LINK
COLLABORATIVE RESEARCH

HGCA

defra
Department for Environment Food and Rural Affairs

AGRISENSE

ADVANTA SEEDS

Dow AgroSciences

Elsoms

NICKERSON

JOHN INNES CENTRE

ADAS

TAG
THE ARABLE GROUP

Integrated control of wheat blossom midge

Dr Toby Bruce

ROTHAMSTED RESEARCH

Aims of the project

- Characterise level of susceptibility of wheat varieties
- Seek sources of resistance
- Develop attractant based traps to monitor midges
- Combine the above in an integrated control strategy

Pest Ecology

- Larvae can remain dormant in the soil for up to 13 years
- Midges mate at emergence site
- Females migrate to other areas if no suitable egg laying sites are available
- The susceptible growth stages are from ear emergence to early anthesis

Impossible to decide in time which fields need treating hence a large area is sprayed for insurance

Larvae digest grain and encourage fungal infections e.g. *Fusarium graminearum*

Results so far

- Varieties differ a lot in response to midge

  VULNERABLE

  TOLERANT

  RESISTANT

- BUT you need to be able to quantify the risk to use the information
- Pheromone traps have been developed and test marketed

Vulnerable - escape mechanisms

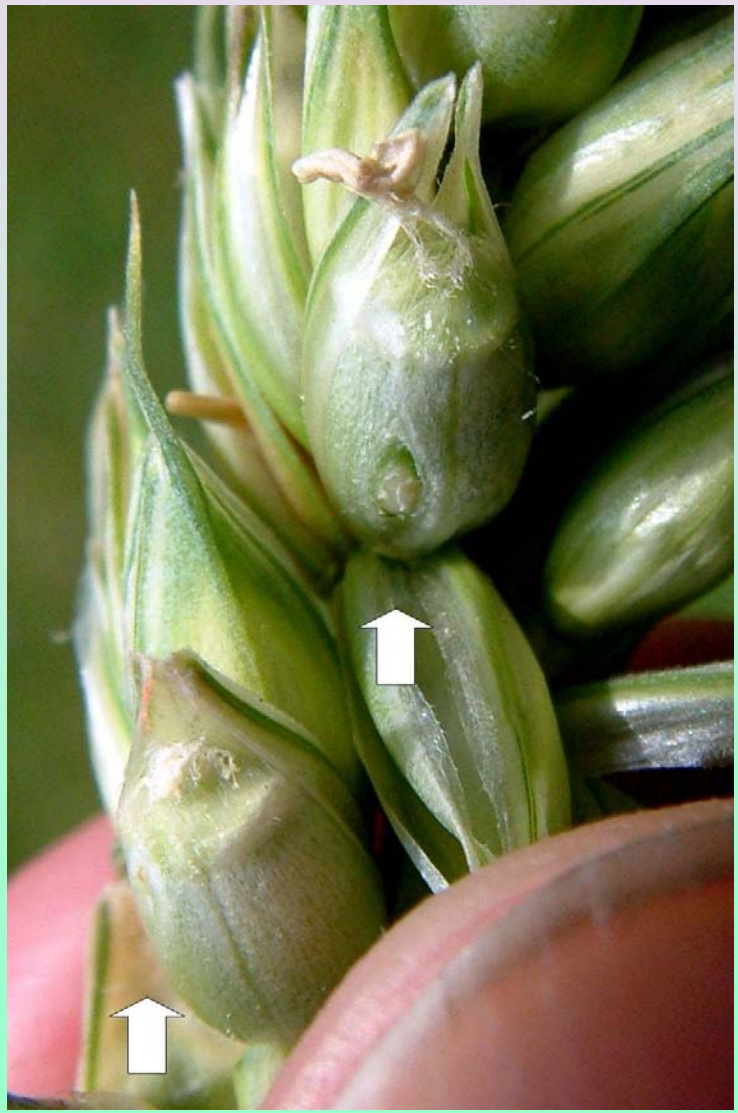
- Flower before female flight
- Shorter ear emergence period
- Closed flowering habit
- Less attractive volatiles released?

Tolerant

- Larva has less effect on grain development
- There is little yield benefit after application of chlopyriphos

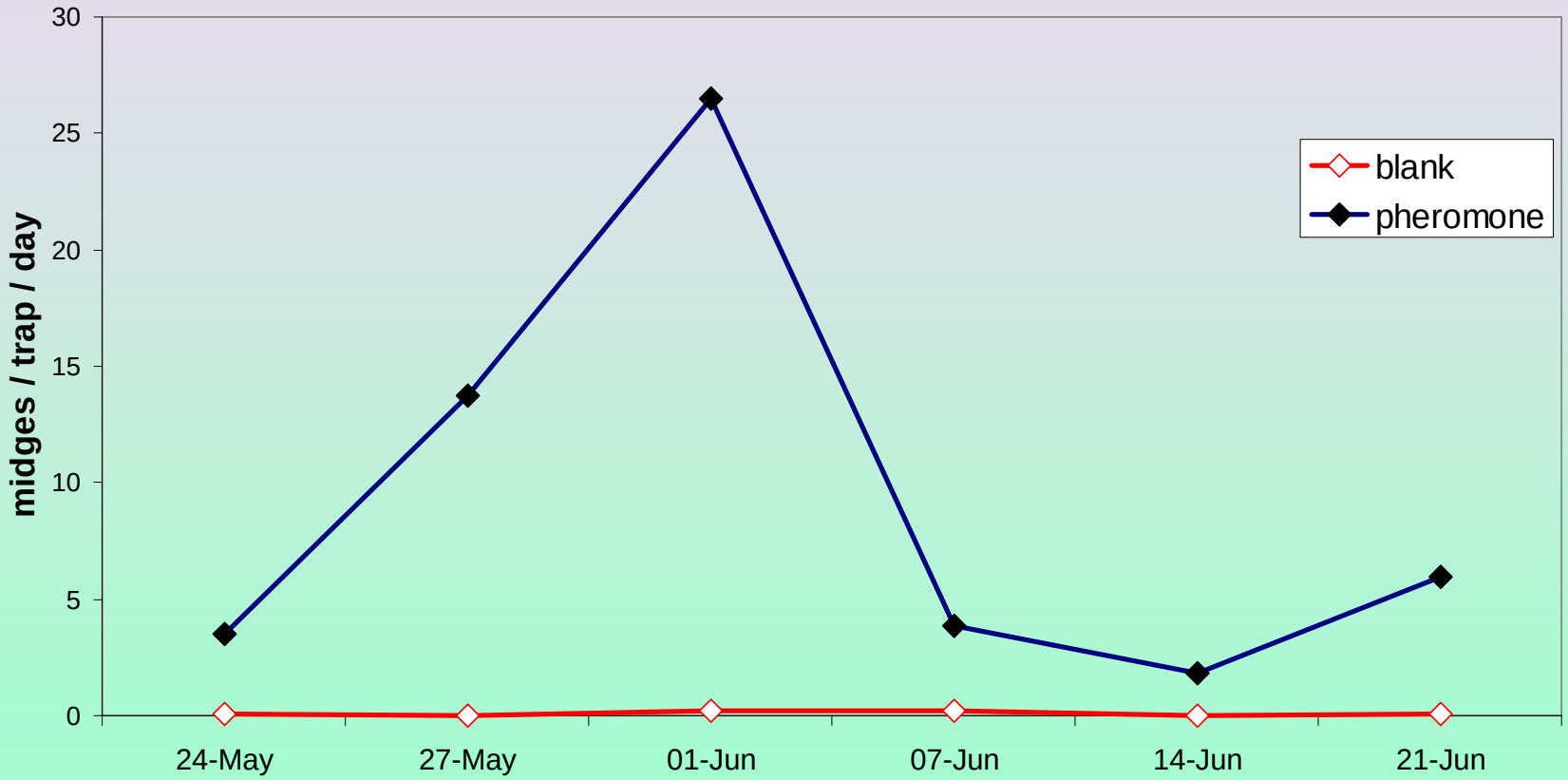
Resistant

- Females lay eggs, but larvae die when they start to feed
- Possibly due to production of phenolic acids by the grain
- Genetic basis of resistance as yet unknown for UK varieties

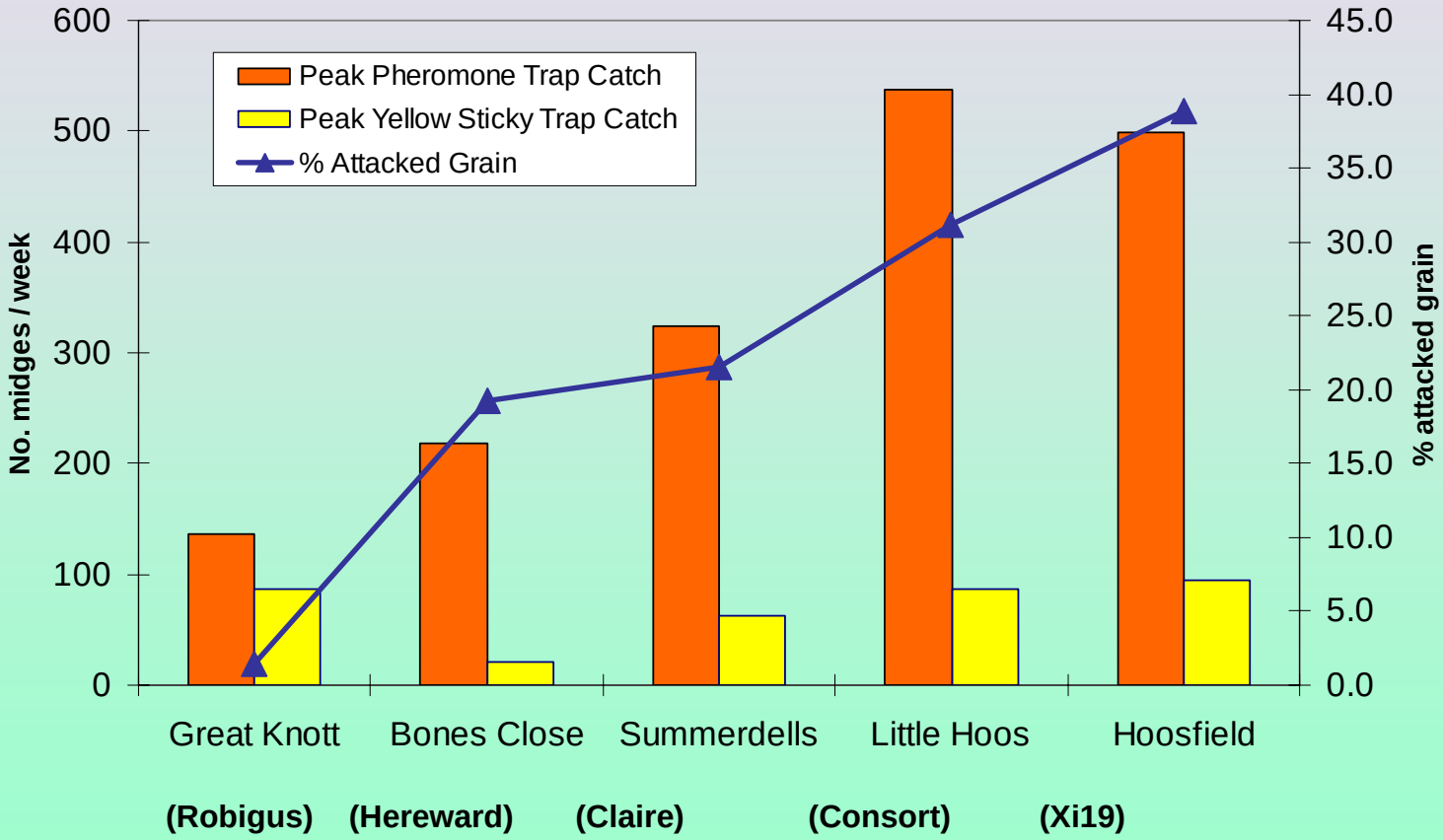



Pheromone Trap
midges caught on sticky insert

Pheromone Trap Catch over Season



Pheromone Trap Catch and Subsequent Infestation



Conclusions

- There is a range of resistance levels in UK wheat
- Pheromone monitoring traps show when the crop is at risk