[1294] EFFECT OF CHEMICAL CONTROL OF *BEMISIA ARGENTIFOLII* (HEMIPTERA: ALEYRODIDAE) ON THE INCIDENCE OF BEAN GOLDEN MOSAIC VIRUS IN COMMON BEANS AND ITS YIELD

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The control of the silverleaf whitefly, *Bemisia argentifolii*, Bellows & Perring in common beans (*Phaseolus vulgaris)* and the incidence of bean golden mosaic virus (BGMV) were evaluated by using seed treatment with imidacloprid or thiamethoxam followed by four or six sprays with insecticide, at weekly intervals. The field experiment was carried out in an irrigated area, at Petrolina-Pernambuco (Brazil). A randomized complete block design with four replicates was used and each plot had an area of 160 m^2. The treatments, and concentration, in grams or millilitres of commercial product /100 kg of seeds or 100 litres of water, were: **1)** imidacloprid 200 SC (200g), acephate 750 BR (100g), metamidophos 600 CS (125ml), imidacloprid 700 GRDA (20g), cartap 500 PS (300g); **2)** imidacloprid 200 SC (200g), acephate 750 BR (100g), metamidophos 600 CS (125ml), imidacloprid 700 GRDA (20g), cartap 500 PS (300g), acephate 750 BR (100g), lambdacyhalothrin 50 CE (50ml); **3)** thiamethoxam 700 WS (200g), acephate 750 BR (100g), metamidophos 600 CS (125ml), thiamethoxam 250 WG (200g), cartap 500 PS (300g); **4)** thiamethoxam 700 WS (200g), acephate 750 BR (100g), metamidophos 600 CS (125ml), thiamethoxam 250 WG (200g), cartap 500 PS (300g), acephate 750 BR (100g), lambdacyhalothrin 50 CE (50ml); **5)** control, without insecticide. The chemical control decreased significantly the number of eggs, nymphs and adults and also the percentage of infection by BGMV, ranging from 1.48 to 2.95% against 46.29% in the control treatment. Grain yields and the percentage of yield increase for treatments 1, 2, 3 and 4, were respectively: 1,930 kg/ha, 29.53%; 2,395 kg/ha, 60.74%; 2,180 kg/ha, 46.31% and 2,405 kg/ha, 61.40%, while in the control the yield was 1,490 kg/ha. There was no significant difference among number of pods per plant, number of seeds per pod and weight of 100 seeds.
Index terms: Insecta, BGMV, vector, *Phaseolus vulgaris*

[1295] OBSOLETE INSECTICIDES IN LATIN AMERICA: WHAT TO DO WITH THEM?

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In every country of Latin America, there are accumulations of unwanted, obsolete insecticide stocks which represent serious risks to human health and the environment. The great majority of these accumulations come from bulk government purchases or donations by the international community to control insect pest outbreaks in agriculture and public health. Because these insecticides were banned or had their use restricted by regulatory authorities or because they were not used within their validity dates, they can no longer be used and are considered obsolete. They are found in urban and rural areas, usually under very poor storage conditions, in corroding and leaking metal drums or ragged paper or plastic bags. Government authorities tend to deny that they exist and take bold decisions to dispose of them in landfills, giving them away as donations to other countries or keeping them under hidden storage. High temperature incineration in dedicated hazardous waste furnaces is the most recommended method for disposal of these obsolete insecticides and other pesticides but most countries of the region do not count with these facilities. Obsolete pesticides need to be repacked, including used containers and contaminated soil, and transported to facilities in the country or abroad where they can be properly disposed of. The cost of the entire operation is estimated by FAO to run between US$ 3000 and US$ 4500 per ton. Conservative estimates indicate that over 10 000 tons of obsolete pesticides exist in Latin America, needing to be urgently disposed of due to the human health and environmental problems they are causing. FAO is conducting a regional survey on the situation in order to present the problem and suggest possible solutions to the Latin American governments and to the international donor community. The author presents case stories of the situation of obsolete pesticides in some countries, discusses possible disposal action scenarios and elaborates on ways to prevent future accumulations.
Index terms: toxic wastes, pesticide disposal

[1296] EFFECT OF THIAMETHOXAM (ACTARA® 250 WG) ON ENTOMOPATHOGENIC MICROORGANISMS

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The compatibility of entomopathogenic microorganisms with thiamethoxam (Actara® 250 WG) and other insecticides was studied in *in vitro* and field assays. The microorganisms tested were a bacterium (*Bacillus thuringiensis)*, a virus [*Baculovirus anticarsia* (NPVAg)], and eight fungi (*Aschersonia aleyrodis*, *Beauveria bassiana*, *Hirsutella thompsonii*, *Metarhizium anisopliae*, *Nomuraea rileyi*, *Paecilomyces farinosus*, *Sporothrix insectorum*, and *Verticillium lecanii)*. Two concentrations of each product were tested in the laboratory, based on the maximum and minimum recommended levels for application under field conditions. The products were added to specific culture medium for entomopathogen growth. Reproductive and vegetative growth was evaluated for fungi, and colony forming units (CFU) were evaluated for bacteria. For the field test, CFU were considered for both fungi and bacteria and caterpillar mortality of the NPV of *Anticarsia gemmatalis*. The action of the pesticides on the vegetative growth and sporulation of the microorganisms varied as a function of the chemical nature of the products, of their concentration and of the microbial species: (1) thiametoxam was compatible with all microorganisms studied; (2) endosulfan, monocrotophos and deltametrin were the insecticides that most affected *B. thuringiensis*, *B. bassiana*, *M. anisopliae* and *S. insectorum*; (3) thiametoxam did not affect the inoculum potential of *B. thuringiensis*, *B. bassiana* or *M. anisopliae* when applied to bean crops (*Phaseolus vulgaris*), and (4) thiametoxam did not affect the efficiency of the nuclear polyhedral virus of *A. gemmatalis*.
Index terms: Insecticide, microbial control, compatibility.

[1297] MIGRATION AND SELECTION AFFECTING INSECTICIDE RESISTANCE IN *PSEUDOPLUSIA INCLUDENS*

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Pseudoplusia includens is a migratory insect that overwinters in southern Florida and Texas, the Caribbean Basin and Mesoamerica. Incapable of diapause, *P. includens* migrates into the soybean growing regions in the Mid South. Insecticide resistance is a consistent problem with this insect in soybean agroecosystems, however the cause of the resistance remains a puzzle because insecticide usage in soybean agroecosystems is low. Therefore, this project set out to determine the relative contribution of migration from overwintering sites to resistance development and the relative contribution of local selection to resistance development. Data on the susceptibility to 6 insecticides and genetic markers from twenty-two populations of *P. includens* from sites in Puerto Rico, Florida, Texas and Louisiana were collected in 1998. The AFLP technique was used to detect genetic markers and insecticide susceptibility data were collected from diet overlay bioassays using discriminating doses of the insecticides. Analysis of the genetic data indicated that *P. includens* populations in Louisiana are derived from overwintering populations in Texas and Puerto Rico, but probably not southern Florida. The insecticide bioassay data showed abundant variation in susceptibility to thiodicarb, chlorfenapyr, *B. thuringiensis*, and spinosad between populations. The variation in susceptibility to permethrin and emamectin benzoate between populations was low. The correlation between the genetic distances and insecticide susceptibility was moderate, suggesting that both local selection and migration contribute to resistance observed in the soybean agroecosystems in the Mid South.