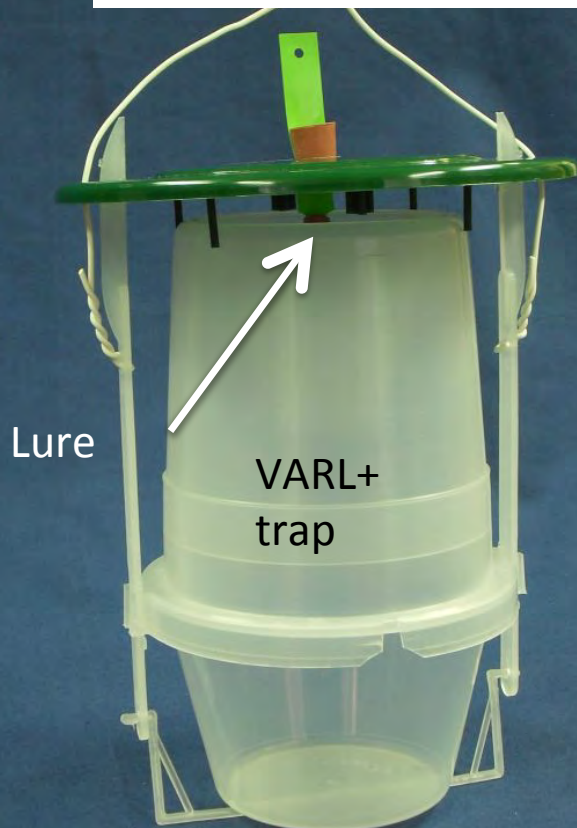


How to use? The [CSALOMON® VARL+](#) or [RAG](#) traps, with pheromone lure of cotton bollworm (*Helicoverpa armigera*)



cotton bollworm (*Helicoverpa armigera*) adult moth

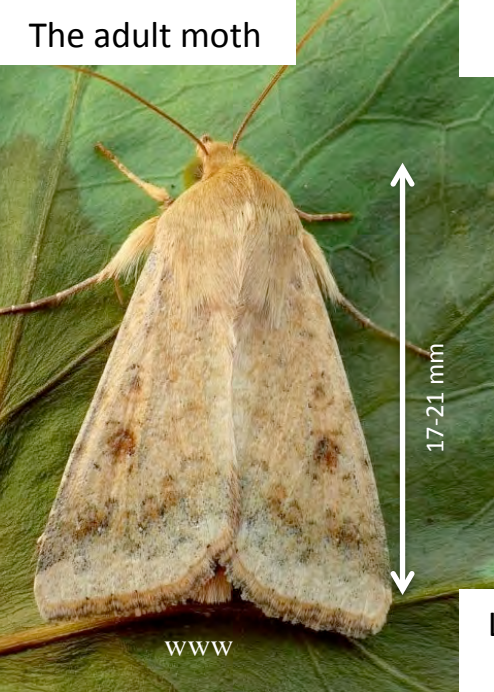


The lure is synthetic **sex pheromone**, therefore the trap will catch only **males** (no females, sorry). This provides the most sensitive tool for detection of the pest!

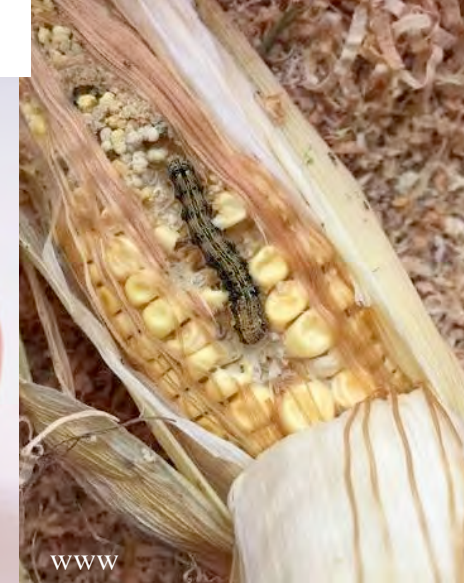
The lure with **RAG** traps can be used for: **detection** of seasonal occurrence (start of flight), **detection** of spread to new geographical regions, **timing** of control measures (if necessary). The lure with **VARL+** traps can be used for: apart from the above, also for quantitative changes of **flight pattern**, mass occurrence in outbreak years; the trap will not saturate even after having caught several hundreds of moths!



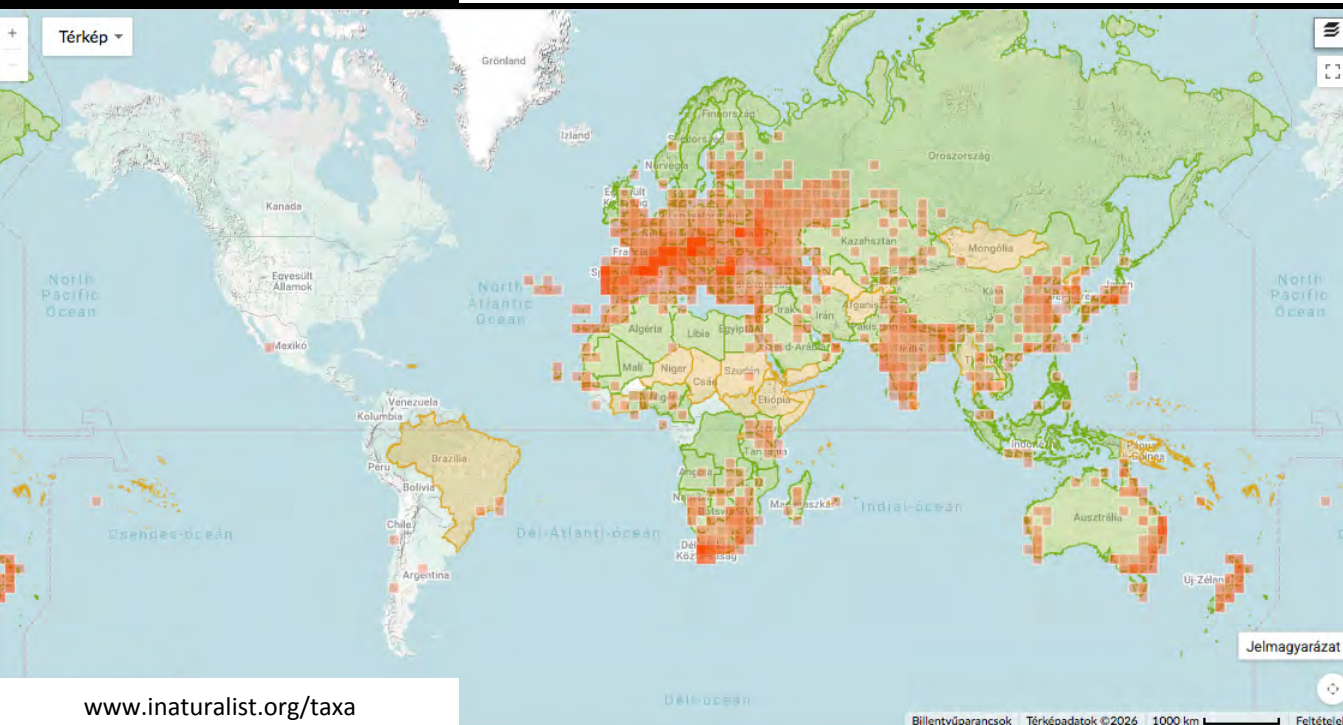
The adult moth



The cotton bollworm (*Helicoverpa armigera*)



Larvae of the cotton bollworm feed on very many hostplants. Most significant damages occur among others on **maize**, **cotton**, various **vegetables**, but it can destroy **ornamentals** also.



The pest is widespread all over the Old World, in temperate and warm regions of all **Eurasia**, in **Africa**, and in **Australia**. Some reports mention even South America. In Central Europe it became more and more widespread invading up from south in the nineties, becoming one of the insect pests with **most impact**. Pheromone-baited traps have been used since available as they form an easy-to-use and cheap tool for detection and flight pattern following.

Cotton bollworm: **seasonal occurrence**, flight pattern:

Moths **invading** each year **from south** appear in Central Europe in May-June, then they mate and lay their eggs. Cotton bollworms are very **fast** in producing new generations and in case of favorable conditions in developing a mass outbreak. Some authors suggest that bollworms can even overwinter in Central Europe.



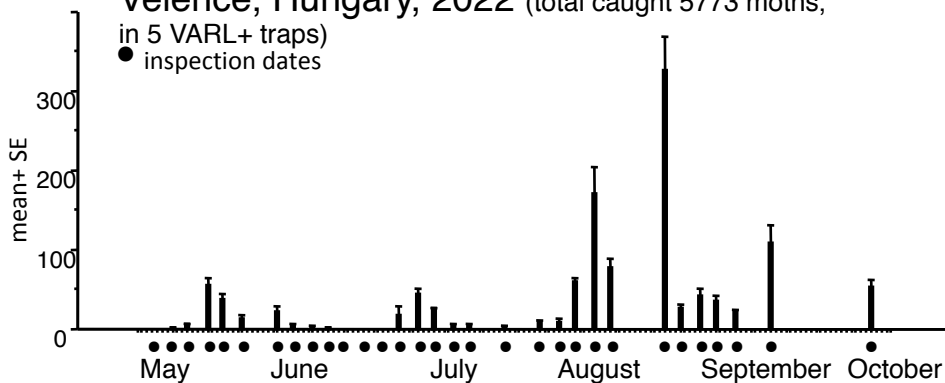
Moths caught on the sticky insert of a RAG trap



A VARL+ trap with bollworm catch

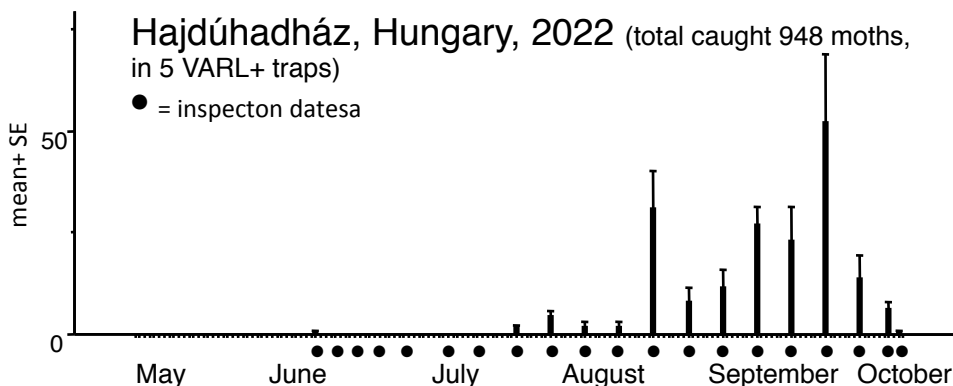
Velence, Hungary, 2022 (total caught 5773 moths, in 5 VARL+ traps)

● inspection dates



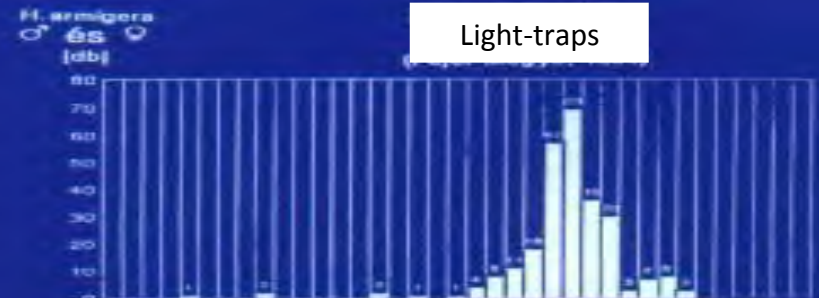
Hajdúhadház, Hungary, 2022 (total caught 948 moths, in 5 VARL+ traps)

● = inspection dates

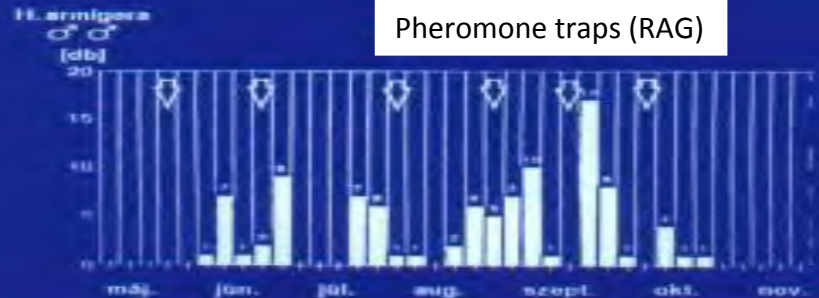


Flight of cotton bollworms in VARL+ traps with pheromone lure, in Hungary. After: Tóth M. and Szanyi Sz. in prep.

Light-traps



Pheromone traps (RAG)

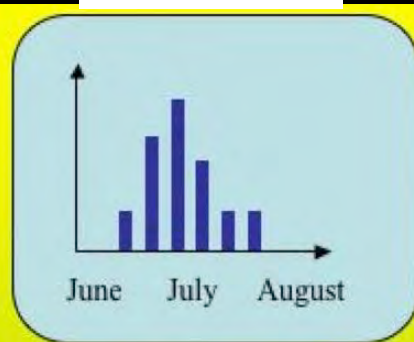


Catches of cotton bollworms in 1995 in Hungary, in RAG traps with pheromone lures and in light-traps. It can easily be seen that the RAG traps **sensitively detected** invading first moths in June, but were **unable to follow** numbers of the mass outbreak later (which could be seen from light-trap catches). From the point of view of control early summer **timely detection** of occurrence is of **utmost importance**! (Szeőke K. et al., Növényvédelem, 31: 249-256, 1995)

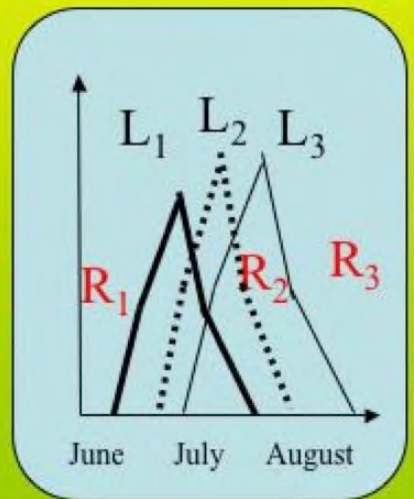
Actual damages depend also on phenology of the plant attacked: in maize **co-occurrence** of R_1 phenological scale with **mass swarming** was of determining importance:

We measured:

flight pattern of
cotton bollworms
(VARL+ traps with
pheromone lure)



Occurrence of young
larvae (L_1 , L_2 , L_3) in
cobs



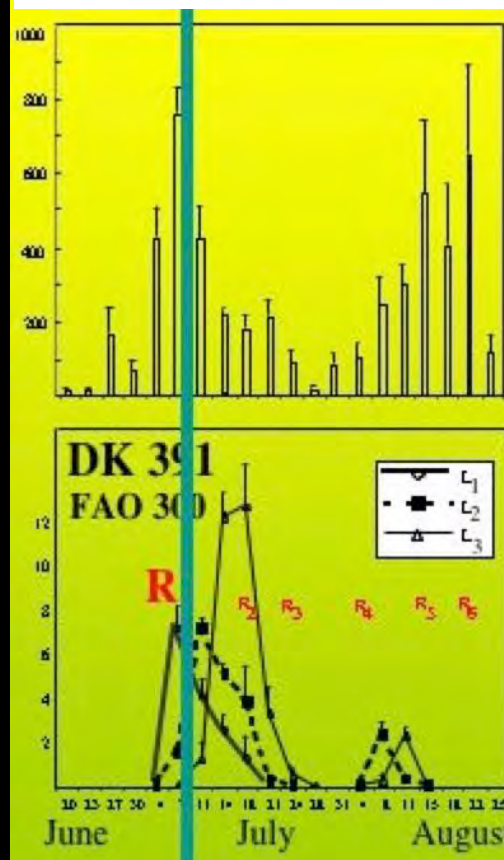
Phenology of maize
hybrid (R_1 , R_2 ,
 R_3 ...)

(scale according to Special
Report No. 48. 1996, updated
2003, Iowa State Univ. Ext.,
Ames, IA)

Mezőhegyes, Hungary, 2003. After:
[J. Pest Sci. 80:183-189.2007](#), and
[Acta Phytopath. Acad. Sci. Hung. 44:315-326, 2010](#)

Note: the growing rate is **not relevant**!
Results are **not connected** with possible
resistance of hybrids!

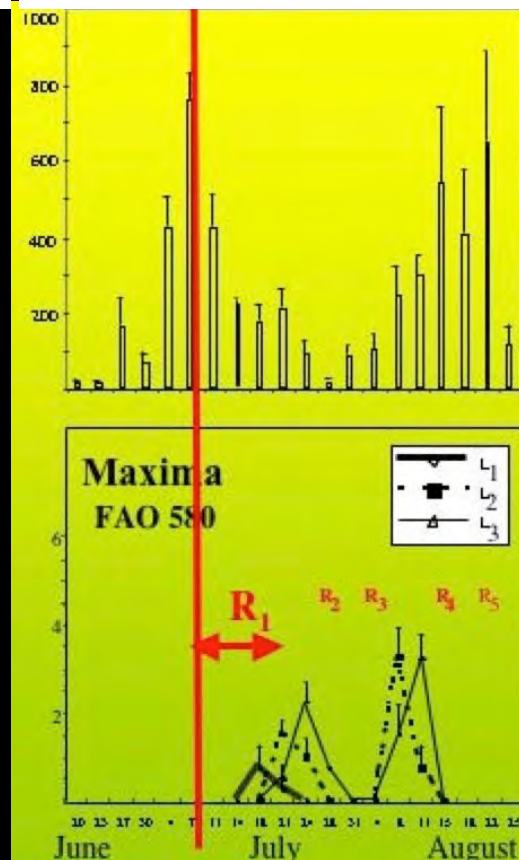
Short growing rate hybrid



Maize **already reached R_1**
scale when **peak flight**
occurred – young larvae
appear at once, in great
numbers:

Spray at once!

Long growing rate hybrid



Maize **has not reached R_1**
scale when **peak flight**
occurred – young larvae
appear in low numbers, after
some time:

Do not spray yet, wait!

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Assistance in preparing this advisory leaflet is deeply acknowledged to
M. Tóth

