



Seed to seed phenology in *Asphodelus tenuifolius* Cavan

Usha Devi and Veenu Kaul*

Department of Botany, University of Jammu, Jammu-180006, Jammu and Kashmir, India

*Corresponding author: veenukaul@yahoo.co.in

Received: 26. 11. 2020; Revised: 29.11.2020; Accepted and published online: 01.01.2021

Asphodelus tenuifolius Cavan belonging to sub-family Asphodeloideae of family Asphodelaceae (see also APG IV, 2016) is one of the two species of the genus growing in India (Hooker 1894). Commonly known as onion weed or wild onion or asphodel the species is reported to be a serious weed of many crop plants notably wheat, chickpea, lentil, mustard, etc (Jain *et al.* 2002, Mishra *et al.* 2002). However, it is of considerable medicinal importance. Besides being used as a condiment, its various parts reportedly harbor compounds with anti-microbial, diuretic, anti-inflammatory and laxative properties (Yaghasiya and Chanda 2007, Dangi *et al.* 2013). In India it is commonly used for treating indigestion, ulcers, inflammations, skin infections, toothache, cough etc (Chopra *et al.* 1986, Yaghasiya and Chanda 2007, Sibanda and Okoh 2007). The present investigation was conducted on plants of two populations growing at two villages, Thathi (district Jammu) and Spalwan (district Kathua) of Jammu and Kashmir, India. Despite the two being located at respective distances of ~25 and ~75 km from Jammu city, their phenological behavior did not vary significantly (Devi 2009). The various events characterizing the seed to seed cycle of this species are elaborated below.

The plants are 31.5± 3cm tall, annual, herbs bearing a highly reduced stem very close to the soil surface. Seeds germinate in first week of November and continue to do so till third week of December. After one month, seedlings grow into plantlets which are distinguishable into a short indistinguishable stem bearing leaves at a single level giving it the rosette like appearance. The plants remain in vegetative phase in first week of November to first week of January and shift to reproduction thereafter in first week of January. It begins with the emergence of scape from the centre of the whorl of leaves. The scape is green, erect and hollow differentiating a compact raceme at its apex within 7-10 days. Fresh inflorescences continue to differentiate for 30-40 days from the date of emergence of first scape (Devi 2009). About 2 to 3 flowers in an inflorescence open per day. Flowers are hermaphrodite and nectariferous bearing white to pinkish tepals. Anthesis initiates at 5:30 h. and a flower opens completely by 9:30 h. Anther dehiscence marked by the formation of longitudinal slits initiates 10 – 15 minutes after anthesis. Within 15 – 20 minutes anthers empty their contents. Stigma receptivity overlaps with anther dehiscence and exhibits a peak 4 – 6 h later. Nectar secretion also begins after anthesis and reaches a maximum around 12:00 h. All flowers close and do not open 9 h post anthesis (Devi 2009).

Fruits attain maturity 10–15 days after successful pollination and fertilization. They dry on the plant itself and split along longitudinal slits. Together, fruit formation, maturation and dehiscence take place within one to less than one and a half month of pollination. The flowers of last week of February are in fruiting in first to second week of March. Even though these fruits dehisce in second week of April, they remain dormant for about six months and germinate in November. This completes the seed to seed cycle in *Asphodelus tenuifolius*.

Keywords: *Asphodelus tenuifolius*, scape, dormant, nectariferous, weed, medicinal

REFERENCES

- APG IV The Angiosperm Phylogeny Group IV 2016. An update of the Angiosperm Phylogeny.
Group classification for the orders and families of flowering plants. *Bot. J. Linnnean Soc.* **181** 1–20.
- Chopra RN, Nayar SL and Chopra IC 1986. *Glossary of Indian Medicinal Plants* (Including the Supplement). Council of Scientific and Industrial Research, New Delhi.
- Dangi AS, Aparna SM, Yadav JP, Arora DR and Chaudhary U 2013. Antimicrobial Potential of *Asphodelus tenuifolius*. *J. Evolution of Medical and Dental Sci.* **2** 5663–5667.
- Devi U 2009. *Studies on the inter-population variation in morphological and reproductive features of Asphodelus tenuifolius Cavan.* M.Phil. Dissertation submitted to University of Jammu, Jammu.
- Hooker JD 1894. *The Flora of British India.* **6** 332.
- Jain KC, Singh S, Nag AK and Shekhawat VS 2002. Efficacy of different weed control methods in chickpea. *Indian J. Pulses Res.* **15** 172–173.
- Mishra JS, Singh VP and Yaduraju NT 2002. Competitive ability of winter season weeds in wheat (*Triticum aestivum*). *Indian J. Agri. Sci.* **72** 167–168.
- Sibanda T and Okoh AI 2007. The challenges of overcoming antibiotic resistance: plant extracts as potential source of anti-microbial and resistance modifying agents. *African J. Biotech.* **6** 2886–2896.
- Vaghasiya Y and Chanda SV 2007. Screening of methanol and acetone extracts of fourteen Indian medicinal plants for antimicrobial activity. *Turkish J. Biol.* **31** 243–248.