IOBC-*WPRS*

12th Conference of the Working Group

Integrated Protection of Stored Product

Program
&
Book of Abstracts

Pisa, Italy

3 – 6 September 2019

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11.00 – Belcari A., Rosi C, Sacchetti P., Guidi R., Garbati Pegna F.
"Dates disinfestation by Radio Frequency treatments"

11.15 - COFFEE BREAK and POSTER SESSION

11.45 - SESSION 5: Biological control of stored product pests
Session Chair: Riudavets J. (Spain)

Keynote Speaker: **Russo A.** (Italy), Suma P.
"Entomophagous insects as biocontrol agents of stored food pests"

12.15 - Fürstenau B., Awater-Salendo S.D.
"Biologically-based control of *Tribolium confusum* using parasitoids and semiochemicals: from basic research to semifield application"

12.30 - Riudavets J., Iturralde-García R., Castañé, C.
"Control of *Callosobruchus maculatus* (Coleoptera: Bruchidae) with natural enemies in chickpeas"

12.45 - Thakur D.R., Devi A.
"Studies on developmental compatibility and botanical management of *Callosobruchus maculatus* (F.) (Coleoptera: Bruchidae) on different cultivars of *Vigna radiata* (L.) Wilczek"

13.00 - Masoomeh Moosavi, Nooshin Zandi-Sohani, Ali Rajabpour
"Influence of temperature on the functional response of *Anisopteromalus calandrae* (Hym: Pteromalidae) to different population densities of *Callosobruchus maculatus* (Col.: Bruchidae)"

13.15 - Castañé, C; Iturralde-García, R.; Wong-Corral, F.; Riudavets, J.
"Possibilities for the biological control of the bean weevils *Acanthoscelides obtectus* and *Zabrotes subfasciatus* (Coleoptera: Bruchidae)"

13.30 - Mbata G.N., Shapiro-Ilan D.I., Alborn H., Strand M.R.
"Preferential infectivity of entomopathogenic nematodes in an envenomed *Plodia interpunctella* larvae"

13.45 - LUNCH and POSTER SESSION

15.00 - CONFERENCE TECHNICAL EXCURSION *(Bus stop at the lateral entrance of the Department)*

20.00 - CONFERENCE DINNER

FRIDAY 6 SEPTEMBER 2019
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8.00 - POSTER INSTALLATION

8.45 - SESSION 6: Methods of pest prevention during storage, transportation and handling of stored products

Session Chair: Stejskal V. (Czech Republic)

12.45 - Domingue M.J., Morrison W.R., Myers S.W.
"Behavioral effects of naturally extracted fatty acid on *Trogoderma* larvae"

13.00 - Gagnarli E., Tarchi F., Barzanti G., La Forgia F., Simoni S.
"Effectiveness of propolis' extracts for storage mites' control"

13.15 - LUNCH and POSTER SESSION

14.30 - SESSION 7: Natural products

14.30 - Ofuya T.
"The potential for integration of insecticidal botanical products with other control methods for stored grain protection against insect infestation and damage in Nigeria"

14.45 - Sagheer M., ul Hasan M., Ali Raza, Ali K., Rehman H.A., Gul Zaheer A., Iqbal M.
"Insecticidal bioactivity of extract of basil plant (*Ocimum basilicum*) in combination with *Metarhizium anisopliae* against saw toothed beetle *Oryzaephilus surinamensis* (Coleoptera: Silvanidae)"

15.00 - ul Hasan M., Zaman S., Anwar T., Ali Q., Ayyub M.B., Sadiq M.A., Amjad F., Mehmood R.
"Efficacy of plant extracts against *Tribolium castaneum* (Herbst) in two types of flours"

15.15 - Abada M.B., Hamdi S.H., Gharib R., Boushih E., Messaoud C., Fourmentin S., Greige-Gerges H., Médiouni-Ben Jemâa J.
"Essential oils loaded in nano-delivery systems: a developing technique for the control of the date moth *Ectomyelois ceratoniae* under storage conditions"

15.30 - Korunić Z., Liška A., Hamel D., Lucić P., Rozman V.
"Effectiveness of new developed natural and safe insecticide formulations against stored product insects"

15.45 - Babarinde S.A., Babarinde G.O., Adebayo T.A., Olaniran O.A., Akani R.A., Shittu R.O., Adeleye A.D.
"Response of saw-toothed grain beetle *Oryzaephilus surinamensis* (Linnaeus, 1758) (Coleoptera: Silvanidae) to *Piper guineense*-based biopesticides infesting melon"

16.00 - Giunti G., Algeri G.M., Campolo O., Laudani F., Palermo D., Palmeri V.
"Habituation of the lesser grain borer, *Rhyzoperta dominica*, to essential oil-based repellents"

16.15 - Wicochea-Rodríguez J.D., Ruiz T., Gastaldi E., Chéreau S., Chalier P.
"Biopesticide granules based on essential oils for the protection of wheat grain during storage"

16.30 - Bedini S., Farina P., Conti B.
"Repellence and attractiveness: the double effect of essential oils on insect pests"

16.45 - Baltaci D.
"Control effect of an almond and black cumin seed oil mixture towards four stored product pests"

SESSION 7

Natural products

Effectiveness of new developed natural and safe insecticide formulations against stored product insects

Korunić Zlatko, Liška Anita[1], Hamel Darka, Lucić Pavo, Rozman Vlatka
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The insecticidal effect of new developed insecticide formulations labelled as Natural P, Inert Natural P and Py EC on *Sitophilus oryzae* (L.), *Rhyzopertha dominica* (F.) and *Tribolium castaneum* (Herbst) have been evaluated on wheat grains. Formulation Natural P contains diatomaceous earth (DE), amorphous silica gel (3%), pyrethrin, flax oil, lavandin essential oil (EO) and un-activated yeast. Formulation Inert Natural P combines DE, amorphous silica gel, lavandin EO and food grade bait whereas formulation Py EC contains pyrethrin, piperonyl butoxide (PBO), flax oil, polysorbate, methyl oleate and amorphous silica gel (5%). DE Celatom® MN-51 was used as a standard insecticide. Inert Natural P and Natural P were applied as dust at four different doses, while Py EC was mixed with water in 4 dilutions containing 0.5, 1.0, 1.5 and 2.0 ppm of pyrethrin a.i. and applied as emulsions on grain by spraying. The LD_{50} and LD_{90} values of Inert Natural P were 48.72 and 163.73 ppm respectively for *S. oryzae,* 15.18 and 177.96 ppm for *R. dominica* and 115.20 and 171.30 ppm for *T. castaneum.* The LD_{50} and LD_{90} values of Natural P were 53.56 and 97.94 ppm respectively for *S. oryzae,* 19.47 and 53.05 ppm for *R. dominica* and 75.40 and 105.60 ppm for *T. castaneum.* While the LD_{50} and LD_{90} values of DE Celatom® MN-51 were 188.55 and 352.79 ppm respectively for *S. oryzae,* 39.86 and 405.420 ppm for *R. dominica* and 358.10 and 716.87 ppm for *T. castaneum.* Comparing with DE Celatom® MN-51 two powder formulations applied at effective concentrations had lower impact on wheat test weight reduction. Applied Py EC at concentration of 2.0 ppm a.i. pyrethrin exhibited 100 % mortality after 2 days of *S. oryzae* and *T. castaneum* and after 6 days of *R. dominica.* In addition, all three formulations caused significant reduction of F1 adults compared to control, providing promising approach of integrated pest management strategy.

Key words: stored product insects, natural substances, diatomaceous earth, essential oil, pyrethrin