A Time Course of Scab in Developing Field-Grown Wheat Spikes

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Whole-crop cereals as animal feed

Ensiling (fermentation)

– Milk to soft-dough
– Medium dough (higher dry matter)
Grass silage, **wholecrop wheat** and triticale and peas are ensiled in the same clamp.

Dairy farmer Andrew Addison, Spittals Farm, Low Moor, Penrith, UK -- Jennifer MacKenzie
Wheat Silage for Beef Cattle
Homer B. Sewell
Department of Animal Sciences
(1993)

Wheat Silage is Option for Farmers Needing Feed (June 1997)

Triticale as a Forage Crop for the Southeastern United States
Alkalage – treatment with urea or urea-based additive

- High dry-matter (550 to 800 g/kg)
- At or near physiol. maturity

Winslow, Ltd., New Zealand
Typical components of a mature winter wheat plant

www.fiveflp.com

We eat straw!

Amanda Van De Kerckhove, Saskatchewan
Two-year field experiment in Kinston, NC

• 2006: 8 cvs
• 2007: 4 of them
• Spray-inoculated at mid-anthesis
• Misting: 0, 10, 20 or 30 days
• Sampled 30 spikes per plot: 14, 24, 34, 44, 54, 64 daa
• Visible symptoms at ~20 daa -> index
Separated into:

- FDK
- % infected kernels (PIK)
- DON

Glumes, lemma, palea
Grain DON

2006

2007

DON (ppm)

USG3592
C9184
USG3650
Tribute
VA01W99
Ernie
Neuse
C9474

Med
Hard
Early
KH
Harv
Kern
milk
dough
KH
ripe
loose
milk
dough
KH
ripe
loose
• DON biosynthesis
  – maximal at the infection front before symptom development
  – drops after infection
Glume DON

2006

2007

Med  Hard  Early  KH  Harv  Kern  Loose  Med  Hard  Early  KH  Harv  Kern  Loose

milk  dough  KH  ripe  loose  milk  dough  KH  ripe  loose

0 d mist  10 d mist  20 d mist  30 d mist

DON (ppm)

14 daa  24 daa  34 daa  44 daa  54 daa  64 daa

0 d mist  10 d mist  20 d mist  30 d mist
Glume DON

2006

2007

- USG3592
- C9184
- USG3650
- Tribute
- VA01W99
- Ernie
- Neuse
- C9474

DON (ppm)

0 5 10 15 20 25 30 35 40 45

14 daa 24 daa 34 daa 44 daa 54 daa 64 daa

Med Hard Early KH Harv Kern milk dough KH ripe loose

Med Hard Early KH Harv Kern milk dough KH ripe loose
Rachis DON

2006

2007

Med  Hard  Early  KH  Harv  Kern
milk  dough  KH  ripe  loose

Med  Hard  Early  KH  Harv  Kern
milk  dough  KH  ripe  loose
DON boiled down

2006

2007

Med Hard Early KH Harv Kern
milk dough KH ripe loose

Med Hard Early KH Harv Kern
milk dough KH ripe loose
Infections spread through heads over time.
FDK increases during grain fill especially if it’s very wet....
2006 - grain

DON (ppm) at harvest-ripe

DON (ppm) at hard dough

0 d mist
10 d mist
DON (ppm) at harvest-ripe  
DON (ppm) at hard dough  
2007 - grain  
0 d mist  
10 d mist

2006 & 2007 - grain 0 d mist
DON (ppm) at harvest - ripe

DON (ppm) at hard dough

2006 & 2007 - grain

0 d mist
10 d mist
20 d mist
30 d mist

DON (ppm) at harvest-ripe

DON (ppm) at hard dough

0 d mist
10 d mist
20 d mist
30 d mist
2006 and 2007 – no mist

![Graph showing DON (ppm) at harvest-ripe over DON (ppm). The graph includes data points for Med milk, Hard dough, Early KH, and KH.](image-url)
• DON dynamics differ in various spike fractions

• Total spike DON highest at kernel-hard

• Highest early grain DON levels found in S cultivars and with post-anthesis moisture

• Grain DON at harvest-ripe most associated with DON levels at hard-dough and early kernel-hard

• Post-anthesis moisture breaks down linear relationship between early DON and DON at harvest
Thanks!

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