Table 1 *Flowering phenology of almond during March–April, 1987*

Date of observation	Number of opened flowers/branch (mean of 5 observations)	Percentage bloom
March 1987		
14	2.00	0.31
16	14.10	2.18
18	83.40	12.95
20	182.00	28.38
22	572.80	88.94
24	644.00	100.00*
26	492.00	76.39
28	415.00	64.44
30	353.00	54.82
April 1987		
2	175.40	27.33

* The peak of flowering was considered as 100% bloom and based on this, percentage bloom for whole flowering season was calculated; Weather condition was cloudy in general.

flowers. The former two species of bees were seen on both clear and cloudy days (figures 1 and 2) whereas *lassioglossium* sp. was not observed on cloudy days (figure 2). However, cloudiness was found to decrease the number of *A. c. indica* and *X. fenesterata*. Some Dipteran flies were also observed in interrupted hours but their population was very low. The data further reveal that *A. c. indica* and *X. fenesterata* could commence their field activities at a low temperature of 8°C whereas this requirement was found to be 13.5°C for *Lassioglossum* sp.

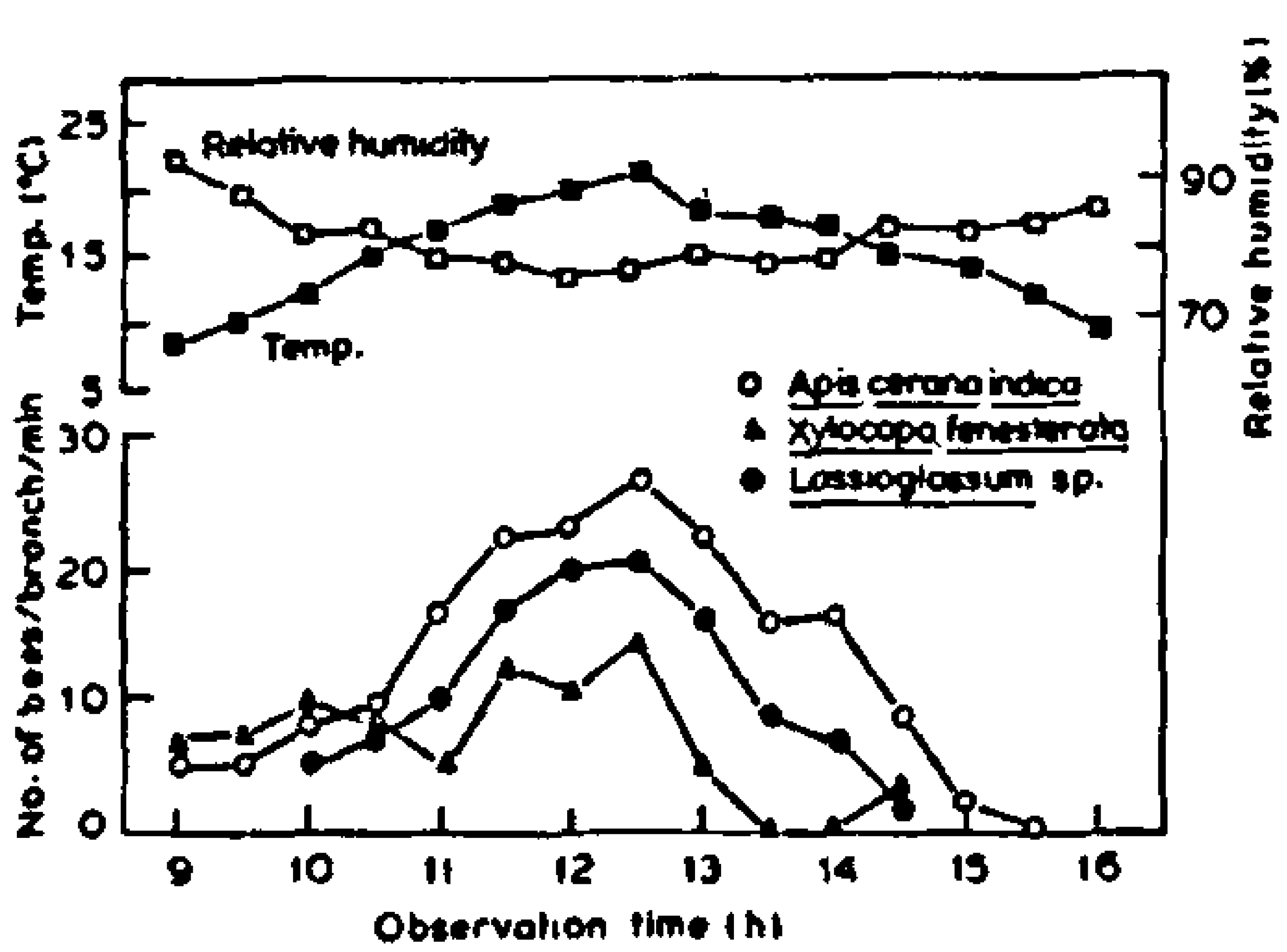

Figure 1. Diurnal activity pattern of bees visiting almond flowers on sunny days. Each point represents the mean for each sampling time on four separate days during the season.

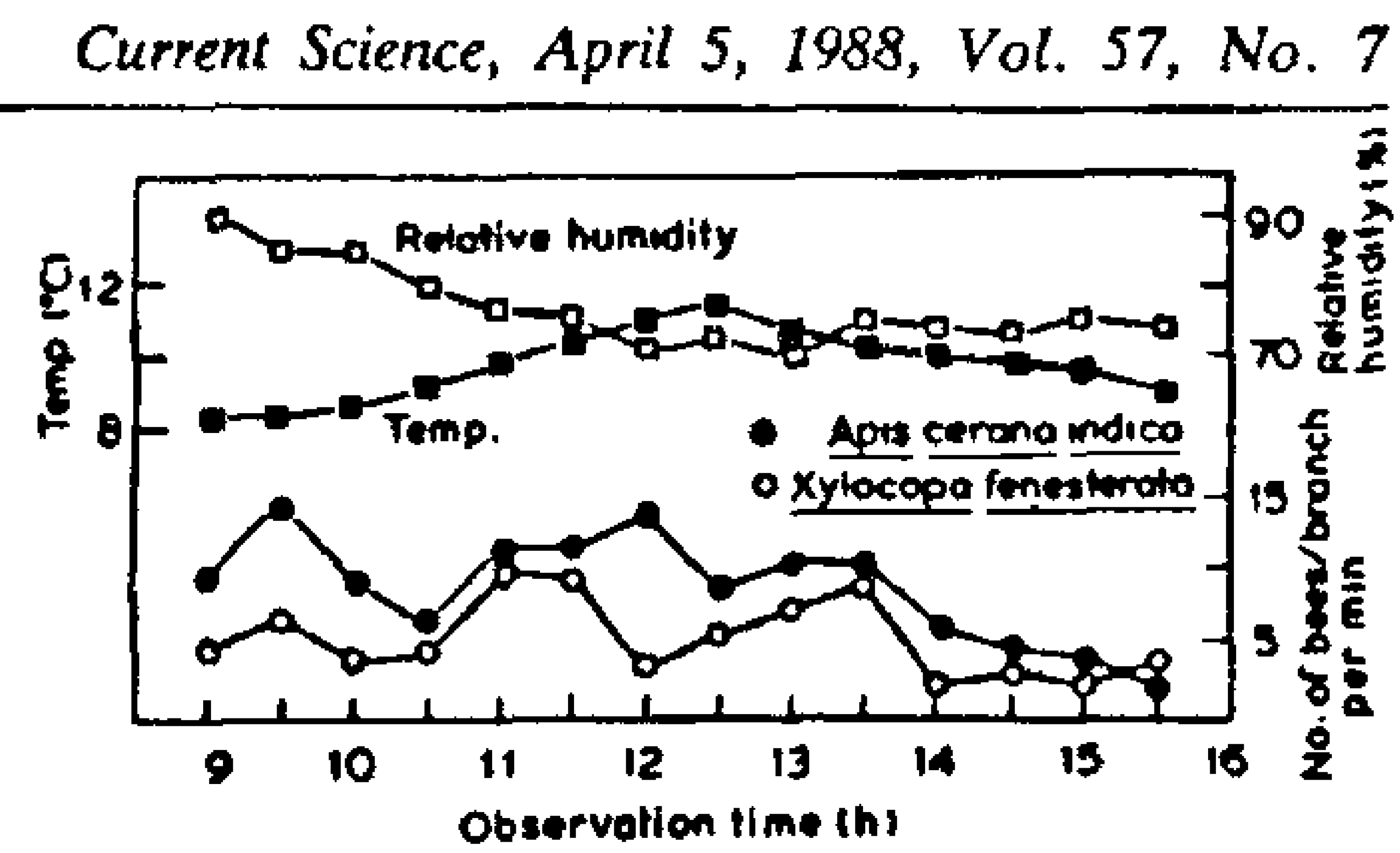

Figure 2. Diurnal activity pattern of bees visiting almond flowers on cloudy days. Each point represents the mean for each sampling time on six separate days during the season.

irrespective of the relative humidity values. Evidently during March when early almond varieties are in bloom, inclement weather limits foraging activity of insects. Efforts are, therefore, needed to explore the possibility of inducing late bloom by some hormonal/enzymatic action, Feeding of bees with 30–50% sugar solution may limit them from foraging for nectar and induce pollen foraging. Management to build a strong field force of *X. fenesterata* and *Lassioglossum* sp. may be of great applied significance in almond growing areas.

Field assistance by Sri D. K. Durani is acknowledged.

15 June 1987; Revised 26 October 1987

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TORUS LONGITUDINALIS IN *MYSTUS KELETIUS* (TELEOSTEI)

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In *Mystus keletius* the torus longitudinalis is seen with its greatest expansions in the sagittal section; its distal end is attached to the caudal end of periventricular layer of the optic tectum. Further, it is connected with the granular portion of the valvula cerebelli (figure 1). According to Kudo[1,2] as reported by Kuhlenbeck[3], the torus has no direct relations to the optic system, although it is known to have connections with corpus cerebelli[3]. Dhillon and Tandon[4] suggested that the presence of the tori appears to compensate for the absence of true optic

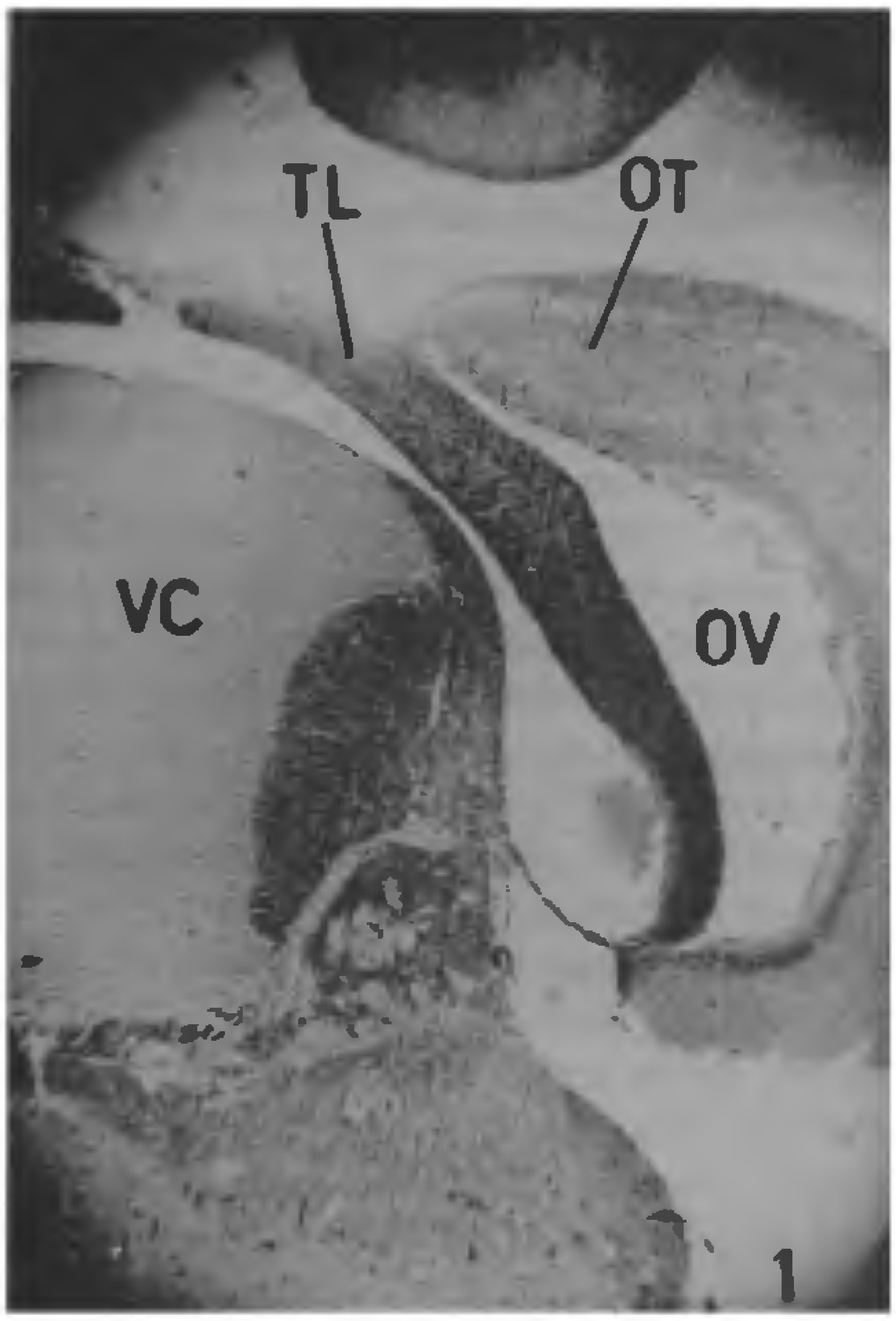

Figure 1. Sagittal section of the brain (mesencephalon) of *Mystus keletius* [OT, Optic tectum; OV, Optocoel; TL, Torus longitudinalis; VC, Valvula cerebelli].

chiasma in bony fishes. The present anatomical feature, however, adds still deeper unknown role for torus longitudinalis. Nevertheless, intimate relation between the body posture and vision cannot be ruled out.

10 August 1987; Revised 10 October 1987

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3. Kuhlenbeck, H., *The central nervous system of vertebrates*, S. Karger, New York, Sydney, London, Paris, 1975, Vol. IV, p. 1.
4. Dhillon, A. K. and Tandon, K. K., *Curr. Sci.*, 1987, **56**, 280.

GROWTH REGULATORY ACTIVITY OF DIMILIN$^{(R)}$ AGAINST *MESOCYCLOPS THERMOCYCLOPOIDES*

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CYCLOPOID copepods occupy a key position in the freshwater food chain. Various species of *Mesocyclops* act as intermediate hosts for Guinea worm (*Dracunculus medinensis*). Hence, a study on the effect of synthetic pesticides on the cyclopoid copepods has special importance. The present study deals with the effect of Dimilin$^{(R)}$ on morphology, fecundity and fertility of *Mesocyclops thermocyclopoides* and its possible use in the field.

Concentrations of 1, 0.5, 0.25, 0.125, 0.0625, 0.031, 0.015, 0.0078, 0.0039, 0.0019 and 0.00097 ppm Dimilin$^{(R)}$ were prepared in water. Initially the compound was dissolved in 5 ml acetone and water was then added to obtain the desired concentrations in a final volume of 250 ml. For each concentration 20 last stage copepodites were used. Parallel controls were maintained in 250 ml water containing only 5 ml acetone. All the experiments were triplicated. Results were recorded at the next moult of last copepodite stage and scoring was done to calculate the growth regulatory activity (GRA) by using the Bransby-Williams[1] formula.

There was no mortality within 48 h at any concentration except 1 ppm, at which 50% mortality was observed. At concentrations 1, 0.5, 0.25, 0.125, 0.0625 and 0.031 ppm, there was prolongation of the copepodite stage for 3 to 4 days (as against the normal moulting to adult cyclops from the last copepodite stage within 24–36 h in controls). This was followed by death without moulting in most cases. At 1, 0.5 and 0.125 ppm, however, some of the copepodite stages moulted, but could not extricate themselves from the exuvium and ultimately suffered mortality.

At all concentrations mating was observed in adult cyclops. Subsequently, the ovisacs developed unequally in the females and in some of the ovigerous females the ovisacs were deformed to a varying degree. Fecundity decreased in such females. In some of the male and female cyclops, antennules were deformed i.e. the minute hairs or setae possessing chemosensory organs were crumpled. These results are similar to those obtained by Tester and Costlow[2] in nauplius stages resulting