Veg. Sci. 37(1) : 89-90 (2010)

Short Communication

FLORAL BIOLOGY OF CLUSTER BEARING AND GYNOECIOUS POPULATION OF SPONGE GOURD (*LUFFA CYLINDRICA*)

PK Singh, BR Choudhary, T Chaubey[1], Ramesh Singh, DR Bhardwaj[1] and B Singh[1]

Seed Production center, Sargatia, Seorahi, Kushinagar-274406 (U.P.)

[1]Indian Institute of Vegetable Research, Varanasi

Sponge gourd though not a major vegetable crop is grown extensively in some parts of India. Serious attention towards genetic improvements are lacking in this crop, even though there is a large genetic variation exits in the country. A knowledge of floral biology is essential for any improvement programme through hybridization. Singh(1957)has made a detailed study on the floral biology in *Luffa sps*. As the prevailing changes in climatic conditions and availability of different sex forms in Sponge gourd makes it necessary to study the floral biology of this crop in present context.

The floral biology studies were under taken in two cluster bearing, two gynoecious and one improved genotype of sponge gourd namely, VRSG-52-1, VRSG-52-2, 25Gy, 27Gy and Pusa Sneha at Seed Production Center, Sargatia,Kushinagar during summer months of March through June,2009. The crop was sown on 5th March 2009. Observations were made regarding days to first flower (average of ten plants) in all the five varieties. Bud development studies were taken up in VRSG-52-1 and 27Gy where number of days taken for the bud to fully develop was calculated. Flower size and ovary length were recorded in all the varieties and average of 100 flowers was computed. The time of flower opening and dehiscence of anthers was recorded on ten plants in each of the five varieties at Weekly intervals. The size of pollen grains was measured under a microscope fixed with ocular scale and a mean of fifty pollen grains was calculated. The pollen germination studies were carried out in 15 and 20 percent sucrose solution containing 200ppm boric acid; pollen grains from freshly opened flowers as well as flowers after 15 hours of anthesis were taken for such studies. The stigmatic receptivity was examined by counting the number of fruit set by hand pollination of 25 female flowers(all five genotypes taken together) at the time of anthesis, 24 hours before anthesis, and 12 and 24 hrs. after anthesis.

VRSG-52-1 was the earliest to produce male flower after 37 days of sowing while Pusa Sneha took longest period (42.00days). The earliest and the latest genotype to produce female flower was VRSG-52-1 (47.00days) sponge gourd 25 Gy(47.00days) and Pusa Sneha(50.00days) respectively (Table.1). This indicates the existence of variability in genotypes with respect to earliness.

On an average it took 14.00 days for the male buds to develop fully(from the stage visible to the naked eye to the day of opening of the bud).in 25 Gy and 16.00days in Pusa Sneha. Female flowers in both these genotypes developed two to three days earlier than their respective male buds. Singh(1957) observed the development of pistillate flowers 3 to 4 days earlier than the male flowers which required 10-16 days.Corolla diameter of fully opened flowers varied among the genotypes.Male flowers were smaller in Pusa Sneha and larger in VRSG-52-1 and VRSG-52-2.genotypes VRSG-52-1 and 27Gy had the maximum ovary length of 5.90cm. Incidently these two varieties also had the longest fruit size.

Anthesis in these genotypes commenced between 4.a.m. in the morning and complete by 6.30 a.m. with slight differences among genotypes. Delayed anthesis

Table:1. Showing days to first flower,flower diameter and ovary length in five genotype of Sponge gourd

Genotype	Days to first flower		Flower diameter(cm.)		Ovary length(cm.)
	male	female	male	female	
VRSG-52-1	37.00	47.00	4.56	5.30	5.90
VRSG-52-2	40.00	49.00	4.43	5.4O	5.70
25 Gy	-------	47.00	----	5.60	6.20
27Gy	-------	49.00	----	5.70	5.90
Pusa Sneha	42.00	50.00	4.63	5.82	5.40

Table.2. Pollen size, Pollen viability and pollen germination in Sponge gourd genotypes

Genotype	Pollen Size		Pollen viability(percent)	Pollen germination (percent)	
	Maximum	Minimum		Freshly opened flowers	15 hrs. after anthesis
VRSG-52-1	102.3 X 97,7	89.3X85.4	95	84	11
VRSG-52-2	101.2 X101.0	87.9 X 86.5	96	80	12
Pusa Sneha	103.2 X 102.3	102.3X101.2	98	86	15

was observed on cloudy and rainy days apparently showing the effect of light and temperature. Similar results were observed by Singh (1957) who reported that anthesis would take place in the morning. Dehiscence of anther preceded flower opening as also reported by Singh (1957). However, the completion of dehiscence required 20 minutes to 3.5 hours.

Pollen viability was high in all monoecious genotypes under study, ranging from 95 per cent in VRSG-52-1 and 98 percent in Pusa Sneha (Table.2). Pollen germination was found to be good. This might be due to better pollen viability on the day of anthesis as also observed by Singh and Katiyar (1966) when pollen from freshly opened flowers were used. Fifteen percent sucrose solution was found to be a suitable medium of germination for all the monoecious varieties under study. Pollen germination came down drastically after 15 hours of anthesis (same day evening). In all the monoecious genotype under study the pollen germination after 15 hours of anthesis was better in 15 percent sucrose solution.

Pollen size varied considerably within the genotype and also between the genotypes as seen from Table2. Stigma was most receptive at the time of anthesis on the basis of per cent fruit set (79.00 per cent). Twelve hours after anthesis (7.00 per cent) fruit set was observed where as 24 hours after and before anthesis, it failed to set fruits.

References

Singh SN (1957). Studies in the floral biology of Luffa. Hort. Advance,Saharanpur. 1: 86-94.

Singh SN and Katiyar GP (1966). Testing viability of pollen grains of *Luffa* sp. Madras Agric. J. 53: 127-129.