

Biology and feeding potential of black beetle (*Chilocorus nigritus*), a predator on date palm scale (*Parlatoria blanchardii*)

CM MURALIDHARAN¹

Date Palm Research Station, Gujarat Agricultural University, Mundra-Kachchh 370 421

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Among the various insect pests, date palm scale (*Parlatoria blanchardii* Targioni-Tozzetti) causes 70-80% loss in fruit yield by direct attack (Smirnoff 1957). Its chemical control is very difficult, because its all stages occur throughout the year, and many adults remain alive beneath the dry fibres, where they are unaffected by chemical spray.

Muralidharan *et al.* (1992) reported for the first time that a coccinellid, *Chilocorus nigritus* Fabr., feed on this scale and reducing its population considerably. Jalali and Singh (1989) studied the biology of *C. nigritus* on 9 diaspine scales, viz *Melanaspis glomerata* (Green), *Quadraspidotus perniciosus* (Comstock), *Aspidiotus destructor* (Signoret), *Aulacaspis tubercularis* (Signoret), *Hemiberlesia lantaniae* (Signoret), *Aonidiella aurantii* (Maskell), *Chrysomphalus aonidium* (L.), *Aonidomytilus albus* (Cockrill) and *Lepidosaphes cornutus* (Ramk). In this experiment the biology and feeding potential of *C. nigritus* was studied on this new host.

The study was conducted at Mundra during August 1990 at room temperature (maximum 32.49°C, minimum 27.29°C and relative humidity 72%). The adult *C. nigritus*, collected from the field and reared on *P. blanchardii*, formed the nucleus culture for the study. For its biology observations were recorded on incubation period, fecundity, lon-

gevity etc. The feeding potential was studied by providing pre-counted scales (100) to each instar and recording the number of adult scales consumed per day. Freshly scale-infested pinnae collected from the field were used. Glass test-tubes (15 cm x 2.5 cm) were used for rearing and other studies.

The elongate eggs are laid singly or in a group of 2-3. The eggs require 6.11 ± 0.09 days to hatch. Among the 4 larval instars, the third instar has the most prolonged durations (3.83 ± 0.20), followed by the second instar (3.83 ± 0.12). The larval durations of the first and fourth instar are 3.5 ± 0.11 and 3.76 ± 0.11 days respectively. A pre-pupal period of 2.47 ± 0.13 days and pupal period of 6.63 ± 0.12 days is observed. The female starts egg-laying after 5.00 ± 0.82 days of emergence, with a fecundity of 151.2 ± 7.83 eggs/female. The male and female longevity is 50.21 ± 6.12 and 76.13 ± 8.13 days respectively. Jalali and Singh (1989) recorded similar observation on incubation period (6.1 days) when it was reared on *Hemiberlesia lantaniae* and a pupal period of 6.5 days when reared on *Aonidomytilus albus*. However, the total larval period varies greatly with different hosts.

Among various instars (Fig 1) the fourth instar consumes the highest number of scales (55.58 ± 4.38), followed by third instar (34.79 ± 2.94). The first instar removes the scale covering and consumes the soft body only (8.39 ± 0.55), whereas the fourth instar and adult devour the entire scale body including

¹Assistant Research Scientist, Agricultural Research Station, GAU, Bhachau 370 140



Fig 1 Egg and different instars of *C. nigritus*

the external coverings. Hence during the larval period on an average 437.35 scales are consumed by various instars. The adult consumes 20.86 ± 1.19 scales/day and average 1 317.72 scales during the life period. Ahmad (1970) reported almost similar feeding potential of *C. nigritus*, when it was reared on *Lepidosaphis* sp. Due to high consumption of prey, high fecundity and long life-cycle etc, this predator may be effectively exploited for

the biological suppression of *P. blanchardii* scales on date palm.

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