

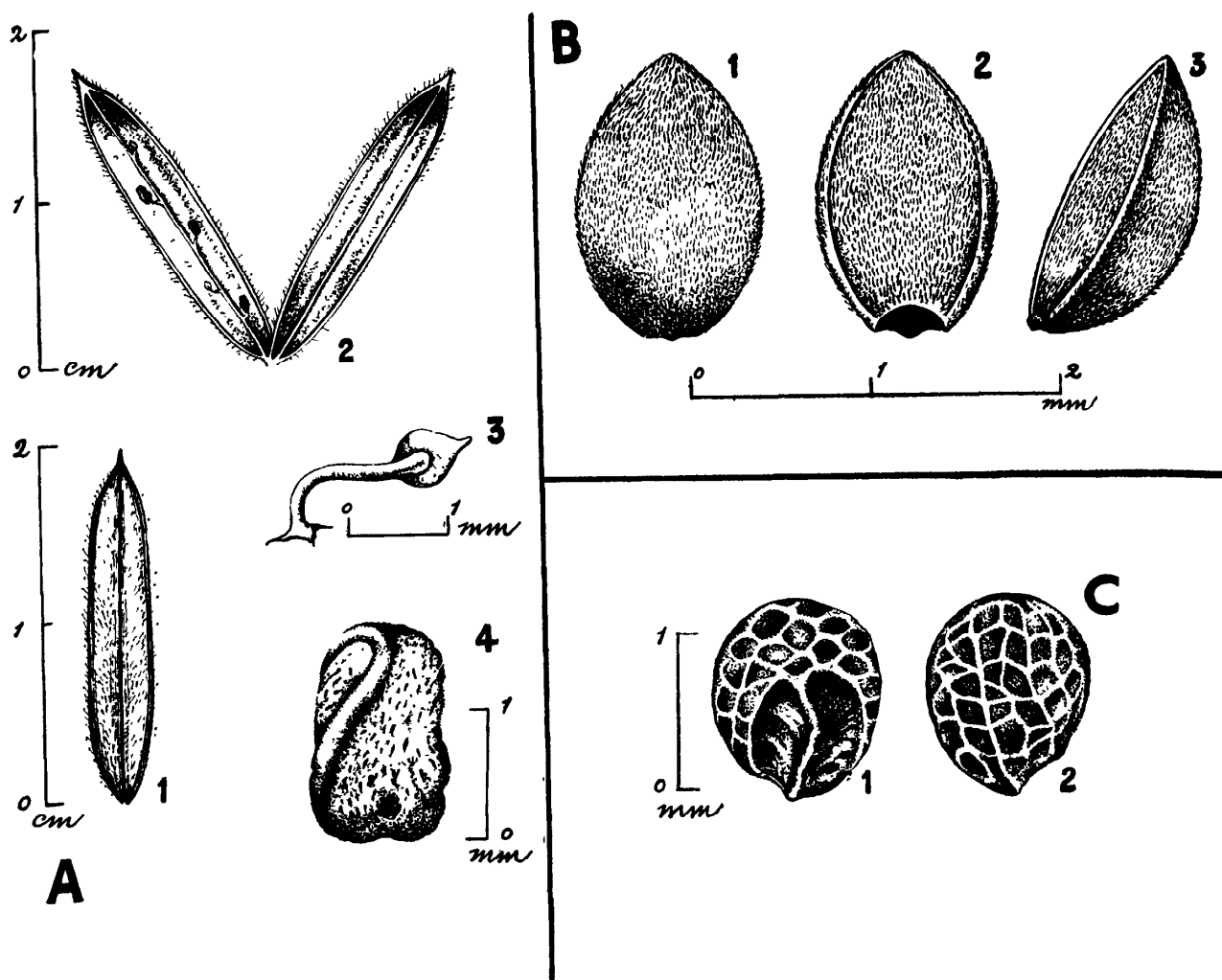


Fig. A(1-4) : *Andrographis lawsonii* Gamble
1. Capsule. 2. Dehiscent capsule showing the seeds. 3. Retinaculum. 4. Seed.

Fig. B(1-3) : *Isachne bourneorum* Fischer
1. Caryopsis—dorsal view. 2. Caryopsis—ventral view. 3. Caryopsis—lateral view.

Fig. C(1-2) : *Teucrium plectranthoides* Gamble
1. Nutlet—ventral view. 2. Nutlet—dorsal view.

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VARIATIONS IN THE FLORAL ORGANS OF *MALACHRA CAPITATA* L.

In the present investigation an attempt has been made to study the variations in floral organs in *Malachra capitata*.

Nine plants of *Malachra capitata* L. were selected for studying different floral characters. Flowers were plucked at fortnightly

intervals starting from the last day of August (initial flowering stage) up to 15th November (last phase of flowering) and the total number of right-handed and left-handed flowers scored in each stage (date) and the percentage of left-handed flowers in each date was determined. The numbers of stamens in each of the two types of flowers at each stage was also counted and the average number of stamens in each type at each date was calculated. Variations in calyx, corolla and gynoecium were studied and the percentages of each type was determined. Diameter of flowers, length and width of petals and length of staminal column were taken on the basis of 50 flowers, and their mean and standard error were calculated.

OBSERVATIONS

Flowers are bracteate in axillary or in "terminal dense" intermixed with bracteoles. Bracts are with 2 appendages at the base, filiform, 3 to 4 in number, leafy and more or less sessile. Flowers in general are pentamerous with white hairy centre and yellow petals. Bracteoles are 2 in number, linear, bristled, 0.6 to 1.1 cm long, green and attached to the base of the calyx. Sepals are subulate, pear-shaped, valvate, connate below the middle into a cup, 0.4 to 0.6 cm long, whitish, 3-nerved, bristled, tomentose and persistent. Petals are contorted, bell-shaped,

slightly united at the base, longer than the sepals and on withering remain yellow. Stamens are many, monadelphous and the staminal column is epipetalous and truncate. Anthers are reniform and 1-celled with numerous filaments, and the pollen are large and spiny. Carpels are 5 in number, 1-ovuled with 10 styles. The diameter of flowers, length and width of petals varied within a considerable range in the population studied. The length of staminal column did not show significant variation (Table 1). The number of sepals varied from 4 to 7, and flowers having 5 sepals were most common. The number of petals varied from 3 to 6 with 5 petals in most cases. The number of ovary chambers was found to vary from 4 to 6, with 5 chambers being the commonest. Stigmatic lobes varied from 8 to 12 but 10 stigmas were common (Table 2). Percentages of the left-handed flowers increased at the later phases of flowering. At the early flowering season, it was only 37.5% during the month of August and after a fortnight it rose to 47.4% but during mid November this was found to be about 57% (Table 3). The number of stamens in both the right and left-handed flowers was found to be reduced towards the end of the flowering phase in November. The number, however, did not vary considerably in the two types of flowers (Table 4).

Table 1. Diameter of flowers, length and breadth of petals and length of staminal column in *M. capitata*.

	Range	Mean $\pm$ S. E.
Diameter of flowers (cm)	1.40-2.80	2.03 $\pm$ 0.0509
Length of petals (cm)	0.90-1.70	1.35 $\pm$ 0.0041
Breadth of petals (cm)	0.50-1.10	0.83 $\pm$ 0.0083
Length of staminal column (cm)	0.60-0.95	0.75 $\pm$ 0.0551

Table 2. *Variations in the number of calyx, corolla and gynoecium in M. capitata.*

No. of sepals	Percentage	Total no. of flowers studied
4	1.77	226
5	81.85	
6	12.39	
7	3.99	
No. of petals		
3	1.34	298
4	9.73	
5	74.33	
6	14.60	
No. of ovary chambers		
4	9.30	138
5	76.33	
6	13.97	
No. of stigmas		
8	6.65	226
9	9.29	
10	72.12	
11	10.17	
12	1.77	

Table 3. *Percentage of left-handed flowers in M. capitata on different dates.*

Date	Total no. of flowers studied	Percentages of left-handed flowers
31.8.68	128	37.50
15.9.68	548	47.44
1.10.68	543	50.27
15.10.68	258	50.38
1.11.68	179	52.51
15.11.68	79	56.96
	1735	48.99

Table 4. *Mean number of stamens in left and right-handed flowers in M. capitata on different dates.*

Date	No. of flowers studied	No. of stamens in left-handed flowers	No. of flowers studied	No. of stamens in right-handed flowers
31.8.68	31	27.13	37	26.30
15.9.68	63	29.91	77	27.22
1.10.68	74	28.43	58	28.58
15.10.68	74	29.36	53	28.38
1.11.68	41	21.26	37	20.61
15.11.68	43	20.16	42	21.68

The fruits are 1-seeded, indehiscent, separating from the axis and subglobose with depressed apex. Seeds are found to be reniform, ascending, steel grey (when outer testa is removed), 2 mm in length and 1 mm in breadth and are covered by a scaly testa.

DISCUSSION

Basu and Chakravarty (1968) studied the flowers, fruits and seeds of *Malachra* in a general way and the present observation agree with their findings. Davis (1964), Davis & Selvaraj (1964) observed that aestivation of plants in Malvaceae and Bombacaceae were clearly of two types and that in about half the number of flowers of any plant of any species of these families, the petals were twisted clockwise and the rest counter clockwise. Similar types of observations in *Malachra* (a malvaceous plant) confirmed their views. Davis and Ghosal (1966) observed that the number of stamens in *Hibiscus rosasinensis* varied very greatly with time and they opined that the difference in the mean number of stamens per flower was due to seasonal variation which was also in the case of *Malachra*.

SUMMARY

The diameter of flowers, length and width of petals varied within a considerable range in the population studied. The length of staminal column did not show significant variation but variations were found in the number of sepals, petals, stigma and ovary chamber. Percentages of left-handed flowers increased at the later phases of flowering. The number of stamens in both the right- and the left-handed flowers was found to be reduced towards the end of flowering phase. The number, however, did not vary considerably in the two types of flowers.

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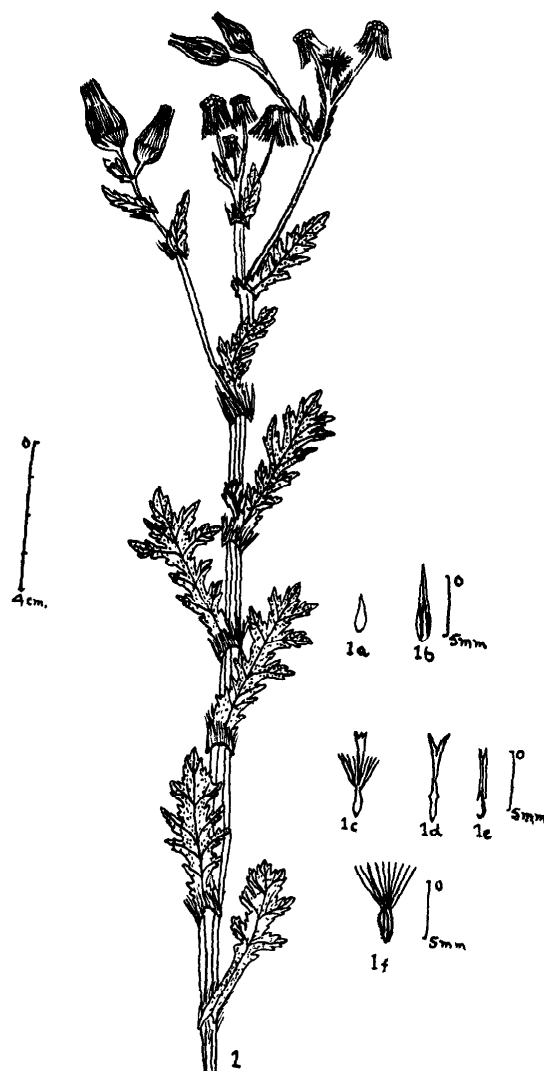
SENECIO VULGARIS LINN.—A FAST SPREADING EXOTIC WEED OF CROP FIELDS AND ORCHARDS OF KASHMIR

The genus *Senecio* Linn. (Compositae) is probably the largest of the plant genera with about 1200 species, distributed almost all over the world (Bailey 1958). Hooker (1875) listed 63 species under the genus from the Indian subcontinent. During the field collections the author has collected specimens of another species viz. *S. vulgaris* Linn. which has not been recorded from any part of India. This species is said to be native of Europe and a common weed in various parts of the world. It is probably a spontaneous introduction in Kashmir and has naturalized under temperate type of climate. It occurs as a common weed in all types of fields spreading fast throughout the valley.

Since the plant has neither been fully described nor illustrated in any of the existing Indian floras, it has been felt to fill this gap.

Senecio vulgaris Linn. Sp. Pl. 867. 1753;
Polunin in Fl. Europea 449. 1969.

Annual or biennial herbs up to 30 cm in height. Stem erect branched, sometimes angled, sparingly hairy with cottony long hairs towards the apices of the branches. Leaves mostly cauline, alternate, 2.0-4.5 cm long, pinnatifid, irregularly and deeply cut into somewhat oblong lobes; lobes toothed, somewhat thick; bases auricled, mostly glabrous and sometimes hairy. Flower heads corymbose, yellow, up to 1.5 cm long, slightly broader at the base and tapering towards the apex; peduncles 0.5-4.5 cm long, somewhat cottony. Involucral bracts 2-seriate, outer ones 6-10 up to 4 mm long, black-tip-



Senecio vulgaris Linn.

Figs. 1-1f: 1. A flowering branch. 1a. Outer involucral bract. 1b. Inner involucral bract. 1c. A disc floret. 1d. An ovary with style. 1e. A stamen. 1f. An achene.