

1st Meeting of the EPPO ad hoc Panel on *Diabrotica virgifera***held jointly with the 3rd International IWGO Workshop on *Diabrotica virgifera*****Zagreb, 1996-10-15/16****PARTICIPANTS**

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1. Opening

The meeting was opened by Deputy-Minister Tanic of the Croatian Ministry of Agriculture and Forestry and by Prof. M. Maceljiski of the Plant Protection Research Institute. Dr Berger welcomed the participants on behalf of IWGO, and Dr Smith on behalf of EPPO. Dr Smith explained that the EPPO ad hoc Panel coincided in its operation with the IWGO Workshop, and was not intended to have a separate function or identity. It was an administrative concept, intended to achieve four main aims: 1) to ensure that specific EPPO concerns were discussed at the workshops on this quarantine pest important for most of the EPPO region; 2) to allow participants from any EPPO member country, and from the EPPO secretariat, to attend the workshops freely and regularly; 3) to put in place an official reporting procedure to the Working Party on Phytosanitary Regulations; 4) to ensure that an EPPO body was in place if the IWGO workshops were interrupted or took another direction.

Dr Berger reported that he had returned from an EPPO-sponsored study tour to Midwestern states of the USA in 1996-07/08. His report is presented in Appendix I.

2. Situation, and results of monitoring, in different EPPO countries

Reports were received on the present situation, and results of monitoring programmes, in the country of the *D. virgifera* outbreak (Federal Republic of Yugoslavia), surrounding countries, and other concerned countries. It was noted that the degree of concern should relate partly to geographical position (distance from the outbreak), suitability of climatic conditions for the pest (which remains to be analysed for the EPPO region), and economic importance of maize. In the last respect, the following table ranks EPPO countries in terms of area of maize production:

Country	million ha	Country	million ha
Romania	3.2	Germany	0.3
France	1.9	Spain	0.3
FR Yugoslavia	1.5	Moldova	0.3
Hungary	1.2	Bosnia-Herzegovina	0.2
Ukraine	1.2	Austria	0.2
Italy	0.9	Greece	0.2
Russia	0.8	Portugal	0.2
Bulgaria	0.6	Slovakia	0.2
Croatia	0.4		

Croatia

Ms Zlof reported that, in 1996, 788 adult *D. virgifera* were caught in traps in Croatia (769 in 109 pheromone traps, 5 in 68 cucurbitacin traps, 14 in 50 yellow sticky traps). The great majority of catches was in pheromone traps. All catches were in the eastern part of the country - 714 in Vukovarsko-srijemska county (adjoining Serbia), 66 in Osjecko-baranjska

country (adjoining Hungary), 8 in Brodsko-posavska county (adjoining Bosnia-Herzegovina). Catches were made up to 100 km from the Serbian border. Fifteen traps placed in other countries made no catches. Surveys were made in maize fields and on soybean fields (in rotation with maize), and also on cucurbits and weeds which attract adults for feeding. No active infestations of maize were found, though a few flying adults were seen.

Federal Republic of Yugoslavia

A written report was presented to the Panel by Dr Berger. Monitoring in 1996 showed that the country could clearly be divided into two zones: northern Serbia, which can be considered as the infested zone in so far as adults can be trapped throughout it, southern Serbia (and Montenegro) which is uninfested (adults are not trapped). Monitoring is carried out in the northern zone as a basis for control recommendations, and in the southern zone (with pheromone traps) to detect further spread. The zone in which active damage is observed remains restricted to an E-W oval around Belgrade. In this area, yield losses are up to 20% (but up to 80% lodging has been seen locally).

Hungary

In 1996, monitoring was extended to the whole country, at different densities in three zones: 1) southern zone corresponding to major area of maize production; 2) central zone (little maize production, because of relatively unsuitable conditions; 3) northern forest zone (no maize). Pheromone traps were mainly used. Adults were caught only in the southern zone, in an area about 100 km along the Serbian border and 40 km in depth (corresponding to 30-40% of the zone). The numbers caught were much greater than in 1995 (19 times more, for the same type of trap). Catches were made at 35 sites in 1996, instead of only 5 in 1995. Surveys of maize crops did not show any active infestations.

Romania

After negative trapping results in 1995, monitoring with cucurbitacin and yellow sticky traps in 1996 led to the first detection of *D. virgifera* in Romania. Three adults were caught in one trap at Nadlac (Arad district), about 300 m from the Hungarian border. Maize fields were monitored throughout the country for signs for damage, but no indications of infestation were found.

Bosnia-Herzegovina

Though there was no participant from Bosnia-Herzegovina at the workshop, Croatian scientists reported that they were aware of a 1996 trapping programme in northern Bosnia which had led to some captures in areas not far from the areas in eastern Croatia where catches were made in 1996.

Slovenia

No adults had been trapped in 1996 in yellow sticky traps placed along the Croatian and Hungarian borders.

Ukraine

Large areas of maize production are being monitored for first signs of damage. Trapping has been started in the extreme southwest of the country (adjoining Romania). Up till now, *D. virgifera* has not been found in Ukraine. An international symposium on the pest was held in Ukraine in 1996 and made detailed recommendations on international cooperation (see *IWGO Newsletter* Vol. 16, No. 2).

Poland

In 1996, five monitoring points were established in the south of the country (near Czech and Slovak borders), in maize fields and in a maize-breeding station. The maize production of Poland is only about 0.05 million ha (cf. figures below), but measures are being taken to prevent introduction of *D. virgifera*.

Other countries

There was confirmation from participants at the workshop that *D. virgifera* has not been found in Austria or Germany. No information was available from certain countries surrounding the area of the outbreak (Albania, Bulgaria, Macedonia, Moldova, Slovakia).

Discussion of the present situation

The situation was summarized by Dr Berger and discussed by the participants. For the moment, the active outbreak is confined to part of northern Serbia. This is the only area where infestations have been found in maize fields. The outbreak area is surrounded by a zone in which adults can be trapped but no infestations have been found, including the adjoining areas in northern Serbia, and limited parts of Croatia, Hungary and Romania.

During discussion, it was recalled that adult female *D. virgifera* will make long-distance flights, often in large numbers (this behaviour is well documented in North America). On the other hand, males will normally only fly a few km. Cucurbitacin and yellow sticky traps catch adults of both sexes, while pheromone traps catch only males. Also, pheromone traps are much more effective than the other traps. From this it could be inferred that the large numbers of males caught in pheromone traps in Croatia and Hungary in 1996 come from local breeding populations of the pest. However, none were seen, so the situation remains unclear. Also, it seems possible that females have flown much further but have not yet been detected.

The area in which adults can be trapped seems to be extending slowly but steadily in all directions. It is possible, however, that this is mainly a reflection of the positioning of traps, and that the true area in which adults can be trapped is in fact larger. There are no specific

reports of "outlying" areas in which *D. virgifera* was trapped, but this again could be due to the trapping pattern.

3. Research reports

Dr Edwards (Purdue University, US) reported that, in Indiana (US), maize is increasingly being grown in rotation with soybean (85% now compared with only 30% a few years ago). In principle, this rotation should break the cycle of the pest and act as an effective control measure. However, female *D. virgifera* are being found in soybean fields, feeding on flowers, and then laying eggs in the soil, which then await the succeeding maize crop. The rotation control strategy is thus broken. Dr Tolefson (Iowa State University, US) stressed that, in his view, it is a myth that *D. virgifera* females return to maize fields to lay their eggs. Recent studies show that females lay eggs where they are. Dr Edwards reported that some Indiana populations of *D. virgifera* are now much more attracted to soybean flowers in laboratory olfactometer tests than populations from Iowa or Nebraska. There may thus be a genetic change in the population.

A report from Drs Sivcev and Draganic (Plant Protection Institute, Belgrade), presented on their behalf, stressed that 40-60% of maize in northern Serbia is grown without rotation. In the four years of the outbreak, the severity of damage seemed to be linked to rainfall. In the initial dry year (1993), damage was limited (as the outbreak was still in its initial stage), but was locally severe. In the wet years 1994 and 1995, there was little severe damage because plants were able to regenerate roots. In 1996 (again a dry year), damage was severe and extensive. Adults moved to , and caused damage on several other crops (cucurbits, sweet pepper), and were found on flowers of sunflower (without damage). Maize seed crops were also damaged. Trials showed that conventional strategies (crop rotation, soil-applied insecticides) worked well in controlling the pest.

Dr Tolefsson reported on current practices for sampling, prediction and modelling of *D. virgifera* in USA. Larval and egg sampling are costly and/or time-consuming. Adult sampling in the previous year is the preferred procedure. Whole plant counts, or ear-zone counts, have proved less time-consuming than use of yellow sticky traps. A sequential scheme can be used, in which sampling is not repeated if populations are above an upper threshold, or below a lower threshold. Only in the intermediate zone between lower and upper thresholds is it useful to sample again, until a clear result is obtained. Sticky traps are best used at the time of expected egg-laying. It is stressed that these proposed procedures relate to management of *D. virgifera* in an area where it is established, and not to detection surveys.

Several other reports were presented, including three papers on chemical control from agrochemical companies. Abstracts can be found in *IWGO Newsletter* Vol. 16, No. 2 (obtainable from Dr Berger).

4. SQR for *Diabrotica* spp.

Dr Smith presented a draft specific quarantine requirement (SQR) for *Diabrotica barberi* and *D. virgifera*, EPPO A1 and A2 pests respectively. The main point was a negative one: no requirements were proposed for maize grain or maize seed, which are not considered to present a risk in international trade. The SQR accordingly deals principally with the risk of transport of *D. virgifera* in soil from maize fields, and possibly in green maize for silage. The draft SQR was found acceptable, to be presented to the EPPO Panel on Phytosanitary Regulations.

5. Possibilities for an FAO-supported action programme

Dr Edwards, who had held preliminary discussions with FAO, scientists in the EPPO countries concerned, and various agencies in USA, outlined the kind of international project which could qualify for financial support from FAO and other agencies. The project should have a clear aim, which could be to set up a monitoring and control programme in the infested area and adjoining areas in order to contain and suppress the pest. Eradication was no longer considered a practical possibility. The project would have to centre on the infested area in Serbia, for which a threshold-based treatment regime should be developed that would suppress pest populations in the long term. In the adjoining areas in Serbia, and similar areas of Croatia, Hungary and Romania, a systematic trapping system should be put in place, with emergency control measures to be taken when traps catch beetles. The aim would be to arrive at a stable situation in which further spread can be prevented.

The programme would include a training elements for staff. It would have to be directed by a monitoring coordinator, a training coordinator, a coordinating committee and national project directors in each country.

Mr Voortman (FAO) set out the level of funding which such a project could receive from FAO (of the order of 300000 USD), with a suggested breakdown (see *IWGO Newsletter*, Vol. 16; No. 2). The Governments involved would also have to commit funds to the project, and to its continuation after the FAO-funded period was over. He stressed that such projects ran for strictly limited periods of time (1-2 years), with defined objectives. In this case, it would be particularly interesting to demonstrate that an international containment policy can work for a quarantine pest.

In discussion, it was noted that the infested area falls within a large but relatively isolated maize production area of the middle Danube basin. This production area is almost completely bounded by mountains (Carpathians to the north and east, Alps to the west, Dinaric Alps and Balkans to the south). In the absence of maize cultivation in these mountain areas, it is probable that they could act as a physical barrier and buffer zone against the spread of the pest. Thus, a containment policy has elements in its favour. It should be noted, however, that the main benefit of a containment policy comes to the maize-producing countries outside the zone, most of which would not be actively involved in its implementation.

It was noted that the proposals made to the workshop for the project went beyond earlier suggestions in several respects: a common aim in a limited period, a higher degree of coordination of a cooperative programme, a more positive commitment of governments to fund action as well as receive subsidies to support existing action. It was recognized that the present political situation in former Yugoslavia did not facilitate FAO involvement or international cooperation. Nevertheless, it was hoped that the situation would improve in the coming year. Accordingly, Drs Berger and Edwards were urged to consult with FAO in the development of a suitable project proposal.