

**VIII DIABROTICA SUBGROUP MEETING**

*Proceedings*

**XXI IWGO CONFERENCE**

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**DIABROTICA VIRGIFERA VIRGIFERA ERADICATION  
CONTAINMENT TEMPTATIVE IN VENETO REGION: YEAR 2001**

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**Abstract**

The attempt to eradicate or at least to contain the newly arrived population of WCR was implemented in and just around a focus area near the Venice airport in 2001 by using the strategies deployed in 1999 and 2000. Monitoring of WCR population was carried out by using PAL sex pheromone traps placed out in focus and safe area. Insecticide treatments were applied to maize fields in focus area and to those fields in safe area where WCR specimens had been caught. Farmers were required to comply with eradication measures (including the prohibition of maize monoculture in focus areas) by Ministerial Decree and by specific ordinances of the Veneto Region. All the fields in the focus area that had been planted to maize in 2000 were checked to determine what crop was planted in 2001. 0.44 ha of monoculture maize were found and mechanically destroyed from the 2<sup>nd</sup> to 20<sup>th</sup> of July. In initial focus area (1200 ha) 6 specimens were captured in traps placed out close to the border of the area, near the monoculture maize fields of the safe area. In the latter, new focus areas were established according to new findings of *Diabrotica* males. In a monoculture maize field 300 m far from the border of the initial focus area, 157 WCR males were captured on a PAL trap in mid July. This was the only trap of the first grid of the safe area that captured specimens. Within few days many other traps were placed out exclusively in monoculture maize fields at increasing distances from the field where the captures were recorded. Totally 67 more specimens were caught in the first and second group of traps placed out in the safe area. Most of the captures were recorded just before the insecticide treatments; a few further captures were observed after 15 days from the last treatment. No specimens were caught on traps placed out in fields planted to crop different from maize

despite the fact these fields were near monoculture maize fields where conspicuous populations had been detected. Several thematic-maps reporting crops, traps and captures positions have been produced.

Key words: *Diabrotica virgifera virgifera*, eradication, containment, Veneto.

## INTRODUCTION

The attempt to eradicate or at least to contain the newly arrived population of WCR near the International Airport of Venice was implemented using the strategies deployed in 1999 and 2000 (Furlan *et al.*, 1998, 1999a and b, 2000).

## MATERIALS AND METHODS

The eradication program was implemented in and just around a focus area near the Venice Airport. The program was based on:

- *Initial focus area (1200 ha):*
  - Monitoring the WCR population: 159 sex pheromone PAL traps were placed out from 25<sup>th</sup> to 29 of June in the focus area.
  - Imposing restrictions on the planting of maize in fields where maize was grown the previous year; in a small area (37 ha) around the fields where 77 WCR specimens were captured in 2000 maize cultivation was completely prohibited; in the rest of the focus area was prohibited to plant maize after maize.
  - Applying insecticide treatments to all maize fields to control WCR adults; the insecticide used was Dursban (chlorpyrifos) WG at the rate of 1,1 kg/ha; all maize fields (153 ha) were sprayed between 17<sup>th</sup> of July and 1<sup>st</sup> of August; further 20 ha in the part near the safe zone where captures had been recorded were sprayed again between 10<sup>th</sup> to 23<sup>rd</sup> of August.
  - Prohibiting the movement of fresh maize or soil in which maize was grown the previous year outside of the focus area.
  - Not allowing maize to be harvested before 1<sup>st</sup> of October.
- *Safe area (about 35.000 ha):*
  - Monitoring of WCR population:  
in the first phase, 207 PAL traps were deployed from the 9<sup>th</sup> of July in the safe area according to a 1 km X 1 km grid mainly in monoculture maize fields; later on further 430 PAL traps were added in monoculture maize fields at increasing distances from the focus area. For research purposes, 132 more traps of different types were added in focus and safe area.
  - Applying insecticide treatments to maize fields (and those all around) where WCR specimens are caught: an area of 54 ha of maize was sprayed between the 24<sup>th</sup> and 28<sup>th</sup> of July; 25 ha were sprayed on the 3<sup>rd</sup> of August and further 43.5 ha on the 10<sup>th</sup> and 11<sup>th</sup> of August.

Farmers were required to comply with these measures by Ministerial Decree and by specific ordinances of the Veneto Region through specific meetings. The Region also made money (about 78.000 Euro) available to support the eradication programme.

## RESULTS

Field checks. After the farmers had been informed of the eradication programme by their organizations, all the fields in the focus area that had been planted to maize in 2000 were checked to determine what crop was planted in 2001.

The field checks were completed in late June and 3 fields totaling 0.44 ha of monoculture maize were found. These fields were mechanically destroyed from the 2<sup>nd</sup> to 20<sup>th</sup> of July.

### WCR captures (figure 1)

- *Initial focus area (1200 ha):*
  - 6 specimens were captured: on July 17 (1), July 24 (1), August 18 (2), September 7 (2). All captures were recorded in traps placed out close to the border of the area, near the monoculture maize fields of the safe area.

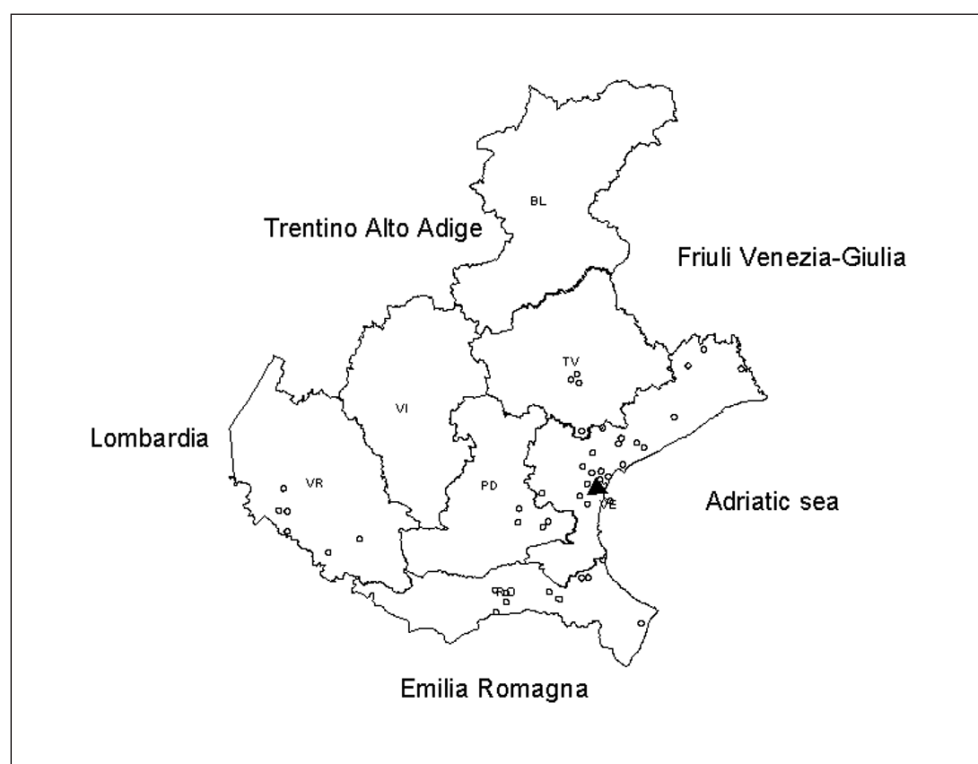


Figure 1 - Layout of the traps in Veneto region in 2001. Dark triangle: PAL traps that captured WCR specimens. Black empty circles: PAL traps that captured no specimens.

- *Safe area and new focus areas:*

- in a monoculture maize field 300 m far from the border of the initial focus area, 108 WCR males were captured on a PAL trap over a 4 day-period (16<sup>th</sup> to 19<sup>th</sup> of July; trap set up on July 16). Further 49 specimens were captured on the same trap just before insecticide treatment (afternoon of the 24<sup>th</sup> of July) repeated after 7 days. After the treatments, the traps did not catch any more beetles until the 4<sup>th</sup> of September.

This was the only trap of the first grid of the safe area that captured specimens. An additional focus area (250 ha) was immediately defined. Within few days (from 22<sup>nd</sup> of July on) many other traps were placed out exclusively in monoculture maize fields at increasing distances from the field where the captures were recorded. Totally 67 more specimens were caught in the first and second group of traps placed out in the safe area. Most of the captures were recorded just before the insecticide treatments; a few further captures were observed after 15 days from the last treatment. Another small focus area (27 ha) had to be defined about 3 km away from the first one; rescue treatments were made in both the newly defined focus areas. No specimens were caught on traps placed out in fields planted to crop different from maize despite the fact these fields were near monoculture maize fields where conspicuous populations had been detected.

Several thematic maps reporting crops, traps and captures positions have been produced.

Table 1 - Influence of the field rotation on the level of WCR captures in traps deployed in the safe area by using G test. Two stars mean a significant difference at P=0,01

area with wcr	no.	% in monoculture	% traps (with captures)	G Test
Traps with >5 WCR	6	100%	within 500 m from a monoculture	0,005 **
traps with 1-4 WCR	16	56%	57%	
area with wcr		% captures	% traps (with captures)	
total traps in monoculture	21	71%	within 500 m from a monoculture	0,000 **
total traps non in monoculture	49	14%	57%	

## CONCLUSIONS

The most important conclusions from this year's work can be summarized as follows:

- The strategies implemented in focus area proved to be very effective in stopping WCR populations; the few specimens captured (6) were collected in the border of the focus area near (within 600 m distance) the small monoculture fields in the safe area where WCR populations were recorded; therefore a re-colonisation of the initial focus area coming from monoculture fields of the safe area (where probably the species had arrived years before but not detected) was observed.

- The key factor of eradication/containment of the species appears to be the interruption of monoculture on all the fields of the focus area. In fact, most of the maize fields where conspicuous captures were recorded were monoculture fields; few specimens were caught in first-year maize near to monoculture fields where high WCR populations had been observed (see *table 1*). Also very small continuous maize fields can allow high WCR reproduction and spread.
- Insecticide treatments directed against the adults are very effective in significantly reducing the populations and stopping their spread.

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