



REPORT OF GUAVA FRUIT FLY *BACTROCERA CORRECTA* BEZZI FROM TEMPERATE KASHMIR

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ABSTRACT

In this study the guava fruit fly *Bactrocera correcta* Bezzi (1916) (Diptera: Tephritidae) is reported from Kulgam, a major peach growing area in South Kashmir through July-August, 2020. District Kulgam was the leading producer of peaches with an annual production of 412MT during the 2018-19 growing season. This potential pest was trapped along with *B. zonata* and *B. dorsalis* in a simple bottle-type trap containing methyl eugenol and SPLAT.

Key words: *Bactrocera correcta*, Tephritidae, parapheromone, methyl eugenol, SPLAT, infestation, simple-bottle traps, Kulgam, J&K, bottle type trap, trap catches

Bactrocera correcta (Bezzi, 1916) is an invasive pest in tropical and subtropical countries. In India, it was first reported in 1916 from Bihar (Bezzi, 1916). It was subsequently reported from other States such as Tamil Nadu, Karnataka, Gujrat, Madya Pradesh, Haryana, Himachal Pradesh, and Punjab. *Bactrocera correcta* infests >70 species of fruits in tropical and subtropical regions. In India, *B. correcta* is also considered a serious pest that causes almost 80% of fruit damage (Jalaluddin, et al., 1999). The main attractants used to capture *B. correcta* are methyl eugenol, ethyl dodecanoate, ethyl palmitate, ethyl oleate, tetradecanoate, and ethyl stearate (Jalaluddin, et al., 1999); Kawashita et al., 2004; Tokushima, et al., 2010). Males of *B. correcta* were attracted to a mixture of β -caryophyllene and α -humulene (Tan, 2010). In this study, district Kulgam of UT of Jammu and Kashmir where *B. correcta* has been reported is discussed herein in the background of maximum peach production of 412 mt (Ahmad, et al., 2021). There is a need to understand the spread and dispersal of *B. correcta* in Kashmir.

MATERIALS AND METHODS

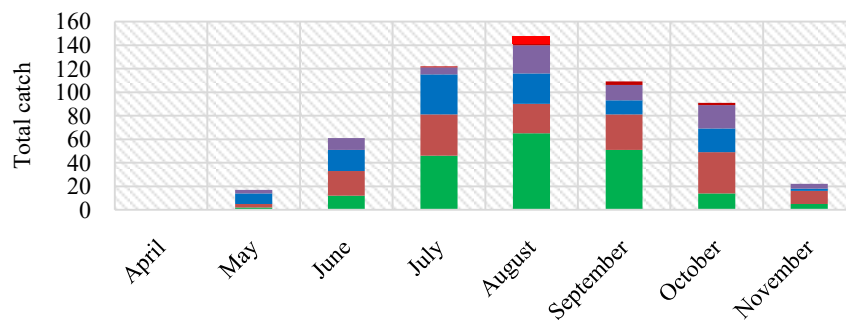
A survey was conducted through 2019 and 2020, in 30 sites of fruit and vegetable growing areas of Kashmir valley. A total of 94 traps made from simple cold drink bottles covered with a yellow adhesive tape containing methyl eugenol inside hanging rubber septa and SPLAT at the bottom were used. Three equidistant holes (1.5

cm²) were made with a hot T-type handle spanner as well as with a glue gun for the entry of fruit flies. Traps were set on 1st March 2019 and retrieved fortnightly (14-15 days later) from the date of installation to 17th November 2020, with a total of 18 visits/ site/ year. Only district Kulgam was surveyed with 6 traps (SKU1=03, SKU2=05, SKU3=08) were installed, and a total of five traps were installed- one each on peach (*Prunus persica*) (Rosaceae), Apple (*Malus pumilla*) (Rosaceae), Bottle gourd (*Lagenaria siceraria*) (Cucurbitaceae), Cucumber (*Cucumis sativus*) (Cucurbitaceae) and Quince (*Cydonia oblonga*) (Rosaceae), at the site SKU2 (Tarigam- 33.7081388°, 75.03809134°, 1569 masl). All the installed traps were checked and refreshed fortnightly, and the *Bactrocera* spp. adults collected were deposited at the Zoology Museum as voucher specimens. Samples were identified by consulting keys and for further confirmation by Prof Drew, (ICMF, Griffith University, Queensland, Australia). The result of each trap site was analyzed for the population index, which estimates the number of fruit flies trapped/day (Trapping Guidelines for Area-Wide Fruit fly Programmes, 2003) as $FTF = F/T \times D$. Where, FTF = fruit flies trapped per day, F = Total number of fruit flies trapped, T = Total number of serviced traps, D = Number of days traps exposed in the site.

RESULTS AND DISCUSSION

Bactrocera spp. were observed flying around and

Bactrocera spp. catch- District Kulgam (2019, 2020)



Month-wise total species catch, 2019 and 2020

■ *B. cucurbitae* ■ *B. dorsalis* ■ *B. zonata* ■ *B. tau* ■ *B. scutellaris* ■ *B. correcta*

Fig. 1. *Bactrocera* spp. catches (District Kulgam, 2019 and 2020)

landing on *P. persica* and *C. sativus* plants. A total of six species, namely *B. cucurbitae*, *B. dorsalis*, *B. tau*, *B. scutellaris*, and *B. zonata*, were captured from almost all 30 locations and *B. correcta* has been detected in August, 2020 in district Kulgam of South Kashmir. *Bactrocera correcta* collected were studied under a Leica S9D+ stereomicroscope with MC170HD camera. A total of 6 adult males were trapped in August, of the 569 fruit flies representing 6 species collected from district Kulgam, with the population index being 0.18 fruit flies trapped/ day (Fig. 1). The adults observed were found to be characterized by the following: Head fulvous face with a pair of elongated facial spots less joined together towards the middle region, forming a transverse band. Thorax: Scutum is black and the scutellum is yellow in colour, with narrow black basal band. Postpronotol lobes and notopleura are yellow in colour. Mesopleural stripe is reaching almost to anterior notopleural seta dorsally. Wings have a narrow pale fuscous costal band confluent with R_{2+3} . A small little bit elongated fuscous spot across apex of R_{4+5} . Wing cells bc and c are colourless, without microtrichia. Segmented legs with yellowish-brown colour, except hind tibiae that is brownish-gray apically. Abdomen: The abdomen is reddish behind the middle, with the presence of a black, narrow transverse and longitudinal band. Abdominal terga III-V is red brown with a black T-shaped pattern. Pecten on lateral side between III and IV terga is well developed. *Bactrocera correcta* differs from *B. zonata* in possessing black scutum, and from *B. dorsalis* in possessing an incomplete costal band and transverse facial spots.

Bactrocera cucurbitae, *B. dorsalis*, *B. tau*, and *B. scutellaris* in Jammu and Kashmir had been reported

during 2008-2009 from two districts, Budgam and Srinagar (Ganie et al., 2013); and *B. zonata*, had been added (Mir et al., 2014). Bhagat et al. (2014) reported *B. cucurbitae*, *B. zonata*, *B. tau*, and *B. dorsalis* from Kashmir. *Vidalia accola* Hardy (Mir and Mir, 2015) and *Hemilea malaisei* Hering (Mir et al., 2017) were added to these. Maximum adults of various *Bactrocera* spp. were observed during June to September on peach as reported by Jalaluddin (1996). In India, *B. correcta* is commonly found on guava fruits and reduces the total phenolic content of susceptible cultivars, and can cause 80% loss (Jalaluddin and Sadakathulla, 1999). *Bactrocera correcta*, often occurs along with *B. zonata* and these corroborate with the results of Kapoor (1989). *Bactrocera correcta* is an exotic species, commonly found in India, Pakistan, Nepal, Vietnam, Myanmar, Thailand, China, Bhutan, and Sri Lanka (Drew, 2010). In many countries, it has been targeted as a quarantine pest as it is considered one of the highly invasive pests (Qin et al., 2016).

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AUTHOR CONTRIBUTION STATEMENT

All authors equally contributed.

CONFLICT OF INTEREST

No conflict of interest.

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