PROJECT TITLE : ANALYZING AGRICULTURE IN INDIA AND MAKING STRATEGIC DECISIONS BASED ON IT ACCORDING TO POPULATION

1.INTRODUCTION

Agriculture is the backbone of Indian Economy. In India, majority of the farmers are not getting the expected crop yield due to several reasons. The agricultural yield is primarily depends on weather conditions. Rainfall conditions also influences the rice cultivation. In this context, the farmers necessarily requires a timely advice to predict the future crop productivity and an analysis is to be made in order to help the farmers to maximize the crop production in their crops. Yield prediction is an important agricultural problem. Every farmer is interested in knowing, how much yield he is about expect. In the past, yield prediction was performed by considering farmer's previous experience on a particular crop. The volume of data is enormous in Indian agriculture. The data when become information is highly useful for many purposes. IBM Cognos Business Intelligence is a web-based integrated business intelligence suite by IBM. It provides a toolset for reporting, analytics, score carding, and monitoring of events and metrics. The software consists of several components designed to meet the different information requirements in a company. IBM Cognos has components such as IBM Cognos Framework Manager, IBM Cognos Cube Designer, IBM Cognos Transformer. Cognos Analysis Studio helps business users get fast answers to business-related queries. Reporting studio allows you to create pixel-perfect reports for your organization. Cognos event studio allows you to assign a specific event that sends a notification to the stakeholder in your organization. Cognos Metric Studio allows you to monitor and analyze business metrics of your organization by building a scorecard environment.

2. LITERATURE SURVEY

M. A. Jayaram and Netra Marad, "Fuzzy interference Systems for Crop Prediction", Journal of Intelligent Systems, 2012, 21(4), pp.363-372[1]. Prediction of crop yield is significant in order to accurately meet market requirements and proper administration of agricultural activities directed towards enhancement in yield. Several parameters

such as weather, pests, biophysical and morphological features merit their consideration while determining the yield. However, these parameters are uncertain in their nature, thus making the determined amount of yield to be approximate. It is exactly here that the fuzzy logic comes into play. This paper elaborates an attempt to develop fuzzy inference systems for crop yield prediction. Physio morphological features of Sorghum were considered. A huge database (around 1000 records) of physio morphological features such as days of 50 percent flowering, dead heart percentage, plant height, panicle length, panicle weight and number of primaries and the corresponding yield were considered for the development of the model. In order to find out the sensitivity of parameters, one-to-one, two-to-one and three-toone combinations of input and output were considered. The results have clearly shown that panicle length contributes forth yield as the lone parameter with almost one-to-one matching between predicted yield and actual value while panicle length and panicle weight in combination seemed to play a decisive role in contributing for the yield with the prediction accuracy reflected by very low RMS value. P. Vindya "Agricultural Analysis for Next Generation High Tech Farming in Data Mining" , Anna University, Trichy, Tamilnadu, India, 5 May 2015[2]. Recent developments in Information Technology for agriculture field have become an interesting research area to predict the crop yield.

3. SYSTEM DESIGN

System design thought as the application of theory of the systems for the development of the project. System design defines the architecture, data flow, use case, class, sequence and activity diagrams of the project development.

A. IBM Cognos Analytics
IBM Cognos Analytics is a set of business intelligence tools available on cloud or on-premise. The primary focus is in the area of Descriptive Analytics, to help users see the information in your data through dashboards, professional reporting and self-service data exploration. In this work, we used the IBM cognos data analytics for analysing the crop yield data.
Following are important features of IBM Cognos:
1) Get Connected - Connect your data effortlessly Import data from CSV files and spreadsheets. Connect to cloud or on-premises data sources, including SQL databases, Google BigQuery, Amazon, Redshift, and more.
 2) Prepare your data – Prepare and connect data automatically Save time cleaning your data with AI-assisted data preparation.

Clean and prep data from multiple sources, add calculated fields, join data, and create new tables.

3) Build visualizations - Create dynamic dashboards easily Quickly create compelling, interactive dashboards. Drag and drop data to create auto- generated visualizations, drill down for more detail, and share using email or Slack.

4) Identify Patterns – Uncover hidden patterns Ask the AI assistant a question in plain language, and see the answer in visualization. Use time series modelling to predict seasonal trends.

5) Generate Personalised Reports – Create and deliver personalized reports Keep your stakeholders up-to-date, automatically. Create and share dynamic personalized, multi-page reports in the formats your stakeholders want.

6) Gain Insights - Make confident data decisions Get deeper insights without a data science background. Validate what you know, identify what you don't with statistically accurate time-series forecasting and pinpoint patterns to consider.

7) Stay Connected – Go Mobile Stay connected on the go with the new mobile app. Access data and get alerts right from your phone.

Important Components of Cognos Software:

a) Cognos Connection: Cognos connection is a web portal that allows users to access Cognos 10 and studios. Based on your assigned role, you can use this component to retrieve, view, publish, manage, and organize companies' reports, scoreboards, and agents. The Administrator also using Cognos Connection to establish roles and user permissions and manage the Cognos Connection content.

b) Cognos Business Insight: Cognos Business Insight allows users to create their dashboard using any object. All content which the user is permitted to view will be presented as an object. This can be used in your workspace to create a fully personalized dashboard.

c) Cognos Query Studio: Cognos Query Studio helps business users to get fast answers to business related queries. It helps organizations to better understand the product, customer, and organizational needs. It also helps them to react quickly and stay ahead of the competition.

d) Cognos Analysis Studio: Cognos Analysis Studio helps businesses to find and focus on things which are important to the business. It also helps to understand the latest trends, compare data, and assess business performance for multidimensional analysis.

e) Cognos Business Insight Advanced: Cognos business insight Advanced is a new module included in Cognos 10. It combines Cognos query studio and Cognos Analysis Studio. It offers robust authoring environment for business peoples.

f) Cognos Report Studio: Using the Cognos reporting tool, you can create pixel-perfect

reports for your organization. It allows you to create charts, maps, lists, or any other available report type using relational or multidimensional data sources.

g) Cognos Event Studio: This tool allows you to assign a specific event that sends a notification to the stakeholder in your organization. You can create agents which enables you to your events and thresholds. Therefore, the event occurs or threshold is reached the agent sends the notification.

h) Cognos Metric Studio: Cognos Metric Studio allows you to monitor and analyse business metrics of your organization by building a scorecard environment. It also helps you to establish criteria and then monitor your organization to see how it is responding as the changes made in the criteria.

4. SYSTEM ARCHITECTURE

IBM Cognos Analytics provides dashboards and stories to communicate your insights and analysis. You can assemble a view that contains visualizations such as a graph, chart, plot, table, map, or any other visual representation of data. Explore powerful visualizations of your data in IBM Cognos Analytics and discover patterns and relationships that impact your business. A dashboard helps you to monitor events or activities at a glance by providing key insights and analysis about your data on one or more pages or screens. The following are the modules in our work:

1) Uploading data.(dataset)
2) Cleaning data (prepare data).
3) Analysing and interpreting (exploration).
4) Visualizing data (dashboard creation).
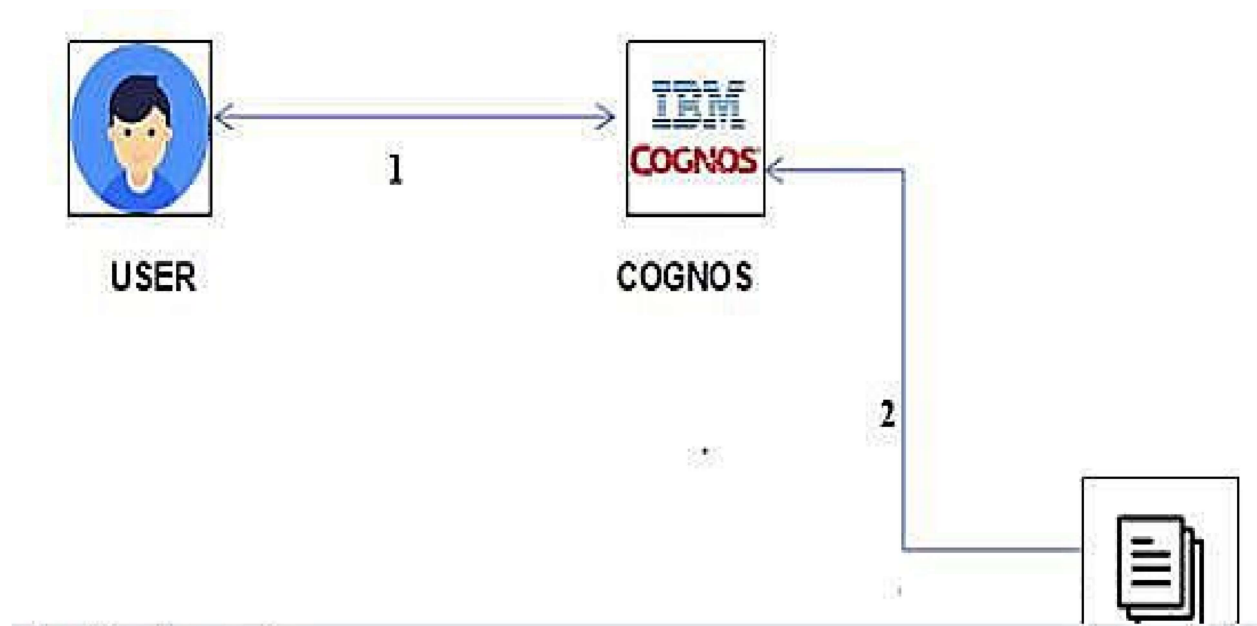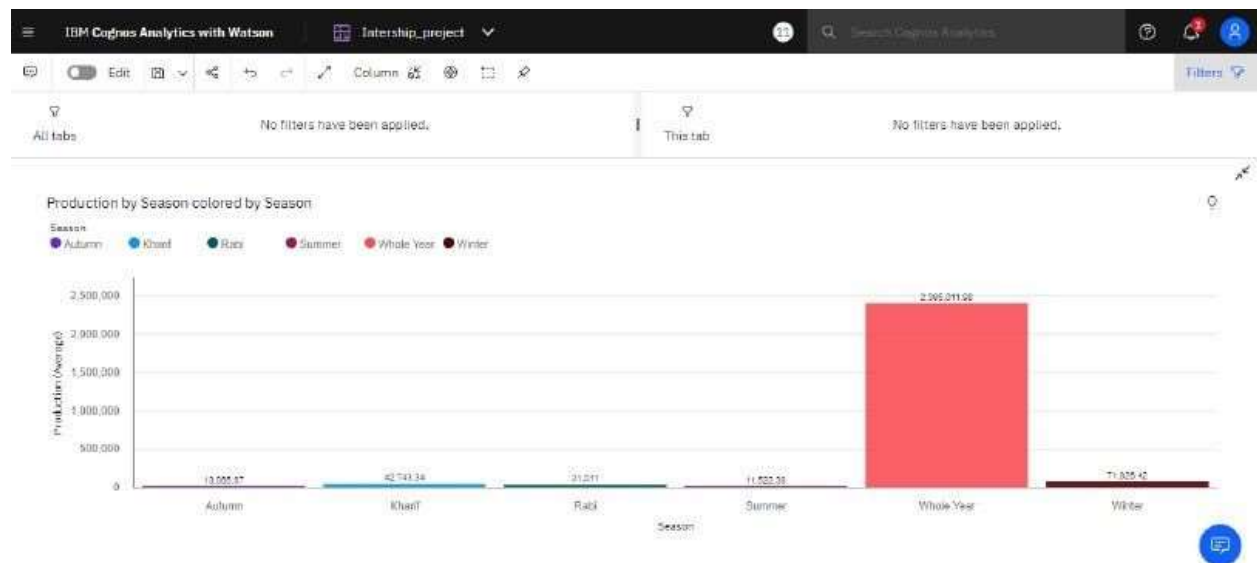
5.RESULTS

Fig. 2 Data Visualisation 1
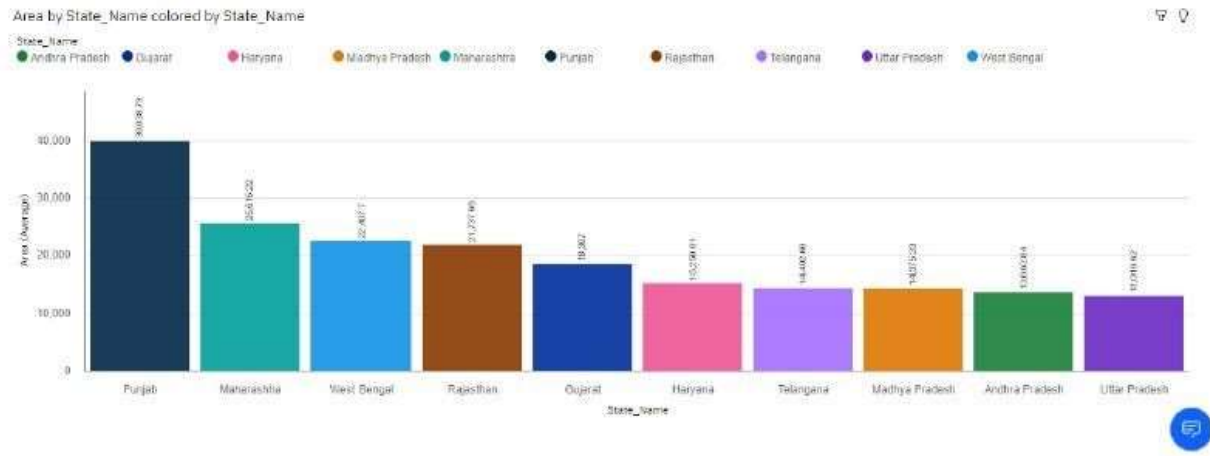The above figure shows the seasons with average production

Fig. 3 Data Visualisation 2
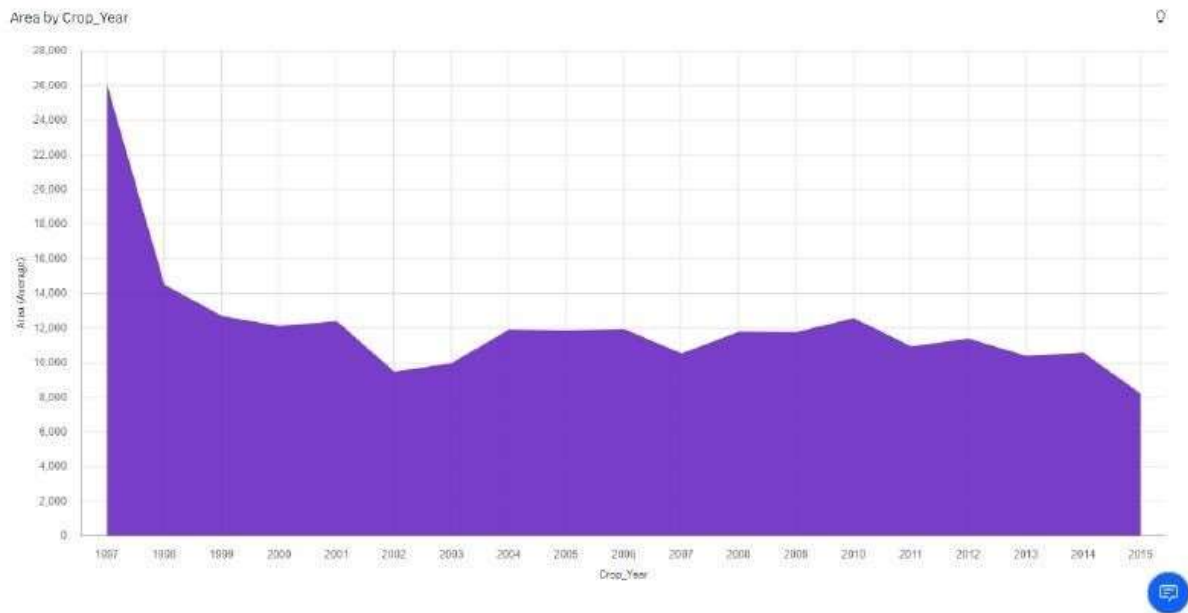The above figure shows the visualize top 10 states with most area

Fig. 4 Data Visualisation 3
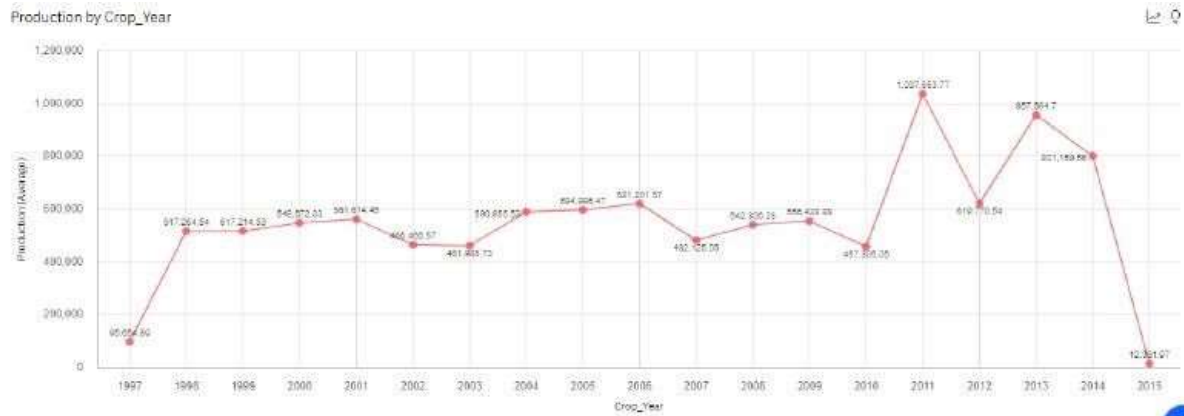The above figure shows the visualize with years usage of area and production

Fig.5 Data Visualisation 4
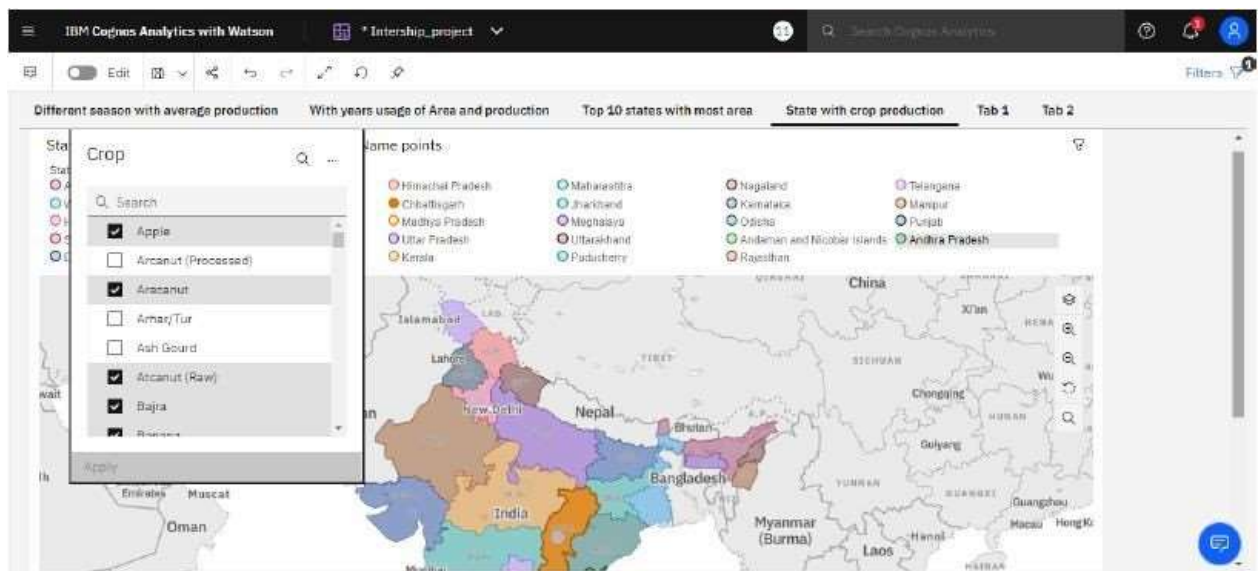The above figure shows the visualisation contains state with crop production

Fig. 6 Data Visualisation 5
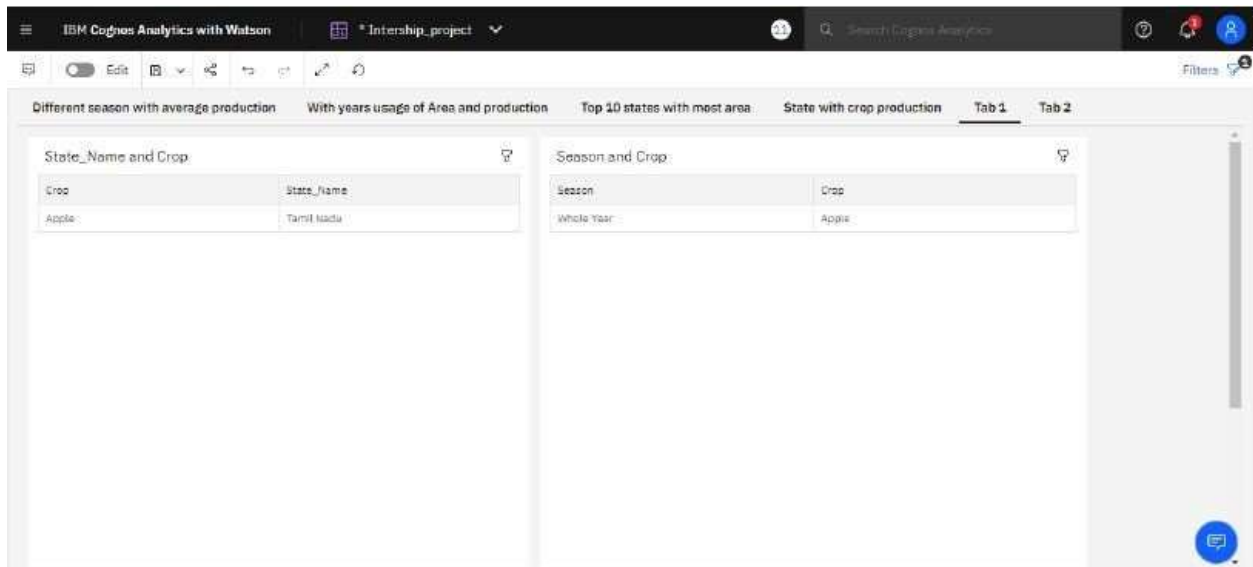The above figure shows the visualisation contains state with crop production

Fig. 7 Data Visualisation 6
The above figure shows the table of states with the crop production along
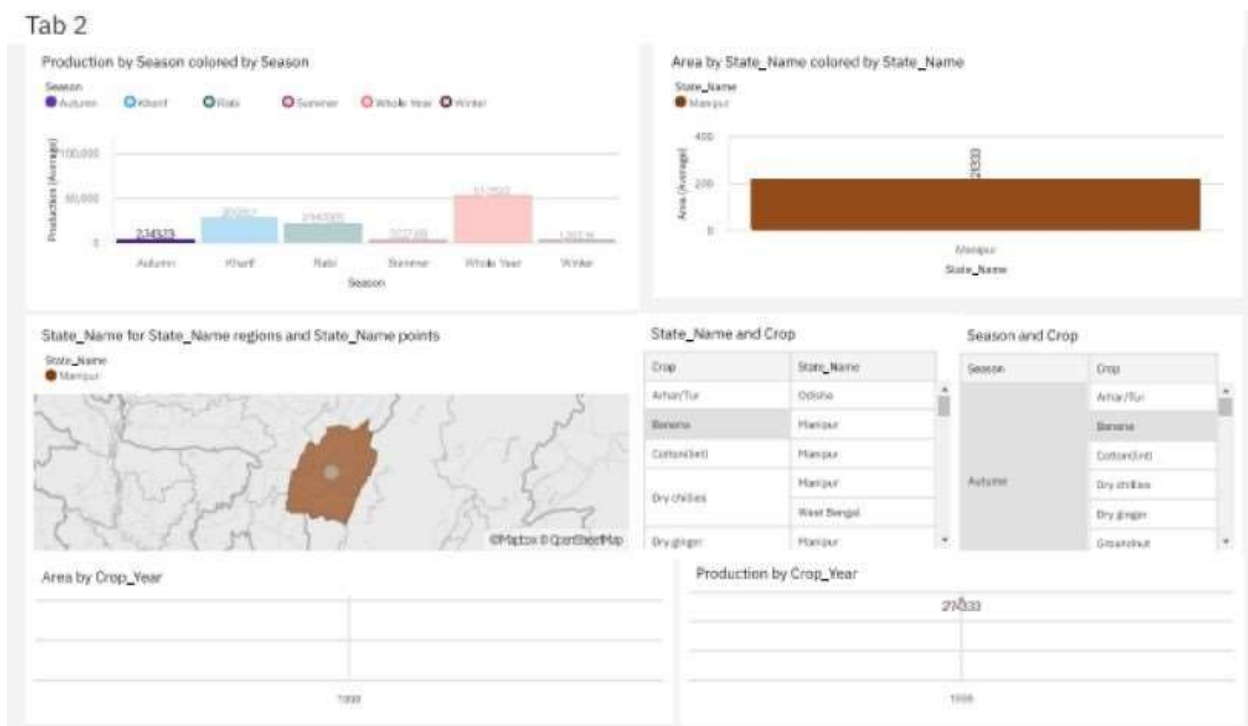with season (text table)

Fig. 8 Data Visualisation 7
The above figure shows the agriculture data analytics in crop yield estimation dashboard

6.CONCLUSION

As a result of penetration of technology into agriculture field, there is a marginal improvement in the productivity. The innovations have led to new concepts like digital agriculture, smart farming, precision agriculture etc. In the literature, it has been observed that analysis has been done on agriculture productivity, hidden patterns discovery using data set related to seasons and crop yields data. We have noticed and made analysis about different crops cultivated, area and productions in different states and districts using IBM Cognos some of them are

1) Seasons with average productions. In this analytics we come to know in which seasons the average production is more and in which seasons the production is less.

2) Production by crop year. In this analysis we come to know in which years the production is high and low.

3) Production by District. With this analytics we can aware of the districts with the selected crops cultivated and states too

4) Production by Area. From this we can know how much area should be cultivated and the production will be getting will be estimated. Finally created the dashboard and made analysis that in which state and in which year with crop area and to what extent the production will be are analysed.

7.REFERENCES

1. M. A. Jayaram and Netra Marad, "Fuzzy interference Systems for Crop Prediction", Journal of Intelligent Systems, 2012, 21(4), pp.363-372.
2. P. Vindya "Agricultural Analysis for Next Generation High Tech Farming in Data Mining" , Anna University, Trichy, Tamilnadu, India, 5 May 2015
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):427-431.
4. David B. Lobell, The use of satellite data for crop yield gap analysis, Field Crops Research-143, 2013; 56–64.
5. https://www.toolbox.com/hr/hr-analytics/articles/what-is-hr-analytics/   [6] https://www.ibm.com/downloads/cas/WVJBQERV