

## **Effect of climate and its impact on agriculture of Haryana (India)**

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### **Abstract**

The impact of climate change on the locally grown crops in Haryana, Haryana State reconnaissance survey was conducted. With the understanding of site specific environment settings, the sampling location, the relevant parameters, sampling frequency and the type of samples to be collected were determined. The results depicted from data collected during a three year period (i.e. 2010-2013). It was observed that significantly high percentage of farmers have experienced adverse effects to their crop yield and high incidence of the crop diseases, which has strained their agriculture activity related budget as well as earning at very economic cost in terms of the pesticides. They have to carry out crop rotation due to change in climatic conditions which incidentally have shown positive impact on the overall crop yield.

**Keywords:** climate, agriculture, Haryana

### **Introduction**

Agriculture of Haryana State contributes significantly to the economy of the North India region. The principle crops that are abundantly grown in the study area include sugarcane, Wheat, jowar, bajra, rice, Pulses, gram, seed, cotton, groundnut and others. Agriculture in Haryana received a much needed lift when there was an increase in the cropped area. This was the result of an increase in the number of fallow land. Another reason was the increase in the portion of the cultivable land. The crops of the district can be broadly categorized into two groups grown as Kharif (June- October) and Rabi (October- November). The Kharif crops include the Bajra, Jowar, rice, cotton. The other variety of crops grown in Rabi includes Wheat, groundnut, Sesame and Jowar. These crops are also extensively cultivated during this time of the year. Sugarcane is considered to be the chief cash crop of Haryana. In the backdrop of above information, this study was specifically carried out to understand the impact of climate change in the crop pattern as well as other related aspects in the study area.

### **Objective**

To study effects of climate change an agriculture land use.

### **Material and Methods**

A view of assessing the impact of climate change on the locally grown crops in Haryana State a reconnaissance survey was conducted. With the understanding of site specific environmental settings, the sampling locations, the relevant parameters, sampling frequency and the type of samples to be collected were determined. The results presented are from data collected during a three year period (2010- 2013) from 200 farmers of study area. Based on the reconnaissance survey, suitable sampling sites were selected from the study area. Care was taken that the samples truly represented the population. Meteorology Data and Production Data in this study were

taken to ensure authenticity of secondary data pertaining to the weather and crop productivity related aspects of the study regions. Furthermore, the data pertaining to the crop productivity were obtained from the agriculture Statistical Information of Haryana State, published by Agriculture and Farmer Welfare department Haryana State, Panchkula (Haryana) and Department of economic survey 2014, Government of Haryana. The data collection was done using a structured and standardised questionnaire.

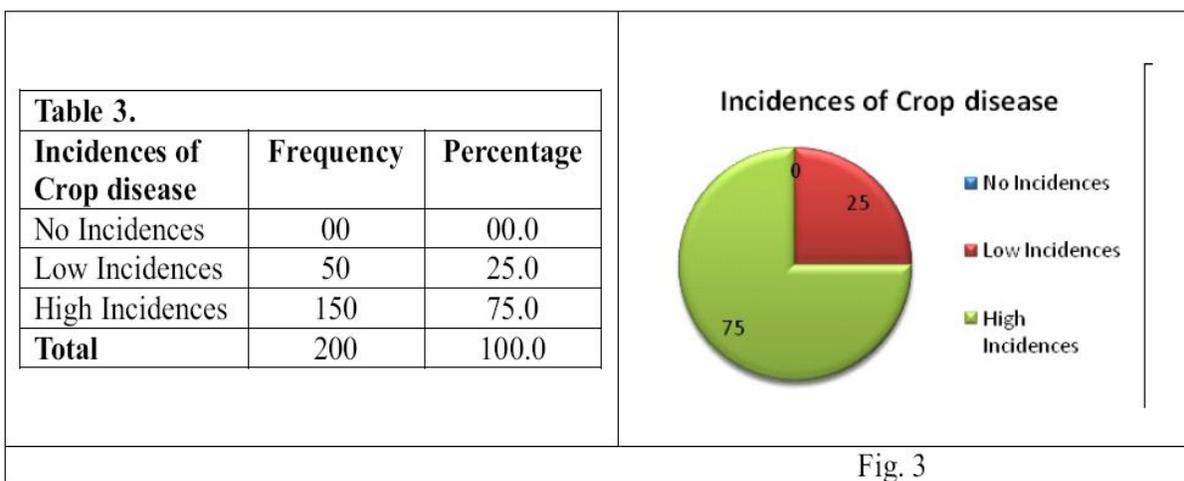
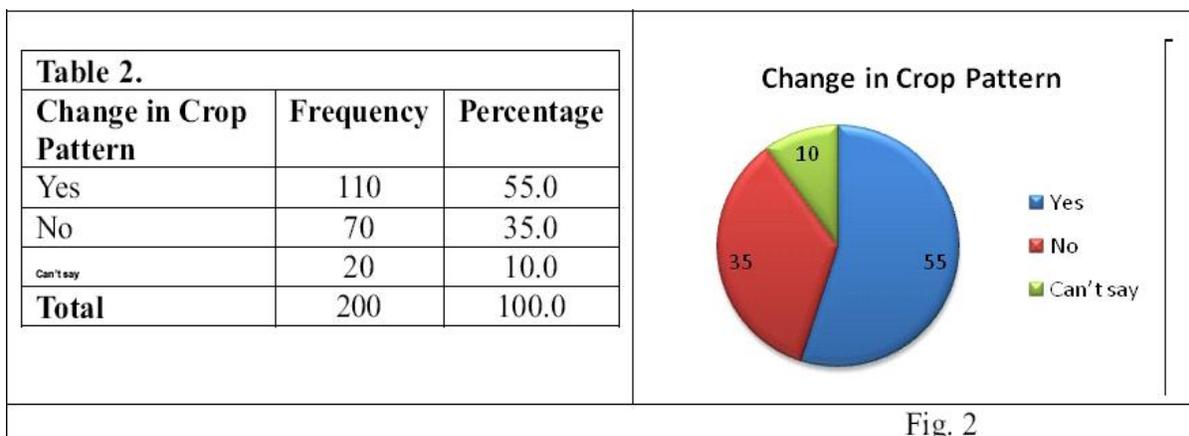
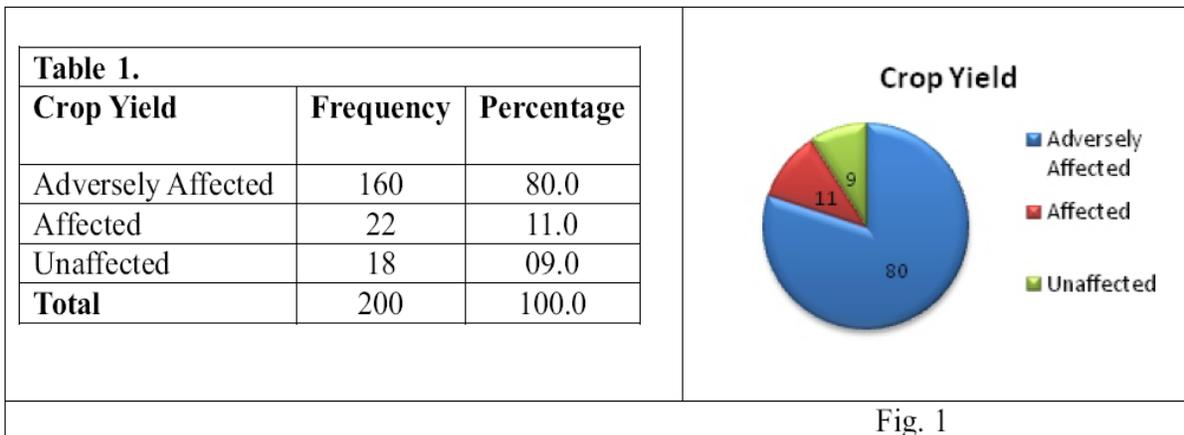
### **Results and Discussion**

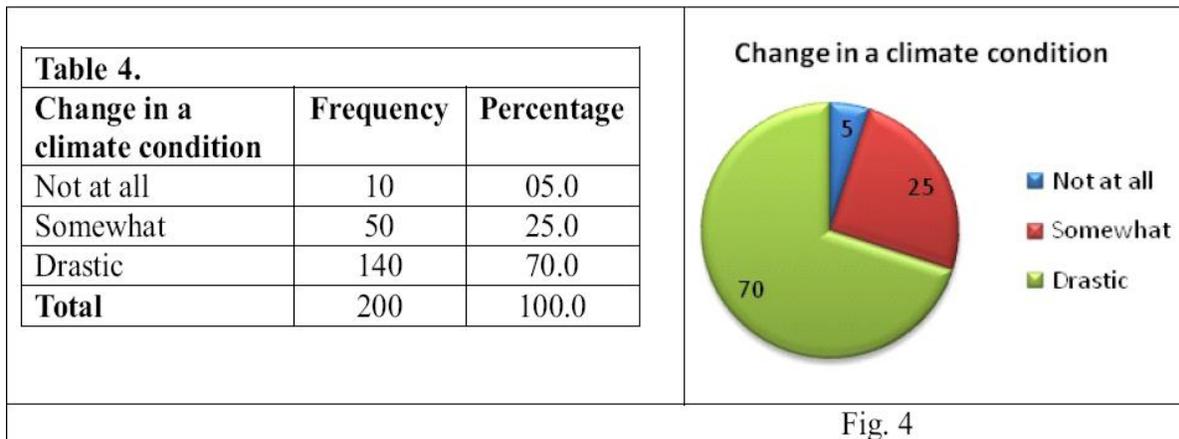
The results showed responses of farmers regarding the effect of change in climate on plant yield. It was evident from the responses that according to 80 % farmers climate change adversely affected the plant yield, 11% farmers indicated that plant yield was affected due to climate change. However, 9% farmers indicated that the plant yield was unaffected due to change in climate. It apparent from the information that according to significantly high percentage of farmers the plant yields adversely affected due to change in climate (Fig.1). It was observed from the responses that according to 55% farmers they changed their crop pattern due to climate change, whereas 35% farmers did not change their crop pattern. It was evident that majority of farmers in the study area changed their crop pattern because of climate change (Fig.2). The climate has forced many farmers to change their crop patterns, which has also affected their earning. The survey shows responses of farmers regarding incidences of crop disease due to climate change. It was evident from the responses 75% farmers that, there were high incidences of crop disease due to climate change; however 25% farmers indicated that there were low incidences of crop disease due to climate change (Fig.3). It was apparent from the information that significantly high percentage of farmers in the study area experienced high incidences of crop disease due to climate change. Noticeable high percentage of the farmers of study

region indicated that there was high incidence of the crop disease, which has strained their budget as well as earning and the pesticides were needed to manage the cultivation.

It was evident from the responses pertaining to the responses of farmers regarding change in climatic condition that according to 70% respondents there was drastic change in environment during last few years. 25% farmers indicated that

there was somewhat change in the climatic condition during last few years. However; 5% farmers indicated no change in climate during last few years (Fig.4). It was apparent from the information that according to significantly high percentage of farmers there was drastic climatic change during last few years. Majority of farmers of the study region indicated that they experienced drastic change in the climatic conditions.





**Conclusion**

In Haryana State it was observed that significantly high percentage of farmers have experienced adverse effects to their crop yield as a function of climate change. Furthermore, the climate change has forced many farmers to change their crop patterns, which has also affected their earning. In addition to this a noticeable high percentage of the farmers of study region indicated that there was high incidence of the crop diseases. Which has strained their agriculture activity related budget as well as earning and the pesticides were needed to manage the cultivation. Besides this, it was also observed that the farmers of the study region have to carry out crop rotation, which incidentally has shown positive impact on the overall crop yield.

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