17-057

ADELCNYRTUS MODERATUS (HOWARD) (HYM-NOPTERA: ENCYRTIDAE) IN THE CONTROL OF ASPIDIELLA HARRII (COCKERELL) (HOMOPTERA: DIASPIDIDAE) ON DIOSCOREA CFR. ALATA L. IN WEST AFRICA

S. Manzella, G. Liotta

Osservatorio Regionale per le Malattie delle Piante, Assessorato Agricoltura e Foresti, Regione Siciliana, Palermo, Italy - 1 Istituto di Entomologia agraria, Università degli Studi, Palermo, Italy

A major infestation of yam scale, Aspidiella harrii (Cockerell), was found on tubers of Dioscorea cfr. alata L., imported to Italy from Ghana for food use and intercepted by the Servizio Fitosanitario Regionale.

On random samples of parings of infested tubers, measuring about 5 cm², representative of the whole batch imported and isolated in a laboratory, on 2nd-instar larvae and females of A. harrii (number of scales present averaged 24,11/cm² tuber) there was found Adelcnyrtus moderatus (Howard) parasitization ranging from 37.04% to 86.36%, with an average of 56.57%. In laboratory conditions, it was observed that there is very high emergence, amounting to 96.62%.

From the samples there also collected some individuals of Azota sp. (Hymenoptera: Aphelinidae). It remains to be verified whether this was a case of primary parasite activity on yam scale, or hyperparasite activity on A. moderatus.

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BRUCHID ECOTYPES IN NIGERIA - THE CASE OF CALLOSOBURCHUS MACULATUS FAB ON COWPEA, VIGNAUNGICULATA (L.) WALP.

L. E. N. Jackar1, T. I. Ofupo2

1International Institute of Tropical Agriculture (IITA), Oyo Road, PMB 5320, Ibadan, Nigeria, W. Africa. 2Department of Crop Production, Federal University of Technology, PMB 704 Akure, Ondo State, Nigeria.

Variation in insect response to resistant crop varieties is a common phenomenon. This is sometimes the result of ecological exclusion or other barriers that restrict gene flow between individuals or regions, and appears to be true of the cowpea storage bruchid, Callosobruchus maculatus Fab. We studied oviposition, growth and development of six populations of C. maculatus, designated simply as IT, PH, UM, MD-1, MD-2, MD-3, from different locations in Nigeria on the resistant cowpea cultivar, TVU 2027 and four cultivars of African yam bean (AYB) (Stenostylus sternocarpa) obtained from the same eastern Nigeria location as one of the bruchid populations, and on the brown cowpea cultivar (susceptible). F1 progenies obtained by cross-mating individuals from different populations were similarly tested on the control cultivars.

Oviposition was variable, and differences were not significant. The lowest egg count was from the UM population. The IT and PH populations had higher adult emergence and shorter developmental times on TVU 2027 than did the other populations. This was not surprising for the IT population that, unlike the PH population, had previous experience with TVU 2027. All F1 populations with IT female parents also had better emergence and developmental period than their reciprocal crosses, or those involving other populations but this varied with the virulence of the mate parent. The UM population was one of those most sensitive to TVU 2027 (average <10% emergence), but also seemed better adapted to the AYB cultivars (65% emergence compared to 71.9% for the susceptible control). All others ranged in emergence from 1.4-22.8%. Total development time was correspondingly shorter in the UM population. These results suggest that there is only one species involved. However, there appears to be distinct ecotypes of this species in Nigeria. This has far-reaching implications for the development and deployment of cowpea cultivars that have resistance to only one of the ecotypes.

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THE ROLE OF SEMIOCHEMICALS IN DIFFERENTIAL INFESTATION OF CALLOSOBURCHUS MACULATUS IN WILD AND CULTIVATED PULSES

S. Ignacimuthu, B. Balachandran, A. Jayakumar, R. Seenivasagan, G. Karuppayam J.K. Sivakumar and A. Sen

Entomology Research Institute, Loyola college, Madras - 600 034, India.

Primary metabolites comprising of protein, carbohydrates, lipids and free amino acids, as well as secondary metabolites such as total phenols and ortho-dihydroxy phenols were analysed in wild and cultivated pulses. Trypsin inhibitor level was also quantified. Studies on development of Callosobruchus maculatus on wild and cultivated pulse seeds were made. The content of primary metabolites in the cultivars was higher than in the wild relatives. The secondary metabolites of the cultivars did not differ much from the wild relatives. The trypsin inhibitor levels were quite varied within the wild pulse populations both at intra and interspecific levels. A drastic reduction in the egg laying capacity of Callosobruchus maculatus was observed in the wild pulses. Our biochemical analyses suggest that the wild pulses contain compounds which inhibit egg laying.

17-060

Anastrepha fraterculus (Diptera: Tephritidae) dispersal in Brazilian apple growing area

A. Kovalevski1,2, R.L. Sugayama3 & A. Malavasi2

1EMBRAPA/CNPVU, Vacaria; 2Dept. Biologia, Inst. Biodiças, USP, São Paulo, Brazil

Apple growing area expanded from 137 ha in 1970 to more than 30,000 ha in 1995. Anastrepha fraterculus is a major pest and hosts in native vegetation areas adjacent to commercial orchards are responsible for population growth. A feral population was released in order to study A. fraterculus dispersive behavior. Marked adults were maintained in lab conditions up to 10 days with water and food ad libitum. McPofil traps containing grape juice 25% were used: 15 in a 0.5 ha native vegetation area, 24 in an open grass field, and 48 in a 7 ha commercial orchard. Adults were released in the edge of the native vegetation area.

Out of 2,154 released flies, 7.1% were recaptured from the 2nd to the 20th day after release. Four, 12 and 17 days after release, 27.6, 88.6 and 98.4% of recaptures had occurred. Out of 8 flies (7 females: 1 male) recaptured in the orchard, 6 were recaptured in the edge (580 m from release point), one at 870 m and one at 700 m. These flies may have been helped by the wind. In the orchard, recaptures occurred 3 and 4 days after release. An insecticide cover spray may have affected results. In the native vegetation area, 144 marked flies were recaptured and behaved similarly to wild flies. No flies were recaptured in the grass field.

Results suggest that A. fraterculus dispersive behavior from native vegetation areas into orchards explains the large attack intensity in orchard edges.