ESTIMSTE THE CROP YEILD USING DATA ANALYTICS

BY

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TEAM ID :PNT2022TMID23966

Project Domain: Data Analytics

FROM

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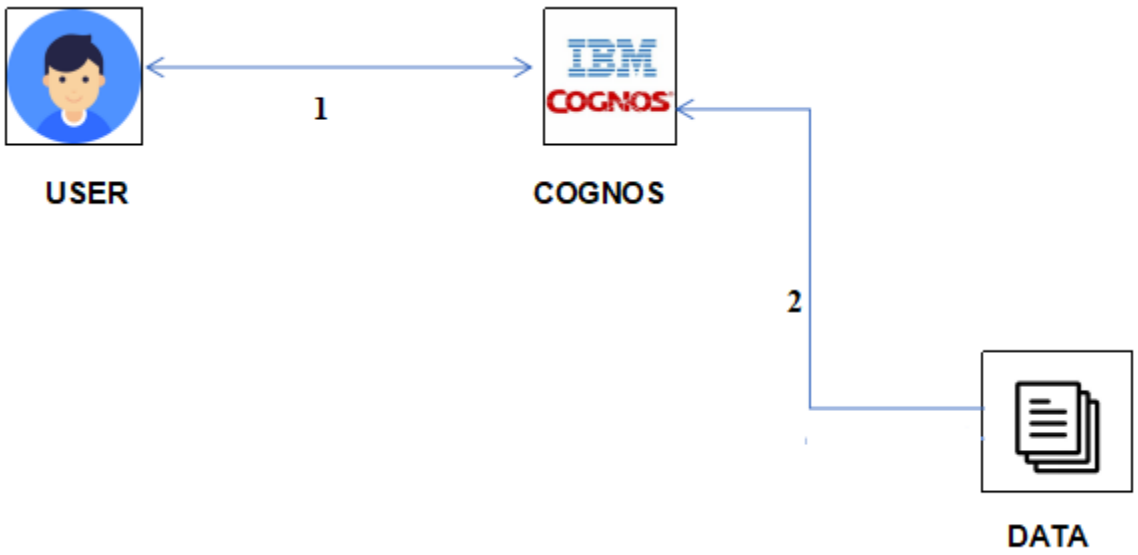
Introduction :

Crop production in India is one of the most important sources of income and India is one of the top countries to produce crops. As per this project we will be analyzing some important visualization, creating a dashboard and by going through these we will get most of the insights of Crop production in India.

Crop yield prediction is one of the challenging tasks in agriculture. It plays an essential role in decision making at global, regional, and field levels. The prediction of crop yield is based on soil, meteorological, environmental, and crop parameters. Crop prediction attributes are defined by multiple factors such as genotype, climate and the interactions between the two. Accurate crop prediction needs a fundamental understanding of the functional relationship between cultivation and interactive factors like the genotype and climate.



LITERATURE SURVEY

INTRODUCTION :

Crop yield prediction is one of the challenging tasks in agriculture. It plays an essential role in decision making at global, regional, and field levels. The prediction of crop yield is based on soil, meteorological, environmental, and crop parameters. Crop prediction attributes are defined by multiple factors such as genotype, climate and the interactions between the two. Accurate crop prediction needs a fundamental understanding of the functional relationship between cultivation and interactive factors like the genotype and climate.

PREDICTION : India is basically agriculture based country and approximately 70% our country economics is directly or indirectly related to the agricultural crops. The principle crop which occupies the highest (60-70%) percentage of cultivable land in the Indian soil is the paddy culture and it is the major crop especially in central and south parts of the India. Rice crop cultivation plays an imperative part in sustenance security of India, contributing over 40% to general yield generation. Literature

Review : [1] M. A. Jayaram and Netra Marad, “Fuzzy interference Systems for Crop Prediction”, Journal of Intelligent Systems, 2012, 21(4), pp.363-3720.6.

Methodology : It uses new methods to solve everyday problems. It is understandable and straightforward. Fuzzy logic is also extensively used today. The results are acceptable, it can be used with confidence, especially if we are dealing with inaccurate inputs.

LIMITATIONS : Human knowledge is often incomplete and episodic as compared to systematic way. If the model is not known then it is impossible to achieve the stability of the controller system. Sometime rules are mismatched and non coherent. [2] P. Vindya “Agricultural Analysis for Next Generation High Tech Farming in Data Mining” , Anna University, Trichy, Tamilnadu, India, 5 May 2015.

Methodology : The purpose is to estimate difference in efficiency and prediction between organic and inorganic farming. This work achieves a high accuracy and a high generality in terms of yield prediction capabilities.

LIMITATIONS : It includes high costs of maintenance. The majority of farmers are illiterate, and understanding how to use current technologies in farming is difficult. Production cost in organic farming is quite higher. Algorithm used: Genetic Algorithm, Artificial Neural Network (ANN), Nearest neighbor, Memory based reasoning. [3] Dakshayini Patil, M .S, Shirdhonkar. Rice Crop Yield Prediction using Data Mining Techniques: An Overview. International Journal of Advanced Research in Computer Science and Software Engineering, 2017; 7(5):427- 43.

Methodology : It predicts the yield of rice crops and helps in growing better strategies at various climatic conditions.

LIMITATIONS : This research has the ability to only detect the yield of rice crops and it doesn’t detect any other crops. So, it is not effective. Algorithm used: WEKA tool. [4] David B. Lobell, The use of satellite data for crop yield gap analysis, Field Crops Research-143, 2013; 56–64.

Methodology : Satellite data have repeatedly been shown to provide information that, by themselves or in combination with other data and models, can accurately measure crop yields gap in farmers' fields.

LIMITATIONS : Design, development, investment and insurance of satellite requires higher cost. They are often less accurate than field-based measures. Satellite Internet latency can be a significant problem. Unlike terrestrial communications, minor changes in weather can have a massive impact on both the speed and latency of satellite data. Image processing is a time taking process. Algorithm used: Agronomy. [5] M. Paul, S. K. Vishwakarma and A. Verma, "Analysis of Soil Behaviour and Prediction of Crop Yield Using Data Mining Approach," 2015 International Conference on Computational Intelligence and Communication Networks (CICN), 2015, pp. 766-771, doi: 10.1109/CICN.2015.156.

Methodology : This work presents a system, which uses data mining techniques in order to predict the category of the analyzed soil datasets. The category, thus predicted will indicate the yielding of crops.

LIMITATIONS : The soil properties suitable for crop yield are considered. Climatic properties that affect the crops are not considered. For crop analysis, we need to monitor various environmental parameters such as temperature, humidity and moisture. Algorithm used: Naive Bayes and K-Nearest Neighbour (KNN)

References:

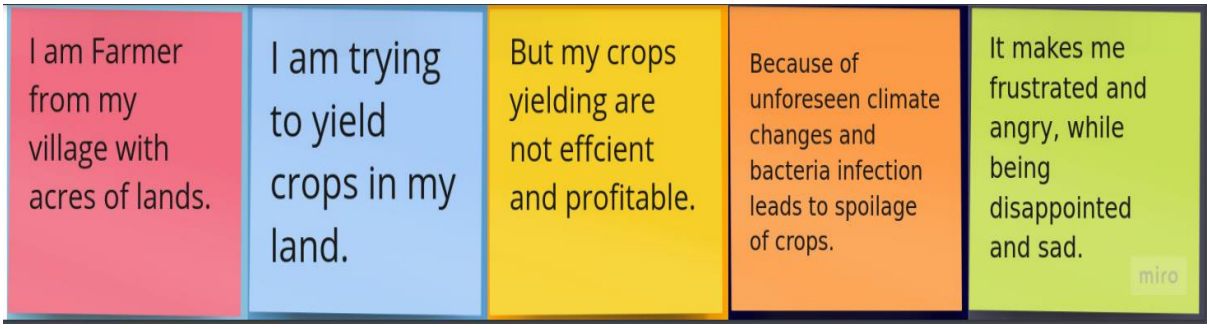
1. Apolo-Apolo OE, Martínez-Guanter J, Egea G, Raja P, PérezRuiz M. 2020. Deep learning techniques for estimation of the yield and size of citrus fruits using a UAV. European Journal of Agronomy. doi:https://doi.org/10.1016/j.eja.2020.126030. [Crossref], [PubMed], [Web of Science ®], [Google Scholar]

2. Apolo-Apolo OE, Pérez-Ruiz M, Martínez-Guanter J, Valente J. 2020. A cloudbased environment for generating yield estimation maps from apple orchards using UAV imagery and a deep learning technique. Frontiers in Plant Science. doi:https://doi.org/10.3389/fpls.2020.01086. [Crossref], [PubMed], [Web of Science ®], [Google Scholar]

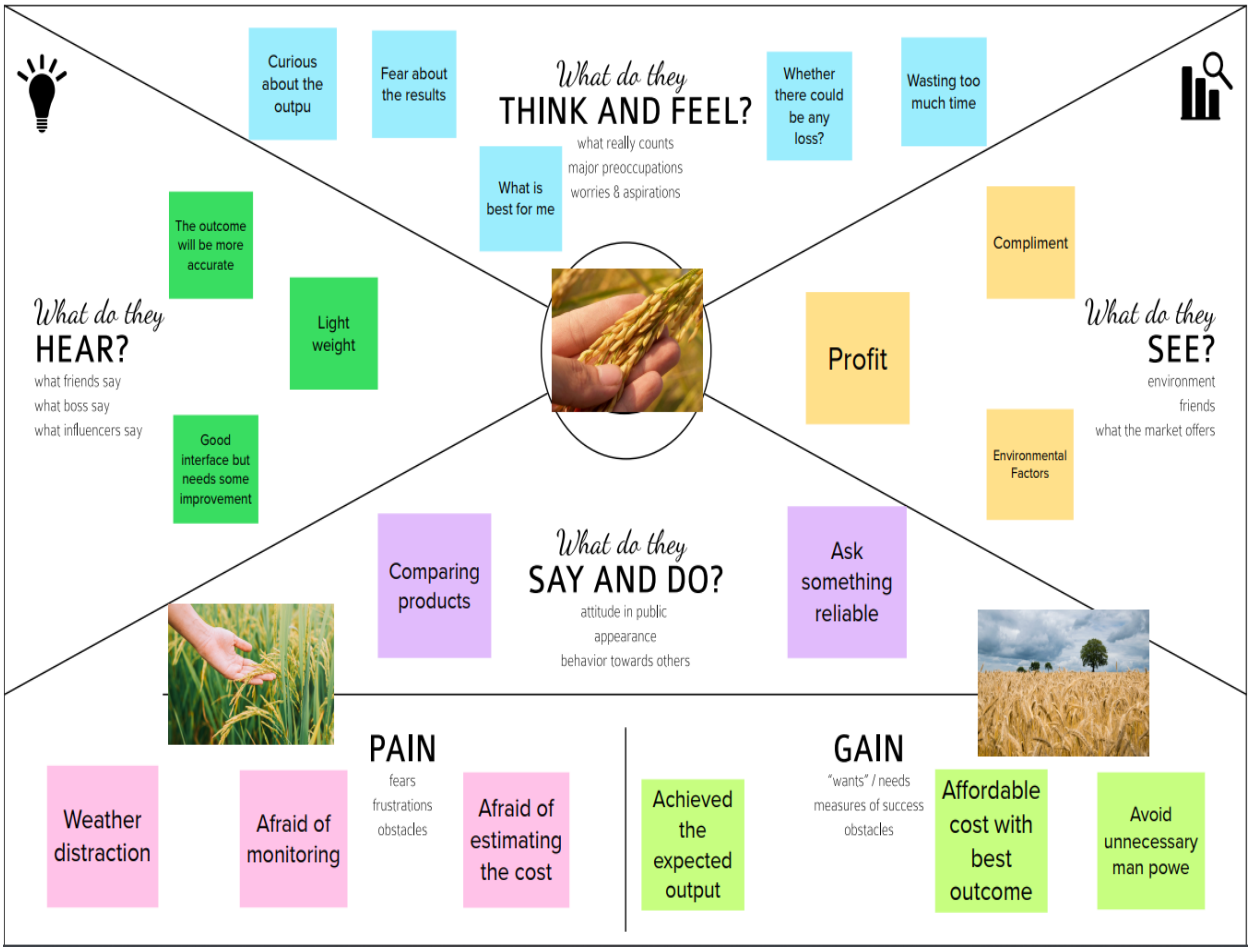
3. Chlingaryan A, Sukkarieh S, Whelan B. 2018. Machine learning approaches for crop yield prediction and nitrogen status estimation in precision agriculture: A review. Computers and Electronics in Agriculture. 151:61–69. doi:https://doi.org/10.1016/j.compag.2018.05.012. [Crossref], [Web of Science ®], [Google Scholar]

4. Dharani M, Thamilselvan R, Natesan P, Kalaivaani P, Santhoshkumar S. 2021. Review on crop prediction using deep learning techniques. Paper presented at the Journal of Physics: Conference Series. [Crossref], [Google Scholar]

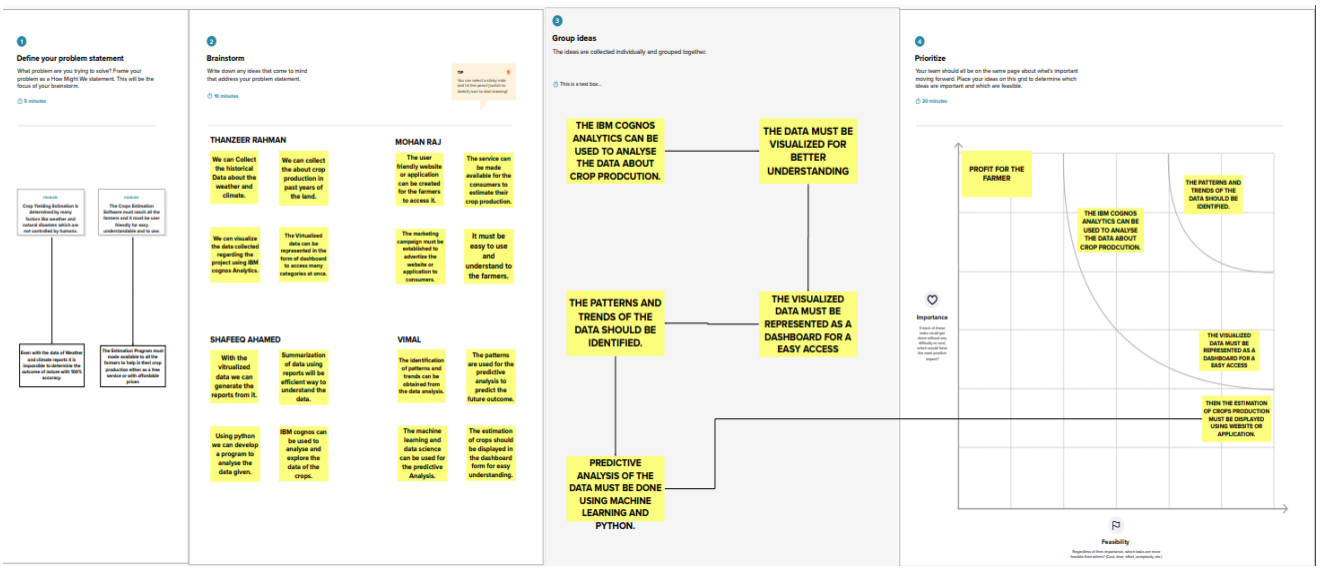
PROBLEM SOLUTION FIT



Empathy Map


Curious about the outpu
Fear about the results
What do they
THINK AND FEEL?
what really counts
major preoccupations
worries & aspirations
What is best for me
Whether there could be any loss?
Wasting too much time
The outcome will be more accurate
Light weight
What do they
HEAR?
what friends say
what boss say
what influencers say
Good interface but needs some improvement
Compliment
Profit
What do they
SEE?
environment
friends
what the market offers
Environmental Factors
Comparing products
What do they
SAY AND DO?
attitude in public
appearance
behavior towards others
Ask something reliable
PAIN
fears
frustrations
obstacles
Weather distraction
Afraid of monitoring
Afraid of estimating the cost
GAIN
"wants" / needs
measures of success
obstacles
Achieved the expected output
Affordable cost with best outcome
Avoid unnecessary man powe

Brainstorm and Ideation



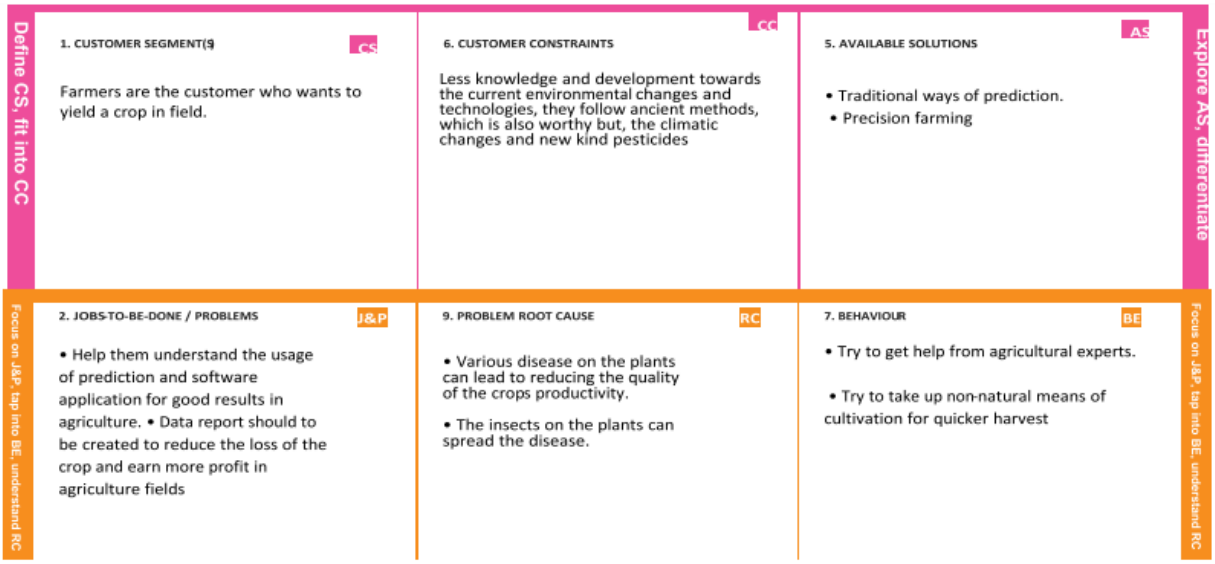
Proposed Solution

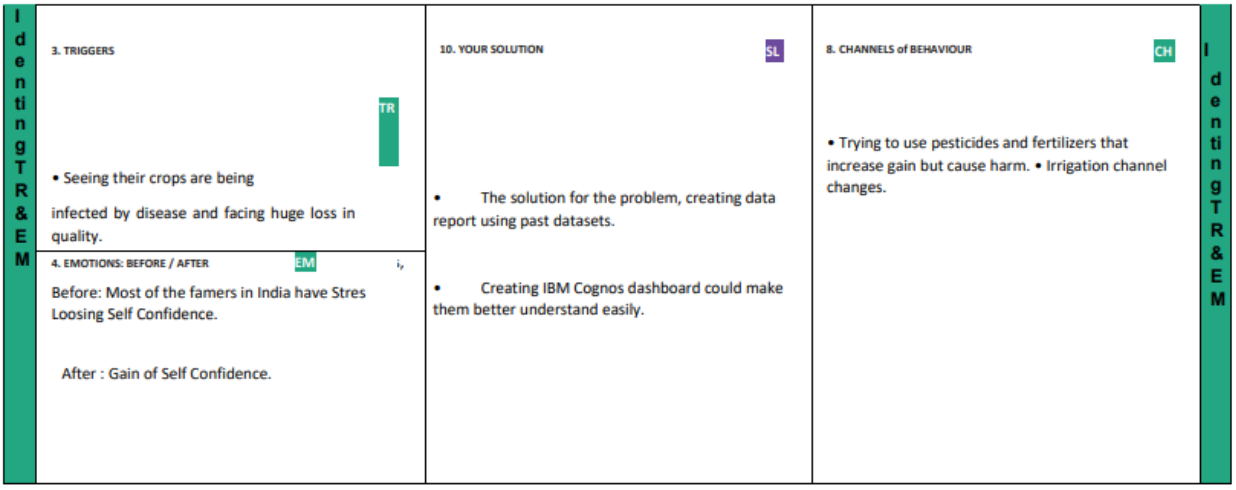
Proposed Solution:

Project team shall fill the following information in proposed solution for estimate the crop yield using data analytics.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	In the agriculture sector the farmers are facing difficulties in analysing the demand in market and soil quality analysis to achieve high crop yield through technology. The main objective of this project is to predict crop yield that will be extremely useful to farmers to plan for the harvest and sales of harvested grain.
2.	Idea / Solution description	Provide perfect data report after deep data analysis of the past data. Helping them out to overcome loss in crop yield forming.
3.	Novelty / Uniqueness	With this solution we can analyse, visualize data and give the farmers the option to choose which crop to cultivate in which period of time/season to efficiently earn more profit from the crop yield
4.	Social Impact / Customer Satisfaction	Perfect data visuals create a large impact in the crop yield. And hence farmers will be able to gain more profit.
5.	Business Model (Revenue Model)	We can increase/enhance crop production and other raw materials. Also, Increase in productivity will result in increase of Revenue for the farmers.
6.	Scalability of the Solution	With the data visual reports, farmers will be able to cultivate crop according to the area, climate, soil and other features that impact the crop yield and hence enhancing the productivity

Problem solution fit





Solution Requirements(functional & Non – functional)

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Creation of IBM Account	Create an IBM Account
FR-2	Credentials validation	The credentials are entered and validated for access
FR-3	Analysis process	With the help of IBM Cognos Analytics the prediction of crop yielding is estimated
FR-4	Outcome Process	The results are presented to the user in the dashboard.

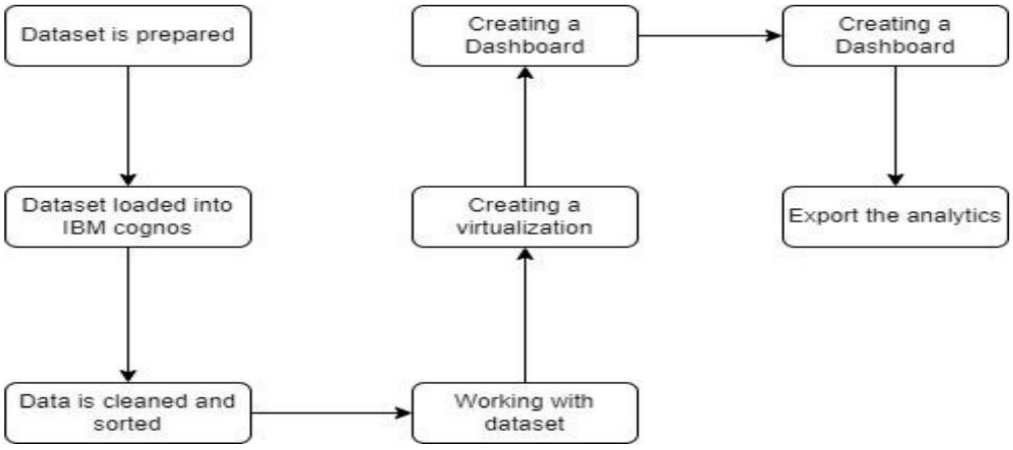
Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	The user can be able to access with the system user friendly. The system is built with a simple manner and algorithm.
NFR-2	**Security**	Access permission for the particular system information it can only change by the system admin. The user must be having a high security measures.
NFR-3	**Reliability**	The database update process must roll back all the related update when any update fails. The dataset will not be modified by anyone only the admin can modify the dataset.
NFR-4	**Performance**	The performance of the dashboard is very easy and flexible to the user. It can be perform smooth
NFR-5	**Availability**	New module deployment must not impact front page, dashboard and check out the pages availability and then show some visualization of them.
NFR-6	**Scalability**	It can be support many users to access at a time. The dashboard is scalable for the crop when their farmers and customers is used to analysis.

Data Flow Diagrams and Use

Data Flow Diagram:



User Stories

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user or web user)	Login	USN-1	As a user, I can log into the application by entering email & password		High	Sprint-1
	Dashboard	USN-2	Preparing the dataset	The acceptable dataset must be crated	Medium	Sprint-1
		USN-3	Loading the dataset	I can able to upload the dataset that is prepared.	High	Sprint-1
		USN-4	Cleaning and sorting	I can able to clean and sort the loaded data	Low	Sprint-1
		USN-5	Visualization	I can able to virtualize data in various types.	High	Sprint-2
Analyzing	Dashboard Creation	USN-6	Creating the Dashboard	I can be able to create the dashboard and access the created dashboard	High	Sprint-2
	Report	USN-7	Creating the report	I can able to create the report and	High	Sprint-3

				access the created report		
	Story	USN-8	Creating the story	I can able to create the story and access the created story.	High	Sprint-3
Exporting	Exporting the Analytics	USN-9	Share the analytics	I can able to export the analytics acquired through IBM cognos	Medium	Sprint-4

Solution Architecture:

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions.

Its goals are to:

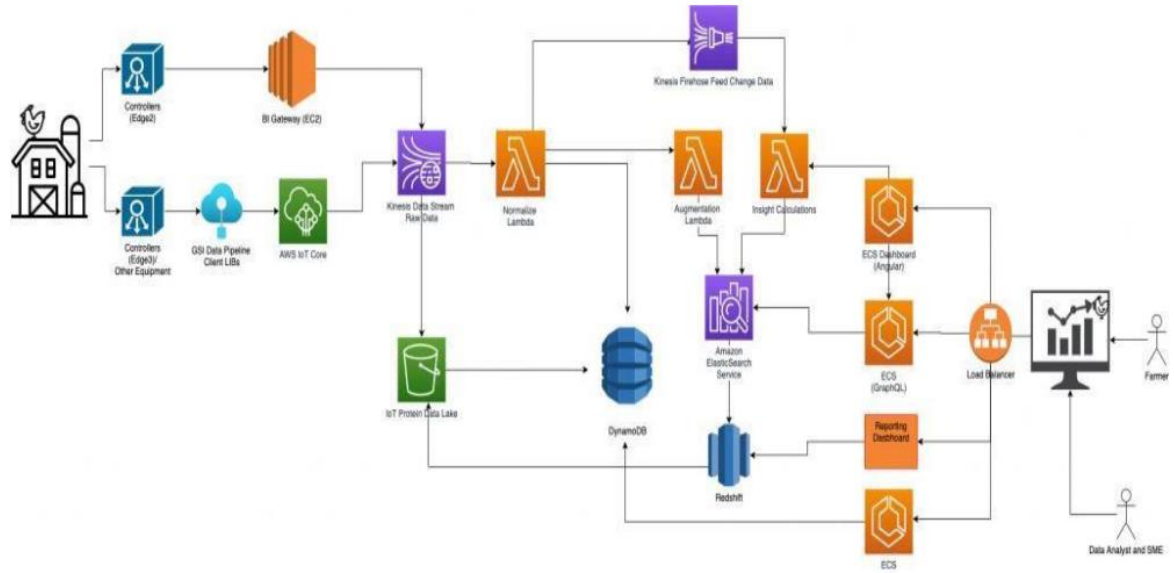
• Find the best tech solution to solve existing business problems.

• Describe the structure, characteristics, behavior, and other aspects of the software to project stakeholders.

• Define features, development phases, and solution requirements.

• Provide specifications according to which the solution is defined, managed, and delivered.

Example - Solution Architecture Diagram:



Technology Stack (Architecture & Stack)

Technical Architecture:

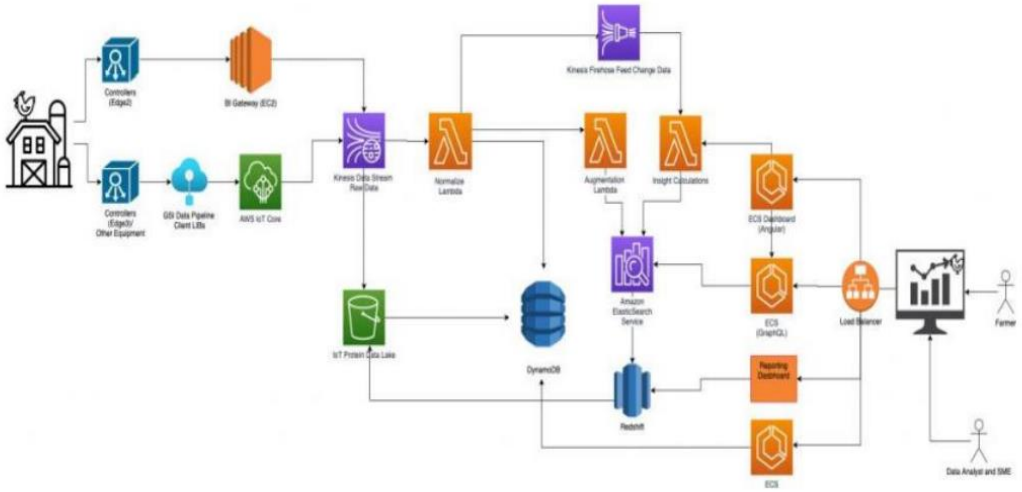


Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g. Web UI, Mobile App, Chatbot etc.	HTML, CSS, JavaScript / Angular Js / React Js etc.
2.	Application Logic-1	Logic for a process in the application	Java / Python
3.	Application Logic-2	Logic for a process in the application	IBM Watson STT service
4.	Application Logic-3	Logic for a process in the application	IBM Watson Assistant
5.	Database	Data Type, Configurations etc.	MySQL, NoSQL, etc.
6.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant etc.
7.	File Storage	File storage requirements	IBM Block Storage or Other Storage Service or Local Filesystem
8.	Machine Learning Model	Purpose of Machine Learning Model	Object Recognition Model, etc.
9.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Cloud Server Configuration :	Local, Cloud Foundry, Kubernetes, etc.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	Technology of Opensource framework
2.	Security Implementations	List all the security / access controls implemented, use of firewalls etc.	e.g. SHA-256, Encryptions, IAM Controls, OWASP etc.
3.	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-services)	Technology used
4.	Availability	Justify the availability of application (e.g. use of load balancers, distributed servers etc.)	Technology used
5.	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc.	Technology used

Project Planning Phase

Product Backlog, Sprint Schedule, and Estimation (4 Marks)

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Working with the Dataset	1	To work on the given dataset, Understand the Dataset.	2	High	Vimal
		2	Load the dataset to Cloud platform then Build the requirements Visualizations.	10	High	Thanzeer Rahman
Sprint-2	Data Visualization Chart	3	Using the Crop production in Indian dataset, create various graphs and charts to highlight the insights and visualizations. Build a Visualization to showcase Average Crop Production by Seasons.	4	Medium	Thanzeer Rahman
			*Showcase the Yearly usage of Area in Crop Production.	4	Medium	Mohan Raj

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
		4	Build a visualization to show case top 10 States in Crop Yield Production by Area.	4	Medium	Vimal
			Build the required Visualization to showcase the Crop Production by State.	4	Medium	Shafeeq Ahamed
			Build Visual analytics to represent the Sates with Seasonal Crop Production using a Text representation.	4	Medium	Thanzeer Rahman Vimal

Sprint-3	Creating The dashboard	5	Create the Dashboard by using the created visualizations.	20	High	Vimal Thanzeer Rahman Shafeeq Ahamed Mohan Raj
Sprint-4	Export The Analytics	6	Export the created Dashboard	20	High	Vimal Thanzeer Rahman Shafeeq Ahamed Mohan Raj

Project Tracker, Velocity & Burndown Chart:

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	05 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	12 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	19 Nov 2022

Velocity:

We have a 24-day sprint duration, and the velocity of the team is 20 (points per sprint). Let's calculate the team's average velocity (AV) per iteration unit (story points per day)

$$AV = \text{Sprint Duration} / \text{Velocity} = 24 / 20 = 1.2$$

Burndown Chart:

A burn down chart is a graphical representation of work left to do versus time. It is often used in agile software development methodologies such as Scrum. However, burn down charts can be applied to any project containing measurable progress over time.

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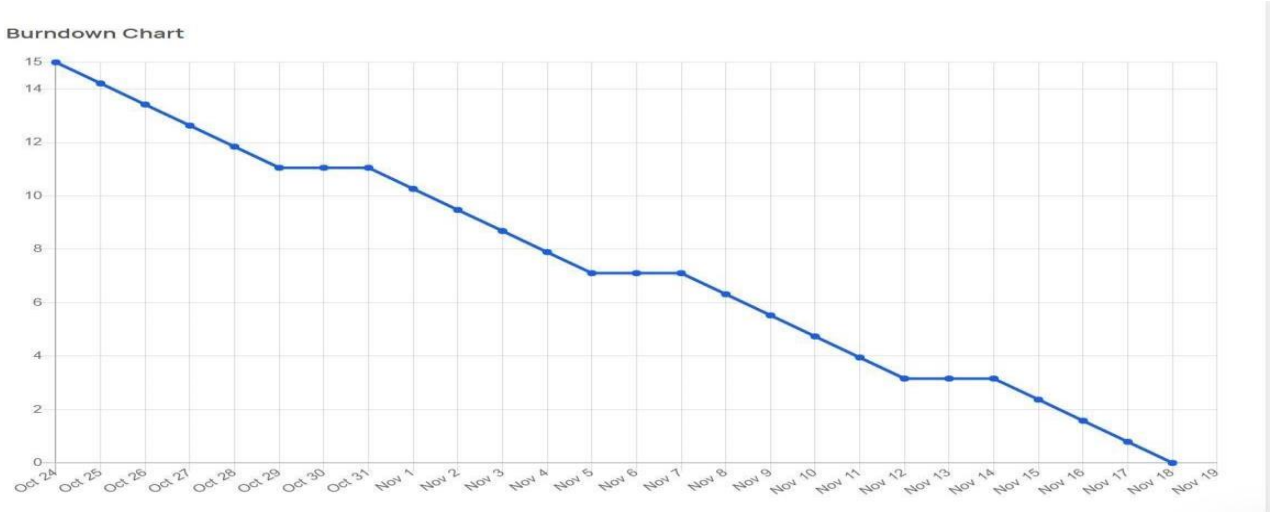

Project Planning Phase Milestone and Activity List

Title	Description	Date
Literature Survey and Information Gathering	Gathering Information by referring the technical papers, research publications etc	1 SEPTEMBER 2022
Prepare Empathy Map	To capture user pain and gains Prepare List of Problem Statement	11 SEPTEMBER 2022
Ideation	Prioritise a top 3 ideas based on feasibility and Importance	18 SEPTEMBER 2022
Proposed Solution	Solution include novelty,feasibility,business model,social impact and scalability of solution	24 SEPTEMBER 2022
Problem Solution Fit	Solution fit document	1 October 2022
Solution Architecture	Solution Architecture	1 0ctober 2022
Customer Journey	To Understand User Interactions and experiences with application	9 0ctober 2022
Functional Requirement	Prepare functional Requirement	15 October 2022
Data flow Diagrams	Data flow diagram	15 October 2022
Technology Architecture	Technology Architecture diagram	16 October 2022
Project Development-Delivery of sprint 1,2,3 &4	Develop and submit the developed code by testing it	24 October 2022 – 19 November 2022

CODING AND SOLUTION

Index.html:

```
<!Doctype HTML>

<html>

<head>

        <title></title>

        <link rel="stylesheet" href="style.css" type="text/css"/>

        <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/4.7.0/css/font-awesome.min.css">

</head>




<body>



        <div id="mySidenav" class="sidenav">

        <p class="logo"><span>IBM</span>--Crop_Production</p>

  <a href="https://us3.ca.analytics.ibm.com/bi/?perspective=dashboard&pathRef=.my_folders%2FCrop_production%2BDashboard&action=view&mode=dashboard&subView=model000001848a733b26_00000000" class="icon-a"><i class="fa fa-dashboard icons"></i>   Dashboard</a>

  <a href="#"class="icon-a"><i class="fa fa-users icons"></i>   Customers</a>

  <a href="https://us3.ca.analytics.ibm.com/bi/?perspective=story&pathRef=.my_folders%2FCrop_production%2Bstory&action=view&sceneId=model00000184908f5625_00000000&sceneTime=0"><i class="fa fa-list icons"></i>   Story</a>

  <a href="https://us3.ca.analytics.ibm.com/bi/?pathRef=.my_folders%2FCrop_production%2BReport&action=run&format=HTML&prompt=false"class="icon-a"><i class="fa fa-list-alt icons"></i>   Report</a>

  <a href="https://www.kaggle.com/datasets/abhinand05/crop-production-in-india"class="icon-a"><i class="fa fa-tasks icons"></i>   Data</a>

  <a href="#"class="icon-a"><i class="fa fa-user icons"></i>   Accounts</a>

  <a href="#"class="icon-a"><i class="fa fa-list-alt icons"></i>   Tasks</a>
```

```
</div>
<div id="main">

        <div class="head">
                <div class="col-div-6">
<span style="font-size:30px;cursor:pointer; color: white;" class="nav"  >&#9776; Dashboard</span>
<span style="font-size:30px;cursor:pointer; color: white;" class="nav2"  >&#9776; Dashboard</span>
</div>

        <div class="col-div-6">
        <div class="profile">

                <img src="images/user.png" class="pro-img" />
                <p>USER <span>DOB</span></p>
        </div>
</div>
        <div class="clearfix"></div>
</div>

        <div class="clearfix"></div>
        <br/>

        <div class="col-div-3">
                <div class="box">
                        <p>98<br/><span>DASHBOARD</span></p>
                        <i class="fa fa-users box-icon"></i>
                </div>
        </div>
        <div class="col-div-3">
                <div class="box">
```

```
                        <p>92<br/><span>REPORT</span></p>
                        <i class="fa fa-list box-icon"></i>
                    </div>
                </div>
                <div class="col-div-3">
                    <div class="box">
                        <p>99<br/><span>STORY</span></p>
                        <i class="fa fa-list box-icon"></i>
                    </div>
                </div>
                <div class="col-div-3">
                    <div class="box">
                        <p>78<br/><span>TASKS</span></p>
                        <i class="fa fa-tasks box-icon"></i>
                    </div>
                </div>
                <div class="clearfix"></div>
                <br/><br/>
                <div class="col-div-8">
                    <div class="box-8">
                    <div class="content-box">
                        <p>Visualization Charts <span>View All</span></p>
                        <br/>
                        <table>
<tr>
  <th>CONTENT</th>
</tr>
<tr>
  <td>*Seasons With Average Productions</td>
</tr>
```

```
 <tr>
  <td>*With Years Usage Of Area And Production</td>
 </tr>
 <tr>
  <td>*Top 10 States With Most Area</td>
 </tr>
 <tr>
  <td>*State With Crop Production</td>
 </tr>
 <tr>
        <td>*States With The Crop Production Along With Season </td>
 </tr>



</table>
                    </div>
        </div>
        </div>

        <div class="col-div-4">
                    <div class="box-4">
                    <div class="content-box">
                            <p>Total View <span>View All</span></p>

                            <div class="circle-wrap">
   <div class="circle">
    <div class="mask full">
     <div class="fill"></div>
    </div>
    <div class="mask half">
```

```
      <div class="fill"></div>
    </div>
    <div class="inside-circle"> 84% </div>
  </div>
 </div>
                    </div>
          </div>
          </div>

          <div class="clearfix"></div>
</div>


<script src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js"></script>
<script>

 $(".nav").click(function(){
   $("#mySidenav").css('width','70px');
   $("#main").css('margin-left','70px');
   $(".logo").css('visibility', 'hidden');
   $(".logo span").css('visibility', 'visible');
    $(".logo span").css('margin-left', '-10px');
    $(".icon-a").css('visibility', 'hidden');
    $(".icons").css('visibility', 'visible');
    $(".icons").css('margin-left', '-8px');
     $(".nav").css('display','none');
     $(".nav2").css('display','block');
 });

$(".nav2").click(function(){
```

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    $("#mySidenav").css('width','300px');
    $("#main").css('margin-left','300px');
    $(".logo").css('visibility', 'visible');
     $(".icon-a").css('visibility', 'visible');
     $(".icons").css('visibility', 'visible');
     $(".nav").css('display','block');
      $(".nav2").css('display','none');
 });
</script>
</body>
</html>

style.css:
body{
        margin:0px;
        padding: 0px;
        background-color:#1b203d;
        overflow: hidden;
        font-family: system-ui;
}
.clearfix{
        clear: both;
}
.logo{
        margin: 0px;
        margin-left: 28px;
    font-weight: bold;
    color: white;
    margin-bottom: 25px;
}
```

```
.logo span{
        color: #f7403b;
}
.sidenav {
  height: 100%;
  width: 300px;
  position: fixed;
  z-index: 1;
  top: 0;
  left: 0;
  background-color: #272c4a;
  overflow: hidden;
  transition: 0.5s;
  padding-top: 30px;
}
.sidenav a {
  padding: 15px 8px 15px 32px;
  text-decoration: none;
  font-size: 20px;
  color: #818181;
  display: block;
  transition: 0.3s;
}
.sidenav a:hover {
  color: #f1f1f1;
  background-color:#1b203d;
}
.sidenav{
  position: absolute;
  top: 0;
```

```
  right: 25px;
  font-size: 25px;
}
#main {
  transition: margin-left .5s;
  padding: 16px;
  margin-left: 300px;
}
.head{
        padding:20px;
}
.col-div-6{
        width: 50%;
        float: left;
}
.profile{
        display: inline-block;
        float: right;
        width: 160px;
}
.pro-img{
        float: left;
        width: 40px;
        margin-top: 5px;
}
.profile p{
        color: white;
        font-weight: 500;
        margin-left: 55px;
        margin-top: 10px;
```

```
        font-size: 13.5px;
}
.profile p span{
        font-weight: 400;
   font-size: 12px;
   display: block;
   color: #8e8b8b;
}
.col-div-3{
        width: 25%;
        float: left;
}
.box{
        width: 85%;
        height: 100px;
        background-color: #272c4a;
        margin-left: 10px;
        padding:10px;
}
.box p{
         font-size: 35px;
   color: white;
   font-weight: bold;
   line-height: 30px;
   padding-left: 10px;
   margin-top: 20px;
   display: inline-block;
}
.box p span{
        font-size: 20px;
```

```
        font-weight: 400;
        color: #818181;
}
.box-icon{
        font-size: 40px!important;
   float: right;
   margin-top: 35px!important;
   color: #818181;
   padding-right: 10px;
}
.col-div-8{
        width: 70%;
        float: left;
}
.col-div-4{
        width: 30%;
        float: left;
}
.content-box{
        padding: 20px;
}
.content-box p{
        margin: 0px;
   font-size: 20px;
   color: #f7403b;
}
.content-box p span{
        float: right;
   background-color: #ddd;
   padding: 3px 10px;
```

```
   font-size: 15px;
}
.box-8, .box-4{
        width: 95%;
        background-color: #272c4a;
        height: 380px;

}
.nav2{
        display: none;
}

.box-8{
        margin-left: 10px;
}
table {
  font-family: arial, sans-serif;
  border-collapse: collapse;
  width: 100%;

}
td, th {
  text-align: left;
  padding:15px;
  color: #ddd;
  border-bottom: 1px solid #81818140;
}
.circle-wrap {
  margin: 50px auto;
  width: 150px;
```

```
  height: 150px;
  background: #e6e2e7;
  border-radius: 50%;
}
.circle-wrap .circle .mask,
.circle-wrap .circle .fill {
  width: 150px;
  height: 150px;
  position: absolute;
  border-radius: 50%;
}
.circle-wrap .circle .mask {
  clip: rect(0px, 150px, 150px, 75px);
}

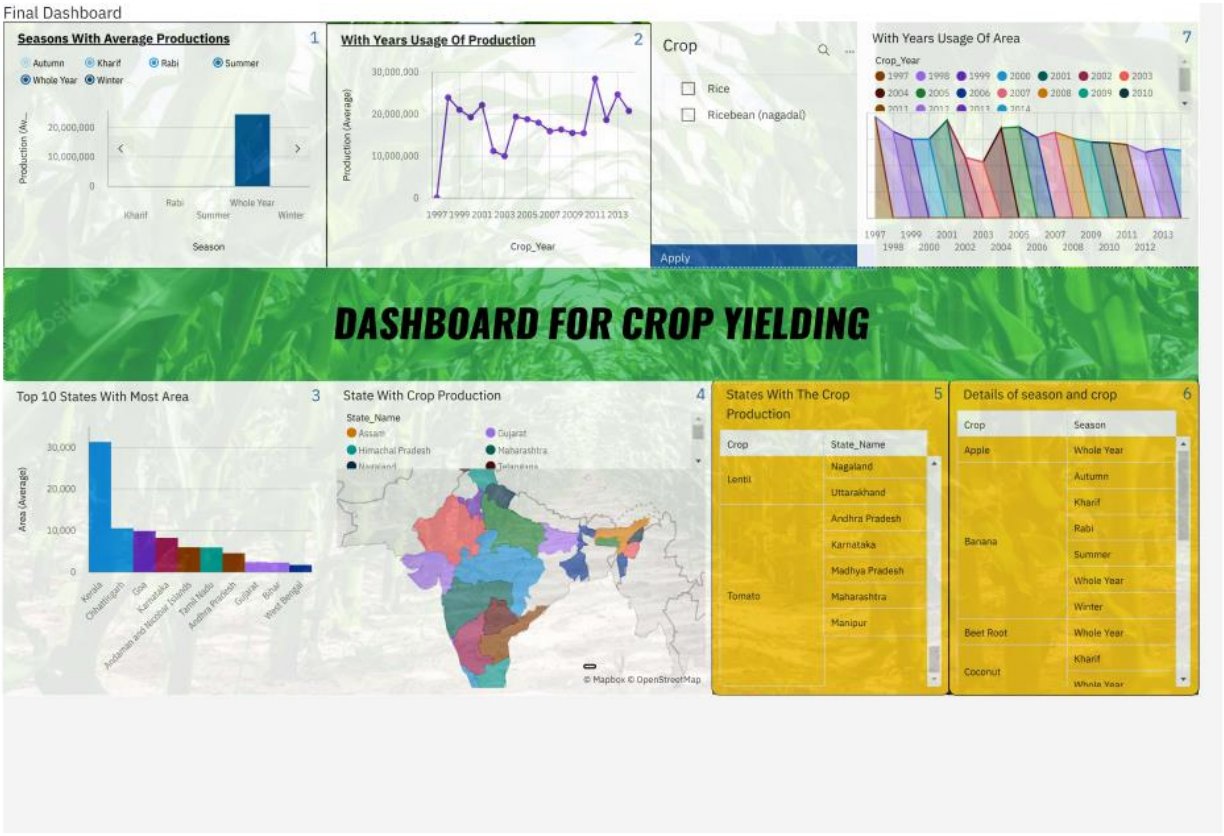
.circle-wrap .circle .mask .fill {
  clip: rect(0px, 75px, 150px, 0px);
  background-color: #f7403b;
}
.circle-wrap .circle .mask.full,
.circle-wrap .circle .fill {
  animation: fill ease-in-out 3s;
  transform: rotate(126deg);
}

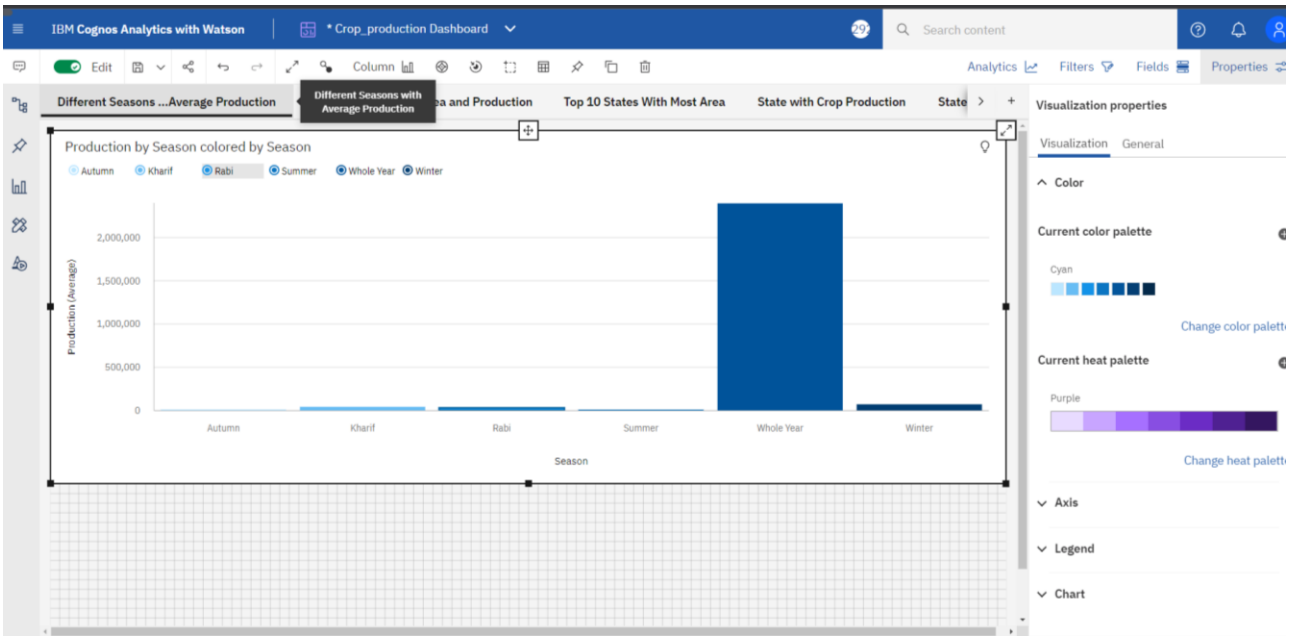
@keyframes fill {
  0% {
    transform: rotate(0deg);
  }
  100% {
```

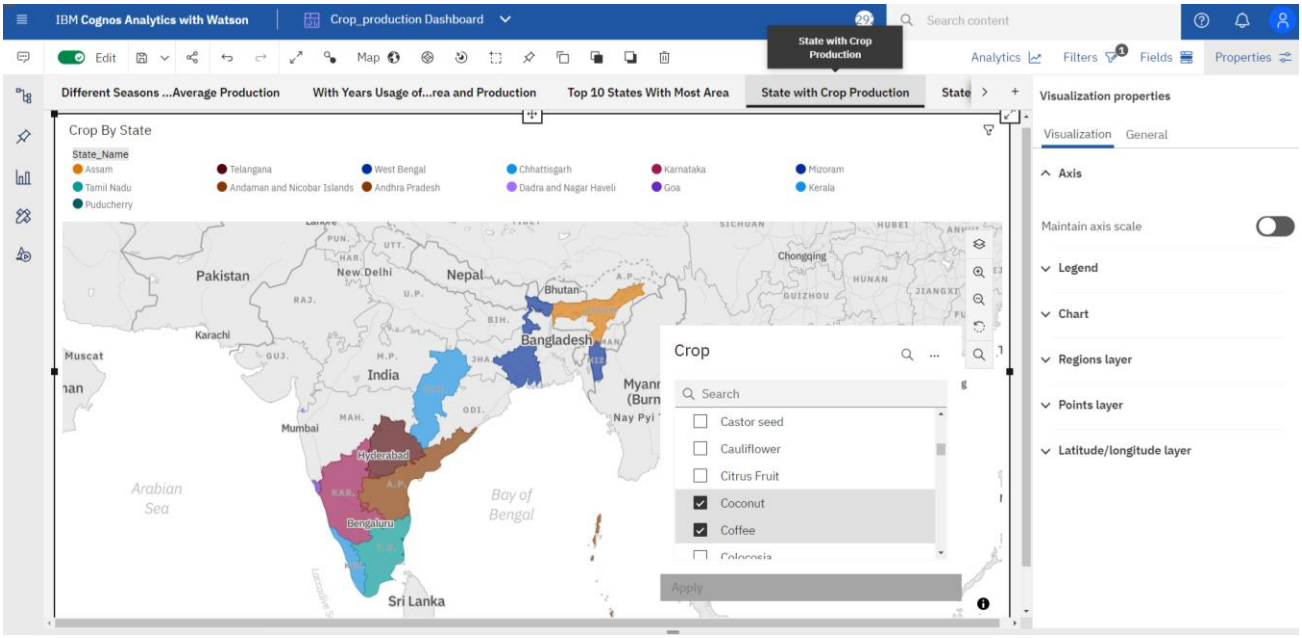
```
    transform: rotate(126deg);
  }
}
.circle-wrap .inside-circle {
  width: 130px;
  height: 130px;
  border-radius: 50%;
  background: #fff;
  line-height: 130px;
  text-align: center;
  margin-top: 10px;
  margin-left: 10px;
  position: absolute;
  z-index: 100;
  font-weight: 700;
  font-size: 2em;
}
```

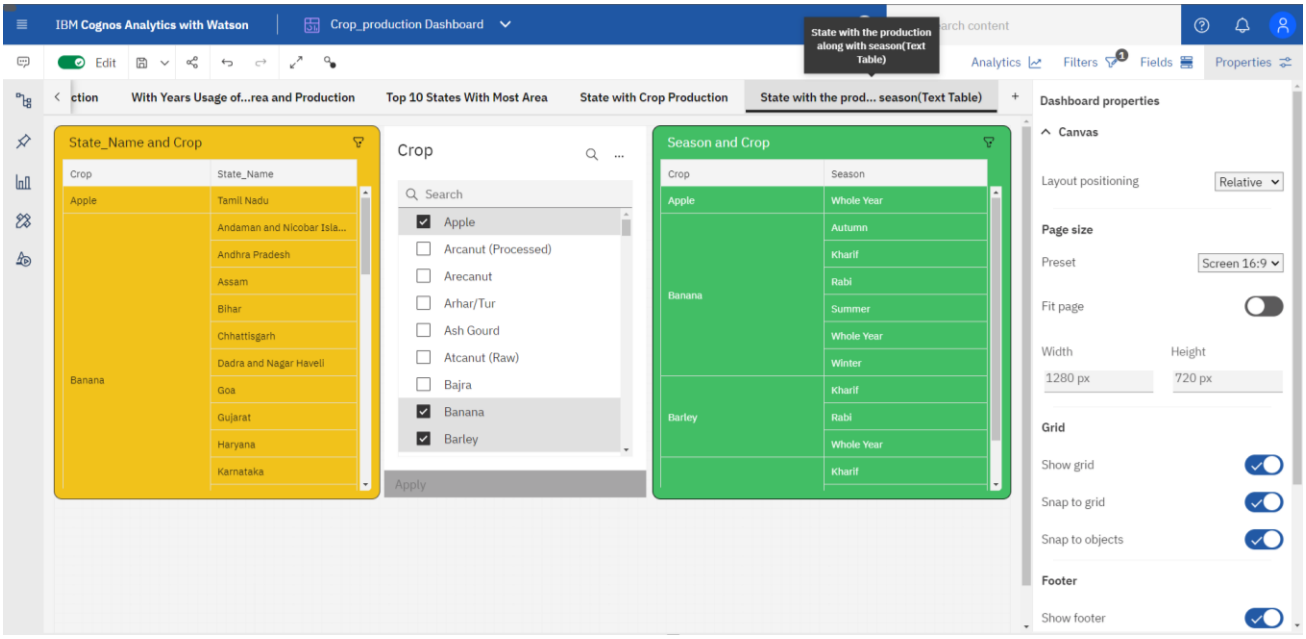
SNAPSHOTS

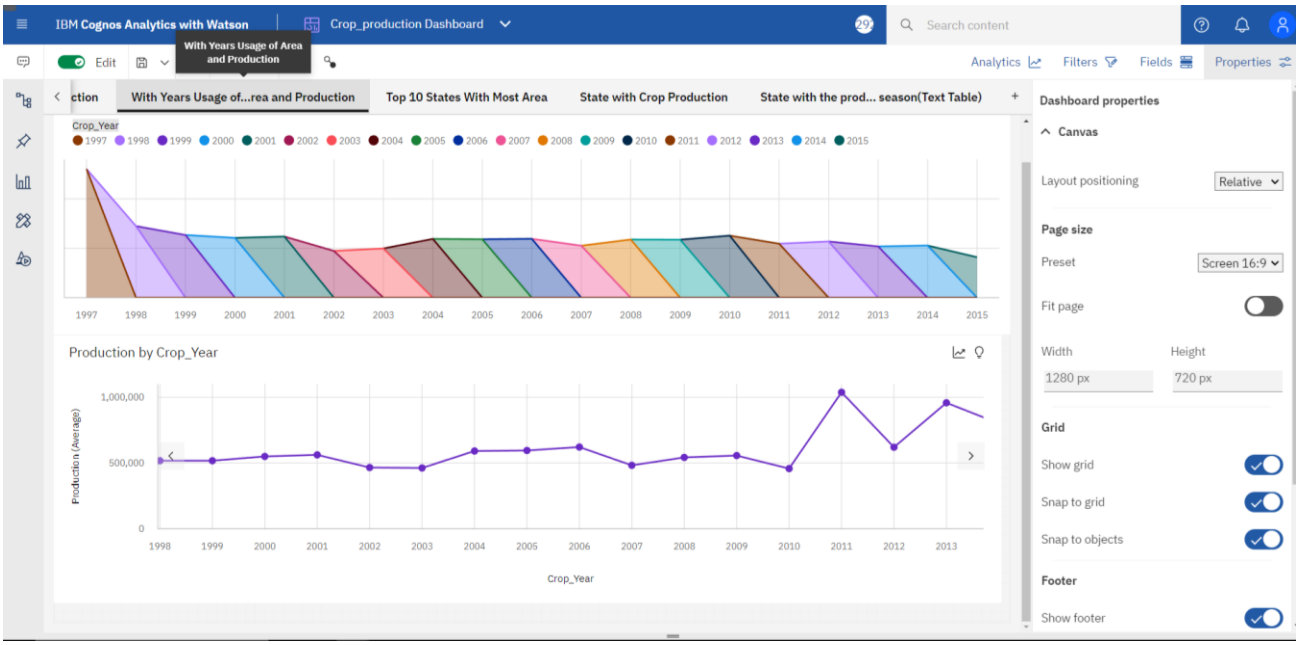
1.CROP PRODUCTION DASHBOARD:

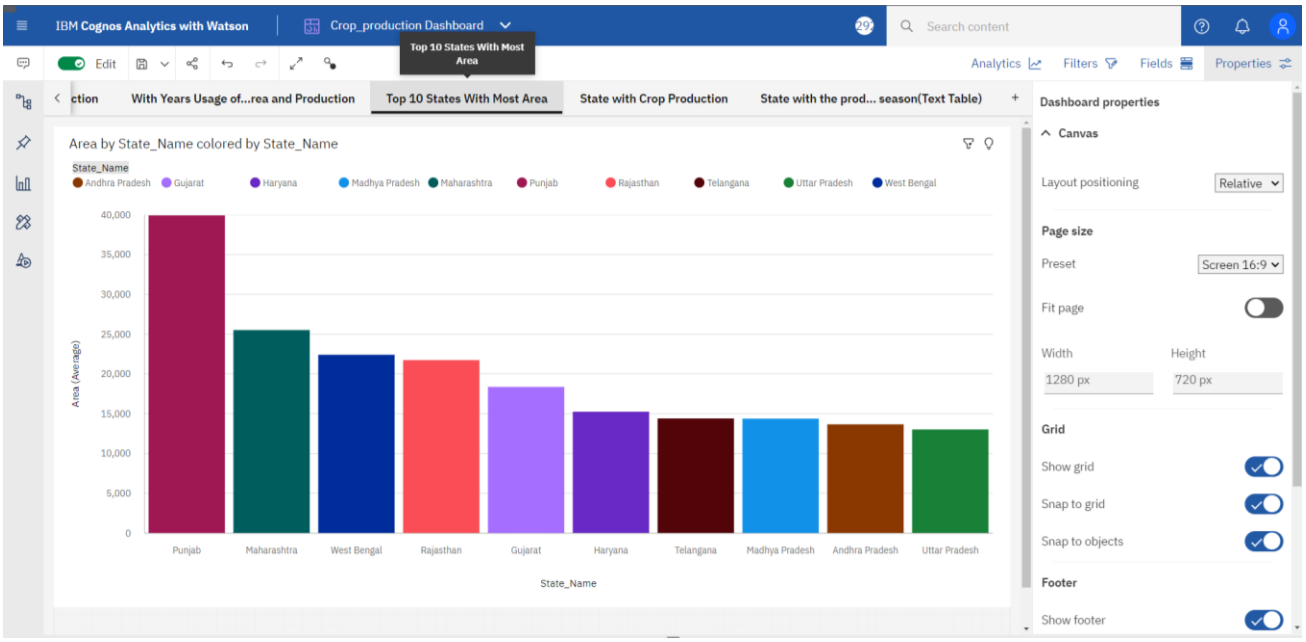




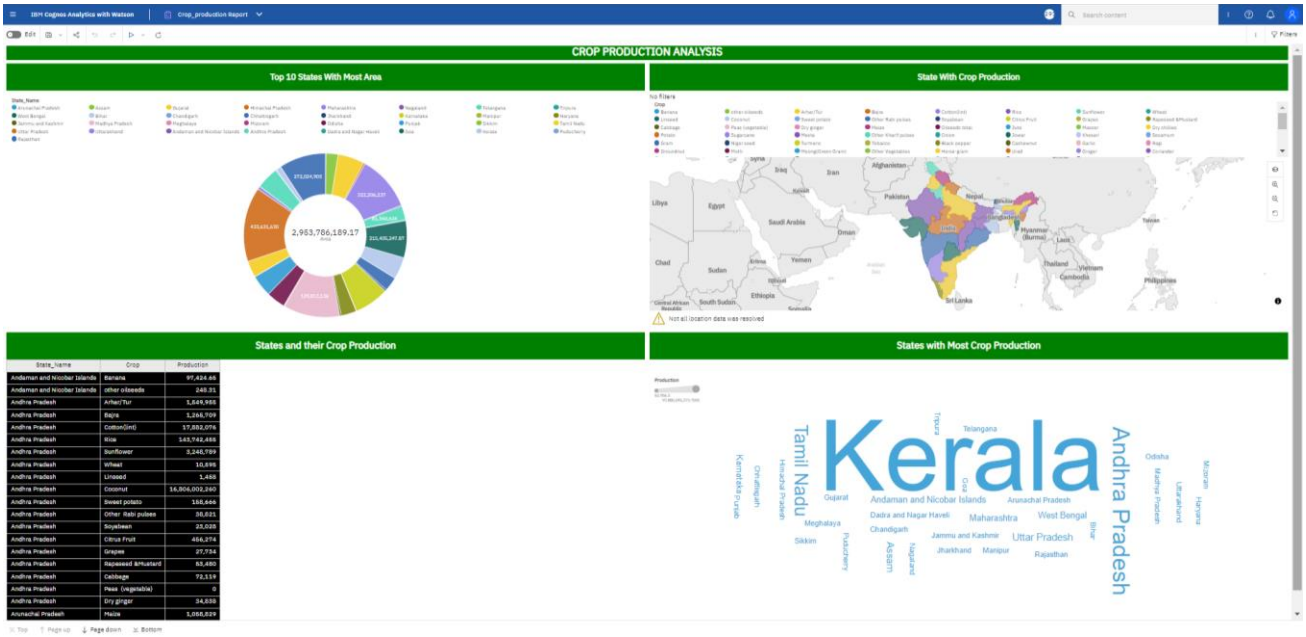

IBM Cognos Analytics with Watson
Crop_production Dashboard
State with Crop Production
Different Seasons ...Average Production
With Years Usage of...rea and Production
Top 10 States With Most Area
State with Crop Production
Visualization properties
Visualization
General
Axis
Maintain axis scale
Legend
Chart
Regions layer
Points layer
Latitude/longitude layer
Crop By State
State_Name
Assam
Telangana
West Bengal
Chhattisgarh
Karnataka
Mizoram
Tamil Nadu
Andaman and Nicobar Islands
Andhra Pradesh
Dadra and Nagar Haveli
Goa
Kerala
Puducherry
Pakistan
New Delhi
Nepal
Bhutan
Bangladesh
India
Karachi
Muscat
Mumbai
Hyderabad
Bengaluru
Sri Lanka
Arabian Sea
Bay of Bengal
Chongqing
Crop
Search
Castor seed
Cauliflower
Citrus Fruit
Coconut
Coffee
Apply


IBM Cognos Analytics with Watson
Crop_production Dashboard
State with the production along with season(Text Table)
With Years Usage of...rea and Production
Top 10 States With Most Area
State with Crop Production
State with the prod... season(Text Table)
Dashboard properties
Canvas
Layout positioning
Relative
Page size
Preset
Screen 16:9
Fit page
Width
Height
1280 px
720 px
Grid
Show grid
Snap to grid
Snap to objects
Footer
Show footer
State_Name and Crop
Crop
State_Name
Apple
Tamil Nadu
Andaman and Nicobar Isla...
Andhra Pradesh
Assam
Bihar
Chhattisgarh
Dadra and Nagar Haveli
Banana
Goa
Gujarat
Haryana
Karnataka
Crop
Search
Apple
Arcanut (Processed)
Arecanut
Arhar/Tur
Ash Gourd
Atcanut (Raw)
Bajra
Banana
Barley
Apply
Season and Crop
Crop
Season
Apple
Whole Year
Banana
Autumn
Kharif
Rabi
Summer
Whole Year
Winter
Barley
Kharif
Rabi
Whole Year
Kharif


IBM Cognos Analytics with Watson
Crop_production Dashboard
Search content
With Years Usage of Area and Production
Edit
Analytics
Filters
Fields
Properties
With Years Usage of...rea and Production
Top 10 States With Most Area
State with Crop Production
State with the prod... season(Text Table)
Crop_Year
1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015
Production by Crop_Year
Production (Average)
1,000,000
500,000
0
1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013
Crop_Year
Dashboard properties
Canvas
Layout positioning
Relative
Page size
Preset
Screen 16:9
Fit page
Width
Height
1280 px
720 px
Grid
Show grid
Snap to grid
Snap to objects
Footer
Show footer


IBM Cognos Analytics with Watson
Crop_production Dashboard
Search content
Top 10 States With Most Area
Edit
Analytics
Filters
Fields
Properties
With Years Usage of...rea and Production
Top 10 States With Most Area
State with Crop Production
State with the prod... season(Text Table)
Area by State_Name colored by State_Name
State_Name
Andhra Pradesh Gujarat Haryana Madhya Pradesh Maharashtra Punjab Rajasthan Telangana Uttar Pradesh West Bengal
Area (Average)
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
Punjab Maharashtra West Bengal Rajasthan Gujarat Haryana Telangana Madhya Pradesh Andhra Pradesh Uttar Pradesh
State_Name
Dashboard properties
Canvas
Layout positioning
Relative
Page size
Preset
Screen 16:9
Fit page
Width
Height
1280 px
720 px
Grid
Show grid
Snap to grid
Snap to objects
Footer
Show footer

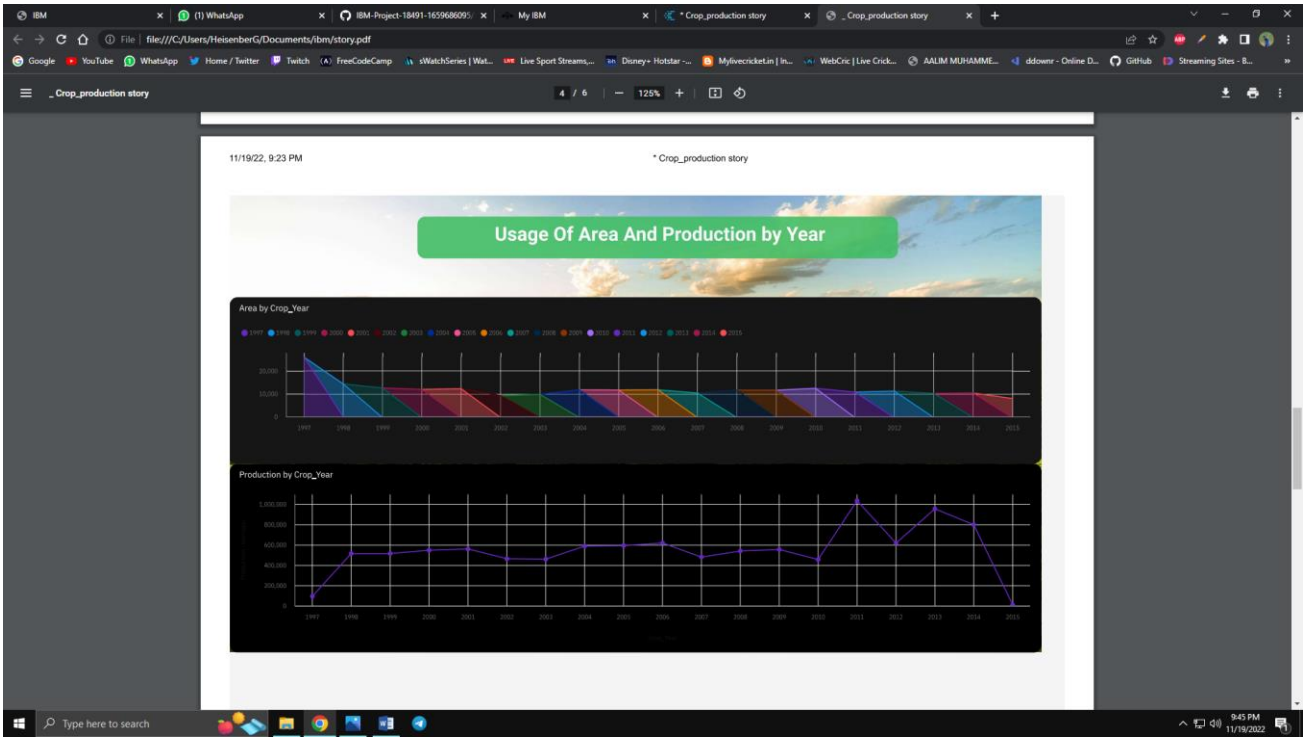
CROP PRODUCTION REPORT:

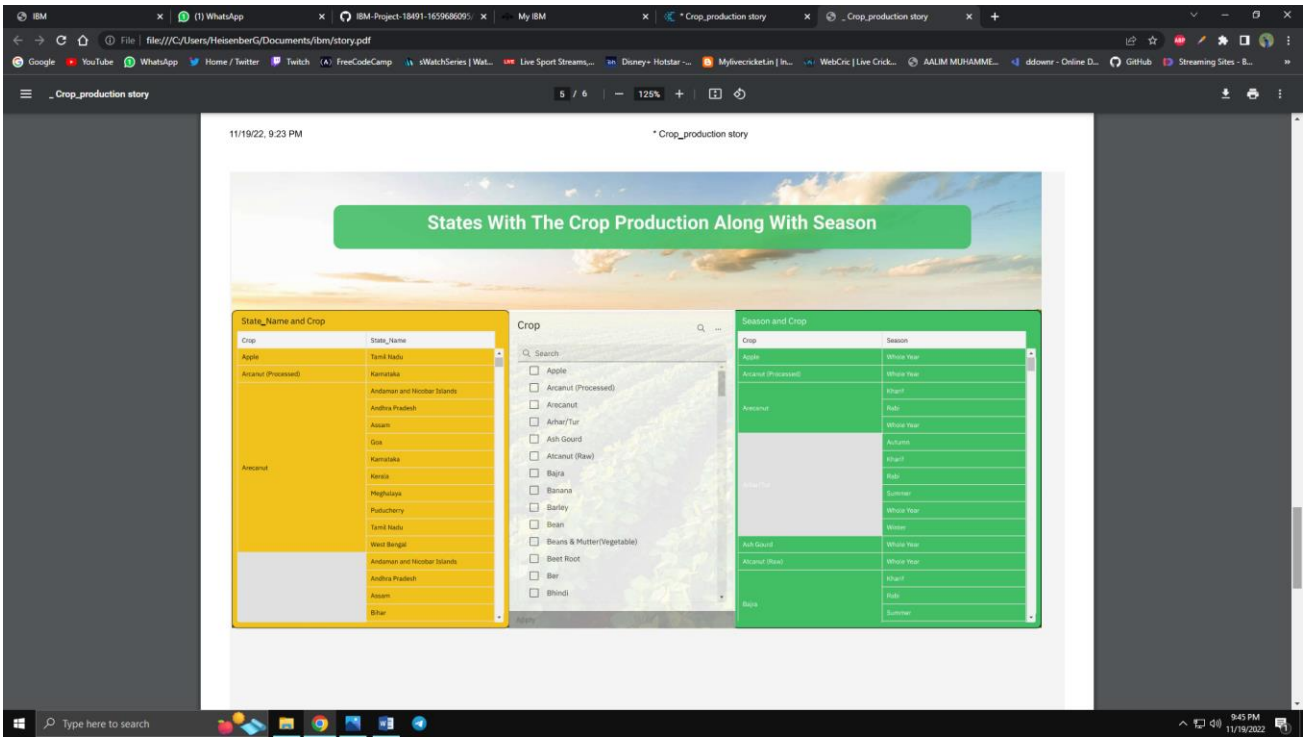


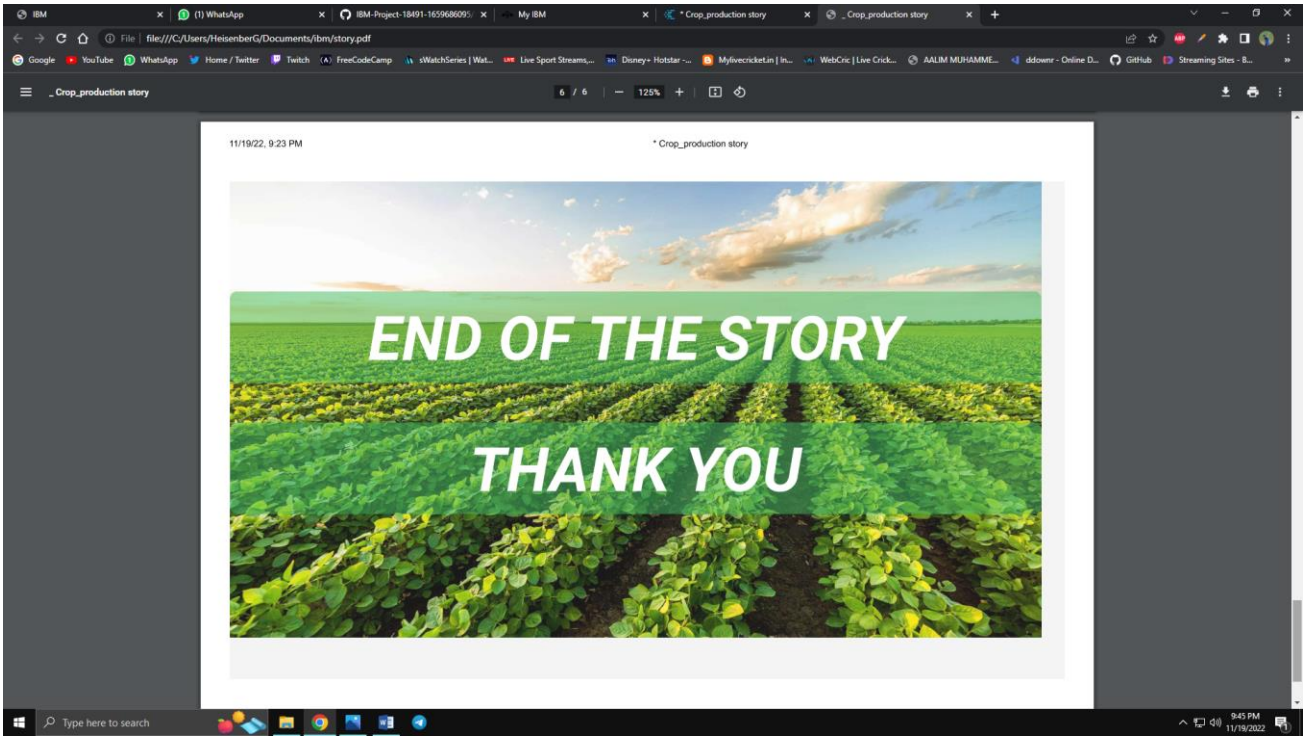
Crop Production Story:


Top states with Crop Production
These are the top 10 states that produces large amount of crops in india
Kerala Being thee leading crop prodcing state in india.
The margin between kerala and other states are huge in terms of production.
Andhra Pradesh and Tamil Nadu being the second and third largest crop producing states.
Top 10 States with Crop Production


States With Crop Production
Crop
Search
Apple
Arcanut (Processed)
Arecanut
Arhar/Tur
Ash Gourd
Atcanut (Raw)
Bajra
Banana
Barley
Bean
Beans & Mutter(Vegetable)
Beet Root
Ber
Bhindi
Bitter Gourd
Black pepper
Blackgram
States with crop production
Sri Lanka
Colombo
Maldives
Male
Bay of Bengal


11/19/22, 9:23 PM
* Crop_production story
Usage Of Area And Production by Year
Area by Crop_Year
Production by Crop_Year


11/19/22, 9:23 PM
* Crop_production story
States With The Crop Production Along With Season
State_Name and Crop
Crop
Season and Crop



DATASETLINK : https://www.kaggle.com/datasets/abhinand05/crop-production-in-india

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