

## Has climate change altered apples' taste?

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While it may not be evident, the taste and texture of apples may have undergone a considerable change over the last many years due to climate change, says a new study conducted by Toshihiko Sugiura and team at the National Agriculture and Food Research Organisation in Fujimoto, Japan. The paper was published in *Scientific Reports* last week.

The study attributes the change in taste and texture — essential qualities for a fresh fruit — to the increase in global temperature over the years, specifically during the maturation period of the fruit. To understand the effect of environmental factors like temperature, precipitation and solar radiation on apple phenology (the study of cyclic natural phenomena related to plant or animal life), the team studied two common and widely-used cultivar varieties of apples in Japan — Fuji and Tsugaru — over a period of 40 years from 1970 to 2010.

Analyzing the environmental factors during this time, the study found that there was a considerable increase in the mean air temperature in these two regions.

### **Environment**

The study then tabulated the environmental factors during the bud breaking and full bloom times of the fruit. A significant increase in the mean air temperature during March and March-April was found; bud breaking and blooming times of the fruit take place during this time. The authors found an advancement of bud breaking day and full bloom day in the fruit's calendar (nearly one to 2.3 days per decade during the study period), and correlated these to the increase in temperature.

### **Taste and texture**

Acid concentration and soluble solids are the corresponding indicators of sourness and sweetness in a fruit while fruit firmness and watercore rating determine the fruit's hardness and softness respectively. These factors were judged against five maturation indexes for the fruit. The study found that the average change rate of these factors when compared against the five maturation indexes showed a decrease in the acid concentration, firmness and watercore rating levels and an increase in the soluble solid levels. As per the study, these factors were found to exhibit a similar trend when the mean air temperature rose during the maturation period, resulting in a possible change in the taste and texture of the fruit. So, while we may not have realised it, it may be possible that our apples have become a tad sweeter over the years!