Cereal-grain forages: Points to consider when adding them to dairy cattle diets

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Cereal grain forages

- Increasing acreage in cereal grain cover crops in recent years (SARE, 2017)
- Many species used:
  - Rye, Oat, Wheat, Triticale, Barley
- Runoff, soil health, FORAGE
- Provides a late fall harvest (Oct/Nov) and/or spring harvest (May/June) 1-4 tons DM/acre
- Allows for double cropping
As cereal grain mature:

- Forage yields increase

but...

- **Forage Quality** decreases, sometimes quickly
When to harvest cereal grain forages?

This depends on ...

• What animals you intend to feed the forage?

• Timing of next crop planting?

• Weather?
Cereal Grain Forage Quality

• Lactating cows/young heifers (<12 months):
  High CP (15-20% CP)
  Moderate NDF (40-50% NDF) with
    High NDF digestibility
  High energy (>65% TDN)

• Heifers (>12 months/Dry cows):
  Moderate CP (12-15% CP)
  High NDF (>50% NDF)
  Moderate energy (55-65% TDN)
Effects of Growth Stage on Nutritive Value of Triticale

20-29 Tillering
30-39 Elongation
40-49 Boot
50-59 Heading
60-69 Flowering
70-79 Milk
80-89 Dough
90-99 Ripe

\[
Y = 0.0006 x^2 + 0.086 x^2 - 3.1599 x + 74.8
R^2 = 0.929
\]

\[
Y = 0.0043 x^2 - 0.78 x + 40.9
R^2 = 0.930
\]

\[
Y = 0.0003 x^2 - 0.041 x^2 + 1.66 x + 50.3
R^2 = 0.615
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Lactating cows
- Boot stage

\[ Y = 0.0006x^2 + 0.086x^2 - 3.1599x + 74.8 \]
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\[ Y = 0.0003x^3 - 0.041x^2 + 1.66x + 50.3 \]
\[ R^2 = 0.615 \]
Heifers – Heading to soft dough
Points to Consider: Fiber

Typically partially replaces alfalfa in diets

- Grass fiber more digestible but stays in rumen longer than alfalfa
  - Can increase rumen fill
  - Possibly lower intakes
  - Adjustments to diet fiber to maintain intakes and production needed
Points to Consider: Fiber

- Early harvest can allow for high milk production
  - Flag leaf to boot stage
  - Low lignin (1-3%) and high fiber digestibility (60-70%)
Points to Consider: Harvesting/Storage

- Can have a hollow stem with later maturities
  - Use shorter particle length and excellent packing
  - Forage should be 30-45% DM
  - Likely can direct harvest at soft dough stage
    - Wilting needed for earlier harvests
Points to Consider: Potassium

- Cereal forage can have high potassium
  - 1 to 4% DM
- Manure fertilization increases potassium
- Avoid feeding high potassium forages to dry cows; especially close-up cows
- High K levels can reduce Mg absorption
  - Feed higher Mg mineral
Points to Consider: Nitrates

Khorasani et al., 1997  Canadian Journal Animal Science
Nitrate in Cereal Forages

- Toxic to animals, especially if only forage fed
- Higher with heavy manure or N fertilizer applications
- Builds up during cool, cloudy conditions
- Ensiling reduces levels; no reduction for hay
- Testing at harvest and feeding suggested
  - Dilution can lower risk
Point to Consider: Next Crop?

- Planting of next crop may dictate harvest time:
  - Corn silage
    - Earlier harvest (mid/late May)
  - Summer annuals (sorghums, millet, etc)
    - Possibly later harvest as summer annuals planted early June
Questions?

fyi.uwex.edu/heifermgmt