J. Indian bot. Soc. e-ISSN:2455-7218, ISSN:0019 - 4468 Vol. 99 (3&4) 2020:00-00

STUDY ON SOME GROWTH PARAMETERS IN *CROCUS SATIVUS* L. SOWN AT DIFFERENT LOCATIONS IN PULWAMA, KASHMIR

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Date of online publication: 30th June , 2020
DOI:10.5958/2455-7218.2020.00015.7

A preliminary study was carried out to assess temporal variation in some important growth parameters of *Crocus sativus* L. sown at four different locations within Pulwama district of Union Territory of Jammu & Kashmir, India. No significant variations were observed in flower diameter, fresh weight of stigma, dry weight of stigma, number of leaves, fresh weight of leaves and dry weight of leaves across these locations. As the climate within the district does not vary much, microclimate within a locality may have resulted in non significant differences recorded in some of these parameters.

Key words: *Crocus sativus* L., Kashmir, Leaves, Stigma, Variation

Crocus sativus L. is a cormous perennial herbaceous member of the family Iridaceae cultivated in many countries such as Azerbaijan, China, France, Greece, Egypt, India, Iran, Israel, Italy, Mexico, Morocco, Spain and Turkey for being a well-known spice saffron which is actually dark-red stigmas of its flowers (Pitsikas 2016). One stigma of saffron weighs about 2 mg and each flower has three stigmata; 150,000 flowers must be carefully picked one by one to obtain 1 kg of spice. In contrast to the intraspecific variability seen in other *Crocus* species, *Crocus sativus* has minimal genetic variation, and it is concluded that the triploid hybrid species has most probably arisen only once (Alsayied *et al*. 2015). Agro-climatic variations within different regions or even locations may be a reason for variation in saffron product characters as reported in some studies (Ghaffari and Bagheri 2009, Siracusa *et al*. 2013, Babaei *et al*. 2014).

The present investigation was undertaken to get an idea about variation in some growth parameters in *Crocus sativus* sown at different locations in Pulwama district of UT of Jammu and Kashmir, India. Experiment was laid at four different sites including three locations in the world famous saffron fields of Pampore Pulwama. Healthy and visibly uniform sized corms weighing 20-25 grams each were sown in the month of September at each of these locations at a depth of 10 cm in well prepared clay loam soil beds. The distance between rows was 25 cm and 10 cm between corms in a row. Before planting, corms were dipped for few seconds in a fungicide solution of 0.7% carbondizium and 2.5% Mancozeb and dried overnight at room temperature to remove excess moisture. Observations were taken on diameter of freshly opened flowers, fresh weight of stigma (g), dry weight of stigma (g), number of leaves, fresh weight of leaves (g) and dry weight of leaves (g) during second year of planting of corms. Data was taken on a minimum of 20 randomly selected and tagged plants at each of these locations. Diameter was taken as an average of two perpendicular measurements across the flower at balloon stage and dry weight of stigmas and leaves was taken after drying in a forced draught oven at 80°C for 1 hr. Appropriate corm size and weight was taken into consideration during our present study since the ability of a corm to produce flowers depends on its size and the quality of planting material in terms of corm size is of paramount importance in obtaining immediate good yield of saffron. In our earlier study it has been found that corms weighing less than 17g fail to produce flowers while those which are 30g or more are ideal for increased flower and saffron yield during first year of planting and that saffron yield/flower (style and stigmas together) range from 6-10

Received on April 03, 2020 www.indianbotsoc.org Accepted on April 09, 2020

Table 1:. Effect of different sowing locations on some growth parameters in *Crocus sativus*

Location	Flower diameter (cm)	Fresh weight of stigma (g)	Dry weight of stigma (g)	Number of leaves	Fresh weight of leaves (g)	Dry weight of leaves (g)
Site 1	2.133±0.299	0.061± 0.009	0.019±0.005	6.9±1.1	0.62±0.19	0.19±0.05
Site 2	1.894±0.371	0.047±0.012	0.024±.008	5.6±0.7	0.73±0.23	0.2±0.06
Site 3	1.964±0.305	0.052±0.016	0.028±0.014	7.5±1.5	0.55±0.21	0.2±0.06
Site 4	1.884±0.362	0.052±0.010	0.023±0.008	6.1±0.9	0.57±0.18	0.2±0.06

Values are means±SD

mg and depend on size of the corm (Joo and Sultan 2013).

Perusal of the data obtained and presented in Table 1 reveal no significant differences in various parameters studied across different locations. Narrow range of variability observed may be due to microclimate at a particular location as climate did not vary markedly within the experimental site. The results are thus in line with earlier such studies (Lattoo *et al*. 1997). We have found strong positive correlation between flower diameter and fresh weight of stigma (+0.923) and negative correlation between flower diameter and dry weight of leaves (-0.927) whereas dry weight of stigma showed no much correlation (+0.262) with number of leaves. However, Baghalian *et al*. (2010) have found significant positive correlation between dry stigma weight and leaf number.

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