



Evaluation of emerging trend of saffron (*Crocus sativus*) vis-à-vis climate change in temperate region of Kashmir valley, India

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ABSTRACT

The present study was conducted in three different sites of saffron growing areas of temperate region of Kashmir valley, India to evaluate emerging trend of saffron vis-à-vis climate change and production trend. The productivity was evaluated climatic data of temperature and rainfall. The soil in the major saffron grown area of Pampore, Srinagar is uniform and clayey in nature with a soil permeability of 0.05 cm/hr. The productivity in the area was shown an increasing trend with temperature and rainfall. The rainfall data during activity period (July-September) and productivity data were collected (2000-2008) from three different locations. It is evident from results that the maximum productivity was found to be 3030 g/ha in year 2000 and minimum productivity was found 940g/ha corresponding rainfall 150.3mm in the year 2004. The correlation coefficient between productivity and rainfall was 0.18 with a P-value of 0.627. Thus the productivity exhibits positive but non-significant correlation with rainfall. Different year temperature (2000-2009) and corresponding productivity was shown significant effect of temperature on productivity. The statistical analysis between temperature variation and productivity of saffron was to be equal (R^2)0.260 with a P-value of 0.468. Thus, the productivity exhibits positive relations but non-significant with mean maximum temperature.

Key words: saffron, irrigation, water requirement, soil properties

INTRODUCTION

Saffron the legendary crop of Jammu & Kashmir belongs to the family of Iridaceae and genus *crocus*. Saffron is a spice derived from the flower of *Crocus sativus*, commonly known as the Saffron. Saffron has a long medicinal history as part of traditional healing. Modern medicine has also discovered saffron as having anti-carcinogenic (cancer-suppressing), anti-mutagenic (mutation-preventing), immune modulating, and antioxidant-like properties. Saffron stigmas, and even petals, have been said to be helpful for depression. Early studies show that saffron may

protect the eyes from the direct effects of bright light and retinal stress apart from slowing down macular degeneration and retinitis pigmentosa. Saffron as a cultivated plant grows from altitude of sea level to almost 2000 m, although it is more acclimatized to hill sides, plateaus and mountain valleys ranging in altitudes between 600 and 1700 m (Nehvi *et al.*, 2008). The world's major saffron

producing country are Iran, Spain and India and their export production is 173t, 26t and 8.8t, respectively (Yasmin and Nehvi, 2013). However, due to lack of renovated technology and other climatic factor are responsible for its decline.

Each saffron corm grows to 20–30 cm and bearing flowers, each with three vivid crimson stigmas. Iran now accounts for the lion's share, or around 90%, of world production. The plants fare poorly in shady conditions; they grow best in full sunlight. Fields that slope towards the sunlight are optimal (*i.e.*, south-sloping in the Northern Hemisphere) (Agavev, 2003). Planting is mostly done in June month, where corms are lodged 7–15 cm deep; its roots, stems, and leaves can develop between October and February. Planting depth and corm spacing and climate, are critical factors in determining yields (Zehan *et al.*, 2006).

The climate has a great significance in planning and interpretation of operations relating to production, protection, fertilization and irrigation

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