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## Population dynamics of safflower aphid (*Uroleucon compositae* Theobald) in relation to weather parameters

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**Abstract**

The investigations on seasonal incidence of Aphids, (*Uroleucon compositae* Theobald) on safflower under were conducted on research farm of Oilseed research station Latur, VNMKV, Parbhani during Rabi 2016-17. Seasonal incidence of *U. compositae* observed that maximum incidence to the tune of 142 aphids / 5 cm twig was recorded during 3<sup>rd</sup> SMW in January, the pest infestation found it active from January to February.

**Keywords:** Aphid, safflower

**1. Introduction**

Safflower (*Carthamus tinctorius* L.) commonly known as *kardi* is one of the important Rabi oilseed crop of the country. It is well adapted to dry regions and is the member of family compositae. Safflower has been grown in India since immemorial and is mentioned as *kusumba* in ancient scriptures. Presently in India it is most commonly known as *kardi* in Marathi and *kusum* in Hindi. There are 36 species in the genus *Carthamus*, found in many part of world namely Asia, Africa, and mediterrian regions out of these only *Carthamus tinctorious* (L.) (2n =24) is cultivated in India.

India has rich diversity of annual oilseed crops on account of diverse agro-ecological conditions. Nine annual oilseeds, which include seven edible oilseeds, viz., groundnut, rapeseed-mustard, soybean, sunflower, sesame, safflower and niger and two non-edible crops, viz., castor and linseed, are grown in country. Safflower is a multipurpose crop rich in vitamin A, iron, phosphorus and calcium. The use of this crop is as vegetable and edible oil for human being and as drying oil and dye for trade. Safflower oil which is sold as saffola, is considered to be more preferred oil due to rich poly unsaturated fatty acid (73-79% lenoleic), which help in reducing the blood cholesterol level. The oil is mainly used as edible oil. It is also used in manufacture of paints, varnishes and linoleum. India is in first place in terms of area and production in the world with an area 138 lack ha and production 41 lakh tonnes with productivity 434 kg/ha (2016-2017). Safflower is mainly grown in Maharashtra, Karnataka to some extent in Gujarat and parts of Andhra Pradesh, Madhya Pradesh, Orissa, Bihar (Akashe, 2012) [2]. In India, Maharashtra is highest producer of safflower (63%) from the largest growing area (67%) followed by Karnataka with 32% in production and 275 lakh ha in area (Jadhav *et al.*, 2012) [3].

The flower petals are used for colourings and flavouring foods. One of the major reasons for the low productivity is the loss due to insect pests. Among the insect pests that attacks safflower, the aphid, *Uroleucon compositae* Theobald (Hemiptera: Aphididae) is the most destructive and regular pest Safflower is affected by a number of insect pests and diseases causing substantial loss in yield (Singh *et al.*, 1999). However, safflower aphid (*Uroleucon compositae*) is one of the most destructive pests infesting the crop particularly from its elongation stage to flowering period. The safflower aphid causes 37 to 74 per cent loss in yield). In case of severe infestation the yield losses range from 24.20 to 67.72% (Shetgar *et al.*, 1993). Seed and oil content losses due to aphid infestation have been recorded as 24 to 60% Shetgar *et al.*, 1992) [7]. Nymphs and adult suck the cell sap from the tender leaves and tender shoots and impair the vitality of the plant. In cases of sever infestation the entire plant is covered by the insect and present the blackish appearance. Besides sucking the sap from the plants, they also excrete a honey dew like substance on which black sooty mould develops that

adversely affects photosynthesis. The pest is active from November or December.

**2. Material and Methods**

The experiment was carried out with Safflower crop using variety Co-1 were conducted at research farm of Oilseed research station Latur, VNMKV, Parbhani during Rabi 2016-17. The experiment was conducted in a randomized block design (RBD) with three replications and seven treatment. Sowing field plot were prepared by applying well decomposed farm yard manure. Plot size 10x10 m. and spacing 45x20 cm<sup>2</sup> Weekly observations of aphids count was taken by observing 5 cm twig 10 randomly selected and tagged plants from experimental plot.

**3. Result**

The seasonal incidence of *U. compositae* on safflower were observed during Rabi 2016-17. The data recorded on population of Safflower aphid presented in Table 1 and graphically depicted in Figure 1.

The population of *U. compositae* was recorded from Oct to March. The maximum level of infestation (142 aphid/5cm twig) was recorded during 3<sup>rd</sup> SMW in January, the pest infestation found it active from January to February. The predator infestation on safflower crop from October to March. The maximum level of infestation (0.7 aphid/5cm twig) was recorded during 2<sup>nd</sup> SMW in January, the pest infestation found it active from January to February.

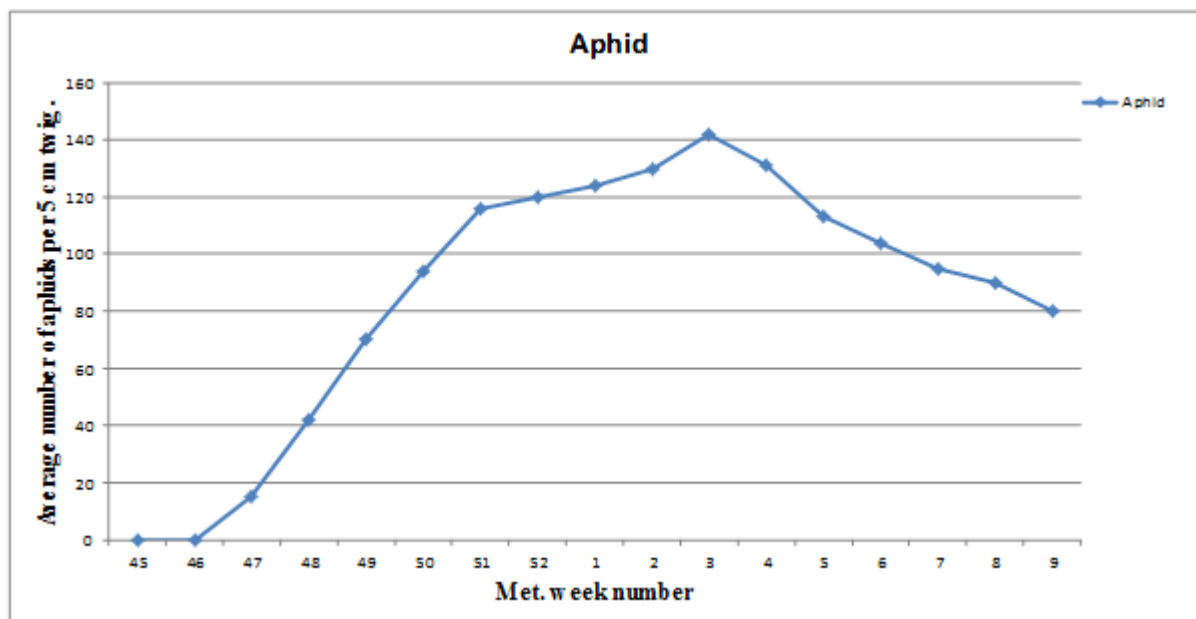
**Table 1:** Seasonal incidence of safflower aphids (*Uroleucon compositae* Theobald)

Sr No	Meteorological Week	Period	Number of aphid / 5 cm twig
1	45	7 Nov - 11 Nov	00
2	46	12 Nov - 18 Nov	00
3	47	19 Nov - 25 Nov	19
4	48	26 Nov - 2 Dec	42
5	49	3 Dec - 9 Dec	70
6	50	10 Dec - 16 Dec	94
7	51	17 Dec - 23 Dec	116
8	52	24 Dec - 31 Dec	120
9	1	01 Jan- 07 Jan	124
10	2	08 Jan- 14 Jan	130
11	3	15 Jan- 25 Jan	142
12	4	22 Jan- 28 Jan	131
13	5	29 Jan - 04 Feb	113
14	6	05 Jan - 11 Feb	104
15	7	12 Jan - 18Feb	95
16	8	19 Jan - 25 Feb	90

**4. Discussion**

low temperature and high humidity with cloudy weather are conducive for the safflower aphid multiplication, he further mention that maximum and minimum temperature ranged between 30-35 °C and 14 to 17 °C respectively which were most favourable for rapid development development of aphid. Similarly, increase relative humidity and maximum temperature created favorable condition to increase in

population of *Uroleucon compositae* of safflower as observed in present study where peak aphid population was observed when the relative humidity was more than 80%. The aphid appeared in the safflower field in 51 standard meteorological weeks. The mean maximum temperature of 28-30 °C and minimum temperature of 13-16 °C and relative humidity of 83.4% were found most conducive for aphid multiplication, which are in agreement with present study.



**Fig 1:** Seasonal incidence of Safflower aphid *U. compositae* (Theobald)

## 5. Conclusion

The aphid (*Uroleucon compositae*) infestation on safflower crop was noticed from Oct to March. The maximum level of infestation (142 aphid/5cm twig) was recorded during 3<sup>rd</sup> SMW in January, the pest infestation found it active from January to February.

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