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Fusarium and Aphids: Winners and Losers on Their Shared Wheat Host

Rumiana Ray

Background – FHB and *Sitobion avenae*

Fusarium Head Blight in cereals

- Caused by the most aggressive *F. graminearium*
- **Not all Fusarium is equal**
  - Chemotypes – DON vs NIV
- **Loss of yield and quality**
- Safety EU legislation for mycotoxins

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Sitobion Avenae

- Phloem sucking pest
- 14% yield loss

Resistance

- No resistance to the aphid
- *Fhb1* and *Fhb2* in Sumai-3

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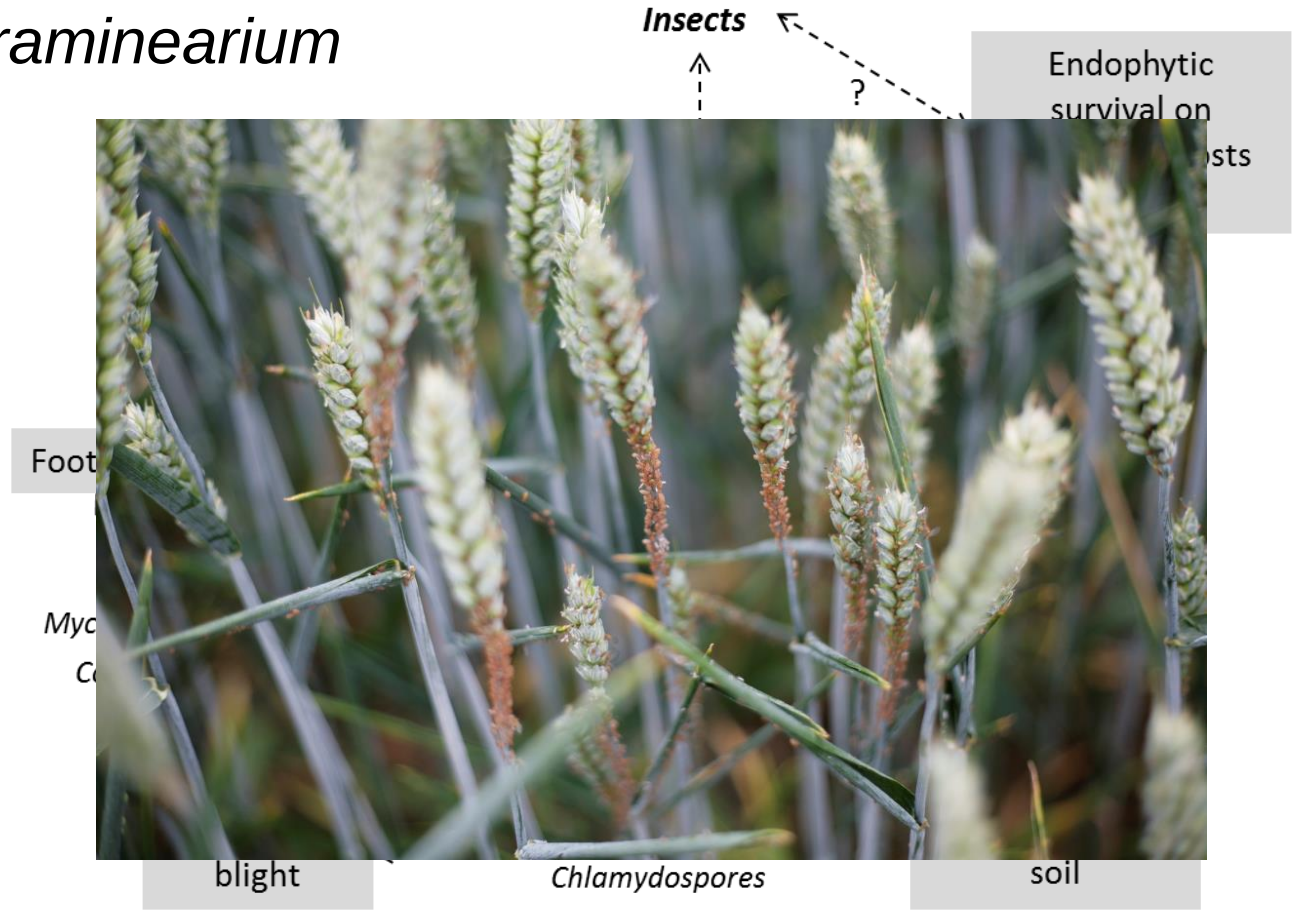
Window of susceptibility

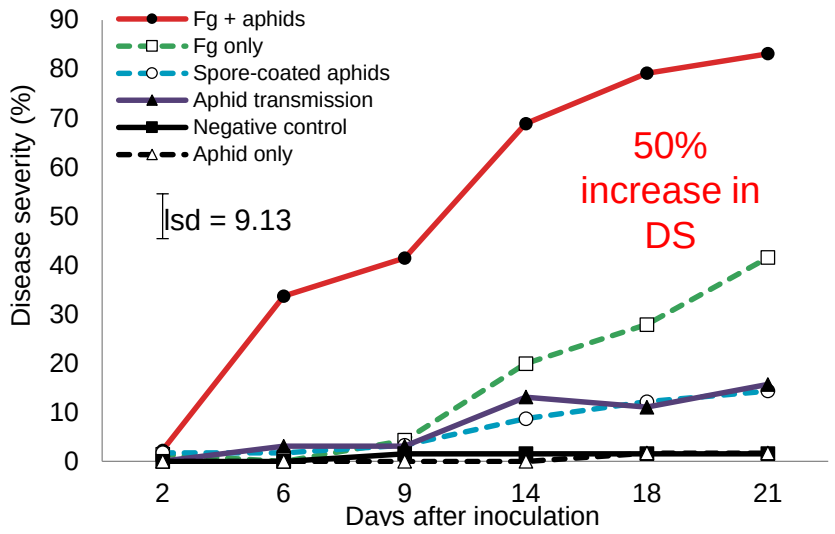


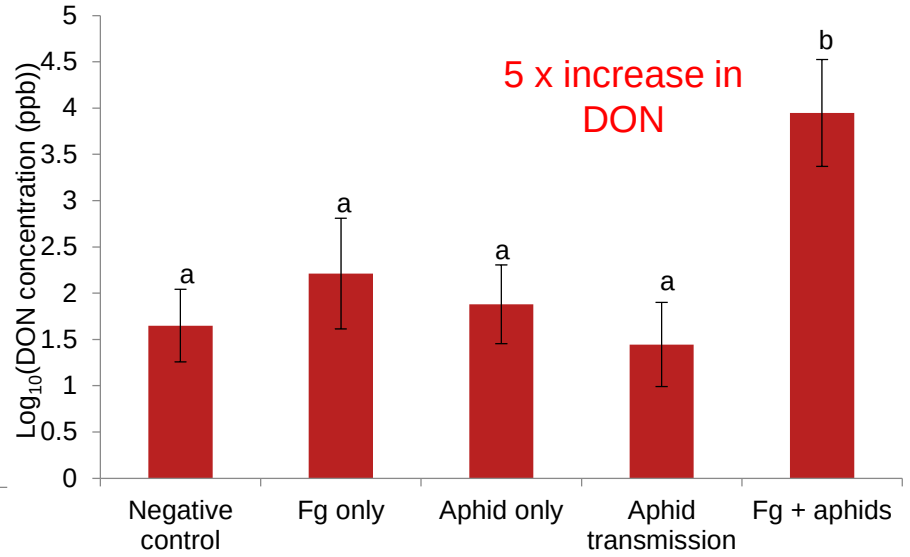
In the field, pests (Sa) and pathogens (Fg) co-occur and interact

What are the consequences for disease?

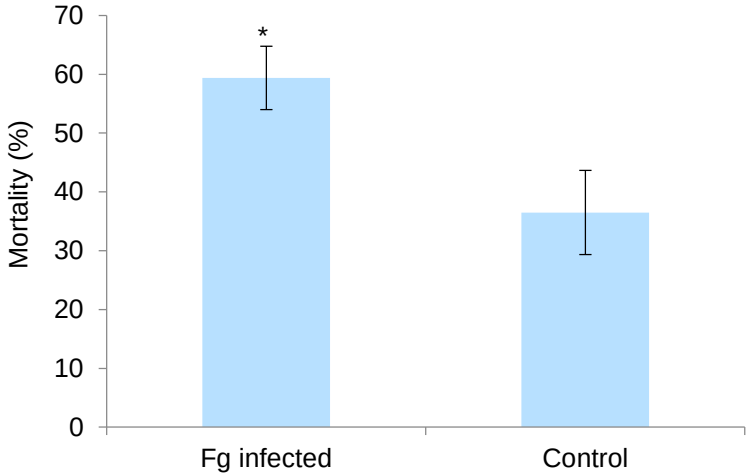
Drakulic et al. Plant Pathol. 66, 3-13 (2017)

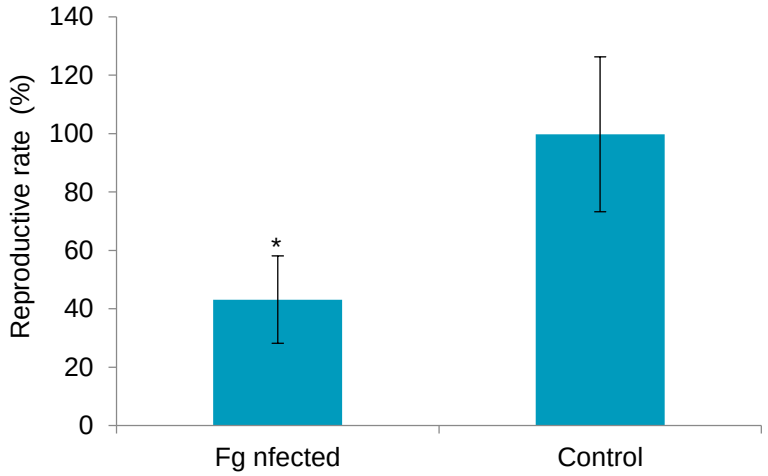
Sharing the host plant, consequences for the pathogen and the pest





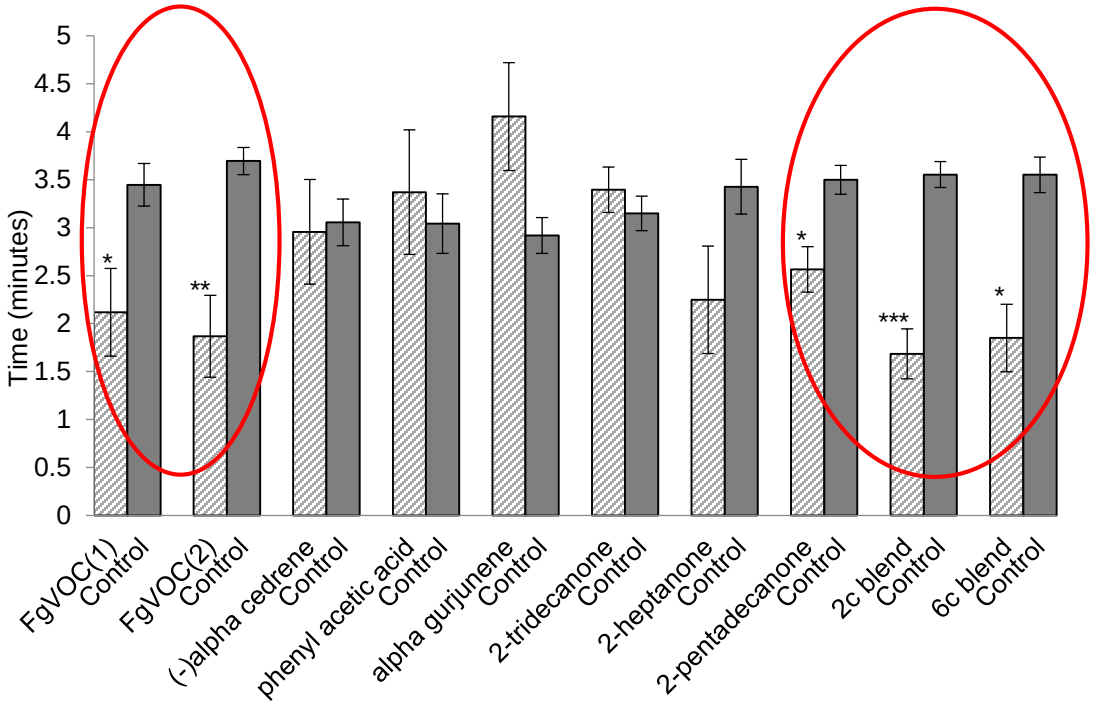
Accelerated disease progression and mycotoxin accumulation

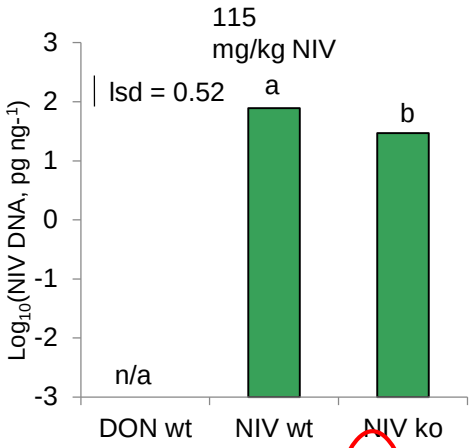




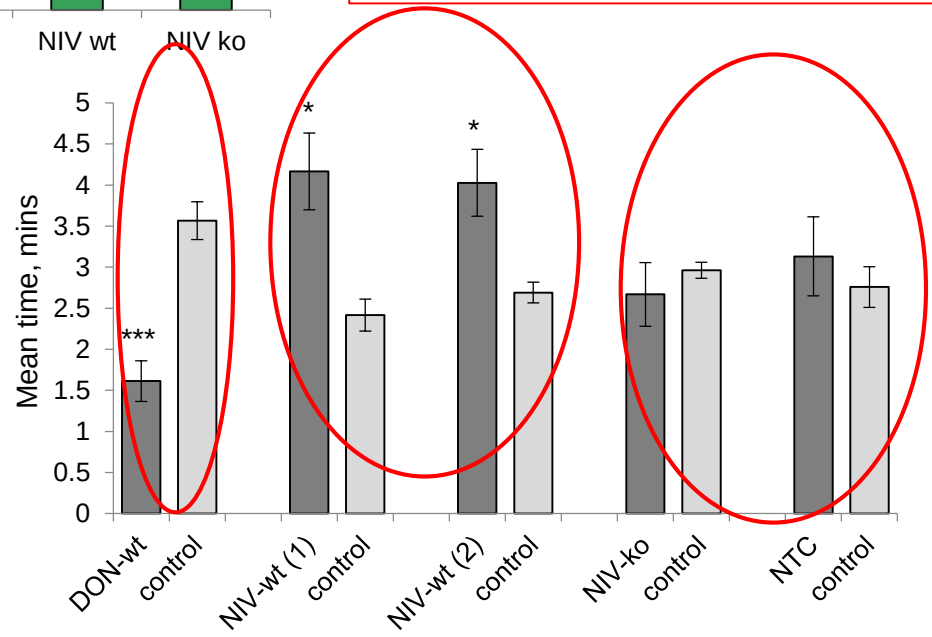
Aphid fecundity and survival are markedly reduced by Fg infection

Sharing the host plant, the influence on pest behaviour





NIV- induced volatiles are attractive to aphids and direct consequence of NIV production



Aphids are repelled by Fg – induced volatiles with 2-pentadecanone being the key semiochemical involved

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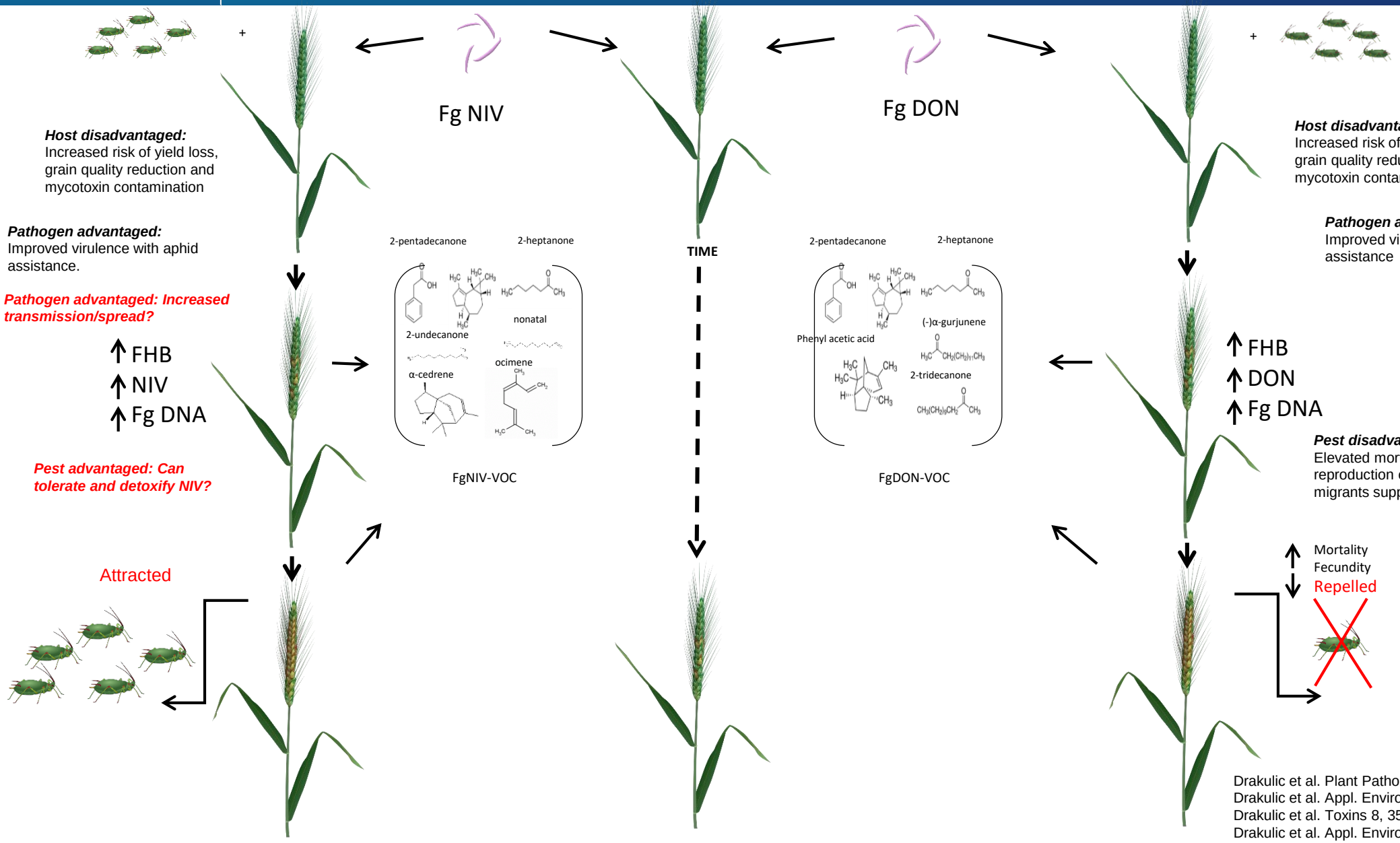
Summary



Drakulic et al. Plant Pathol. 66, 3-13 (2017)
Drakulic et al. Appl. Environ. Microbiol. 81, 3492-3501 (2015)
Drakulic et al. Toxins 8, 353 (2016)
Drakulic et al. Appl. Environ. Microbiol. 82, 6548-6556 (2016)

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