

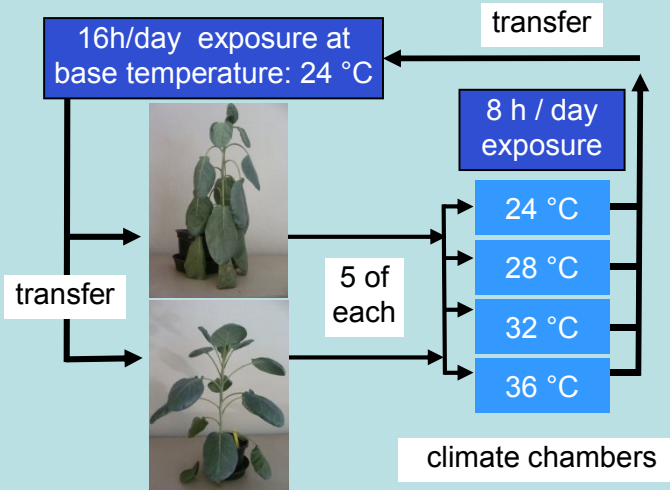
Introduction

Due to climate change, there is need to consider that there will be periods of high temperatures and/or changes in precipitation patterns. With strong decreases in precipitation, some plants hosting insect herbivores will be drought stressed. The effects of these drastic changes in weather patterns, i.e. high temperatures and decreased precipitation, will affect chewing insect pests' development and behaviour in diverse ways. These effects were investigated for *P. xylostella* in climate chambers simulating periods of high temperatures as expected with a changing climate in the future. The effects of decreased precipitation were tested by rearing *P. xylostella* on drought stressed host plants.

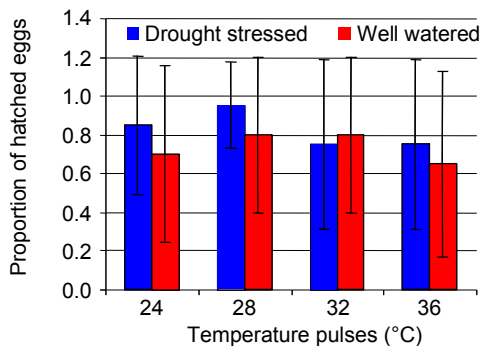


Material and Methods

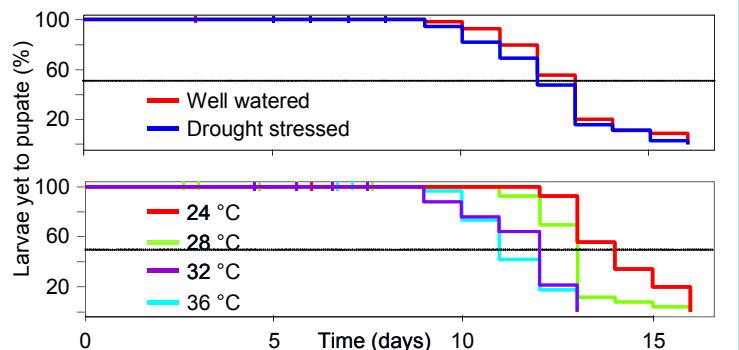
- 20 well watered and 20 drought stressed Brussels sprouts plants were used
- 4 *P. xylostella* eggs were placed on the lower leaves of each plant
- Egg mortality and development time till pupation were observed



Results and discussion



- Drought stress did not have a significant effect on egg mortality ($p = 0.26$)
- However, at higher temperatures, mortality might increase due to egg desiccation
- Egg mortality was less than 40% in all treatments. In contrast 100% mortality is noted in the literature for constant temperatures higher than 34°C



- Drought stress did not have a significant effect on larval development, but a trend was observable that most larvae pupated earlier on stressed host plants
- Higher humidity may have created a micro-climate around plants thus masking the drought stress effect
- Larvae exposed for 8h/day at 36°C pupated 4 days earlier than larvae at 24°C (Kaplan-Meier survival curves)

Conclusions

- Due to climate change, periods of high temperatures will lead to more generations per year, up to 3 more generations at 36°C than at 24°C.
- Exposure to high temperatures for a limited time period has no influence on egg mortality.
- Additional trials are needed to investigate and validate the climate change impacts in the field. Moreover, effects of climate change on natural enemies have to be considered.