

Dashboard Design

Date	25 December 2025
Project Title	Predicting Plant Growth Stages with Environmental and Management Data Using Power BI.
Maximum Marks	5 Marks

Activity 1: Interactive and visually appealing dashboards

Major Outcomes from the Dashboard:

- **Overall Growth Success Rate:** The dashboard reveals a cumulative success rate of 49.7% across all 193 trials. This critical **KPI** indicates that current agricultural methods are resulting in a crop failure rate of over 50%, highlighting an urgent need for optimization.
- **Fertilizer Efficiency:** The analysis identifies Organic Fertilizer as the top performer, achieving a 70% success rate. In contrast, Chemical fertilizers show a significantly lower success rate of 55%, and plants with "No Fertilizer" fail approximately 70% of the time.
- **Soil Type Performance:** Loam Soil proves to be the most resilient substrate, with a baseline success rate of 56%. Clay soil is identified as the highest-risk category, contributing the most to the overall failure count (44% success rate).
- **Optimal Watering Strategy:** The data highlights a specific "Golden Rule" for Sandy soil: Daily Watering combined with Organic fertilizer maximizes yield. Conversely, distinct watering frequencies (Daily vs. Weekly) show negligible improvement for Clay soils unless the fertilizer type is changed.
- **Environmental Sweet Spot:** The scatter plot analysis pinpoints the ideal environmental conditions for success. Plants consistently reaching the growth milestone are clustered in the temperature range of 20°C to 30°C with humidity levels between 45% and 65%.

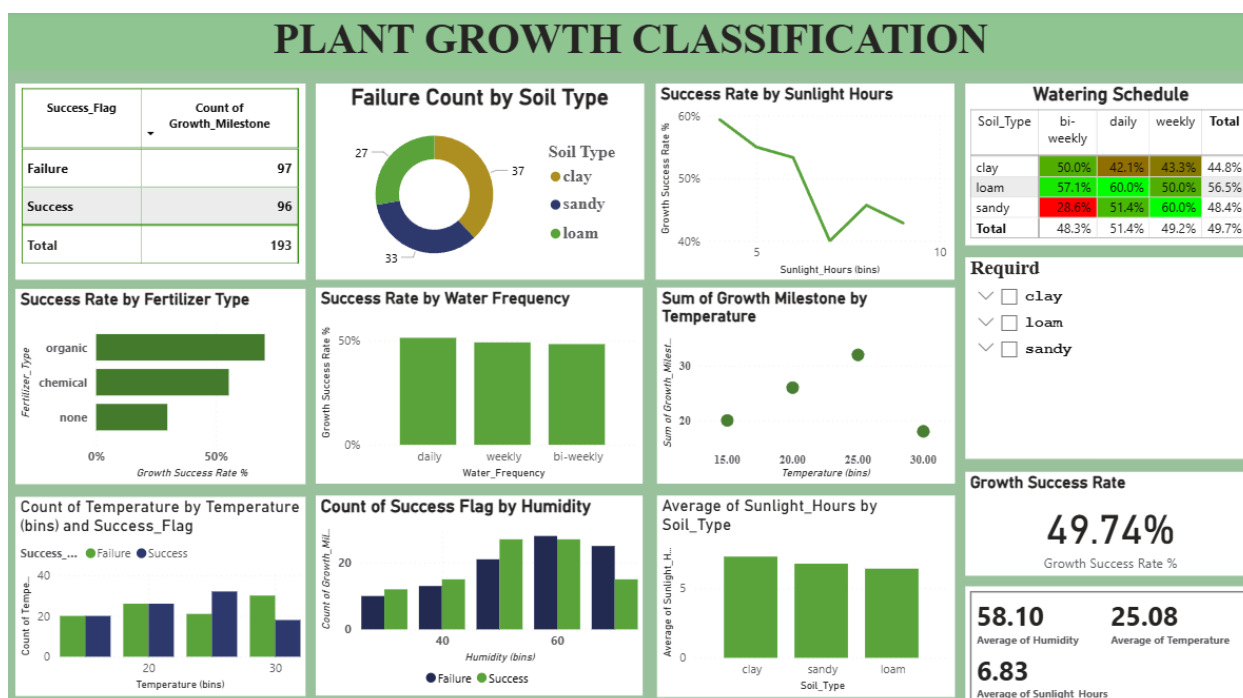
- **Impact of Neglect:** The dashboard visually demonstrates the high cost of inaction. The "None" category in fertilizer usage correlates with the lowest yield, proving that relying solely on soil nutrients without additives is a failing strategy for this crop type.

Design Implementation Strategy:

- **Clear and Intuitive Layout:** We utilized a "Grid Layout" with high-level KPIs (Success Rate, Total Plants) at the top left for immediate visibility, followed by detailed charts (Soil/Fertilizer analysis) in the centre.
- **Interactive Filters and Slicers:** A global slicer for "Soil Type" was added to the sidebar. This allows the user to filter the entire dashboard to see, for example, only "Clay" soil data, instantly revealing that Chemical fertilizers are particularly ineffective for that specific soil.
- **Colour and Theming:** We applied a "Nature/Growth" colour theme (Greens for Success, Greys/Reds for Failure) to make the status of the plants intuitively recognizable.
- **Drill-Down Capabilities:** The "Fertilizer Performance" bar chart is set up to allow drill-down into "Watering Frequency," enabling users to see exactly which watering schedule works best for Organic vs. Chemical fertilizers.

Dashboard Design:

a.)



b.)

