**FOR CHILLI CROP**

**Dataset Analysis**

**Production (28%) –** The most influential factor, as it determines overall market supply and farmer revenue.

**Arrivals (18%) –** The quantity of chilli reaching markets influences pricing trends and demand. High arrivals can lead to price drops**.Sales (12%) –** The volume of chilli sold impacts market trends, profitability, and pricing**.**

**Max Temperature (10%)** – High temperatures (>35°C) can reduce flowering and fruit setting, lowering yield.

**Min Temperature (6%) –** Low temperatures (<10°C) slow growth and delay harvest, impacting supply.

**Rainfall (6%)** – Insufficient rainfall can cause drought stress, while excessive rainfall can lead to fungal diseases, both of which impact production.

**WHY PROPHET IS BETTER THAN OTHER MODELS :**

**Prophet can directly take historical time-series data and automatically detect seasonality, trends, and holidays.**

|  |  |
| --- | --- |
| **DATE** | **PRODUCTION** |
| **2015-01** | **500** |
| **2015-02** | **520** |
| **2015-03** | **600** |
| **-------** | **------** |
| **2015-12** | **650** |

* Agricultural researchers and agritech startups use Prophet for forecasting crop production, rainfall trends, and pest outbreaks.
* Helps farmers and agribusinesses plan production cycles based on weather and climate patterns.

**2. ARIMA (AutoRegressive Integrated Moving Average):**

* Works only on stationary data – If data has an increasing/decreasing trend, ARIMA struggles without heavy preprocessing.
* **Not good with missing data** – If your dataset has missing months or irregular time intervals, ARIMA fails.

3. **LSTM (Long Short-Term Memory)** –

* Needs Too Much Data & Manual Features
* Needs a large dataset – LSTM performs poorly on small datasets (like yearly or monthly crop production).
* Does not detect seasonality automatically – You must manually add time-based features (e.g., month, year, lag values).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| YEAR | MONTH | PRODUCTION | MAXTEM | MINTEM | RAINFALL |
| 2015 | 1 | 500 | 28 | 12 | 50 |
| 2015 | 2 | 520 | 30 | 15 | 40 |
| 2015 | ---- | ---- | --- | --- | --- |
| 2024 | 12 | 650 | 27 | 10 | 60 |