

## **POPULATION DYNAMICS OF THE MUSTARD SAWFLY *ATHALIA LUGENS PROXIMA* KLUG**

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### **ABSTRACT**

The field experiments on the population dynamics of the mustard sawfly *Athalia lugens proxima* Klug were conducted in the Instructional farm of Junagadh Agricultural University, Junagadh, Gujarat in two successive *rabi* seasons of 2012-13 and 2013-14. Correlation analysis of the pooled data revealed that the maximum and minimum temperature influenced the larval population negatively; while relative humidity in the morning and evening were positively (0.5363) and negatively (-0.1120) influencing, with their mean values exhibiting negative correlation. The estimate of determination coefficients ( $R^2 = 0.7647$ ) revealed that all the weather factors viz., temperature, relative humidity, sunshine hours, wind speed and rainfall had a major role on the population buildup.

## **ENHANCING THE EFFICACY OF PHEROMONE TRAP AGAINST BRINJAL SHOOT AND FRUIT BORER**

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### **ABSTRACT**

Exploiting the brinjal shoot and fruit borer (BSFB), *Leucinodes orbonalis* (Crambidae: Lepidoptera) sex attraction with monitoring and/or mass trapping approach is an ecofriendly IPM method. To improve the trapping system components, two field experiments were conducted with superior and waterless pheromone trap designs as alternative to the regular water basin trap. Results showed that the improved delta trap (patent-filed as Delta-Plus) is superior in terms of both catch efficiency and more user-friendly. The additional access vents in three combinations of dimensions and vent numbers led to significantly more moth catches. Further, the moth catches for the same

amount of pheromone dispensed in the widely used cheaper funnel trap were observed to be too low, and inefficient for BSFB trapping.

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## **PREDATORY POTENTIAL OF WATER BUGS AGAINST THE FILARIAL VECTOR *CULEX QUINQUEFASCIATUS* SAY**

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### **ABSTRACT**

Three water bugs, *Laccotrephes ruber* L., *Ranatra filiformis* F. and *Diplonychus rusticus* F., are natural biological control agents of mosquito larvae, *Culex quinquefasciatus* Say. These were evaluated for their predation potential on the fourth instar larvae of *C. quinquefasciatus*. Significant difference was observed as regards the predator density and time, and the results indicated that every predator act as natural biological control agent when the density of prey reached 100. Among the three predators selected, *L. ruber* was the best with maximum efficiency (79.16) followed by *D. rusticus* (61.50) and *R. filiformis* (39.16).

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## **NEW RECORD OF SPIDER *NIHONHIMEA JAPONICA* (BÖSENBERG AND STRAND) (THERIDIIDAE)**

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### **ABSTRACT**

A spider *Nihonhimea japonica* (Bösenberg and Strand, 1906) under family Theridiidae is redescribed and brought out as a new record from Kerala in this study. Two females collected from evergreen forest area in Chimmony wildlife sanctuary, Thrissur, Kerala are included in this study.

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## **FORENSICALLY IMPORTANT MITES ASSOCIATED WITH BEETLES FOUND ON DECOMPOSING CARRIONS**

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## ABSTRACT

A decomposing corpse has a rich diversity of insects, and of these most of the studies deliberate on the Diptera while the Coleoptera (beetles) stand neglected. Present study reports on the mites collected from the decomposition sites during succession studies with beetles. Three species belonging to the family Parasitidae viz., *Parasitus mustelarum* Oudemans, and *Poecilochirus* sp. collected with bait traps are included. Deutonymphs of these carried by the silphid *Thanatophilus minutus* Kraatz and the histerid *Saprinus quadriguttatus* are described.

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## HERMETIC STORAGE OF BLACK GRAM IN METAL BIN AND FLEXIBLE STORAGE BAGS

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## ABSTRACT

Hermetic storage is entirely organic, requiring no chemical or biological intervention than any other technique. Studies were done with hermetically sealed black gram at 12% moisture content in metal bin, GrainPro bag and Storezo bag for 2 months, compared with woven polypropylene bags. Observations on the moisture content (%), *Callosobruchus maculatus* mortality and carbon dioxide concentration were made along with temperature and relative humidity. It was observed that the moisture content in metal bin, GrainPro bag, Storezo bag and control increased after 2 months- from 12.32 to 12.41%, 12.23 to 12.73%, 12.23 to 12.76% and 12.12 to 13.44% respectively; 95% mortality of *C. maculatus* was observed in metal bin, while GrainPro and Storezo bag resulted in 90% mortality. The CO<sub>2</sub> concentration in metal bin, GrainPro, Storezo and control increased from 0.03 to 15.37%, 14.83%, 15.27 % and 3.37%, respectively. Results reveal that the hermetically sealed metal bin, GrainPro bags and Storezo bags prolong the storability of black gram grains compared to the polypropylene bag.

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## MALE GENITALIA VARIATION IN THE LEAFHOPPER *GONIAGNATHUS (TROPICOGNATHUS) SYMPHYSIS*

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## ABSTRACT

The male genitalia in the leafhopper *Goniagnathus (Tropicognathus) symphysis* Dash and Viraktamath (Hemiptera: Cicadellidae: Deltocephalinae) was studied. This revealed variations and these illustrated and described comparing with its original description.

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## **ANOPHELINE VECTORS IN CAR NICOBAR ISLANDS- AN AREA WITH NEGLIGIBLE MALARIA**

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### **ABSTRACT**

Anopheline larvae exhibited seasonal variations in their abundance, with per dip density ranging from  $0.013 \pm 0.002$  to  $0.309 \pm 0.088$ . Peak larval density coincided with high rainfall. The abundance was maximum in breeding sites viz., water storage tanks, kutchra drains, culverts and cesspools with a per dip density of  $0.283 \pm 0.070$ ,  $0.274 \pm 0.068$ ,  $0.260 \pm 0.137$  and  $0.199 \pm 0.059$ , respectively. Larval density was maximum in the transient water bodies formed during the monsoon, with early instars (59.71%) being always more compared to the late instars (40.29%). Two species were identified- *An. sondaicus* (95.8%) and *An. barbirostris* (3.2%), with the former being found in a wide range of habitats, and the latter always less, which could be the reason for negligible malaria cases.

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## **ENTOMOFAUNA OF SORGHUM**

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### **ABSTRACT**

Entomofaunal diversity at different growth stages (seedling, vegetative, flowering and maturity stage) of sorghum crop under irrigated condition was studied at the Tamil Nadu Agricultural University, Coimbatore, during October 2017- January 2018. Observations on pests, natural enemies and innocuous insects made at weekly intervals were analysed to bring out the alpha diversity with four standard biodiversity indices, namely, Shannon-Weaver diversity index, Simpson's dominance index, Pielou's uniformity index and Margaleff's richness index. A total of 78 species under 47 families and 11 orders were observed to be associated. The diversity and richness were observed to be more during

the vegetative stage followed by maturity and flowering stages whereas the least was observed during the seedling stage.

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## **IMMATURE STAGES OF *PAPILIO POLYTES* LINNAEUS (LEPIDOPTERA: PAPILIONIDAE)**

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### **ABSTRACT**

The immature stages of butterfly, the common mormon- *Papilio polytes* Linnaeus (Lepidoptera: Papilionidae) were studied at Solan, Himachal Pradesh. This butterfly is an active flier and prefers mostly gardens and human habitations. The larvae are polyphagous and observed on three plants belonging to the family Rutaceae viz., *Citrus aurantifolia* (Cristm.) Swingle, *Murraya koenigii* (L.) Sprengel and *Zanthoxylum alatum* Roxb. Some observations on its biology, and nectar host plants are included.

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## **EVALUATION OF INSECTICIDES AGAINST MANGO HOPPERS *AMRITODUS ATKINSONI* AND *IDIOSCOPUS CLYPEALIS***

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### **ABSTRACT**

Field experiments were conducted during 2015-16 to evaluate the efficacy of certain insecticides against mango hoppers *Amritodus atkinsoni* and *Idioscopus clypealis*. Imidacloprid was observed to be the most effective with no leafhoppers even 21 days after application; and it was on par with thiamethoxam (0.02), acetamiprid (0.15) and carbosulfan (0.76). Buprofezin (1.23) and fipronil (1.54) were the next best. Based on fruit yield, the order of efficacy was: imidacloprid (with 75.33 kg/tree) > thiamethoxam > acetamiprid > carbosulfan > buprofezin > fipronil as against 44.50 kg/tree in untreated control.

## **FUMIGANT TOXICITY OF SOME PLANT VOLATILE OILS AGAINST PULSE BEETLE *CALLOSOBRUCHUS MACULATUS***

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### **ABSTRACT**

Fumigant toxicity of five plant volatile oils viz., ginger oil (*Zingiber officinale*), patchouli oil (*Pogostemon cablin*), garlic oil (*Allium sativum*), cinnamon oil (*Cinnamomum zeylanicum*) and lemon oil (*Citrus limon*) were evaluated at 0.01%, 0.05%, 0.1%, 0.5% and 1.0% concentrations against the egg, larva, adult of the pulse beetle *Callosobruchus maculatus* and their effect on the oviposition was evaluated. The results revealed that the fumigant toxicity indicated by the lowest egg hatching of 10% was observed with 1.0% concentration of *C. zeylanicum* and *Z. officinale*; and also maximum larval mortality of 90% was observed. The adult mortality was 90% with *C. zeylanicum* oil at 1.0% and 72.50% with *Z. officinale* oil at 1.0%. *C. zeylanicum* and *Z. officinale* at 1.0% concentration also resulted in minimum oviposition of 3.00 and 4.25 eggs, respectively in contrast to 74 to 78 eggs in untreated control.

## **OLFACTORY RESPONSES OF BANANA PSEUDOSTEM WEEVIL *ODOIPORUS LONGICOLLIS* OLIVIER TO AGGREGATION PHEROMONE AND HOST PLANT VOLATILES**

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### **ABSTRACT**

Banana pseudostem weevil *Odoiporus longicollis* Olivier (Coleoptera: Curculionidae) is an important pest of banana. In this study, male produced aggregation pheromone was identified as 2-methy-4-heptanol (2M4H) which attracts both male and female. In order to achieve higher attraction for field trapping, an aggregation pheromone (2M4H), host plant extract (HPE) and combination of 2M4H + HPE were evaluated under laboratory conditions with wind tunnel bioassay. Maximum weevil attraction was observed in the descending order of: 2M4H + HPE > 2M4H > HPE, suggesting a better synergistic effect of host plant extract on pheromone.



## **EFFICACY OF DINOTEFURAN 20%SG AGAINST MAJOR PLANTHOPPERS OF RICE**

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### **ABSTRACT**

The efficacy of dinotefuran 20%SG was evaluated against white backed planthopper (WBPH) and brown planthopper (BPH) in rice during 2016 and 2017. Doses of 30, 40 and 50 g a.i. along with imidacloprid 17.8 SL and quinalphos 25 EC @ 20 and 500 g a.i. ha<sup>-1</sup>, respectively were compared. The results revealed that dinotefuran @ 40 and 50 g a.i. ha<sup>-1</sup> proved significantly better (1.70- 2.04 WBPH /hill; 2.02- 2.61 BPH/hill) at 5, 7 and 10 days after spray as compared to imidacloprid (2.75- 4.29 hoppers/hill); quinalphos (3.32- 4.91 hoppers/hill) and untreated control (17.78- 26.67 hoppers/hill) across all locations evaluated. The grain yield ha<sup>-1</sup> was also significantly more with these treatments.

## **ARCHIPS MACHLOPIS (MEYRICK) (TORTRICIDAE: LEPIDOPTERA)- OCCURRENCE ON GARLIC**

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### **ABSTRACT**

The present observations on the occurrence of *Archips machlopis* (Tortricidae: Lepidoptera) on garlic (*Allium sativum*) is a new host record and it was observed during *rabi* 2018 at Pune. Larvae were observed tying the adjacent leaves of plants and feed from within, and hence referred to as leaf-tiers. Larva has a brown prothoracic shield, and a narrow white line that demarcates the head capsule. Adult moths cryptically coloured, forewings grey, brown, rust, or tan coloured, with wings held in a characteristic a flattened roof fashion at repose; forewings have a prominent round-pointed apex. Pupa dark brown to black with cremaster elongate and tapered, enclosed within a dense web of silk. Mild to moderate level of infestation (5-8% damage) with typical leaf-tying and scraping symptom was observed.