

**EFFICACY OF *PIPER BETLE* LEAF EXTRACTS AGAINST
SWEET POTATO WEEVIL *CYLAS FORMICARIUS* (F.)**

RAVEEN, R.,* KANMANI, S., LOKESH, K.V., SAMUEL TENNYSON, ARIVOLI, S. AND
JAYAKUMAR, M.*****

Department of Zoology, Madras Christian College, Chennai 600059

***Department of Zoology, Thiruvalluvar University, Vellore 632115*

****Department of Zoology, University of Madras, Chennai 600025*

**Email: raveenraja2002@gmail.com*

ABSTRACT

The sweet potato weevil *Cylas formicarius* (F.) is the most destructive pest of sweet potato. Insecticides used against this pest are highly toxic and hence undesirable. Deploying plant extracts is an ecofriendly alternative. In the present study, the crude leaf extracts of *Piper betle* L. were evaluated for their efficacy against the adults of *C. formicarius* at concentrations of 0.625, 1.25, 2.50, 5, 10 and 20 ppm through petri dish bioassay method. Adult mortality was calculated 24, 48 and 72 hr after exposure. Results indicate that the ethyl acetate extract of *P. betle* gave the maximum mortality; their LD₅₀ and LD₉₀ values were 11.78 and 17.13, 8.68 and 12.81, 6.14 and 10.94 ppm after 24, 48 and 72 hr, respectively.

**EFFECT OF SILICIC AND SALICYLIC ACIDS ON MAJOR INSECT
PESTS AND THEIR NATURAL ENEMIES IN RICE**

P. CHANDRAMANI

Department of Entomology

Agricultural College and Research Institute, Kudumiyamalai 622104

Email: pcento12@gmail.com

ABSTRACT

Field, pot culture and laboratory experiments were carried out to study the effect of foliar spraying of silicic and salicylic acids against major pests of rice through inducing resistance, and their natural enemies like spiders and mirids. In the field experiment, leaf feeders and sucking insects were found significantly reduced with basal application of rice husk ash 500 kg/ha + silica solubilizing bacteria (SSB) @2 kg/ha with foliar spraying of silicic acid 0.5 %. This was followed by basal application of calcium silicate 50 kg/ha with foliar application of silicic acid 0.5%. Similarly, significantly less stem borer incidence was observed with basal application of rice husk ash 500 kg/ha + SSB 2 kg/ha with foliar spraying of silicic acid 0.5%. Spiders and mirids were significantly less with basal application of calcium silicate 50 kg/ha along with foliar application of silicic acid 0.5%. In short, significantly reduced damage by the leaf folder, stem borer and gall midge besides reduction in the population of brown plant hopper (BPH), spiny beetle, ear head bug and increased natural enemies were observed with basal application of rice husk ash

500 kg/ha + SSB 2kg/ha and foliar spraying of silicic acid 0.5%. Basal application of calcium silicate 50 kg/ha with foliar application of silicic acid 0.5% was the next best. Correlations with inferences on the biology of BPH, leaf folder and biophysical factors (silicified cells and leaf erectness and biochemical factors viz., peroxidase content and silica content) corroborated their efficacy.

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KARYOTYPIC STUDIES ON SOME PSEUDOCOCCIDS (HEMIPTERA: COCCOIDEA: PSEUDOCOCCIDAE)

KOKILAMANI, A.L.*, RAMAKRISHNA, S. AND VENKATACHALAI AH, G.*****

Department of Research and Studies in Zoology, Tumkur University, Tumakuru 572103

**Department of Zoology, Bangalore University, Bengaluru 560056

***Center for Applied Genetics, Department of Zoology,

Bangalore University, Bengaluru 560056

*Email: alkokilamani@yahoo.co.in

ABSTRACT

Three species of pseudococcids viz., *Phenacoccus solenopsis* (Tinsely), *Maconellicoccus hirsutus* (Green), and *Ferrisia virgata* (Cockerell) were subjected to cytological investigations with cytological techniques. These revealed a configuration of $2n=10$ in both male and females with 'Lecanoid type of genetic system' and without any identifiable sex chromosomes. Differentially stained (Giemsa, C-banded, and $AgNO_3$) female somatic chromosomal karyotypes were constructed for each of these species and used for comparison.

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ANALYSIS OF BROWN PLANTHOPPER *NILAPARVATA LUGENS* FEEDING INDUCED VOLATILES IN RICE CULTIVARS

NAVYASHREE, R. K., SOUNDARARAJAN, R. P. AND
MOHANKUMAR SUBBARAYALU***

Department of Plant Biotechnology, Centre for Plant Molecular Biology & Biotechnology,
Tamil Nadu Agricultural University, Coimbatore 641003

**Department of Rice, Tamil Nadu Agricultural University, Coimbatore 641003

*Email: smktnau@gmail.com (corresponding author)

ABSTRACT

The Brown planthopper (BPH) is an economically important insect pest of rice. Herbivore induced plant volatiles (HIPVs) have greater role in plant defense as repellents or feeding inhibitors or cues for natural enemies. In this study, volatiles induced after BPH infestation from susceptible (TN1) and resistant (Ptb33) rice varieties were identified using Gas Chromatography Mass Spectrophotometer (GCMS) and NIST MS 2 library. Ptb33 infested samples had defensive volatiles like stigmaterol, β -sitosterol, hexadecenoic

acid, benzothiazole, phytol, nonanal with highest peak area %. In infested samples of TN1, only a few defense related volatiles like α -copaene were found. Eleven and sixteen overlapping volatiles were identified in infested and uninfested samples of TN1 and Ptb33, respectively. In addition to the host plant resistance in Ptb33 to BPH, induced volatiles provide indirect defense.

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PROTEINS AND TRYPSIN INHIBITORS IN SEEDS OF VARIOUS PLANTS

A.Y. SOWBAGHYA, M. SHANTHI*, M. MURUGAN*, E. KOKILADEVI**, A. KAVITHA PUSHPAM** AND C. CHINNAH**

Department of Agricultural Entomology; ** Department of Biotechnology,
Agricultural College and Research Institute,

Tamil Nadu Agricultural University (TNAU), Madurai 625104

***Department of Differently Abled Studies, Community Science College and Research
Institute, TNAU, Madurai 625104

*Email: cshanthiento07@gmail.com (corresponding author)

ABSTRACT

The potential trypsin inhibitor sources were identified from seeds of ten plants, based on the reaction of trypsin with synthetic substrate N α -Benzoyl-D, L- arginine 4- nitroanilide hydrochloride (BAPNA). All the tested ones contained various levels of protein (20.87 to 155.68 mg g⁻¹ of seed) and trypsin inhibitor units (TIU) (245.77 to 11235.82 TIU g⁻¹ seed). Among them, the Red lucky seed (*Adenanthera pavonina* L.) was identified as the richest source of trypsin inhibitor with 11235.82 TIU and 96.06 mg protein/ gm of seed with specific activity of 116.97 TIU mg⁻¹ protein. The next best ones the seeds of bitter gourd (*Momordica charantia* L.) and babul (*Acacia nilotica* L.) with the TIU g⁻¹ seed as 9100.03 and 8690.72, protein content of 155.68 and 88.11 mg g⁻¹ seed with the specific activity of 58.45 and 98.63 TIU mg⁻¹ protein, respectively. This study is the first report of *Zingiber officinale* Rosc. as the source of trypsin inhibitor.

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CYTOLOGY OF STEM BORER *STROMATIUM BARBATUM* (F.) INFESTING GRAPEVINES IN MAHARASHTRA

D. S. YADAV *, Y. H. RANADE, R. R. SAMARTH AND B. B. FAND**

ICAR - National Research Centre for Grapes

Manjari Farm PO, Solapur Road, Pune 412307, Maharashtra

**Present address: ICAR-Central Institute for Cotton Research
Shankar Nagar PO, Nagpur- 440010, Maharashtra

*Email: Deependra.yadav@icar.gov.in (corresponding author)

ABSTRACT

Stem borer *Stromatium barbatum* (F.) (Coleoptera: Cerambycidae) has emerged as a major pest in grapes in India. In the present study, the chromosome number and basis of sex differentiation of *S. barbatum* are described. Mitotic chromosome spreads were

prepared by isolating and treating the gonads with colchicine and staining with conventional Giemsa stain. Cytogenetical analysis revealed the events of chromosomal evolution. The results revealed diploid chromosome number of $2n = 18+XO$ in male and $2n = 18+XX$ in female. Presence of supernumerary chromosome in female, translocation and uncommon pairing behaviour also were observed. The differences and similarities of the sexes are brought out.

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FIELD EFFICACY OF SOME INSECTICIDES AND BIOPESTICIDES AGAINST RICE HISPA *DICLADISPA ARMIGERA* (OLIVIER)

URVI SHARMA* AND AJAI SRIVASTAVA**

Department of Entomology, CSK Himachal Pradesh Krishi Vishwavidyalaya (CSKHPKV),
Palampur, Himachal Pradesh

CSKHPKV Rice and Wheat Research Centre, Malan, Himachal Pradesh

*Email: urvi.urvi.sharma.sharma@gmail.com (corresponding author)

ABSTRACT

Field efficacy of insecticides and biopesticides was studied against rice hispa *Dicladispa armigera* (Olivier) infesting rice (cv Kasturi Basmati) during *kharif* 2014 and 2015 at the CSK Himachal Pradesh Krishi Vishwavidyalaya, Rice and Wheat Research Centre, Malan. Application of various insecticides viz., dinotefuran 20 SG, triazophos 40 EC, chlorpyrifos 20 EC, monocrotophos 36 SL @ 200g, 500, 1250, 850 ml ha⁻¹, respectively, and biopesticides viz., *Beauveria* 10⁶ spores ml⁻¹, *Melia* 5%, *Eupatorium* 5% @ 5.0, 2.5, 2.5L ha⁻¹, respectively, proved promising. Dinotefuran was the most effective, while of the biopesticides, *Beauveria* application was the best. However, maximum returns were obtained with triazophos (BCR= 8.8:1 and 8.0:1 during 2014 and 2015, respectively at the experimental farm, and 12.2:1 at farmer's field.

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BALANITES AEGYPTIACA FRUIT EXTRACT FOR MANAGING SUGARCANE WOOLLY APHID

S. S. NALGE* AND A. S. WABALE

Department of Botany, Padmashri Vikhe Patil College of Arts, Science and Commerce,
Pravaranagar 413713, A/p. Loni Kd, Tal. Rahata, Dist. Ahmednagar, Maharashtra

*Email: nalgeswapnil44@gmail.com (corresponding author)

ABSTRACT

Sugarcane woolly aphid (*Ceratovacuna lanigera* Zehntner) is the most important pest of sugarcane, and many insecticides are employed for controlling this. This study is an attempt to find an ecofriendly alternative with sprays using the aqueous extract in cow urine and distilled water from the fruits of *Balanites aegyptiaca*. Results revealed that all the concentrations i.e., 5, 10, 15, 20, 25 and 30% gave promising results with 100%

mortality. But as the concentration increased yellowing of sugarcane leaves was observed, suggesting the use of extracts in lower concentrations.

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**DISTRIBUTION AND HONEY PRODUCTION POTENTIAL OF
*PLECTRANTHUS RUGOSUS***

DEVINDER SHARMA* AND AYAZ AHMAD RESHI

Division of Entomology, Faculty of Agriculture,
Sher-e-Kashmir University of Agricultural Sciences & Technology,
Jammu, Main Campus Chatha 180009, Jammu and Kashmir

*Email: devskuastj@gmail.com

ABSTRACT

Studies at the Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu during 2015-16 analysed the distribution of *Plectranthus rugosus* Wall and its potential as a honey bee *Apis mellifera* (F.) pastorage. The physicochemical analysis of its honey was also done. The survey indicated that *Plectranthus* was available throughout the Jammu division, with potential areas being Kisthwar, Doda and Ramban districts. In these districts surplus honey was harvested during mid-August to First week of November. The colony buildup i.e., colony strength in terms of brood, pollen and honey reserves showed a gradual increase with average honey production being 6.31 ± 0.16 kg/colony. Unfortunately, *Plectranthus* is under threat owing to destruction by humans.

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**BIOLOGY OF BLACK SOLDIER FLY *HERMETIA ILLUCENS* (L.)
(DIPTERA: STRATIOMYIDAE) ON MUSKMELON FRUIT**

SHARANABASAPPA*, B. H. SRIKANTH, M. S. MARUTHI AND
H. B. PAVITHRA**

Department of Agricultural Entomology, College of Agriculture, UAHS Shivamogga 577225

** Art of Waste Management, Kalpavraksha, 1st Cross, KC Road,
Jannapura, Bhadravathi 577301

*Email: sharanu.deshmukh@gmail.com (corresponding author)

Life history of black soldier fly *Hermetia illucens* was studied under laboratory conditions at the Department of Agricultural Entomology, College of Agriculture, UAHS, Shivamogga Karnataka. The incubation, total larval and pupal period were observed to be from 5-7, 25-30 and 10-60 days, respectively. Fecundity was observed to be from 555-650 eggs with eggs laid in a single clutch, with hatchability being 40-70%. The total life cycle of male and female lasted for 47-106 and 57-120 days, respectively.

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**EFFECTS OF GREEN GRAM AND BLACK GRAM VARIETIES ON
LIFE STAGES OF *SPODOPTERA LITURA* (F.)**

RATHOD SANDEEP ROHIDAS AND ARBIND KUMAR RAI*

Department of Entomology
Rajendra Prasad Central Agricultural University, Pusa, Samastipur 848125, Bihar
*Email: arbindrau56@yahoo.co.in

ABSTRACT

The present study evaluated the effects of varieties of green gram (*Vigna radiata*) and black gram (*Vigna mungo*) on the life stages of *Spodoptera litura* (F.). The observations on the feeding index, approximate digestibility (%), pupal weight, growth index and survival index of *S. litura* were made. The results revealed that the varieties Pusa 9531 of green gram and *Sekhar* of black gram were the most suitable for the development of *S. litura*, with maximum gained pupal weight of 321.25 mg and 333.00 mg, respectively. The least suitable varieties were the HUME 668 (251.00mg) of green gram and TU-94-2 (312.00 mg) of black gram based on gained pupal weight.

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**EFFICACY OF BOTANICALS AGAINST PULSE BEETLE
CALLOSOBRUCHUS MACULATUS (F.) IN GREENGRAM**

MANJU, K.* , J. JAYARAJ*¹ AND M. SHANTHI*

*Department of Agricultural Entomology, Tamil Nadu Agricultural University
Agricultural College and Research Institute, Madurai 625104
*Email: vu2jrj@rediffmail.com (corresponding author)

ABSTRACT

In the present study, twelve botanicals viz., *Ipomea* sp. *Oscimum sanctum* (L.), *Pongamia pinnata* (L.), *Vitex negundo* (L.), *Adhatoda* sp. (L.), *Zingiber officinale* (L.), *Allium sativum* (L.), *Curcuma longa* (L.), *Acorus calamus* (L.), *Capsicum annum* (L.), *Piper nigrum* (L.) and neem seed kernel powder were evaluated against the adults of pulse beetle *Callosobruchus maculatus* (F.) in green gram seed storage. Mortality, oviposition deterrent activity, adult emergence and seed germination were observed. All the treatments were found significantly effective, of which mixing of 1% seed powder of *P. nigrum* resulted in 100% mortality within 12 hr. Progeny development and adult emergence of 28.4 and 30.0% was obtained with 1% pod powder of *C. annum* and 1% seed powder of *P. nigrum*, respectively. It was also observed that 1% each of rhizome powder of *A. calamus*, seed powder of *P. nigrum* and pod powder of *C. annum* led to high seed viability of 97.3, 92.0 and 90.6%, respectively.

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**WATERLESS PHEROMONE TRAP- EFFICIENT ALTERNATIVE TO
WATER BASIN TRAP FOR SUGARCANE EARLY SHOOT BORER**

M. PRABAKARAN, S. DOUREISAMY , V. BHASKER***, M. RAVI***, S.
SITHANANTHAM* AND K. RAMARAJ⁺**

Sun Agro Biotech Research Centre, Madanandapuram, Chennai 600125

**TNAU Sugarcane Research Station, Cuddalore 607001
***TNAU Sugarcane Research Station, Sirugamani 639115
+Centre for Plant Protection Studies
Tamil Nadu Agricultural University, Coimbatore 641003
*Email: sabrcchennai@yhaoo.co.in

ABSTRACT

For pheromone-based trapping in monitoring and/or mass trapping of the adult (moth) stage of the sugarcane early shoot borer (ESB) *Chilo infuscatellus* Snellen is done with conventional funnel trap and standard water basin trap (Delta trap). In this study an improved waterless pheromone trap (Delta Plus) has been compared in sugarcane fields at two locations. The same model with enlarged sticky gum arena, and the same design without access window, besides a smaller version of Delta Plus have also been included. The synthetic sex pheromone used was the *C. infuscatellus* ((Z)-11-Octadecen-1-ol). The results revealed the consistency and superiority of the Delta trap in terms of weekly catches. The advantage of additional access windows as an attribute in design improvement in the Delta Plus trap was also confirmed (12% incremental), and of the normal size of Delta trap over smaller size (32% incremental), amount of pheromone remaining same. The present pilot study thus confirms the potential of the newly developed waterless trap model (Delta Plus- patent filed) as it combines greater efficiency with more user-friendly than the water basin trap.

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PHEROMONE TRAPPING OF BRINJAL FRUIT AND SHOOT BORER: MALE ORIENTATION AND SPATIAL DISTRIBUTION

T. AMSA*, M. PRABAKARAN**, S. SITHANANTHAM** AND M. NALINI***

Department of Zoology, Queen Mary's College, Chennai 600004

**Sun Agro Biotech Research Centre, Porur, Chennai 600125

***Poompuhar College, Melaiyur 609107, Sirkali Taluk, Nagapattinam

*Email: amsanaga15@gmail.com (corresponding author)

ABSTRACT

Pheromone trapping is an ecofriendly management of the brinjal shoot and fruit borer, *Leucinodes orbonalis*. In the present study on orientation and distribution of male moths to the sticky arenas in a delta trap were evaluated. One-third of moths trapped were oriented towards the lure source, while the remaining two thirds were found oriented either away from or opposite to the pheromone source. This indicates the predominant tendency of the male moths to escape apparently due to overlapping close range visual or olfactory clues. This pest behaviour could be pursued to ascertain the role of olfactory versus visual stimuli in prompting the moth escape behaviour as basis for minimizing the escapes by altering the trap design suitable. The distribution of the moth catches in the length side of the sticky arena (18.0 x11.0 cm), was found to be more (62%) in the inner half section (closer to the lure source) compared to only about 38% in the outer half. This pattern of greater catches closer to lure source was also evident across the width side. The

observed lower catches in sections away from lure source could provide directions to alter the dimensions of the sticky arena.

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RESISTANCE TO ACARICIDES IN *TETRANYCHUS TRUNCATUS* EHARA ON VEGETABLES

ANUSHREE BACHHAR, HASEENA BHASKAR*, BERIN PATHROSE* AND
M. R. SHYLAJA

Department of Plant Biotechnology, CPBMB, College of Horticulture,
Kerala Agricultural University, Thrissur 680656

*Department of Agricultural Entomology,
College of Horticulture, Kerala Agricultural University, Thrissur 680656

*Email: bhaskarhaseena@yahoo.co.in

ABSTRACT

A study was undertaken at College of Horticulture Vellanikkara, KAU to investigate the status of acaricide resistance in *Tetranychus truncatus* Ehara (Prostigmata: Tetranychidae), the predominant species of spider mite infesting vegetable crops of Thrissur district, Kerala. Susceptibility of three field strains of *T. truncatus* collected from okra (VkOk1), amaranthus (VkAm3) and pumpkin (VkPm3) to three commonly used acaricides, viz., spiromesifen 240 SC, fenazaquin 10EC and diafenthiuron 50WP was evaluated in the laboratory following leaf dip bioassay in comparison with a laboratory maintained susceptible strain (SS). Bioassay study revealed that the level of resistance varied among the strains for the acaricides evaluated. The strain VkOk1 recorded highest LC₅₀ value and has developed 8 (1794.293 ppm), 13 (852.394 ppm) and 10 (1968.496 ppm) fold resistance to spiromesifen, fenazaquin and diafenthiuron, while VkAm3 recorded 7.0 (1571.021 ppm), and 5.53 (362.789 ppm) resistance to spiromesifen and fenazaquin, respectively. The strain VkPm3 showed susceptibility on par with the SS to all the acaricides evaluated. The study reports acaricide resistance in *T. truncatus* for the first time in India.

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WOOD-BORING LONGHORN BEETLES (COLEOPTERA: CERAMBYCIDAE) OF AGROFOREST ECOSYSTEM IN INDIA

KARIYANNA B.⁺, RAJEEV GUPTA, MOHAN, M.* AND FRANCESCO VITALI**

Indira Gandhi Krishi Vishwavidyalaya, Raipur, Chhattisgarh 492012

*ICAR-National Bureau of Agricultural Insect Resources, Bangalore 560024

**National Museum of Natural History of Luxembourg,
Münster Rd. 24, L-2160 Luxembourg, Luxembourg

⁺Current address: University of Agriculture Science, Raichur, Karnataka 584101

*Email: mohan_iari@yahoo.com (corresponding author)

ABSTRACT

The members of longhorn beetles are basically phytophagous and many are wood boring causing significant damage to many plants. This study discusses 28 species of such beetles belonging to 17 tribes, 24 genera and four subfamilies of agricultural importance. Of these 13 species belong to the Lamiinae, 12 to Cerambycinae, two of Prioninae and one of Lepturinae. These had been collected from agriculture lands, fruits and plantation orchards. Brief descriptions of these along with synonyms, host range and distribution details are provided, of which 15 species are new reports from different states of India.

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EVALUATION OF FOLIAR VIS-A-VIS SOIL APPLICATION OF CERTAIN INSECTICIDES AGAINST *PHYLLOCNISTIS CITRELLA* STANTON

ANJITHA GEORGE*, S. KUTTALAM** AND C. N. RAO
ICAR-Central Citrus Research Institute, Nagpur, Maharashtra 440033
**Tamil Nadu Agricultural University, Coimbatore 641003
*Email: anjithakitty@gmail.com

ABSTRACT

The present study is on the evaluation of the efficacy of selected insecticides viz., imidacloprid, acetamiprid, thiamethoxam, along with *Bacillus thuringiensis* and mineral oil against the citrus leaf miner *Phyllocnistis citrella* Stainton on rough lemon rootstock. Soil drenching 15 days prior to flush emergence and foliar application coinciding with flush emergence had been compared. The results indicated that soil application of neonicotinoid insecticides remained more effective against leaf miner larvae for longer duration as compared to foliar application. Soil application significantly induced more biomass.

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EFFECT OF BUPROFEZIN ON DEVELOPMENTAL STAGES OF *DIAPHORINA CITRI* KUWAYAMA (HEMIPTERA: LIVIIDAE)

ANJITHA GEORGE*, C.N. RAO AND S. RAHANGADALE
ICAR-Central Citrus Research Institute, Nagpur, Maharashtra 440033
*Email: anjithakitty@gmail.com (corresponding author)

ABSTRACT

Effect of buprofezin (7.5, 15, 30, 75, 150 and 300 ppm each) on development of Asian citrus psyllid (ACP), *Diaphorina citri* Kuwayama was studied on *Citrus reticulata* Blanco (budlings) with different stages of citrus psylla viz., a) 1-2- and 3-4-days old eggs, b) first, third and fifth instar nymphs. The effect of IGR was dose-dependent and varied according to the age of the life stage. Mean egg hatching/plant for both 1-2- and 3-4-day old eggs were significantly low at 150 ppm and 300 ppm. First and third instars were highly susceptible than fifth instars with zero survival at 150 and 300 ppm while adult emergence ranged between 40.33 - 44.67% from fifth instar at 150 and 300 ppm during season I and II. Similarly, fecundity of adults emerged from such treatments (first and third instar nymphs) were zero at higher concentrations of buprofezin (150 & 300ppm)

while fecundity of adult females emerged from treated fifth instar nymphs released on healthy budling were nil. Hence, buprofezin may be incorporated as a management tactic in rotation with insecticides especially during flush emergence after further field evaluation as it has significant effect on growth, reproduction and survival of citrus psylla.

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MELISSOPALYNOLOGICAL INVESTIGATIONS ON SUMMER HONEY SAMPLES FROM MANDI DISTRICT, HIMACHAL PRADESH

***RADHIKA JAMWAL AND V. K. MATTU**

Sociobiology and Behavioral Ecology Research lab, Department of Biosciences,
Himachal Pradesh University, Shimla 171005, Himachal Pradesh

*Email: radhika_mnd@yahoo.co.in

ABSTRACT

A total of 19 summer honey samples from Indian honey bee, *Apis cerana* F. hives located in 18 different localities of Mandi district of Himachal Pradesh were studied. The pollen samples were acetolysed and identified microscopically. The melissopalynological analysis of these samples yielded 81 pollen taxa: of these twelve pollen types were predominant as pollen sources; and 42 were secondary and 70 were important minor and minor pollen sources. These were observed distributed in over 40 plant families comprising of trees, shrubs, herbs, climbers and grasses. Based on pollen analysis, eleven honey samples were identified as unifloral, and eight classified as multifloral. The predominant pollen types were *Grewia optiva*, *Citrus* sp., *Moringa oleifera*, *Mangifera indica*, *Sapindus mukorosii*, *Eucalyptus* sp., *Syzygium cumini*, *Brassica campestris*, *Trifolium* sp., *Robinia pseudoacacia*, *Malus domestica* and *Prunus* sp. Besides entomophilous, anemophilous pollen types from *Chenopodium album*, *Psidium guajava*, *Zea mays*, poaceous and euphorbiaceous members were also observed.

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COMPARATIVE BIOLOGY OF *SPILOSOMA OBLIQUA*

YOGESH KUMAR, H.D.* AND SWARNALI BHATTACHARYA**

Orissa University of Agriculture & Technology, Bhubaneswar 751003

Palli Siksha Bhavana, Visva-Bharati, Sriniketan 731236

*Email: yogeshkumar.hd@gmail.com (corresponding author)

ABSTRACT

Bihar hairy caterpillar *Spilosoma obliqua* (Walker) is a polyphagous pest causing huge losses in many crops. Its comparative biology on rice bean, black gram, cowpea and cashew was evaluated in this study. This revealed that the egg period varies from 5 to 6 days, and % hatching was maximum with black gram and rice bean (92%). The least of the larval period was observed on black gram (18.32 days), as well the pupal period (7.66 days). The adult emergence was again maximum when fed on black gram (91.66%) and the least on cashew (58.33%), and similar was the case with adult longevity. The

maximum sex ratio was observed with cowpea (1:2). The total life cycle on black gram, cowpea, rice bean and cashew occupied 35.65, 36.49, 38.12 and 47.07 days, respectively.

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DROSOPHILID DIVERSITY (DIPTERA: DROSOPHILIDAE) FROM SHIMLA DISTRICT, HIMACHAL PRADESH

ASHA BHARDWAJ, MOHD. ZAHIER KHAN, PRACHI FARTYAL , MANISHA SARSWAT*** , RAJENDRA S. FARTYAL***

Systematic & Cytogenetic Laboratory, Department of Zoology and Biotechnology,
HNB Garhwal University, Srinagar-Garhwal, 246174, Uttarakhand

**Department of Mathematics, HNB Garhwal University, Srinagar-Garhwal, 246174

***Department of Zoology Government PG College, Karnprayag, Uttarakhand

* Email: fartyalrs@gmail.com (corresponding author)

ABSTRACT

The present study was conducted to explore the diversity of drosophilids from Shimla district of Himachal Pradesh. A total 47 species under eleven genera viz., *Drosophila*, *Hirtodrosophila*, *Stegana*, *Lordiphosa*, *Leucophenga*, *Mycodrosophila*, *Scaptomyza*, *Scaptodrosophila*, *Impatiophila*, *Zaprionus*, and *Hypselothyrea* were collected. Abundance and species diversity were computed using Simpson (D), Shannon-Wiener (H), and Berger-Parker (1/d) indices. Simpson index was low at 0.029, Shannon-Wiener index was high at 3.669 and Berger-Parker index was also high at 0.613. Study reveals significant drosophilid diversity and favourable conditions for sustenance of several species.

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GENETIC DIVERSITY OF RICE LEAF FOLDER USING MITOCHONDRIAL CYTOCHROME OXIDASE 1 GENE

VIKAS JINDAL

Insect Molecular Biology Laboratory, Department of Entomology
Punjab Agricultural University, Ludhiana 141004

Email: vikas_ento@pau.edu

ABSTRACT

Genus, *Cnaphalocrocis* spp is an important insect pest of rice in all rice growing countries in world. More than twenty species of *Cnaphalocrocis* exists in nature throughout the world and six have been reported from Tamil Nadu alone. The information on rice leaf folder species prevailing in Punjab is lacking. Seven populations from different regions of Punjab were collected to identify species of rice leaf folder. Mitochondrial cytochrome oxidase1 (DNA barcode region) was amplified and cloned in pGEM-T-easy vector. The nucleotide sequence of mtCOI gene were determined and analysed. The Blast analysis showed that all the populations existing in Punjab are *C. medinalis*. The genetic

differences were observed among Punjab population like Moga, Hoshiarpur-2 and Sangrur-2 which has only one nucleotide difference from other populations at position 202 (A instead of G), 388 (G instead of A) and 499 (C instead of T) of DNA barcode region (mtCOI), respectively. The genetic diversity analysis with population from other parts of world revealed that population of Pakistan, India, China, Australia and Korea formed one cluster. However, Papua New Guinea population is totally different from all the populations and formed a separate cluster.

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INSECT FAUNA CAPTURED BY LIGHT TRAPPING IN NEW TOWN AREA, NORTH 24 PARGANAS, WEST BENGAL

SOUMIT DUTTA* AND SINJINI BOSE

Vidyasagar College, Saltlake, Kolkata 700 091

*email: soumitdutta11@gmail.com

ABSTRACT

The present study highlights the variety and variability of light trap collected insects in the New town area, a fast-developing city situated in the North 24 Parganas district, West Bengal. Insects captured from January to June 2018 were observed belonging to five orders of class Insecta viz., Diptera, Hemiptera, Coleoptera, Orthoptera and Lepidoptera. Of these, the most abundant with species was the Coleoptera and the least collected one being Lepidoptera.

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MANAGEMENT OF INSECT PESTS OF CABBAGE WITH INTERCROPPING AND THEIR PLANTING PATTERN

G. LAXMAN, R. K. SHARMA AND S. R. SINHA

Division of Entomology,

ICAR- Indian Agricultural Research Institute, New Delhi 110012

*Email: laxmanagrigo@gmail.com (corresponding author)

ABSTRACT

Field experiment was conducted on the incidence of insect pests and natural enemies on cabbage, *Brassica oleracea* var. *capitata*. Seven treatments with combinations comprising of three intercrops (fenugreek, lucerne and turnip) with two (linear and square) patterns of planting were evaluated in 2016-17 and 2017-18. Square planting of cabbage with lucerne was observed to be the most effective planting pattern with the least population of *Plutella xylostella* (0.71 and 0.33/plant), *Pieris brassicae* (21.98 and 34.95 larvae/ plant), aphids (228.25 and 186.13 aphids/plant) along with maximum occurrence of syrphids (1.94 and 1.93 maggots/plant). Also, maximum population of coccinellids of (2.65 and 3.21 grubs+ adults/plant), along with parasitisation of *P. xylostella* (31.39 and 36.12%) and *P. brassicae* (32.18 and 36.20%) were observed when square planting of cabbage with turnip was followed.

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**INSECTICIDAL ACTIVITY OF SWEET FLAG *ACORUS CALAMUS*
AGAINST *LASIODERMA SERRICORNE* (F.) AND
CRYPTOLESTES FERRUGINEUS (STEPHENS)**

N. ABHIJITH*, S. MOHAN AND S. JEYARAJAN NELSON

* Department of Entomology, Sri Venkateswara Agricultural College, Tirupati 517502
Department of Agricultural Entomology, Agricultural College and Research Institute,
Tamil Nadu Agricultural University, Coimbatore 641003

*Email: abhijithbhatmarate@gmail.com (corresponding author)

ABSTRACT

Bioassay studies were conducted on two storage insect pests viz., cigarette beetle *Lasioderma serricorne* (L.) and rusty grain beetle *Cryptolestes ferrugineus* (Stephens) exposing them to three different package materials treated with sweet flag *Acorus calamus* 6 EC. After 36 hr of treatment (HAT), in *L. serricorne*, 20.00, 13.33 and 23.3% mortality were observed, while with *C. ferrugineus* it increased to 80.00, 73.33 and 80.00% with bags made of polypropylene, jute and in muslin cloth material, respectively. After 72 and 48 HAT 100% mortality of *L. serricorne* and *C. ferrugineus* was observed with all the three. The results revealed the potential of *A. calamus* 6 EC as a biopesticide to avoid the cross infestation of storage pests by surface treatment.

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**EFFECT OF AVOCADO AND YOGURT IN DIET MEDIA
ON WING LENGTH, OVARIOLE NUMBER AND PROGENY PRODUCTION OF
*DROSOPHILA MELANOGASTER***

CLEONA ALEXANDER AND M. S. KRISHNA*

Department of Studies in Zoology,
University of Mysore, Manasagangotri, Mysore 570006

*Email: drosokrish@gmail.com (corresponding author)

ABSTRACT

Dietary constituents are known to have profound effect on physiological activities including reproductive fitness, fecundity and body size of the organism. In the presents study, the flies of *Drosophila melanogaster* were reared in yogurt and avocado supplemented media to understand its effect on the wing length, ovariole number and progeny production. The results showed that the wing length, ovariole number and progeny production were significantly higher in avocado + yogurt media followed by yogurt supplemented media. This suggests that avocado and yogurt as a combination followed by yogurt alone provided required nutrients to the flies to grow larger in size and have a greater number of ovarioles and produce greater number of progeny than the flies grown in wheat- cream agar media. These results suggest that avocado and yogurt as a combination provide reproductive fitness benefits followed by yogurt media alone.

INFLUENCE OF WEATHER ON THE PARASITOID CATCHES IN THREE RICE GROWING AGROCLIMATIC ZONES OF TAMIL NADU

J. ALFRED DANIEL^{*}, K. RAMARAJU^{}, S. MOHAN KUMAR^{***},
P. JEYAPRAKASH⁺ AND N. CHITRA**

Department of Agricultural Entomology

Tamil Nadu Agricultural University, Coimbatore 641003

^{**}Directorate of Research, Tamil Nadu Agricultural University, Coimbatore 641003

^{***}Department of Plant Biotechnology, Tamil Nadu Agricultural University, Coimbatore 641003

⁺Department of Rice, Tamil Nadu Agricultural University, Coimbatore-641003

*Email: danieljalfred@gmail.com (corresponding author)

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ABSTRACT

Parasitic hymenopterans play a vital role against many pests of rice regulating them naturally. The present study evaluated the influence of weather factors on such parasitic hymenopterans in rice under three agroclimatic rice zones of Tamil Nadu viz., western zone, Cauvery delta zone and high rainfall zone during 2015-16. Collections were made for 20 consecutive days in each zone. The weather data viz., maximum temperature, minimum temperature, relative humidity and rainfall were used correlated with the parasitoid population. These revealed significantly negative correlation with maximum temperature and positive one with minimum temperature, relative humidity and rainfall in the Cauvery delta zone. In the high rainfall zone, the parasitoid population exhibited positive and significant correlation with rainfall and positive but non-significant correlation with maximum temperature and relative humidity, and negative non-significant correlation with minimum temperature. The parasitoid population showed non-significant negative correlation with temperature (maximum and minimum), relative humidity and rainfall in the western zone.

POPULATION DYNAMICS OF IMPORTANT INSECT PESTS OF SOYBEAN IN RELATION TO WEATHER PARAMETERS

M.M. SONKAMBLE^{*} AND B.S. RANA

Department of Entomology

Rajasthan College of Agriculture

Maharana Pratap University of Agriculture and Technology, Udaipur 313001

*Email: milind.sonkambleento@gmail.com (corresponding author)

ABSTRACT

A field experiment was carried out at Instructional farm, Rajasthan College of Agriculture, Udaipur (Rajasthan State) on the population dynamics of major insect pests of soybean during *kharif* 2014 and 2015. Populations of jassids, whiteflies, semilooper and tobacco caterpillar were monitored weekly with different sampling techniques and the data generated correlated with weather parameters. The results revealed that mean population of jassids, whiteflies, semilooper and tobacco caterpillar gradually increased, reaching a peak at 35th SMW to 39th SMW and thereafter declined. The multiple linear regression analysis indicated that influence of weather parameters was 53.9% ($R^2=0.532$) and 91.2% ($R^2=0.912$) in relation to the population of jassids, 69.6% ($R^2=0.696$) and

92.6% ($R^2=0.926$) with that of whitefly, 79.5% ($R^2=0.795$) and 91.7% ($R^2=0.917$) with that of semilooper and 54.2% ($R^2=0.542$) and 70.9% ($R^2=0.709$) with that of tobacco caterpillar during kharif 2014 and 2015, respectively.

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**BASELINE TOXICITY AND EFFICACY OF TOLFENPYRAD AGAINST
RED PUMPKIN BEETLE *AULACOPHORA FOVEICOLLIS* LUCAS
IN COMPARISON WITH OTHER INSECTICIDES ON CUCUMBER**

SARASWATI MAHATO AND H. P. MISRA

Department of Entomology, College of Agriculture, OUAT, Bhubaneswar 751003, Odisha

Email: hara-agri@yahoo.co.in

ABSTRACT

A field experiment was conducted at the Central Research Station, Orissa University of Agriculture Technology, Bhubaneswar in RBD with nine treatments replicated thrice during *kharif*, 2016 and *rabi*, 2016-17 to evaluate the efficacy of eight pesticides viz., tolfenpyrad 15 % EC @ 150 g a.i./ha, fipronil 5 % SC @ 50 g a.i./ha, indoxacarb 14.5 % SC @ 72.5 g a.i./ha, flubendiamide 480 SC @ 78.70 g a.i. /ha, chlorantraniliprole 18.5 % SC @ 30.83 g a.i./ha, spinosad 45 % SC @ 75 g a.i./ha, cartap hydrochloride 50% SP @ 375 g a.i./ha and acephate 75% SP @ 375 g a.i./ha against the red pumpkin beetle, *Aulacophora foveicollis* Lucas on cucumber cv. "Machhaar" compared with untreated control. All the insecticides evaluated were at par and significantly suppressed adult red pumpkin beetle (RPB) population up to 15 days after spraying to the extent of 77.11 to 81.59% and 75.46 to 82.59% over control during *Kharif*, 2016 and *rabi*, 2016-17, respectively. The leaf-dip bioassay of tolfenpyrad against RPB revealed LC_{50} of 32.88 ppm with a fiducial limit of 25.41 to 42.56 ppm.

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**BIOLOGY OF *CHEILOMENES SEXMACULATA* (F.), A PREDATOR OF
GREEN APPLE APHID IN HIMACHAL PRADESH**

MEENA KUMARI

Department of Zoology , Govt. Degree College Kullu 175101, Himachal Pradesh

Email: meenakchaudhary@gmail.com

ABSTRACT

Observations were made on young nursery plants and apple orchards to record the coccinellid predators of *Aphis pomi* De Geer on apple plants in Himachal Pradesh. Many species of lady bird beetles were found feeding on green apple aphid, *Aphis pomi* De Geer on the nursery plants in Mashobra locality of Shimla district and Ner Chowk locality of Mandi district. Of these coccinellids, *Cheilomenes sexmaculata* (F.) was found to be effective predator of green apple aphid. The life cycles of this predator was studied during May to August and feeding potential of its larvae and adults on green apple aphid evaluated.

**ON A COLLECTION OF BRACONIDAE FROM
THREE RICE GROWING ZONES OF TAMIL NADU**

J. ALFRED DANIEL^{*}, K. RAMARAJU^{} AND A.P. RANJITH^{***}**

Department of Agricultural Entomology,

Tamil Nadu Agricultural University, Coimbatore 641003

^{**}Directorate of Research, Tamil Nadu Agricultural University, Coimbatore 641003

^{***}Department of Zoology, University of Calicut, Malappuram 673635

^{*}Email: danieljalfred@gmail.com

ABSTRACT

Surveys were conducted to explore the braconid fauna in rice ecosystems of Tamil Nadu during 2015-16 in three different rice growing zones viz., western zone, Cauvery delta zone and high rainfall zone. A total of 574 braconids with 18 species under 8 subfamilies were collected. Alpha and beta diversity were computed for the three zones. The diversity indices (Simpson's index, Shannon-Wiener index, Pielou's index) revealed that high rainfall zone is the most diverse zone, with Cauvery delta zone being the least diverse. *Macrocentrus philippinensis* was the dominant braconid with a relative abundance of 19.3%. On comparing the species similarities using the Jaccard's index in three zones taken in pairs, it was observed that 53% similarity existed between western and Cauvery delta zones, it was 44% between the high rainfall and Cauvery delta zones, and 50% as regards the high rainfall and western zones.