

*This column covers information on the introduction and cultivation practices of new, under-utilized and other economic plants in India. The information shall be contributed articles by authors or compiled by editors.*

*Contribution of articles by plant growers, agronomists, horticulturists and floriculturists with cultural practices, seed source and economics are solicited.*

## **Effect of corms weight on quality of Saffron (*Crocus sativus* Linn.)**

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### **Abstract**

The stigma of saffron flowers is not only used in food, confectionary and liquor industries but also has medicinal properties and is used as appetizer, digestive and sedative. Due to high economical efficiency of saffron, its cultivation is increasing in country. Corm weight has significant effect on the quality of stigma of saffron flowers. The results of present study conclude that by selecting corms of 15 g weight for planting high quality saffron stigma could be obtained.

**Keywords:** Saffron, *Kesar*, *Crocus sativus*, Corms.

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Saffron flowers

as appetizer, digestive and sedative (Alonso *et al*, 1998). As saffron does not grow from seeds, reproduction is only possible by vegetative propagation, using the corms. During a research work, entitled influence of the corm weight on the productivity of saffron, authors have

### **Introduction**

Saffron (*Crocus sativus* Linn.) (Hindi – *Kesar*) belonging to family *Iridaceae* is a native of South Europe and is cultivated in Spain, France, Italy, Iran, Turkey, Pakistan, Afghanistan, India, China and some other countries. In Iran Saffron is cultivated mainly in warm-arid and salt desert regions at South of Khorasan province located in North-West of Iran (Omidbaigi *et al*, 2001). It is one of the oldest flavouring, colouring and

medicinal plant. The stigma of saffron flowers is not only used in food, confectionary and liquor industries but also has medicinal properties and is used



Saffron corms



Saffron fields

studied the effects of 1, 3, 5, 7, 9, 11, 13, and 15 g corm weight on the productivity of saffron. Positive correlation has been found between flowering, productivity of saffron and the weight of the corms. Optimal results for flowering, vegetative properties and formation of new corms were achieved by planting saffron corms having weight 13 and 15g weight (Omidbaigi *et al.*, 2002). Therefore, the main aim of this study was to find out the effect of 13 and 15g corms weight on the quality of saffron.

## Materials and Methods

At the stage of opening of flowers in early morning, stigma were collected by hand then air dried and stored in cool, dry and dark place for all treatments. Quality of saffron produced from 13 and 15g corms weight was measured by following methods:

1. The stigma of every treatment was dried at 35°C in a vacuum oven. Then it was ground to a fine powder. One gram of the powder of every treatment was dissolved in 1000 ml distilled water. The solution was shaken for one hour. The extract solutions were filtered and was then analyzed by a spectrophotometer (Schimadzu 2100 series UV visible) (Anonymous, 1993; Trontilis & Polission, 1997).

2. Colouring character of saffron was determined by using following three parameters.
  - (i)  $E^{0/01} 442$ : The absorbance of aqueous extract was measured at 442 nm.
  - (ii) Bicromat number was calculated by  $E^{1/10000} 442 \times 0.065$ .
  - (iii) Crocin number was determined by  $E^{1/1000} 442 \times 7.305$ .
3. Bitter compounds or taste compounds of saffron were measured at 257nm.
4. Aroma or smell compounds of saffron were determined by three parameters like:  $\Delta E_{pic}$ ,  $E_{saf}$  and safranal number.
5. To determine  $\Delta E_{pic}$ , the absorbance of aqueous extract was measured at two different wavelength of 257 and 297 nm.

The difference between the two wavelengths showed  $\Delta E_{pic}$ . To determinate  $E_{saf}$ , 0.025g of stigma powder was used and 25ml (3%) Barium hydroxide solution was added to it and then distilled by water steam. The 25ml of distilled solution was then made up to 50ml in distilled water and the absorbance of the solution was measured at 318 nm that obtained  $E_{saf}$ . The safranal number was calculated by  $E_{saf} \times 0.04$ .

## Results

The results (Table 1) indicated that corms weight had significant effect on the quality of stigma. The colour, bitter compounds and aroma of stigma produced from 15g corm weight was more suitable than 13g corm weight and high quality of saffron.

On the basis of these results it is concluded that corm weight has significant effect on the quality of saffron and by selecting of 15g corm weight as planting material high quality saffron stigma could be obtained.

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**Table 1 : Quality of saffron produced from 13 and 15g corms weight**

Corms weight (g)	Colouring	Bitter compounds	Aroma	Result
13	1.261	0.331	0.649	- 0.578
15	1.310	0.337	0.658	- 0.585