

Optimal harvest timing for spring-grown oat forage

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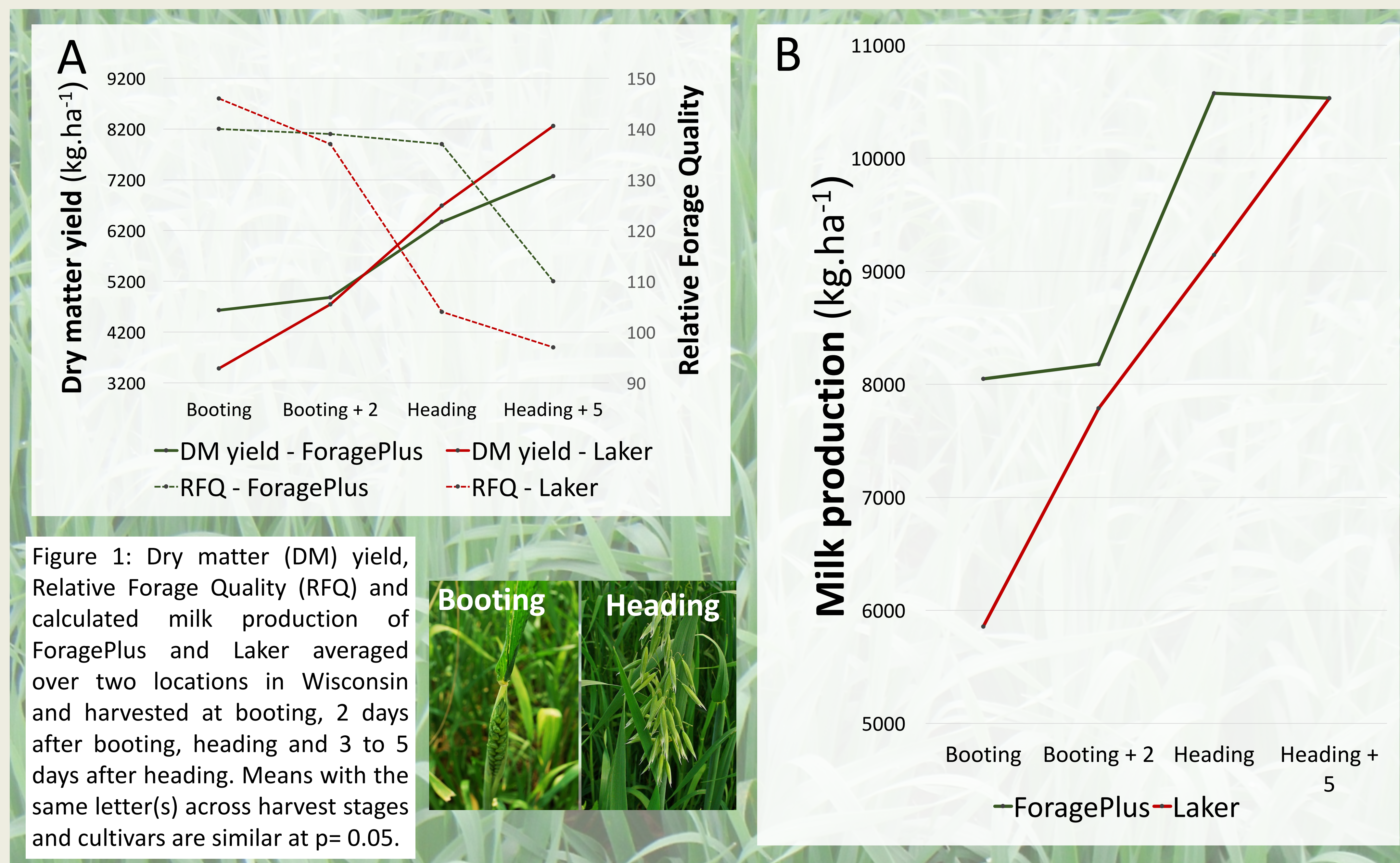


The problem

- **The boot stage** has historically been recommended for dairy-grade oat forage in order to avoid forage quality losses, with limited attention to dry matter accumulation.
- **We propose that total milk production is more relevant to determine the optimal harvest timing of oat forage, as it combines forage yield and quality.**
- Total milk production per hectare was estimated with the Milk16 equation from Undersander *et al.* (2016), which relies on the **total tract NDF digestibility (ttNDFD)** to estimate the energy available to the cow for milk production.

Results

Dry matter yield increased from booting to the late heading stage while relative forage quality dropped from 140 to 104 (Fig. 1A). As the combination of forage yield and quality, **Milk production** kept increasing until the late heading stage where it averaged 10.445 kg.ha⁻¹ (Fig. 1B).



Conclusions

- **Milk production from oat forage is maximized by delaying harvest to the late heading stage.**
- The increase in biomass compensated for the decrease in quality.



Methods

Cultivars

Two similar forage-type cultivars considered to be high quality and high yielding:

- **ForagePlus**, released in 2001
- **Laker**, recently released in 2017

Harvest management

- Plots were harvested at booting, 2 days after booting, heading, and 3-5 days after heading.

Statistical analysis

- Effects of genotypes, harvest stages, location and their interactions were tested with an ANOVA.

Experimental fields and design

- Oats were grown in 2016 at Arlington and West Madison Agricultural Research Station.
- No fertilizer was applied (previous crop: soybeans) and weed were controlled chemically.
- Randomized complete block design with 3 reps.

Weather

- Total precipitation was similar to the 30 years-average and temperatures were 2°C higher.
- Weather conditions were similar in both locations.