

# Western corn rootworm -

# KLPflor+ trap

*Diabrotica v. virgifera* LeConte.

Adult beetles are 4-8 mm long, have a flat body with 3 broad, dark stripes on their yellowish-white back. In male beetles, dark stripes are more or less converged. Female beetles have shorter antennae, and their abdomens are large, yellow, full with eggs. By the males the end of the abdomen is more rounded. Thorax is not spotted, yellowish-brown, which is an important species trait in both sexes. Larvae live in the soil among the roots and have a whitish, soft, maggot-like body.

**Host plant** is **maize**, but feeds also on some other graminaceous plants. **Damage:** The greater damage is caused by the larvae, which chew and often bore

throughout the root-stock and roots of maize in the soil. The whitened, spotted colour of the leaves is characteristic, shows deficiency in nutrients. Indirect damage: plants with dead roots often collapse, sometimes they can recover and straighten up, this way forming a "goose-neck" shape, characteristic of the damage by western corn rootworm (WCR) larvae. Adult beetles

draf.lorraine.agriculture.gouv.fr



KLPflor+



*The beetle, which is captured in the trap*



www.kis.si

cause damage by chewing the grains at the tip of the unmaturred maize-ears, They also damage the stigma, which can cause fertilization problems. This damage, however, is not so significant as the root-damage caused by the larvae. The **KLPflor+** traps should be placed at **1.0-1.5 m** height (or below the upper level of vegetation) at maize plants 5-10 m inside a maize field. Recommended starting time of trapping in Central Europe is **mid-June**.



www.ipm.iastate.edu

*The damage of the adult beetle*



www.ianr.unl.edu



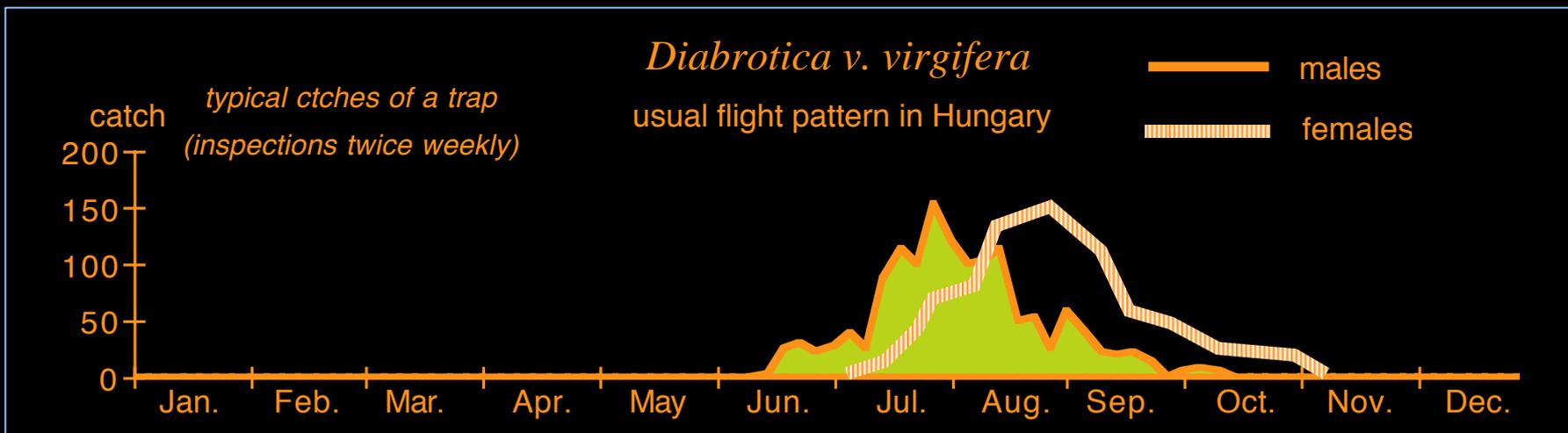
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**Selectivity** of the **KLPflor+** trap: in Central Europe the floral WCR baits of the trap do not attract any other insects. Apart from WCR very low numbers of other insects (flies, grasshoppers, etc.) may get into the trap by chance only. These are easily distinguishable from WCR beetles. The **KLPflor+** trap is provided with the floral WCR bait; thus it attracts predominantly female WCR. The attraction of the chemical bait is improved by the yellow colour of the crawl-up panel. If the need arises, a pheromone bait (available on request) can also be added and the trap can be operated with both types of baits at the same time (in this case the sex ratio captured will resemble the natural sex ratio of the population around the trap). The bait of the **KLPflor+** trap does not lose from its activity for at least **4-6 weeks** in the field, depending on environmental conditions. In order to ensure reliable monitoring, the bait should be replaced after this time period. For satisfactory performance insects should be killed in the catch container.



The western corn rootworm appeared in Europe quite recently. First beetles were discovered near Beograd (Yugoslavia) during the summer of 1992<sup>[1]</sup>. By 2004 many Central- and Western European countries have been infected<sup>[2]</sup>. For detection of the pest pheromone-baited traps (i.e. KLPfero, PAL) can be recommended, which, however, catch only males. In areas where the pest has established itself, more detailed population ecology studies can be performed with a floral attractant-baited trap (i.e. KLPflor, PALs), which catches both females and males. The easiest way to control *Diabrotica* is by crop rotation<sup>[3]</sup>. Where this is not possible, soil insecticides can be applied.

<sup>[1]</sup> Čamprag, D., Bača, F. *Pesticide Science*, 45:291-292, 1995. <sup>[2]</sup>for current distribution of WCR in Europe see [www.mkk.szie.hu/dep/nvtt/wcrnet](http://www.mkk.szie.hu/dep/nvtt/wcrnet). <sup>[3]</sup>Kukuruzna zlatica. ed. D. Čamprag. Društvo za zaštitu bilja Srbije, Beograd, 1995.



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 <[h2371tot@ella.hu](mailto:h2371tot@ella.hu)>; internet: <<http://www.julia-nki.hu/traps/>>.

When using our KLP+, VARs+ or VARb3z+ trap designs it is **absolutely necessary** to kill insects getting into the trap. The most widespread insecticide used in pheromone traps worldwide is an anti-moth strip with dichlorvos (DDVP 15-20%) active ingredient. (This from 2010 is not permitted in some countries!)

Colleagues in Italy successfully used an anti-moth strip VAPE bought in Italian supermarkets. This strip is having transfluthrin as active ingredient.

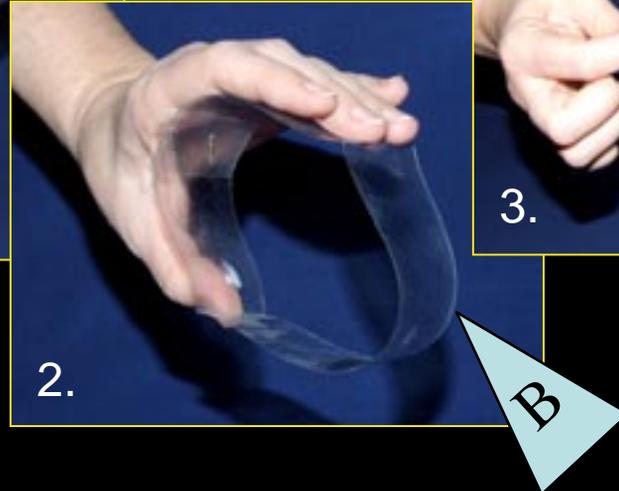
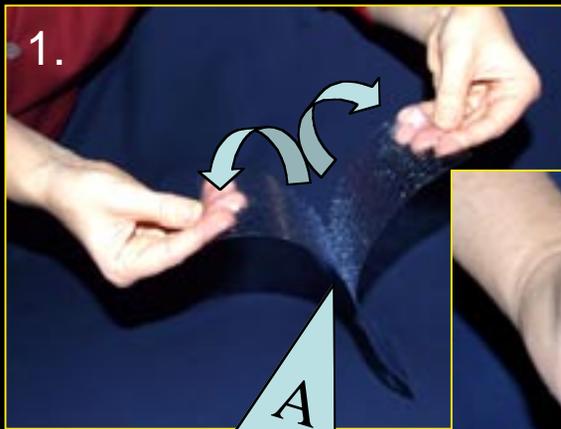
Another successful solution was to use pieces of dog collars (anti mite collars for pets) with diazinone (15%).

One can also spray the inside surface of the traps and catch containers (the largest surface possible) with sprayable household insecticides (permethrin, empethrin or deltamethrin active ingredients all found suitable), however, in this case one has to re-spray at weekly intervals.

For users who find the application of insecticides inconvenient for any reasons, as an alternative we supply our **cylindric sticky insert** (sent as a supplement to KLP+, VARs+ and VARb3z+ trap types).

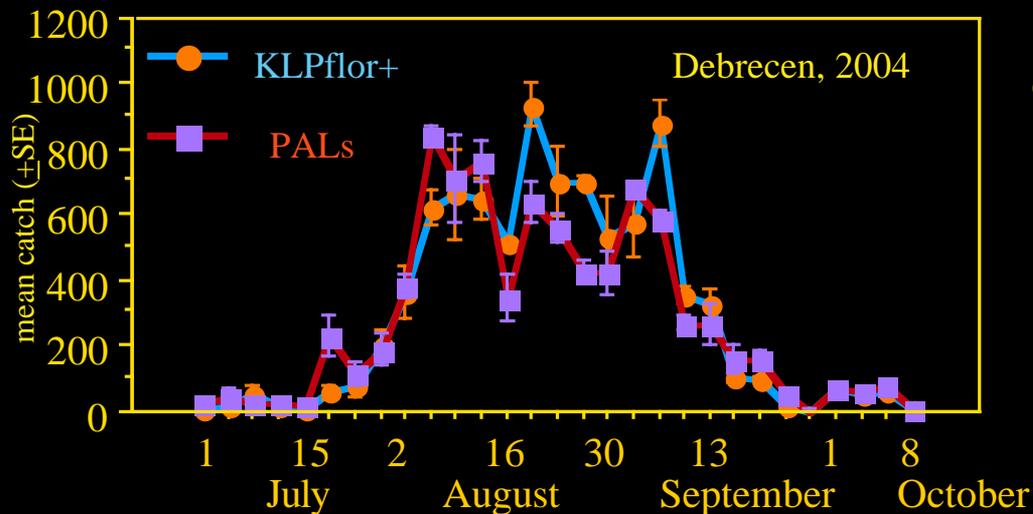


## Assembling instructions for Cylindric sticky insert



1. Separate one sticky insert (A) from the pair of inserts!
- 2-4. Place the sticky insert into the holder ring (B), so that the **STICKY SIDE FACES INSIDE!**
5. Put the assembled cylindrical sticky insert into the catch container of the KLP trap!
6. Place on it the plastic cone and assemble the trap as usual!

With respect to unsexed catches, KLPflor+ performed similar to the sticky PALs.



However, KLPflor+ caught females in higher ratio than PALs. KLPflor+ seems to be especially suited for the capture of females!

