Testing a moist co-product for dairy cows consuming grass silage based diets

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Introduction

• Moist co-products are valuable feeds when fresh or conserved forages are limited for ruminants

• Many types are available from:
  • Forages (silage)
  • Cereals (wet milling, biofuel, others)
  • Fruits & Vegetables (apple, grapes, citrus)

• Disposal creates economical, environmental and regulatory issues

• Nutritious but vary in nutritive values

❖ Should be evaluated against dry feeds
Objective

• To compare TMR containing either
  • Dried rolled wheat (Control) or
  • A wheat-based moist feed (Treatment) for dairy cows

Hypothesis

• This moist feed can replace the rolled wheat in TMR without causing any detrimental effects on cow performance
Materials and Methods

Test Concentrates & TMR

• Two similar concentrates with similar CP (210g CP) & ME (12.5 MJ ME) per kg DM
  – Dry rolled wheat as Control = Cont and
  – A wheat based moist co-product as Treatment = Treat
  – Common ingredients = RSM, SBM, Sugar beet pulp, Molaferm 20, Barley straw, Vit-Min premix

• Each concentrate was daily mixed in a mixer wagon with ryegrass silage at 32:68 ratio to prepare respectively Con and Treat TMR.
Materials and Methods 2

Dairy cows, housing and feeding

• 72 Holstein-Friesian cows
  – distributed into 2 similar groups (n=36) which were balanced for
  – Condition score
  – Parity
  – Daily Milk yield and Days in Milk

• The cows were group housed in an open shed

• Each TMR of about 19kg DM was offered once daily to satisfy the ME and MP needs of a cow producing 25L milk.

• Also, each cow received 2kg Distillers’ grains during milking.
Materials and Methods 3

Measurements over 4 months (*Nov to Feb*)

- Daily Cow health
- Daily intake of TMR and additional concentrates
- Daily milk yield per cow
- Milk composition per cow
  - *Milk Fat*
  - *Milk Protein*
  - *Milk Cell Counts*
- Statistical analysis by Minitab to compare
  - the effect of *Cont vs Treat* TMR on milk yield & composition
Results 1

Cow Health and DMI

- All cows remained healthy and productive
- Both TMR were palatable as indicated by DM intakes (DMI).
- *Treat* cows ate less silage ($13.4 \text{ v } 14\text{kg DM/day/cow, } P>0.05$) but more concentrate ($6.8 \text{ v } 6.2 \text{ kg DM, } P<0.05$) than the *Cont* cows.
- Mean daily DMI of each TMR /cow was uniform ($20.19 \text{ vs } 20.15 \text{ kg for Treat and Cont group respectively}$) for both groups.
Results 2

*Milk Yield*

- Daily milk yield (Fig 1) and total cell counts per cow did not vary (P>0.05) between groups during various months.
- Overall, *Treat* cows tended to increase (P>0.05) mean daily milk yield by 0.144 kg than the *Cont* cows.
Results 3

**Milk Fat & Protein**

- *Treat* cows had always more milk fat and protein contents than the *Cont* cows
- BUT the contents differed significantly (P<0.05) only in Nov-Dec for fat and Jan for protein.
- Overall, the mean milk fat (46.2 vs 43.7) and protein (34.5 vs 33.5) contents were also greater (P<0.001) in *Treat* than the *Cont* cows.
- Mean cell counts always remained within acceptable limits (P>0.05).
Summary & Conclusions

- The cows consuming moist feed based TMR remained in good health as shown by their intake, yield, cells & general appearance.
- The moist feed can replace rolled wheat in TMR.
- However, it is essential to consider the storage, economic & environmental aspects of using such moist feeds in TMR.
- Such co-products can be integrated with a dairy rationing system as a moist bulk feed in winter rations and can also be used as a buffer feed for grazing cows in summer.
- However, the farmers that are located in the vicinity of its production would benefit more as those farmers can utilise moist feeds when these are readily available at a competitive price with less carbon footprints.
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