



# Digestibility of grass fibre increased by screw pressing in bio-refinery

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Screw press for biorefining grass

## Introduction

Processing grass by screw pressing in a bio-refinery yields a protein-rich green juice and a fibre-rich pulp suitable for dairy cow feeding. Screw pressing a second time yields more green juice, while each screw pressing is expected to increase feed intake and fibre digestibility of the pulp in lactating dairy cows.

## Materials and Methods

- 6 × 4 Latin square with 4 periods (21 days duration)
- 2 × 3 factorial design: Developmental stage of summer cut perennial ryegrass at harvest (**Early**=35 days regrowth; **Late**=44 days regrowth) and processing prior to ensiling (**GS**=chopped grass silage; **1xP**=pulp processed once; **2xP**=pulp processed twice)
- 6 second lactation Danish Holstein cows (176±93 DIM)
- Experimental silages, soybean meal, rolled wheat, and minerals fed as total mixed ration (65.0, 6.6, 26.6, and 1.8 % of DM, respectively)

## Objective

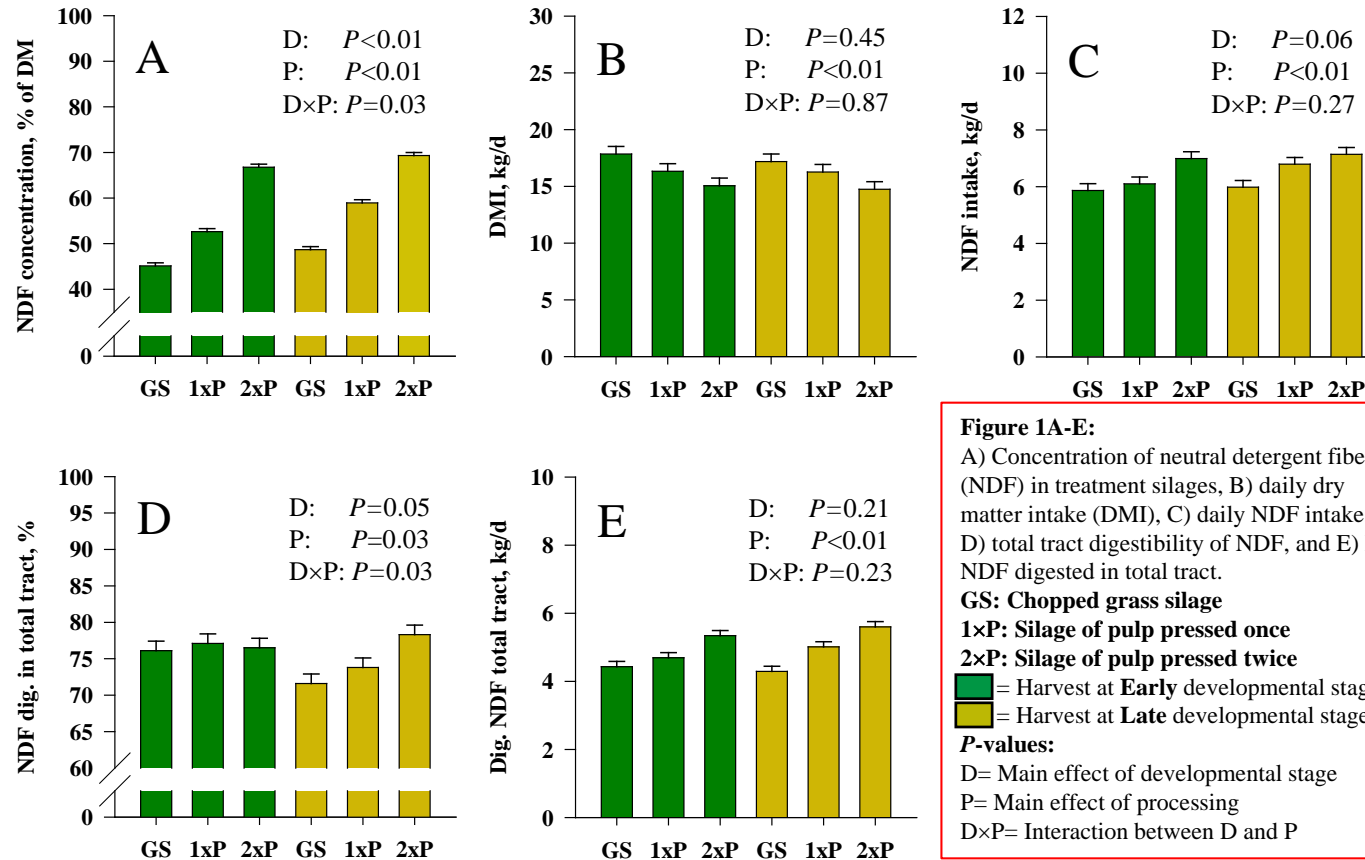
To study the effects of processing (P) grass (chopped grass vs. screw pressed grass at two intensities) harvested at early and late developmental stage (D) on feed intake and fibre digestibility in lactating cows.

## Conclusion

Processing grass by screw pressing to remove solubles increased fibre concentration and intake. Processing had the greatest effect on fibre digestibility in grass harvested at late developmental stage.

## Results

- Across developmental stage, NDF concentration in DM increased 9 and 21 %-units compared to GS, when screw pressing grass once or twice, respectively (Fig. 1A)
- Across developmental stage, DMI was lower (14.9 vs. 17.5 kg/d, respectively) and NDF intake was higher (7.07 vs. 5.92 kg/d, respectively) for 2xP compared to GS (Fig. 1B-C).
- For late cut grass, 2xP had higher digestibility of NDF in the rumen (76.6 vs. 66.2 %, respectively) compared to GS (Fig. 1D). Processing had no effect on fibre digestibility for early cut grass.
- Across developmental stage, the total amount of NDF digested was higher (5.5 vs. 4.4 kg/d, respectively) for 2xP compared to GS (Fig. 1E).



Difference in physical structure of 2xP and GS prior to ensiling, respectively:

