



Developing Multi-Species Thrips Surveillance Using Environmental DNA (eDNA)

Niab Agronomists Day
30th September 2025

Impact of Thrips on UK Horticulture

- Thrips, especially WFT are a serious threat to UK horticulture- including the £377M strawberry industry
- Annual losses between £37M and £56M (10-15%)
- WFT are increasingly resistant to insecticides
- **Diversity of species complicates Management:** Different species necessitate different management approaches compared to WFT
- Due to small size and subtle physical variations, accurate identification is difficult



Western Flower Thrips
(*Frankliniella occidentalis*)



Flower thrips
(*Frankliniella intonsa*)



Onion thrips (*Thrips tabaci*)



Rose thrips (*Thrips fuscipennis*)

The 'what' and 'why' of Environmental DNA (eDNA)

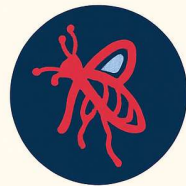
eDNA means
“environmental DNA” –
tiny traces of genetic
material that pests
leave behind on plants



Easy sampling

Instead of catching
insects, we can wash
flowers in a solution and
collect the DNA thiaps
leave behind

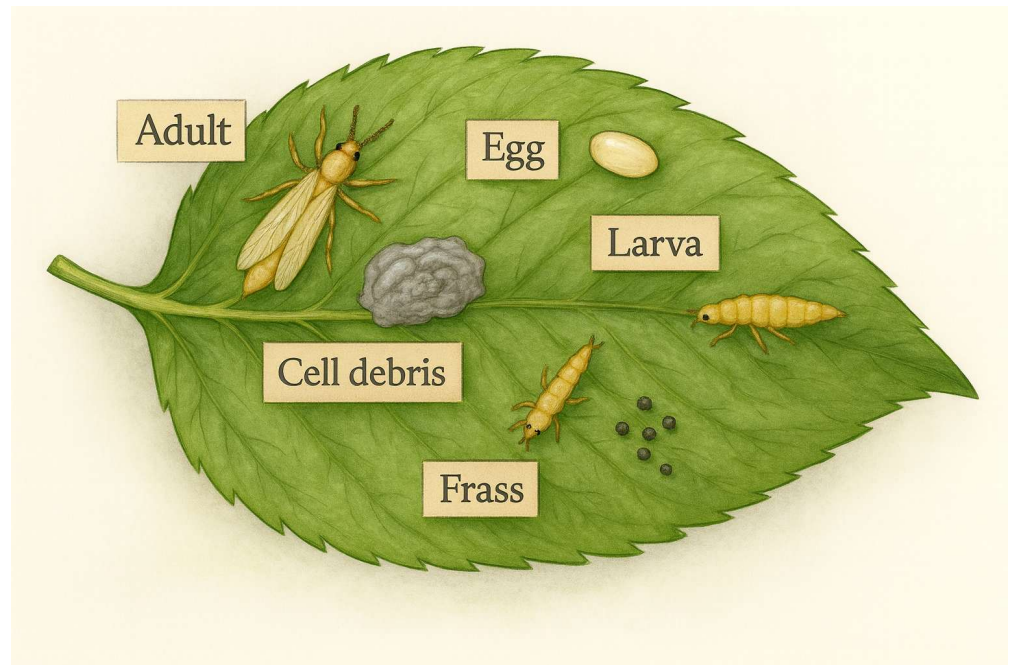
Clear identification
Tests can tell exactly
which thiaps species are
present, even when they
look the same under
a hand lens



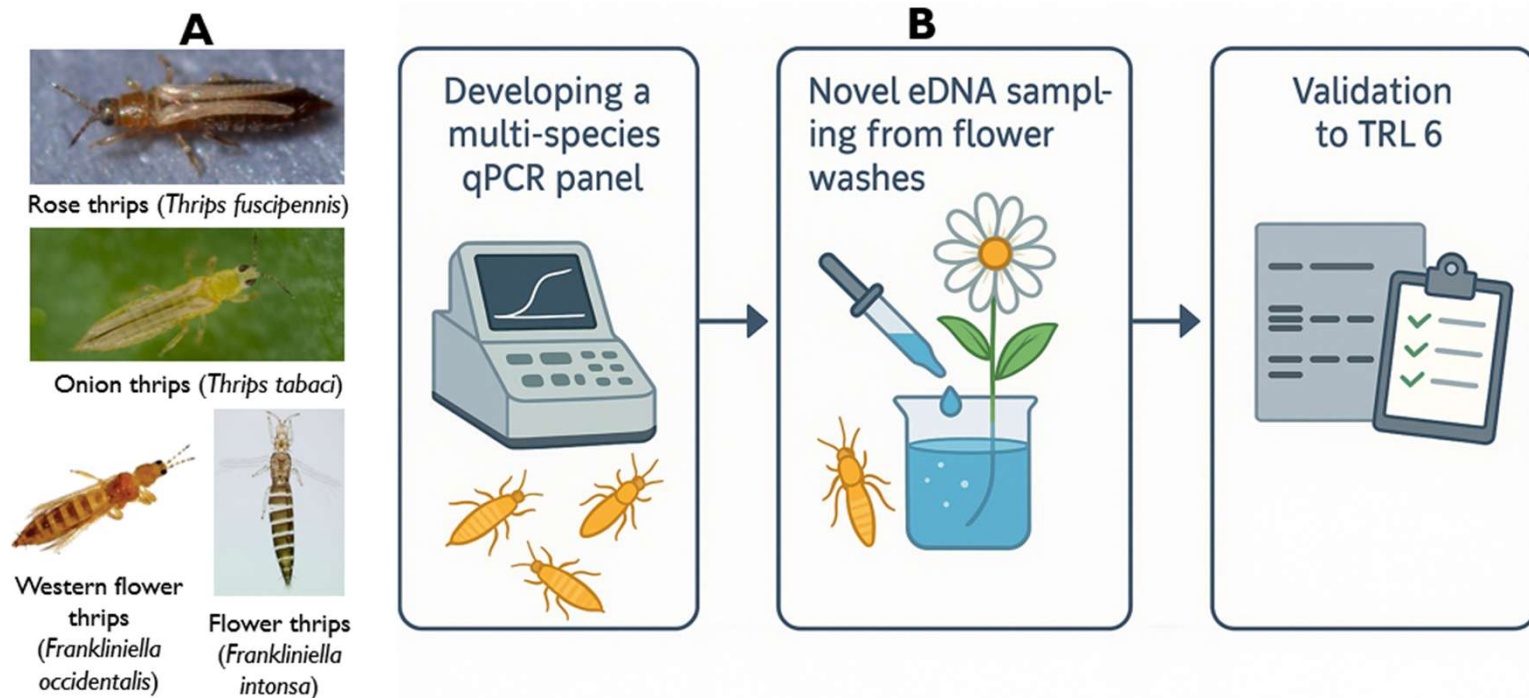
Practical at scale

Simple flower washes
make it possible to
monitor many plants
or fields quickly reliably

Different types of eDNA substrates can be
found on plant surfaces



Goal: Develop a four-species detection panel for thrips using flower wash eDNA



Progress and Next Actions

- **Species specific tests for *Frankliniella intonsa* and *Frankliniella occidentalis*** developed
- **Ongoing development** of tests to discriminate between *Thrips fuscipennis* and *Thrips tabaci*.
- Colony for WFT established
- eDNA collection will be tested in Q2- results update by February 2026

WFT primer testing: 8 DNA Mixtures created and tested by Conventional PCR and qPCR

Mixture Number	F. occidentalis FO	F. intonsa FI	T. tabaci TT	T. fuscipennis TF	Sample ID
1					A
2					B
3					C
4					D
5					E
6					F
7					POS
8	Water	Water	Water	Water	-VE

Lanes A, B, C and G contained WFT DNA. PCR was consistently amplified with high specificity

