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EDITORIAL

In this issue of the IWGO – NEWSLETTER you find the second part of the presentations given at the 10th IWGO – *Diabrotica* Subgroup meeting (together with EPPO and FAO working groups) in Engelberg, Switzerland this January (Poster session*).

In the meantime we are already working for the next (11th) IWGO – *Diabrotica* Subgroup meeting to take place in Bratislava, Slovak Republic next February (Feb. 14-17, 2005). Bratislava can easily be reached either directly by plane, train or car or by plane via Vienna International Airport where from a public shuttle service by bus (approx. 60 minutes bus ride) is available. Further information about this meeting and registration form you can find on page 22.
I think also this meeting will a good possibility to exchange information about *Diabrotica* in Europe.

The new Co-Convenor of IWGO Ulrich KUHLMANN has set up a new IWGO home page in www. The address: **www.IWGO.org**
In the future more and more information will be distributed via this home page.
I am looking forward to see many of you in Bratislava facing an interesting and fruitful meeting

Harald K. BERGER
(IWGO – Convenor, Editor)

*) The participants elected the best poster presented at the meeting: the winner was:
Ioana **GROZEA** & Karl F. **LAUER**
from Banat's University of Agricultural Sciences and Veterinary Medicine, Timisoara, Romania
AGAIN CONGRATULATIONS FROM ALL OF US !!!

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Posters presented at the Xth IWGO – Subgroup Meeting in Engelberg, Switzerland January 14 – 17, 2004

No adverse effect of Coleopteran-specific cry3Bb1 toxin released from root exudates and biomass of transgenic corn on earthworms

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Transgenic corn has been genetically modified to express Bt toxin (Cry3Bb1) in corn roots to control corn rootworm. Previous studies with other toxins suggest Bt toxin may be present in the root exudates or plant residue. If Bt toxin is released into the soil rhizosphere, it may affect other organisms that occur there. Two different greenhouse studies were conducted to determine the effect of root exudates and biomass on weight and mortality of earthworms, *Lumbricus terrestris* (Annelida: Lumbricidae). Preliminary results from these studies showed that there was no significant differences in weight (gm) and percent mortality of earthworms after 45 days in soil planted with Bt and non-Bt corn plants or after 45 days in soil contaminated with ground air dried biomass of Bt or non-Bt plants.

REGENT® - a successful Fipronil product for *Diabrotica spp*. control

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Fipronil is currently the only commercialised member of the phenyl pyrazoles class of insecticides. Since its first registration in 1993 Fipronil has been proven to offer highly effective insect control at low dose against a broad range of economically important pests. Fipronil based products are registered in more than 70 countries for the control of insect pests in more than 100 crops.
Fipronil showed its potent insecticidal activity on Western corn rootworm (*Diabrotica virgifera virgifera* LeConte) in early greenhouse screening. Since then it was further developed for field applications and has EPA approval in the United States of America against *Diabrotica virgifera virgifera* and registration in Brazil against *Diabrotica speciosa* on maize.
In the field, good control of *Diabrotica virgifera virgifera* larvae is obtained with 100-200 g ai/ha applied either as granule or soil spray with in-furrow or band, at-planting application.
Fipronil also very well controls other soil insect pests such as wireworms (*Agriotes spp.),* grey weevil (*Tanymechus dilaticolis*), seedcorn maggots (*Hylemia spp.*), etc., when applied for corn rootworm control. Numerous observations by farmers and users have shown an enhanced plant growth following a successful pest control which significantly could increase the crop yields.

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Damages caused to maize by larvae of western corn rootworm in 2000 following Soya bean sowing in 1999 and maize sowing in 1998

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The combination of two crop (maize-soy bean) rotation in the moderate continental climate of the US maize growing region (Corn Belt) became insufficiently effective in control of western corn root worm *Diabrotica virgifera virgifera* LeConte (WCR) in the beginning of the last decade of the 20th century. When plant lodging and damages to maize were observed, it was considered that maize volunteer plants had been natural attractants and that WCR females had been attracted to lay eggs in soil under the soy bean crop. It was officially confirmed at the meeting of entomologists held in Chicago in 1995 that soy bean - maize rotation ceased to be an effective cultural practice in WCR control.
The analogous behaviour of WCR was established in our country by the first observations of eggs laid in soy bean crops and also in maize crops sown after soy bean.
This statement is based on results obtained for lodged plants in a demonstration trial with two sowing dates and a trial with two growing systems - soy bean-maize and wheat- soy bean-maize rotations. Imago flights were monitored by pheromone (PhT) and yellow sticky traps (YsT) placed in plots with the soy bean crop. Furthermore, the imago abundance is comparatively monitored in maize crops succeeding soy bean crops and in a long-term continuous cropping of maize.
In 2000, hybrids of FAO maturity groups 300-800, i.e. FAO maturity groups 100-200 were sown on April 15, i.e. May 15, respectively. Lodging was evaluated at the end of July and beginning of August. The number of imagos was monitored by YsT and/or PhT traps during the growing season, and obtained data were grouped on the basis of the plant species and the crop rotation variant.
Results on plant lodging were classified according to the following:

- FAO groups: FAO 100-200 - 19 hybrids, 0.60% plants lodged, FAO 300-400 - 18 hybrids, 1.14% plants lodged, FAO 500-600 - 18 hybrids, 1.27% plants lodged, FAO 700-800 - 9 hybrids, 0.60% plants lodged
- properties: sweet maize - 1 hybrid, 8.11% plants lodged, popping maize - 3 hybrids, 33.92% plants lodged, prolific maize - 5 hybrids, 8.42% plants lodged
- sowing dates: regular date - April 15 - 60 hybrids, 3.76% plants lodged and delayed date - May 15 - 19 hybrids, 0.60% plants lodged.

Results on number of WCR beetles registered on YsT and PhT placed in the production crop of soy bean in 1998 indicate significant attractiveness for WCR beetles. Pheromone traps were also placed in the soy bean crop in 1999 and 2000. Obtained results on soy bean attractable ness for WCR beetles show the following:

- Soya bean to maize ratio in the crop rotation amounted to 136: 140, i.e. almost 1:1; abundance index was 99.6
- The same ratio in long-term continuous cropping amounted to 136: 494, i.e. 1: 3.6, while abundance index was 27.5.

According to the gained results the following can be concluded:

- Results previously obtained on the effects of sowing dates on survival rates of larvae were confirmed. The later sowing the lower both survival rate of larvae and plant lodging.
- Attractable ness of the production crop of soy bean for WCR beetles was at the level of maize crop attractable ness in the maize-wheat rotation. Furthermore, damages on maize caused by WCR larvae were also observed in other locations in which soy bean preceded the maize crop.

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A sustainable management of western corn rootworm in Lombardy: a methodological approach based on farming trials

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Western corn rootworm control should be based on a thorough understanding of the habitat, food, preferences and other behaviour of the pest, so that the most effective biological, cultural, as well as chemical controls can be combined in an ecologically and economically sound integrated pest management (IPM) strategy. The aim of IPM is to maximize natural and cultural controls, and use pesticides only as a last resort.

Cultural control reduces pest damage through manipulation of the environment and it is often associated with mechanical operations such as tillage, interplanting, crop rotation and adjusting the time of planting and harvesting. Although cultural practices alone may not give satisfactory control, they are important in minimizing pest injury. In particular crop rotation and biological diversity have long been utilized very successfully in traditional corn rootworm control.

There is a growing awareness of the need to adopt more sustainable and integrated systems of agricultural production, which depend less on chemicals and other energy-based inputs. Such systems can often maintain good yields and at the same time lower the cost of inputs, increase farm profits and solve ecological problems.

Strategies for establishing a sustainable agricultural system in western corn rootworm control in Lombardy, the region with the highest populations, should be based on an integrated pest management and on the extension of sustainable agriculture to farmers.

The process to introduce IPM strategies in Lombardy should be based on:

- education and extension programs to be conducted for consumers as well as for farmers, since information and more research are needed, not only on new technology for sustainable agriculture but also on marketing strategies to ensure a profitable return for the farmer.
- farming experimentation: the possible strategies should establish and implement an area wide pest management research action program for corn rootworm as part of a maize management. This may be obtained setting up IPM strategies in on farming trials in real conditions, at the same time making the involved farmers used and convinced to introduce and divulgate to colleagues the new approaches and the new techniques in the next future. This implies to set up simple on farming trials in known pilot farms.

The main features of the pilot farm should be:

- being suitable for organizing demonstrative trials;
- having main features representatives of the soil and climatic characteristics of the zone;
- being well known by most of the other farmers around;
- being well connected with roads;
- being available to host demonstrative trials and farmers visiting the new experiences.

This approach was being initiated in Lombardy. Main on farming trials concerned the introduction of treatments against the adults taking into consideration the interactions with the other pests and useful insects, of new rotations and new agronomic strategies. The evaluation of effectiveness of the strategies has already been planned.

Indicators to compare initial situation with situation after the completion of the process should be:

- cultivated lands planted with monoculture maize;
- surface planted with maize;
- surface planted with new crops;
- number of captures in pheromone and yellow traps;
- amount of insecticides used per farm;
- number of farmers having reliable information about *Diabrotica* and IPM strategies.

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Present distribution of western corn rootworm (*Diabrotica virgifera virgifera*) in AUSTRIA

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The first WCR beetles were caught in Austria in 2002. The monitoring program was intensified and extended to all Austrian provinces in the following year. Of the 581 traps installed in Austria, beetles were recorded in 256 traps. The grand total of beetles captured was 8673, whereby 8330 were caught in Burgenland province, 339 in Niederösterreich and 4 in Steiermark. In 2003 we see an influx of WCR along the entire eastern border of the country, a distance of 231 km from north to south. Distribution ranges up to approx. 30 km into Austrian territory, whereby new infections were primarily recorded in the southern areas. In the North the range of the pest increased by only a few kilometres inland, compared to 2002. No beetles were recorded in other parts of the country.

In order to determine begin and end of beetle flight in Austria, AGES installed traps in the middle of June and monitored them until the middle of October or until harvest. The first beetle was captured on July 4th, the last on October 9th. 57.18% were captured in July, 37.25% in August, 5.32% in September and 0.25% in October. This means that 94% of the total beetle catch was captured in July and August.
Peak of beetle catch differed according to the time of trap and pheromone renewal, ranging from the third decade of July to the second decade of August. We believe that the reason for this discrepancy lies in diminishing viscosity of the lime used for trapping, probably due to the very high summer temperatures. We noticed repeatedly that beetles could free themselves from the lime and be found on neighbouring plants.
Twenty fields were monitored with two traps approx. 20 meters apart instead of the usual one trap per field as generally used in the Austrian monitoring program. In only 5 cases (25%) were two traps more effective than one.

Table: Beetles captured in Austria in 2003

Province-district	**No. of traps**	**No. of traps with beetles**	**No. of beetles**
B-Neusiedl am See	168	150	8135
B-Eisenstadt Umgebung	31	6	8
B-Mattersburg	24	13	33
B-Oberpullendorf	28	5	11
B-Oberwart	30	4	6
B-Güssing	30	20	47
B-Jennersdorf	40	27	90
Burgenland total	**351**	**225**	**8330**
N-Bruck an der Leitha	31	17	257
N-Gänserndorf	29	9	78
N-Mistelbach	30	1	4
Other districts	69	0	0
Niederösterreich total	**159**	**27**	**339**
St-Fürstenfeld	7	2	2
St-Radkersburg	12	2	2
Other districts	10	0	0
Steiermark total	**29**	**4**	**4**
Other provinces	**42**	**0**	**0**
Austria total	**581**	**256**	**8673**

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IPM of corn at silking stage with special regard to western corn rootworm (*Diabrotica virgifera virgifera)* adults and to cotton bollworm (*Helicoverpa armigera*) larvae in HUNGARY

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The western corn rootworm (*Diabrotica virgifera virgifera* LeConte) (*Coleoptera: Chrysomelidae*) and the cotton bollworm (*Helicoverpa armigera* Hübner) (*Lepidoptera: Noctuidae*) became the most important pests of corn in Hungary in the past ten years. The damage caused by these two pest species increases from year to year. The western corn rootworm adults feed on the silks, which impacts seed quality and quantity. The cotton bollworm larvae also chew the silks first, and then feed on seeds under the husky leaves. *Fusarium* infestation may also occur on damaged seeds. Adult peak flight of the single generation of *D. virgifera virgifera* and that of the second generation of *H. armigera* is reported to overlap each other in course of the season. Therefore, these two pests should be managed together during the silking period as follows:

- Forecast;
- control decision (additive ETLs);
- consideration of short term options (application of parasitoids (*H.amigera*) and pesticides (*D.virgifera.virgifera.*);

In order to measure how long coincides the respective flight periods of *D. virgifera virgifera* and *H. armigera*, we monitored the seasonal flight pattern of *D. virgifera virgifera* by sticky yellow sheets (Pherocon AM), while *H. armigera* was monitored by sticky and funnel types of pheromone traps (Csalomon, Plant Protection Institute), in corn fields in South Hungary, in 2003.
We found that the flight of *H. armigera* peaked around July 10-20, and during this period the number of the western corn rootworm beetles were increasing, and tended to reach its maximum. Our poster will demonstrate overlapping of flight periods and control decision options in details.
Financially supported by a grant of the Hungarian National Science Foundation (OTKA T037355)

Possibilities for control of *Diabrotica virgifera virgifera* in maize in the NETHERLANDS

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Since 2002 and 2003, *Diabrotica* beetles are monitored and caught for the first time at several places in Western Europe. All the beetles were collected in the maize fields, which were situated in the neighbourhood of the airports, like Paris, Amsterdam, Brussels and London. The appearance of the *Diabrotica* beetles means that a research programme should be started. The main area with a high-risk is the monoculture maize and is situated in the east and southern part of the Netherlands. There are in total 35,000 hectare grain maize and 200,000 hectare silage maize grown in the Netherlands. Most of the maize is grown by cattle farmers, what means they grow maize for many years at the same field (monoculture), without any rotation system. Cattle farmers had more interest in animals, but less in

growing plants. What means, that those farmers do not have the interest in the observation of *Diabrotica* beetles. Fields which is infected by *Diabrotica* should be destroyed, what mean the loss of the crop. This has the consequence that the roughage source production especially for dairy cattle shall decrease and a shortage of food can be expected for the following year.
The research programme should be focussed on:

- Chemical control by seed coating with insecticides, to protect the roots and the seedling of the maize plants against the larvae in the first two months after sowing the seeds. This method has a low input of chemicals. This application with one insecticide should lead to the control of the *Diabrotica* and the wireworm (*Agriotes* spp.). Both are major pests in maize.
- Biological products, which are used as an anti-feedant or repellent.
- Entomophage nematodes as a biological agent applied, as a row application should be tested. This system could be of interest for the organic farmers.

The research should be focussed on the larvae stage of the western corn rootworm only. Field experiments with the adults should be carried out in fields with high population densities.

Diabrotica virgifera virgifera in the western part of the Friuli Venezia Giulia Region (North Eastern ITALY): First attempt of eradication - containment

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A monitoring network to survey the possibility of introduction of Western Corn Rootworm (WCR), *Diabrotica virgifera virgifera* LeConte, had been settled in the Friuli Venezia Giulia region since 1995. It covered the whole region and focused mainly on the areas more exposed to the pest introduction.
Up to 1996 monitoring was carried out by using yellow sticky trap (PhAM), some of which were baited by attractive substances (cucurbitacin). Afterwards more effective sexual pheromones traps (PAL) set up by Plant Protection Institute of Budapest (H) were employed.

In 2002 Western Friuli Venezia Giulia monitoring network (Pordenone district, about 30.000 ha of maize crops) was made of 78 traps located on maize monocultures fields.

Between 24th July and 4th September 2002 the first 31 specimens of WCR were found in monoculture maize fields, near Aviano USAF Air Base, not far from survey stations of previous years. After first records the net was reinforced at increasing distance from finding out places. Plant Protection Service adopted eradication measures immediately. Not later than 48 h after findings, concerned fields and other adjacent maize crops (about 230 ha) were sprayed on plant's top using 1,10 kg/ha of Dursban 75WG (chlorpyriphos ethyle, 75%). No other captures occurred after spraying insecticide.

On September 2002, the Plant Protection Service issued a specific rule defining a focus area (1.300 ha of cultivated land) and a corresponding safe area (3.500 ha of cultivated land). In the focus area the following binding phytosanitary measures were adopted: maize rotation (with limited exception for small part of the land of some dairy farms located at the border of the focus area), prohibition to move fresh parts of maize and soil of maize fields outside the area, prohibition to harvest maize grain before 1st October; treatment of all maize fields with an appropriate insecticide against adults of the species. These measures were adopted following the positive results obtained in similar conditions in the neighbouring Veneto region. The same phytosanitary measures were carried out by most of the farmers themselves for the safe area.

A specific rule was issued to support the economic losses caused by enforcement of phytosanitary measures of farms situated in the focus and safe areas. It provides 75 €/ha to cover spray costs and further 300 €/ha to partially cover the economic losses resulted from the forced crop rotation.

In 2003, the monitoring network was enforced: 116 pheromone PAL traps were spotted in the whole maize cultivated in the district, 84 of which located in the focus and safe areas. End June 2003, 22 new captures occurred: 19 were found between 25th June and 24th July, only in maize monoculture fields inside 2002 safe area and three specimens on 30th June in 2002 focus area (two in maize after soybean fields, one in a monoculture field allowed to be planted at the border of focus area). Moreover, in 2003, few days after first findings (from end June to late July), more than 1.000 ha of maize crops in focus area (190 ha, sequential other crops) and in safe area were sprayed with insecticide following the same procedure used in 2002. No WCR has been detected since End July 2003.

The positive results obtained in controlling the WCR population show the high efficiency of the phytosanitary measures adopted: in most part of focus area no population out-break occurred and no WCR capture was detected. Furthermore, the majority of WCR new records interested a very restricted area included inside 2002 safe area.

Unfortunately, in the summer of 2003 new conspicuous WCR foci appeared 30 km eastern, not far from the borderline between Friuli and Slovenia.

Fipronil soil baits – a novel application to control wireworms (*Agriotes spp.*)

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The concept of fipronil soil baits is based on bringing the pest to the insecticide rather than the insecticide to the pest. Baits offer several advantages over conventional treatments including significantly reduced dose rates and lower environmental impact.
Fipronil is uniquely suited for the soil bait technology. The molecule is highly active by ingestion and different to many other insecticides, does not show repellence to insect pests.
Fipronil soil baits, proposed brand name: GOLDOR®, are formulated as soil granules containing 0.5 % fipronil, a feeding attractant and some other formulation components. The application rate is lower compared to conventional uses and is depending on crop and application technique. Under field conditions the product provides excellent wireworm (*Agriotes spp.*) control when applied either with in-furrow or band, at-planting application. Fipronil soil baits show good residual activity, very good plant compatibility and a favourable environmental profile.

Development of *Diabrotica virgifera virgifera* LeConte adults in western plain conditions from ROMANIA

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The first adults of western corn rootworm (*Diabrotica virgifera virgifera* Le Conte) in Romania were discovered in a cornfield from Arad district (Nadlac) in 1996. In Timis district (western part of Romania) the first beetles were observed in 1997 (Deta) and the first damage occurred in 1999 in a monoculture cornfield. Since 1996, the pest has spread year by year in other counties from Romania; the main cause of spreading of this pest was cultivation of corn in monoculture on many hectares.

Because the first appearances of adults were registered in western part of country the researches regarding some aspects of biology of WCR it could be presented only in these places.
The other developmental stages of WCR (larvae, pupae, eggs) have been observed in next years. The larvae were observed on the maize roots from Timis district for the first time in July, in the year 2000. In soil samples collected from field in 2000, in August, eggs were found for the first time. The first observations of pupae in soil were made in 2002.

Researches carried out in Timis County in 2003 showed that adults were present from June 24 until September 22 in maize fields and they had two flight picks in July 15 (119 adults/trap) and August 1 (120 adults/trap), respectively. The males have appeared earlier than females with approximate 4-6 days. The females begin to lay eggs in June 30.

Larvae were found from beginning of May to beginning of August in soil. Pupae were observed from the end of June until the middle of August. These observations were made in monoculture cornfields. The larval and pupae populations were checked weekly.

Some of researches were carried out in laboratory conditions. The results showed that imago, larvae and pupae in laboratory emerged earlier than in field conditions. The adults were registered from May 15 until August 1 with a maximum flight in May 29. The larvae stage was observed from April 3 to June 6 and pupae from May 2 until June 24. Laying eggs in laboratory conditions began in May 30.

Monitoring western corn rootworm in Baden-Württemberg (GERMANY) and measures after detection of *Diabrotica virgifera virgifera* LeConte near the Euroairport Basel-Mulhouse

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Placed in the southwest of Germany, Baden-Württemberg has a total area of about 140,000 hectares maize cultivation. About half of this is grain maize (incl. CCM) and half is silage maize. Most of grain maize is grown in the Rhine valley. The maize production there dominantly takes place in monoculture. Therefore already in 1997 a WCR-monitoring programme started in the governmental district of Freiburg with a few traps and from 1999 the monitoring with PAL traps included all of Baden-Württemberg. In 2003

248 PAL traps were set up. Besides focusing on important maize growing areas, high-risk locations for introduction were targeted such as airfields, airports, truck stops, railway reloading stations etc. Traps are generally placed in pairs at each monitoring site (minimum distance: 20-25m).

The first occurrence of *Diabrotica virgifera virgifera* in the Rhine Valley was registered in Southern Alsace, France, in July 2003. *Diabrotica* beetles were discovered near the Basel-Mulhouse airport about 5 km from the German border. Also in Switzerland 2 beetles were caught in a trap near Therwil in the "Kanton Basel Land", 10 km from the German border.

In France a 5 km focus zone and a 10 km safety zone around the centre of the outbreak was defined and control measures were executed. The zones extended across the River Rhine into Germany. Following the outbreak near the Euroairport Basel-Mulhouse the local district administration in Freiburg issued an order on 13 August defining the area concerned in Germany and prescribing the following measures to be taken:

- The existing monitoring program with 62 PAL-traps in the district Freiburg was strengthened by setting up 32 further lure traps (28 PAL, 4 PALs; Baden-Württemberg altogether 248 traps).
- Aridity-damaged corn (approx. 20 ha) was allowed to harvest as silage maize up to 18 August for use in the 5 km zone only.
- An insecticide treatment was prescribed with "Karate Zeon" (Lambda-Cyhalothrin) by a contractor for all maize remaining after the 18 August. The treatment took place with a stilt tractor on about 130 ha and was paid by the Land of Baden-Württemberg (5700 €).

Result of the monitoring: In 248 traps, including 32 additional traps *D. virgifera virgifera* was not found.
According to the new EU legislation the focus zone measures at least 1 km (radius) and the safety zone at least 5 km (radius). In the safety zone the individual farmers can decide, whether they will implement crop rotation or carry out an appropriate treatment of their maize fields in the zone. For the sowing in 2004, it will be determined that the first measure is a seed treatment with the insecticide "Poncho Pro" (Clothianidin) on all maize fields in the safety zone. The other measures will be executed after a German guideline to the conversion of the EU legislation.

Correlation between western corn rootworm damage and the development of secondary corn roots

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Since Western Corn Rootworm (*Diabrotica virgifera virgifera* LeConte) occurred in Croatia (1995), it became a very severe pest of corn, which can cause economic losses. In the last few years, in the county of Eastern Slavonia and Baranya, lots of cornfields had great percentages of lodged plants.

Our investigation was based on evaluation of corn tolerance against WCR. Measuring of the root size and its weighting are one of the main parameters for evaluation of the hybrid tolerance. Plants with better-developed secondary roots are able to give high yields even after WCR larvae feeding. The aim of this investigation was to evaluate the development of the secondary roots after WCR larval feeding.

The trials were done in USA (Iowa) and in Croatia (Gunja and Osijek) during three years (2001, 2002, and 2003). Nine Croatian (Institute of Agriculture, Osijek) and two Pioneer Hi-Bred Int. Inc. (Johnston, Iowa,

USA) commercial corn hybrids were evaluated by using randomized complete block design with four replications. Secondary roots were evaluated by visual scale 1-6 (1 means the best and 6 is the worst), and evaluation was also measured by weighing (g) the root regrowth at Iowa plots.

Strong positive correlations were determined between weighting the roots in grams and visual scale, in Iowa, during all three years of investigations. Average regrow of the secondary roots between the two weightings (two weeks), were 12,06 g. The best hybrids were: OSSK 644, OSSK 596R, OSSK 617 and OSSK 602. Those hybrids were the most tolerant in investigation.

The results showed that visual scale is good for root regrowth evaluation and it can replace the evaluation by weighting roots, which means less of human work.

Capturing of western corn rootworm adults via Ukrainian and PHEROCON® AM sticky traps in Novi Sad and Belgrade in 2003

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A group of researches, working at the Ukrainian Scientific Plant Quarantine Station Boyani and the State Inspection of Plant Quarantine in cooperation with researchers from Novi Sad and Belgrade (Zemun Polje) tested several pheromone compounds, synthesised in Ukraine, in 2003. The aim of this study was to provide the possibility to monitor western corn rootworm (WCR) beetles (*Diabrotica virgifera virgifera* LeConte) on the Ukrainian territory. Efficiency testing of eight selected compounds in monitoring of WCR imagos was performed in two locations of Serbia: Novi Sand (NS) and Belgrade (Zemun Polje - ZP). The traps were placed in large-scale three- (ZP) and four- (NS) factorial trials with full season maize hybrids. Pherocone® AM yellow sticky traps (YsT) were used as a sticky plates to test eight (01, 05, 07, 10, 11, 12, 13 and 14), i.e. nine + № 7 pheromones made in Ukraine. One YsT and one Pheromone-Csalomon trap (PhT) were used as checks and/or standards. The traps were placed in ca. 20 and 30 m apart. Beetles were counted at three and four day intervals: from July 8th to September 23rd at ZP and from July 10th till the end of August in NS. Pherocone AM traps were replaced at two-week intervals, Ukrainian attractants every week, while PhT trap was replaced just once in NS, on August 17th and three times at ZP, on July 22nd, August 12th, and September 2nd.

A total of 1377 beetles or 172 beetles per trap were captured by Ukrainian attractants in Novi Sad for seven weeks. During the first three weeks of monitoring, a total of 145 beetles per trap or 6.9 beetles per day per trap were registered. A corresponding number of beetles amounted to 27.3 or 1 during four weeks of August. The total catch on standard variants with YsT and PhT traps amounted to 228 and 370 beetles per trap, respectively.

Data on efficiency of certain compounds according to the number of caught beetles in NS and ZP significantly differ. The differences between the numbers of captured WCR beetles on YsT without

pheromones at ZP (13) and NS (228) could be attributed to the pheromones. An actual efficiency was registered in Novi Sad in two compounds (11 and 14), while the total number WCR beetles in other compounds on the traps with pheromone was smaller than on YsT traps with no pheromones.

ZP results indicate a definite, but much lower efficacy of each compound of Ukrainian pheromones, except № 11. This compound showed the best results in NS. Efficacy ranged from 6 in combinations 07 and 13, to 33 and 28 in combinations 12 and 05, respectively. A total of 370 and 712 beetles were caught on PhT in NS and ZP, respectively. The ratio between efficacy of Ukrainian pheromones and PhT as a standard ranged from 1:2.2 to 1:2.4 in NS, while this ratio at ZP amounted to 1:10.2 for the last year compound and to 1:21.6 for the variant 12.

It can be concluded that a significant difference in two locations was very much influenced by the level and genetically different background or different strains of WCR populations. Such hypotheses could be checked during the next year on the material previously collected.

First finding of the western corn rootworm in the NETHERLANDS

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The Plant Protection Service of The Netherlands has carried out annual monitoring with PAL-traps in maize fields for *Diabrotica virgifera virgifera* LeConte (WCR) since 1997. In 2003, pheromone traps were placed at about 120 locations, mainly in monoculture maize fields at risk locations such as airports, harbours and military airbases. August 14, 2003 two adult beetles of WCR – first observation of WCR in The Netherlands – were detected in one maize field near Amsterdam (Schiphol) Airport and the Aalsmeer flower auction. This particular field had been part of the monitoring network for five consecutive years.
As soon as the Entomology Section confirmed the detection of WCR, an eradication programme was implemented. The implemented measures, which followed the control measures as described in the EU-Commission proposal, were included in a national regulation and published.

A **focus zone** of one km radius was demarcated around the field where the two adult beetles were found. Only three maize fields (six ha) are situated within this focus zone. The respective maize fields were treated with *deltamethrin* a few days after the finding of WCR. Two weeks later, the chemical treatment was repeated. The following measures were also implemented:

* no harvest of maize allowed before the October 1;
* no movement of maize and soil from maize fields from within the focus zone to outside this zone;
* crop rotation of 1:3;
* compulsory removal of volunteer maize plants in the following year(s).
* compulsory cleaning of equipment and machinery used on maize fields

In the surrounding demarcated **safety zone** with a radius of five km, crop rotation of 1:2 has been implemented for the forthcoming years. Within this zone, the maize fields were not treated with an insecticide.
Monitoring with pheromone traps (PAL and a few PALs traps) was intensified after the finding of WCR: twenty-six traps were placed within the focus zone (three maize fields), fifty-eight traps within the safety

zone (seventeen maize fields) and one hundred traps on maize fields surrounding the safety zone. Not a single specimen of WCR was caught in this area or elsewhere in The Netherlands after August 14.

Conclusion

The maize field where the two adult beetles of WCR were caught is situated both close to Amsterdam (Schiphol) Airport and the Aalsmeer flower auction. Therefore, a plausible explanation for the introduction of the beetles in this area is, apart from transport by aeroplane, transport by trucks. Because not a single beetle was caught after the first finding of August 14, it is assumed that the situation is under control.

Because the recent outbreaks in the Netherlands, France and Belgium are cause for great concern for an ongoing spread of WCR in these regions, The Netherlands will further increase the monitoring intensity throughout the country in 2004.

Characterization of Cry34Ab1/Cry35Ab1: Evaluating fitness effects on corn rootworm larvae during exposure to roots

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Bacillus thuringiensis strain PS149B1 produces binary insecticidal crystal proteins named Cry34Ab1/Cry35Ab1. This trait is under commercial development through a collaborative research effort between Pioneer Hi-Bred/DuPont and Dow AgroSciences LLC. Maize hybrids expressing Cry34Ab1/Cry35Ab1 insecticidal crystal proteins are being developed for control of larval stage corn rootworm. Effect of this trait on corn rootworm larvae was evaluated using a laboratory seedling assay system. This test system relies on measures of larval fitness over sequential sample points. Preliminary results suggest roots expressing Cry34Ab1/Cry35Ab1 are protected from damage by all instars. These findings and their implications for trait durability are discussed.

Some biological and biochemical aspects of imago *Diabrotica virgifera virgifera* Le Conte

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The growing season 2003 years in the majority of the European countries was characterized by conservation of hot dry weather during long time of spring and summer.

Analyzing dynamic of development and population level *Diabrotica virgifera virgifera* Le Conte in two localities Serbia (Maize Research Institute, Belgrade and Research Institute of Field and Vegetable Crops, Novi Sad) was ascertained, that the level of population of imago in Novi Sad is higher, than in Belgrade. Such situation has developed owing to unfavourable weather conditions in Maize Research Institute region.

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In the season of mass output of beetles *Diabrotica virgifera virgifera* Le Conte above fields of institute has passed "tornado" with hailstones, damaged substantially plants of corn, and also its generative organs that has brought simultaneously to destruction parts of imago of the pests, and also migration of population for the forager factor. There was a requirement to investigate in more details a population of pest in different localities under developed weather conditions of a growing season 2003 years.

Analysis of number female and male on experimental field Maize Research Institute (the end of the first decade of July) has shown their interrelation 100:150 (sexual index 1,5). Thus of 75 % female were ready to postpone eggs, and 25 % were in a state of couple.

At the same time in Novi Sad the sexual index of a population has made 1,74 (on 100 female it was necessary 174 male), and has made about 60 % number female, ready to postpone eggs.
Some morphological parameters of imago have been analyzed also: general length of a body of imago (table 1), width bodies (table 2), length of head (table 3) and length of elytrums (table 4). The data are resulted in tables on morphological parameters of imago *Diabrotica virgifera virgifera* Le Conte from three localities (Zemun Pole - Maize Research Institute, Novi Sad, Serbia and Zakarpatja, Ukraine), showed some deflections. Parameters male from Zakarpatja in the majority of parameters concede to those from Zemun Pole and Novi Sad, and male as well as female from Novi Sad - according to an imago from Zemun Pole. In our opinion, these researches it is necessary to expand to have a picture of variability of a population in Europe in dependence on local climatic conditions and the fodder factor.

Having carried out researches of morphological parameters of imago, the part of a biological stuff has been fixed in 60 % an alcoholic solution with the subsequent preparation for biochemical analysis. They are carried out in Ukrainian Scientific Research Station of Plant Quarantine by method isoelektrofocussed proteins in polyakrilamid jelly with ampholit, pH 3,0-10,0.

Studying of the proteins passport (spectrum) of imago female and male locality Maize Research Institute (Zemun Pole) specifies their identity except for concentration of protein of sexual bunches on fractions.
It is the first assay of such researches which, we hope, in the future will be expand with the purpose of overall detailed studying population *Diabrotica virgifera virgifera* Le Conte in a new natural) niche of the European continent.

Monitoring of *Diabrotica virgifera virgifera* LeConte in the UKRAINE

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In 2003 the total corn acreage in Ukraine amounted to 3.5 million hectares. The specialists of the Ukrainian National Service, researchers of plant quarantine monitored and revealed the western corn rootworm. On the territory of 1200 000 ha 25 regions were visually inspected and by means of pheromone traps of both Moldavian and Ukrainian production 15000 ha in 325 districts of 24 regions of Ukraine were monitored. There were defined the main ways of *Diabrotica* spread into Ukraine (Tabl 1). Major attention was paid to the regions of Odessa, Chernivtsi, Ivano- Frankivsk, Lviv, Zakarpattya bordering with

Romania, Slovakia, and Hungary where the corn rootworm had already settled. The pheromone and cucurbicit traps were installed in the first half of July, starting 1 July 2003. Every 7 days the inspectors of the Phytosanitary Service counted and defined the traps, sent to quarantine labs for analysis. The pheromone capsules were changed every 30 days.

In 2003 Ukrainian specialists of the Phytosanitary service revealed 2590 males end 3 female (Table 1) of *Diabrotica virgifera* in 61 inhabited locations of 10 district: Vynogradiv, Beregovo, Uzhgorod, Mukachiv, Khust, Irshava, Perechyn, V.Bereznyy, Svalyava, Tyachiv in Zakarpattya. These locations are situated in the frame of 50-60-km zone from the border with Slovakia, Hungary, and Romania. WCR imagos in the Zakarpatsky region were found on pheromone traps July 10 to July 18, 2003. The corn plantations monitored revealed no larvae of the western corn rootworm. Thus they migrated from the border regions of Hungary, Romania, and Slovakia. The results of the investigations were published in the special journal. *Diabrotica virgifera virgifera Le* Conte was identified by Zakarpatska zone quarantine laboratory (the city of Uzhgorod) and confirmed by the Central scientific-research quarantine laboratory (the city of Kyiv). In other locations and regions of Ukraine monitoring of the WCR in 2003 gave no positive results.

Based on the knowledge on the western corn rootworm there were edited methodical recommendations, letters and posters, articles were published in scientific and agricultural journals and other media, some TV programs were dedicated to this topic.

Tabl 1: The review of *Diabrotica virgifera virgifera* LeConte occurrence in Zakarpattya region in 2003

	District	Number of caught adults	
		Male	Female
1	Beregovo	312	-
2	Uzhgorod	512	3
3	Vynogradiv	1348	-
4	Mukachiv	104	-
5	Khust	84	-
6	Irshava	166	-
7	Perechyn	26	-
8	V.Bereznyy	5	-
9	Svalyava	21	-
10	Tyachiv	12	-
	Total	2590	3

The pests from maize crops, the assessment of losses and the possibilities of their control (Transylvania – ROMANIA)

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The maize crop in Transylvania occupies a large area, the plants being attacked from the very beginning, from the coming up, till after the earing up by different pests.
In this paper are presented, the results obtained between 2001-2003 regarding the abundance of pests presented in maize crop, the losses assessment of the most damaging pest European Corn Borer (*Ostrinia nubilalis* Hbn.) at the hybrids created in ARDS Turda and the possibilities of controlling the pests

using different methods. The highest frequency of attack was recorded at the corn borer (20-80%), *Agrotis* larvae (3-30%), wireworm (*Agriotes* spp., 8-30%), earth fleas (*Phyllotreta* spp., 20-50%), and also beginning with 2002 the western corn root (*Diabrotica virgifera virgifera*, 8-19% attack, and 20-50 adults/pheromones traps). The produced damages by these pests consisted of significantly yield losses, which were correlated with attack frequency being between 12,7 and 23,7%.
As controlling methods of mentioned pests were utilized the seed treatments, treatments on the vegetation with different products and sexual pheromone traps. The seed treatments with Fipronil (5l/t), Thiametoxam (10l/t), Imidacloprid (10l/t), Acetamiprid (2,5l/t), realized a significantly coming up and yield increase (4,0-15,0% come up plants and 6,5-22,0% yield increase).
The treatments applying on the vegetation with Fipronil (0,1l/ha), Fenoxicarb (0,3kg/ha), Lufenuron (1,0l/ha), Thiametoxam (0,1l/ha), Cipermetrin+Clorpirifos (0,7l/ha), Clorpirifos metil (1,5l/ha), then Bacillus thuringiensis (1,5kg/ha), *Trichogramma maidis* (200.000 indiv. /ha), reduced the attack of European Corn Borer with 15-30%.
The pheromone traps – efficiency biotechnical method- reduced significantly the number of lepidopterous pests (30-40%), establishing also the proper moment of appliance for treatments that means actually money and time savings.
For realizing an efficient control of pests, is necessary a linking of agro technical, biological, chemical methods, the utilising of resistant hybrids, which represents control systems and counts on technological, ecological and economical elements. All of these contributes to reducing the number of treatments, and also in reducing the environmental pollution and protecting the useful insects.

Studies of the harmfulness of the western corn rootworm (*Diabrotica virgifera virgifera*) in UKRAINE

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In 2001, the Western corn rootworm (WCR) was found for the first time in fields of the corn in Ukraine with the help of pheromone traps in the Transcarpathian Region. For the period 2002-2003, there were carried out a visual monitoring of plant damage by larvae and beetles and also catching of imagos on diverse crops using glue traps with sex pheromones. These traps were able to catch both males and females. A small degree of pest colonization of plants let us to find plants with the traits of damage by the larvae (lodging, ulcerated roots) in the heading stage of a panicle and flowering of corncobs, when larvae have completed their feeding, pupated, and flight of imagos began. The damaged corn plants within a field were disposed with small groups (10-18 pieces) and in the whole ones didn't exceed 10% overall number. In 2003, in July-August, the beetles were discovered visually on the corn plants. In so doing, their high density was marked in July 24-26. Then, the imagos dispersed. In August, the beetles being on the corn plants disposed on the threads and naked seeds of corncobs (the milk stage) where they fed (Fig. 1. 2). It was stated that the corncobs of lodging plants, which were probably damaged by the larvae earlier, were colonized later on by the beetles in average in 78% with the number 2.98 adult per corncob. At that time the corncobs of closely situated undamaged by larvae plants were colonized by the beetles to a level 3.4% with the number of 0.09 adult per corncob (Table 1). Ratio of the females to males was 1:0.38. The damage degree of the corn plants by the beetles and larvae was insignificant because of low pest population density. The beetles were not found out visually on other species of crops (the haricot, pumpkin). The imagos of the WCR were caught in the corn fields with sex pheromone traps. Their density increased year in year out: in 2001- only 6 adults, in average 0.17 beetles per trap for a season; in 2002 - 84 and 1.33; in 2003 - 656 and 10.09, correspondingly. In the traps to be settled in the fields of other crops (the sunflower, alfalfa, barley, winter wheat), the beetles were not caught.

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Comparing relative trapping efficacies of several *Diabrotica* rootworm beetle trap types in Illinois, USA

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A number of different trap designs for *Diabrotica spp.* (Col.:Chrysomelidae) (*D.v.v.*) are described in the literature. Some of them are commercially available; some can be put together on the spot with a minimum of dexterity, material, and cost. There is probably not anyone *optimal* trap for all different applications, all rootworm beetle species, different times within the growing season, different population densities, different crops, requirements of omni directionality, or stability in sunshine, wind, and rain. However, in our hands, a few trap designs clearly stood the test of time, both in terms of practicality, trapping efficacy, ease of handling, and costs.

Three trap types have been compared side by side during September of 2003 in Illinois late planted maize fields: 1. the cylindrical "Shaw vial trap" of 1984, 2. the conical sticky cup trap ("Metcalf trap") of 1988, and 3. the newly developed "*Intensive Rootworm Beetle Collection (IRC) trap*" of 2003. The trap design features will be depicted, and some of the results will be tabulated in the poster.

Briefly, all 3 trap types are rather inexpensive, are made from easily accessible materials, and will not require any special tools apart from hammer, drill, metal wire cutter, screw driver, scissors, glass pipettes, glue, insect adhesive, spatula (the latter for type 2 only), and specific lures. Types 1 and 3 are omni directional, type 2 can be modified to become fully omni directional. Given specific pheromone or kairomone lures, the 3 types have a surprisingly high degree of *specificity* for *Diabrotica spp*. The *relative* efficacy ratios of traps 1, 2, and 3 for adult WCR beetles can be characterized as:

1: 91: 23 for type 2 and 3 being baited with MCA alone,
1: 36: 10 with MCA plus MPE,
1: 4: 3 with MPE alone, and
1: 11: 11 with *D.v.v.* sex pheromone alone.

MCA and MPE stand for the synthetic kairomone lures 4-methoxy-cinnamaldehyde and 4-methoxy-phenylethanol, resp., as developed by R.L.Metcalf and R.L.Lampman in 1988. Trap 3 is in the process of further development. Implications for population survey and *D.v.v.* management will be discussed.

Persistence and seasonal population dynamics of entomopathogenic nematodes *Heterorhabditis bacteriophora* and *Steinernema feltiae*

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The establishment and persistence of entomopathogenic nematodes (Heterorhabditis bacteriophora and Steinernema feltiae) was investigated in organic agriculture. Nematodes were sprayed at a dose of 5x105 infective juveniles/m². *S. feltiae* was applied on red clover in October 2001 on an area of 18 x 500 m. In spring 2002 oats were sown. *H. bacteriophora* was applied on oil seed rape in October 2001. White clover

was sown in autumn 2002. In June 2002 *H. bacteriophora* was again applied on field beans, which were followed by winter wheat. The latter nematode was always applied on an area of 9 x 500 m. To monitor the natural nematode population before and immediately after spraying, 100 soil samples per field of approximately 35 g (soil core of 2 cm diameter and 10 cm depth) were collected. Later samplings took 50 samples per field. The samples were transferred to 25℃ and 2 last instars of *Galleria mellonella* were added for 3 days. Trapping of nematodes was replicated twice and the percentage of samples with nematodes was recorded. After the application in October 2001 the population of *H. bacteriophora* decreased to 50% and that of *S. feltiae* to 25% of the released amount. Both nematode populations applied in October 2001 disappeared during the winter and nematodes were again recorded during the summer until September and were than again detected at 2% positive samples in February 2003. A natural population of *H. bacteriophora* was never detected, but the released population invaded the neighbouring controls probably due to anthropological influence. As the occurrence of *S. feltiae* in the *H. bacteriophora* field did not differ from that in the field that was applied with *S. feltiae* we consider that the natural population was not suppressed by the introduction of *H. bacteriophora*. The establishment of *H. bacteriophora* in June 2002 in beans seemed to be more successful as over 50% of the samples were positive for H. *bacteriophora* in the following months. The population was quite frequently detected also during the winter. The beans suffered from an attack of *Sitona lineatus*, which could have supported the successful establishment. It cannot be concluded about an effect on the natural population of *S. feltiae* in this field because this species was not detected neither in the treated nor in the untreated areas.

Natural mortality factors acting on western corn rootworm populations

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The Western Corn Rootworm, *Diabrotica virgifera virgifera* LeConte, invaded Europe about 50 years later after its successful invasion into all North American maize growing areas. In order to successfully combat invasions, we need to thoroughly understand the population dynamics of this alien pest species in the invaded regions. This study focused on assessing natural mortality factors acting on life stages of *D. v. virgifera* by conducting life-table studies in Hungary in 2000 and 2002. This knowledge was used to rank the mortality factors regarding their intensity in reducing *D. v. virgifera* populations, and finally to discover key mortality factors acting on *D. v. virgifera* life stages and thereby influencing population growth.

In order to determine mortality factors during the over wintering period of the pest insect, several sets of eggs were exposed to winter conditions in the field and recollected during the following spring. In order to determine mortality factors among the larval instars and pupae, several sets of 50 maize plants were artificially infested in the field each year. Larval instars and pupae were recollected using soil-root samples, and stage-specific mortality factors were determined. Adult density was measured in 50 emergence cages covering artificially infested single plants in maize fields each year. The population density was compared between each developmental stage, and the apparent mortality of each stage was calculated to construct a life table for two generations of *D. v. virgifera.*

In summary, a total mortality of over 95 % during the life cycle of *D. v. virgifera* appears to be typical for this maize pest; however, its populations are still able to growth. Populations of *D. v. virgifera* were mainly reduced by mortality factors acting on the first instar stage and by not realising the potential fecundity. Nonetheless, large variations in the realisation of fecundity, in the over wintering mortality, and in the mortality of late larval instars resulted in the highest impact to influence population growth rates of *D. v. virgifera*.

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Initial spread by introduced *Diabrotica virgifera virgifera* towards maize fields

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In the late 1980s a new maize pest was accidentally introduced from North America into Serbia. Within 10 years, this invasive beetle, *Diabrotica virgifera virgifera* (Western Corn Rootworm, Coleoptera: Chrysomelidae), was rapidly spreading over Central Europe. Recently several new spots of isolated introductions were reported in Europe, such as in Lombardy (Italy), around Paris (France), Basel (France and Switzerland), Amsterdam (The Netherlands), and London (UK). Those multiple introductions rises the question on the process of initial spread of the beetles over non-native habitats towards maize, being one of the potential key factors behind the invasiveness of *D. v. virgifera*.

In order to investigate such an initial colonisation movement of *D. v. virgifera* adults from unfavourable areas into maize fields, mark release - recapture techniques were applied. Two non-maize areas were chosen as release areas of marked beetles in southern Hungary. Two maize plots were established 300 m apart from a centred release point. Moreover, all non-crop and crop habitats were recorded in longer distances around the release areas. For recapturing beetles, non-baited yellow sticky traps (Pherocon AM), were placed in three circles around the centred release point, totalling in 416 traps in each of the two study areas. About 12000 beetles were marked with fluorescence powder and released in each of the totally 5 releases. Every second to third day, beetles were recollected and their vectors of movement were recorded, i.e. distance and direction.

Preliminary results suggest, that *D. v. virgifera* is a very active flyer and is able to move over longer distances, however, no major vectors of directed flight were found. Together with the expected results in 2004 it will be possible to correlate *D. v. virgifera* movement to weather parameters and habitat structures such as maize, wheat, grassland, forests and others.

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First report on western corn rootworm (*Diabrotica virgifera virgifera* LeConte) in Slovenia

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Maize is one of the major crops in Slovenia covering about 40 % of all arable fields. Since our country has suitable climatic and trophic conditions for the establishment of *D. virgifera virgifera*, we joined a project team which is active in frame of EPPO by monitoring the spreading of WCR in 1995 and started its monitoring in Slovenia in 1997.

The monitoring of WCR in 2003 was carried out by Agricultural Institute of Slovenia in co-operation with the inspectors of Phythosanitary inspectorate. It was financed by Administration for plant protection and seeds (Ministry of Agriculture, Forestry and Food). The control spots were set in maize fields (53) and pumpkin fields (5) between 23 and 26 June in the regions of Pomurje, Podravje, Posavje, Gorenjska, Northern Primorska.

The monitoring was carried out from the end of June (23. 06.) to the end of August. During that time, pheromone and yellow sticky traps were checked regularly in 7 – 10 day intervals. At the end of July pheromone traps were replaced. Yellow sticky traps were replaced more frequently.

At each control spot (altogether 58), one pheromone trap and one yellow sticky trap were set 50 meters away from each other. When the first beetles were caught in the region of Pomurje on 23 July two additional control spots were established in Veščica and Velika Polana using only one pheromone trap per spot. Similarly, two additional spots were established in Northern Primorska (Ajševica and Vogrsko) when WCR was caught in Vogrsko on 6 August. The monitoring of *D. virgifera virgifera* finished in 2003 at the end of August since the maize was harvested one month earlier than in previous years because of very dry weather conditions in the summer.

A total of 62 pheromone traps and 58 yellow sticky traps in the Slovenian regions of Pomurje, Podravje, Posavje, Gorenjska and Primorska were monitored. Male beetles were confirmed in 14 of them; altogether, 19 beetles were caught by pheromone traps and no beetles by yellow sticky traps.

The pest was found for the first time in Slovenia on 23 July 2003 near the villages Gibina (1 beetle), Benica (2 beetles) and Mostje (1 beetle) in Pomurje and on 24 July 2003 near the village Jastrebci (1 beetle) in Podravje, not far away from the border of Hungary and Croatia. Further monitoring showed that the pest was not yet extended in Slovenia since only few beetles were caught in Pomurje afterwards. WCR was also confirmed on 30 July in pheromone traps placed in maize fields in Pince (2) and Domanjševci (1), on 6 August 2003 in Domanjševci (1), Loperšice (1), Motvarjevci (1) and Grabe (2), on 13 August 2003 in Žitkovci (1) and finally on 20 August 2003 in Gaberje (1).

On 6 August 2003, males of *Diabrotica virgifera virgifera* were caught for the first time in pheromone traps placed in Vogrsko (1), Northern Primorska, 10 km from the Slovenian-Italian border and afterwards in Ajševica (1) on 19 August and in Bukovica (1) on 27 August 2003.

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IWGO - ITEMS

FIRST INFORMATION
***FOR THE* 11th *Diabrotica* Subgroup Meeting,**
10th EPPO ad hoc Panel and FAO Network Group

The 11th IWGO *Diabrotica* Subgroup Meeting will take place in

Bratislava, Slovak Republic; February 14 –17, 2005

The *Diabrotica* Subgroup Meeting will take place – as usually - together with the 10th EPPO ad hoc Panel and the FAO –Network Group - Meeting.

On behalf of the IWGO – *Diabrotica* Subgroup Convenor, Prof. Dr. Rich **EDWARDS**, the local organizer Mr. Jozef **KOTLEBA** (Slovakian Ministry for Agriculture; Agricultural and Trade Division Plant Commodities Department) and Dr. Ulrich **KUHLMANN** (Head of the Scientific Committee) and I, you are kindly invited to take part in this meeting. Attached you find the outline of the scientific program, as well as the pre-registration form sheet. Please submit the title of your oral and / or poster presentation according to the themes given in the scientific outline.

Bratislava is the capital of the Slovak Republic and situated in the west of the republic, close to the Austria border, approximately 60 km east of Vienna.
How to get there: by airplane directly to Bratislava Airport or to Vienna International Airport. There is a permanent shuttle service from the Vienna-Airport to Bratislava.
Bratislava can also easily reached by car and train.

The registration fee is divided in early and late bookers and will be € 260,00 (early booking, single room) resp. € 325,00 (late booking, single room). This fee includes all coffee breaks, lunch, dinner and drinks, meeting documents, accommodation (3 nights), program and the IOBC-contribution. (see “Reg.-Form Sheet”)

Further information, especially concerning accommodation and more details about the Conference location will be sent to you by the local organizers via e-mail in due time.

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11TH *DIABROTICA* SUBGROUP MEETING

10TH EPPO AD HOC PANEL AND FAO NETWORK GROUP

February, Monday 14 to Thursday 17, 2005

Bratislava, Slovak Republic

Registration Form Sheet

Deadlines:
Early Registration: 30 November 2004
Late Registration: 31 January 2005

(Please use capital letters)

Name – Ms / Mr / Dr: ……

Institution:……..

Street:……

City:……

Zip/Postal Code:……

Country:……

Telephone:……...

Fax:……

E-mail:……...

Dietary Restrictions: e.g. vegetarian……

1. Registration fee

Registration fees	**Before** 30 November 2004	**After** 30 November 2004
Registration and accommodation (Single Room)	Euro 260.00	Euro 325.00
Registration and accommodation (Double Room)	Euro 240.00	Euro 300.00

Registration covers:

- Entry for scientific sessions
- 3 breakfasts, 2 lunches, 5 coffee-breaks
- 3 dinners including drinks
- Bus transfers to restaurants
- Copy of programme booklet with abstracts
- Accommodation 3 nights single room Euro 75.00 or alternatively 3 nights double room Euro 55.00 (accommodation is included in registration fee!); Conference Center: Súza Hotel, Drotárska cesta, www.suza.sk

In case you like to book a double room, please name your room mate:

_____

Please note, registration will not be processed without accompanying payment of fees.
Send the registration via fax or e-mail to:

Dr. Jozef KOTLEBA
Ministery of Agriculture; Agr. & Trade Division, Plant Commodities Depart.
Dobrovičova 12
81266 Bratislava
Slovak Republic
Fax.: + 421-2-59266358
E-Mail: kotleba@land.gov.sk

2. Payment (Money order only)

☐ I have transferred the registration fee (free of bank charges)

☐ Early Registration/Single Room Euro 260.00

☐ Early Registration/Double Room Euro 240.00

☐ Late Registration/Single Room Euro 325.00

☐ Late Registration/Double Room Euro 300.00

Diabrotica Meeting Account
Tatra Banka, Herlianska 14, Bratislava
Accountholder Samik Pramene
IBAN SK 48 1100 0000 0026 2073 1284 , BIC (Swift) TATRSKBX
Payment specification, indicate ***Diabrotica***

- All bank charges must be paid by the participant.
- Please quote the name of the participant on the transfer form.

Conditions of Attendance:

☐ **I hereby acknowledge the conditions of attendance (please indicate)**

Registration:

- Registration will not be processed without accompanying payment of fees**.**
- After receipt of payment of the registration fees, you will receive a written confirmation by e-mail.

Cancellation:

- Cancellations are accepted in written form only.
- Cancellations received before 15 November 2004 will receive a full refund less a 15 % administration fee.
- No refund for cancellations received after the 15 November 2004 and for no-shows.

Liability:

- The organizer is not liable for any losses, accidents or damage to persons or objects, regardless of the cause. Participants and accompanying persons attend the conference and all accompanying events at their own risk and responsibility.

For questions concerning registration please contact:
Dr. Jozef KOTLEBA
Phone: + 421-2-59266357
Fax: + 421-2-59266358
E-Mail: kotleba@land.gov.sk

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Form Sheet: "Submission of Papers"

First/Last Name_____

I would like to offer:

□ An oral presentation

□ A Poster

Scientific Session Number: □1 □2 □3 □4 □5 □6 □7 □8

TITLE:_____

AUTHORS(s)_____

Scientific Session 1 (Monday 14 Feb 2005 pm): ***Monitoring in Newly Infested Countries***
Representatives of newly infested countries are invited to provide an update about pest status and distribution of Diabrotica based on monitoring data from 2004. Country speakers of newly infested countries please prepare an oral presentation, which will last not longer than 7 minutes (max 4 slides per presentation).

Scientific Session 2 and 3 (Tuesday 15 Feb 2005 am): ***Country Experiences with the Emergency Measures to Prevent the Spread of Diabrotica within the European Community (C(2003)3880): Recommendations***
Speakers are invited to provide information about the implementation experiences of the European Commission decision from 24 October 2003. At the end of the session the IWGO Group might provide recommendations for harmonising a Diabrotica management strategy between European countries.

Scientific Session 4 (Tuesday 15 Feb 2005 pm): ***Management Options***
Speakers are invited to provide information about the adaptation of crop rotation practices, new maize cultivars, and other new products to control Diabrotica including GM products.

Scientific Session 5 (Tuesday 15 Feb 2005 pm): ***Poster Session***
Time will be reserved to make sure that poster presentations can be discussed more in detail. Please use the opportunity to prepare a poster presentation as there is enough space in the hall in front of the conference room to display the contributions submitted.

Scientific Session 6 (Wednesday 16 Feb 2005 am): ***Basic Ecology***
Speakers are invited to provide information about the spatial distribution of Diabrotica, multitrophic interactions in the Diabrotica – maize system, Diabrotica nutrition ecology, Diabrotica – natural enemy associations, and semiochemicals.

Scientific Session 7 (Wednesday 16 Feb 2005 am): ***Free Themes***
Speakers are invited to provide information about topics, which would be otherwise not covered during the meeting. It is expected that one speaker will provide an up-dated overview about the Farmer Field School (FFS) implementation in Europe.

Scientific Session 8 (Wednesday 16 Feb 2005 pm): ***IPM in European Maize Production: Review and Integration of Diabrotica Control Measures***
Invited speakers are expected to provide information about current integrated practices to control other maize pest such as corn borer, wireworms, grubs and aphids. In addition, one invited speaker will review the IOBC Maize IPM Guideline aiming for the potential integration of Diabrotica control measures.

Depending on the number of papers submitted for each presentation format, the programme committee might accept your paper for presentation in a different format.

Please send this form to Dr Jozef Kotleba before 30 November 2004
Fax: +421-2-592 66 358 or E-mail: kotleba@land.gov.sk