I J T A
© Serials Publications
National Academy of Agricultural Science (NAAS)
Rating : 3. 03

Influence of Weight of Saffron (*Crocus sativus L.*) Corm on Daughter Corm Production

Sabina Nasseer[1], *Shahina A. Nagoo*[1] *and Niyaz A. Dar*[1]

Abstract: *Saffron known worldwide for its aroma, colour, and medicinal properties propagates through daughter corm production. The weight of the mother corm has a profound impact on the number and weight of daughter corm production. Eight saffron corms weighing 5g-13g from each category were used for study and it was found that the corms weighing >10 grams yielded maximum daughter corms whereas corms weighing between 6-9 gram yielded less corms with lesser weight. The diameter of the daughter corms also varied with the weight of mother corm.*

INTRODUCTION

Saffron is a slow growing perennial plant regenerating from vegetative multiplication of its underground corms. Its cultivation in Kashmir dates to ancient times as evident from Rajtaringini, which indicates its presence before the reign of Lalitaditya in 750 A.D. According to Kalhana, it was one of the five important things for which Kashmir was famous. It has been an important ingredient of the prescriptions of Wagbatt and Sushrutta who practiced medicine about 500 B.C (Gathercoal and Wirth, 1947).

Saffron reproduces vegetatively through corms, which ranges from 0.5-5 cm in diameter. The aerial portion of the plant is bunches of leaves that arise from the buds present on the surface of corm that subsequently produce at the base new daughter corms (Nehvi *et al.*). The apical bud present in the mother corm produces 2-3 flowers and a few daughter corms also.

The saffron is used in preparation of Kashmir traditional tea popularly known as Kahwa and used in Kashmir Wazwan. Moreover, it also finds use as anti-cancer medicinal herb (Abdullaev, 2002). The breeding of saffron is mainly done through clonal selection of saffron (Fernandez, 2006) but as the triploid nature of saffron inhibits the hybridization programme, methods of conventional breeding are not relevant in terms of saffron breeding and hence the use of mutan genesis has found scope for its improvement (Di Crecchio and Tammaro, 1987).

As the saffron multiplies through corm, it is the only costly input in its cultivation. Due to the longer planting cycle usually more than 8 years, the ample availability of saffron corms becomes obscure (Alam, 2006). It has been observed that the initial weight of saffron corms planted had a profound influence on the number and weight of daughter corms (Alam 2006).

MATERIALS AND METHODS

Saffron corms of different weights ranging from 5g-13g were collected and planted in 1 m × 1 m well prepared and raised beds in the month of August for daughter corm production. About 8 corms were studied in each category at Saffron Research Station, Pampore.

The corms were treated with fungicide solution as prophylactic measure for any pathogenic fungal infection and dried in shade. The corms were planted 10 cm deep in rows and 15 cm apart with adequate nutrients.

[1] Saffron Research Station, Pampore, SKUAST-K

Table 1
Average effect of initial weight of corms on Production of Daughter Corms

Initial Corm weight (g)	*No. of Corms sown*	*No. of Mother Corms (a)*	*No. of Daughter Corms (b)*	*Total Corms (a + b)*	*No. of Daughter Corms/ Mother Corms*
5 g	8	–	5.6	5.6	0.70
6 g	8	–	6.0	6.0	0.75
7 g	8	–	7.5	7.5	0.937
8 g	8	1	4	5.0	0.625
9 g	8	2	5	7.0	0.875
10 g	8	2	8	10.0	1.25
11 g	8	2	15	17	2.12
12 g	8	2	16	17	2.25
13 g	8	3	16	19	2.375

RESULTS AND DISCUSSION

The corms were uprooted in the month of July and the observations on the number, weight and diameter of corms (Figure 1) was taken with respect to each category of corms. It was found that the corms weighing more than 10g had maximum increase (Table 1) in daughter corm formation (2.25). A substantial increase in the number of daughter corms (0.62-0.93) was observed in the corms weighing 6g-9g (Figure 2) whereas least number of daughter corms was observed in the corms weighing 6 grams and less (0.7).

The diameter of the daughter corms varied from 11.25 mm to 17.48 mm (Table 2) and the weight ranged from 1.09 g to 2.14 g.

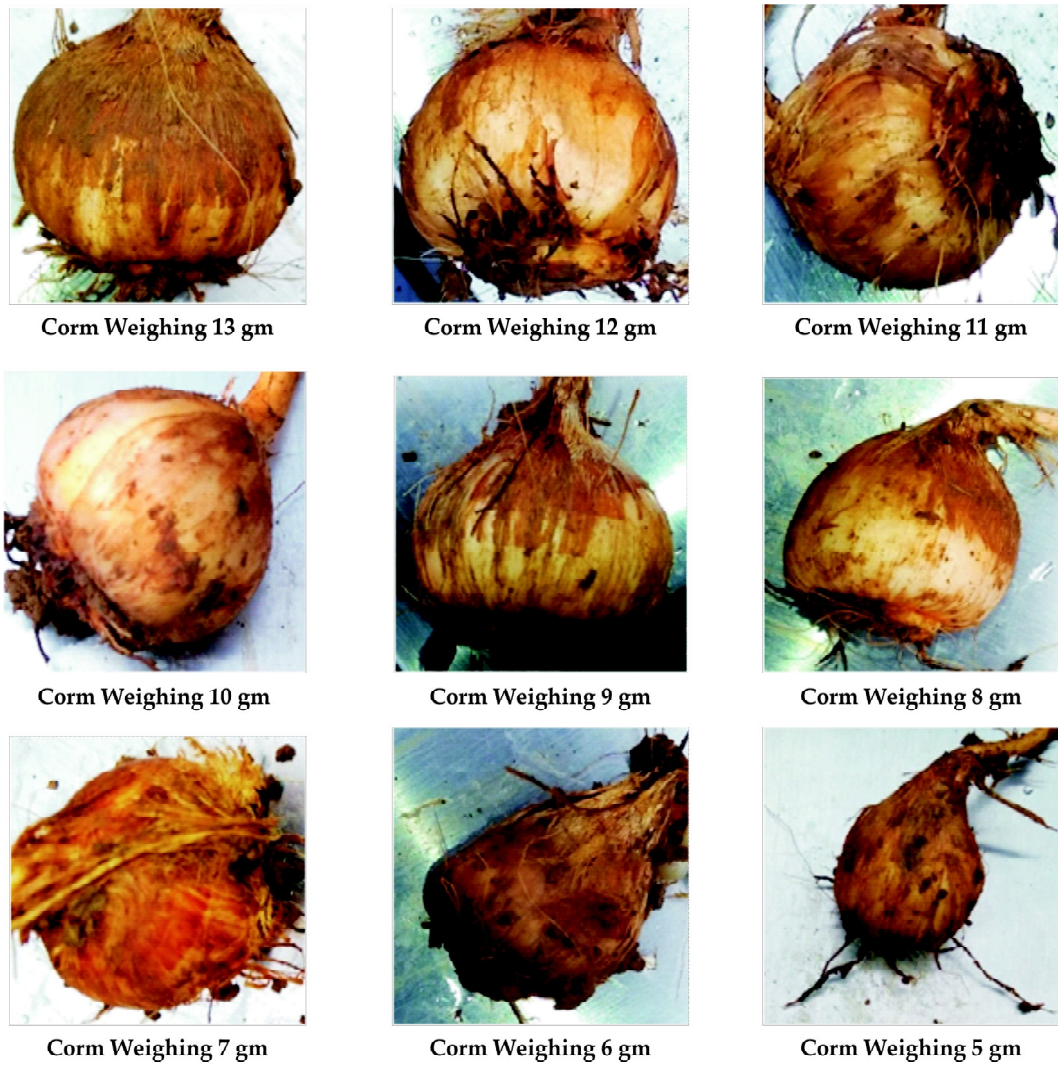

Figure 1: Different Sized Corms

Table 2
Average weight (g) and Diameter (mm) of corms

Initial weight	*Average weight of Mother corm (g)*	*Average weight of Daughter corm (g)*	*Average Diameter of Mother corm (mm)*	*Average Diameter of Daughter Corm (mm)*
5 g	–	0.51	–	–
6 g	–	0.61	–	–
7 g	–	0.90	–	–
8 g	4.2	1.25	18.36	16.42
9 g	8.0	1.09	18.84	15.20
10 g	9.5	2.14	19.62	17.48
11 g	9.9	2.01	20.46	12.59
12 g	10	1.04	21.05	11.25
13 g	12	1.94	25.36	14.36

Initial wt. of Corms	*Effect*
> 10 g	Maximum Daughter Corm Production
6 g – 9 g	Substantial increase in Daughter Corm Production
< 6 g	No increase in Daughter Corm Production

Gul Zaffar *et al.* (1999) also revealed that the maximum number of daughter corms were obtained from corms having diameter 3-3.7 cm giving maximum number of flowers and stigma length. Kaushal and Upadhyay (2002) also revealed that the yield of flowers was dependent on the initial size of the corm at planting.

Daughter Corm Production in Corms weighing more than 10 gm

Daughter Corm Production in Corms weighing from 6 to 9 gm

Daughter Corm Production in Corms weighing less than 6 gm
Figure 2: Daughter Corm Formation

CONCLUSION

For obtaining higher yields, it has been observed that the corms weighing more than 8 g have the potential of flowering the same year whereas the corms weighing less than 6 g are suitable for nursery management to yield bigger sized corms for the area expansion under saffron cultivation and high density.

References

F.I. Abdullaev, (2002), Cancer Chemopreventive and Tumoroicidal Properties of Saffron (*C. sativus* L.) Experimental Biology and Medicine. 227: 20-25.

J. A. Fernandez, (2006), Genetic Resources of Saffron and Allies (Crocus spp). Proceedings of the Second International Symposium on Saffron Biology and Technology, Acta Horticulture 650: 167-188.

A. Alam, (2006), Status and Prospects of Mechanization in Saffron cultivation in Kashmir. Acta Horticulture 650: 409-415.

F.A. Nehvi, Ajaz A. Lone, M.A. Khan, M. I. Makhdoomi, (2010), Comparative study on effect of nutrient management on growth and yield of Saffron under temperate conditions of Kashmir. Acta Horticulture (ISHS) 850: 165-170.

S. K. Kaushal, R.G.Upadhyay, (2002), Studies and variation in corm size and its effect on cormel production and flowering in *Crocus sativus* L. under mid hill conditions of Himachal Pradesh. Research on Crops 3(1): 126-128.

Gul Zaffar, A.A. Sofi, M.S. Mir and Zargar, G.H. (1999), Cultivation of Saffron under Cold Arid conditions of Kargil (Ladakh). Paper presented at National Symposium on Saffron held on Nov. 25-26, 1999 at Regional ResearchLaboratory Jammu (CSIR).

Gather Coal, E.N. and Wirth, E.H. (1947), Pharmacognosy Lea and Febreger, Philadelphia 172pp.

R. Di Crecchio, Tammaro. (1987), Lo Zafferano. L. Italia Agricola. 97: 629-649.