)
- Checked data types and value ranges

2. Calculated Columns (6 DAX Formulas)

Column	DAX Formula	Purpose
Temperature Range	IF([Temp]<20,"Cold",IF([Temp]<=30,"Moderate","Warm"))	Categorize temperature
Humidity Range	IF([Humidity]<50,"Low",IF([Humidity]<=70,"Medium","High"))	Categorize humidity

Plant Growth Category	IF([Temp Range]="Moderate" && [Humidity Range]="Medium","Optimal","Sub-Optimal")	Overall classification
3 More Columns	Humidity Level, Temperature Description, Growth Description	Descriptive analytics

3. Visualizations Created

Visualization	Type	Purpose
Growth by Temperature	Column Chart	Compare temperature impact
Growth by Humidity	Column Chart	Analyze humidity effect
Growth Distribution	Pie Chart	Optimal vs Sub-optimal ratio
Temperature-Humidity Heatmap	Matrix Visual	Identify best combination

🚀 TECHNICAL ACHIEVEMENTS

Skill Area	Achievement
Data Modeling	Created 6 calculated columns using DAX
Data Visualization	Designed 4 interactive professional charts
Dashboard Design	Developed clean, user-friendly interface
Data Analysis	Extracted meaningful insights from patterns
Version Control	Managed project via GitHub repository
Documentation	Created comprehensive project report

📁 PROJECT FILES & RESOURCES

GitHub Repository: https://github.com/pallavibhise2/plant-growth-analysis

Main Files:

- **Plant_Growth_Analysis.pbix** - Complete Power BI dashboard
- **plant_growth_dataset.csv** - Source dataset (100 records)
- **README.md -** Project documentation
- **DAX Formulas** - All calculations code

👁️ HOW TO VIEW THE PROJECT

1. Visit GitHub repository using the link above
2. Download `Plant_Growth_Analysis.pbix` file
3. Open in Power BI Desktop (free download)
4. Refresh data if prompted
5. Explore interactive dashboard with filters

📝 STUDENT DECLARATION

I hereby solemnly declare that the project titled **"Plant Growth Analysis Dashboard"** has been developed and submitted by me. The work presented in this report is original and has been completed to the best of my knowledge and ability.

This project represents my understanding of Power BI, data analysis techniques, and visualization principles learned during the course of study.

Submitted By:
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