

Variation in feed intake of 6 months bull calves fed various types of feeds and rations



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Objective

to analyse how various types of pelleted concentrates, roughage sources, and total mixed rations (TMR) affected 1) Day to Day and 2) Calf to Calf variation in feed intake.

Background

A larger variation in Day to Day feed intake in fattening feedlot beef cattle has been associated with high-starch, low-fiber diets compared to moderate-starch, moderate-fiber diets and this could give rise to larger fluctuations in rumen pH and subacute rumen acidosis that might also lead to a higher level of liver abscesses.

A large Calf to Calf variation in feed intake in the pen could be expected to lead to less uniform growth rates in the pen and increased LW differences among calves.

However, little is known about the two sources of variation in feed intake among rosé veal calves of dairy breeds usually fed high energy diets (concentrate pellets or TMR) and slaughtered before 10 months of age.

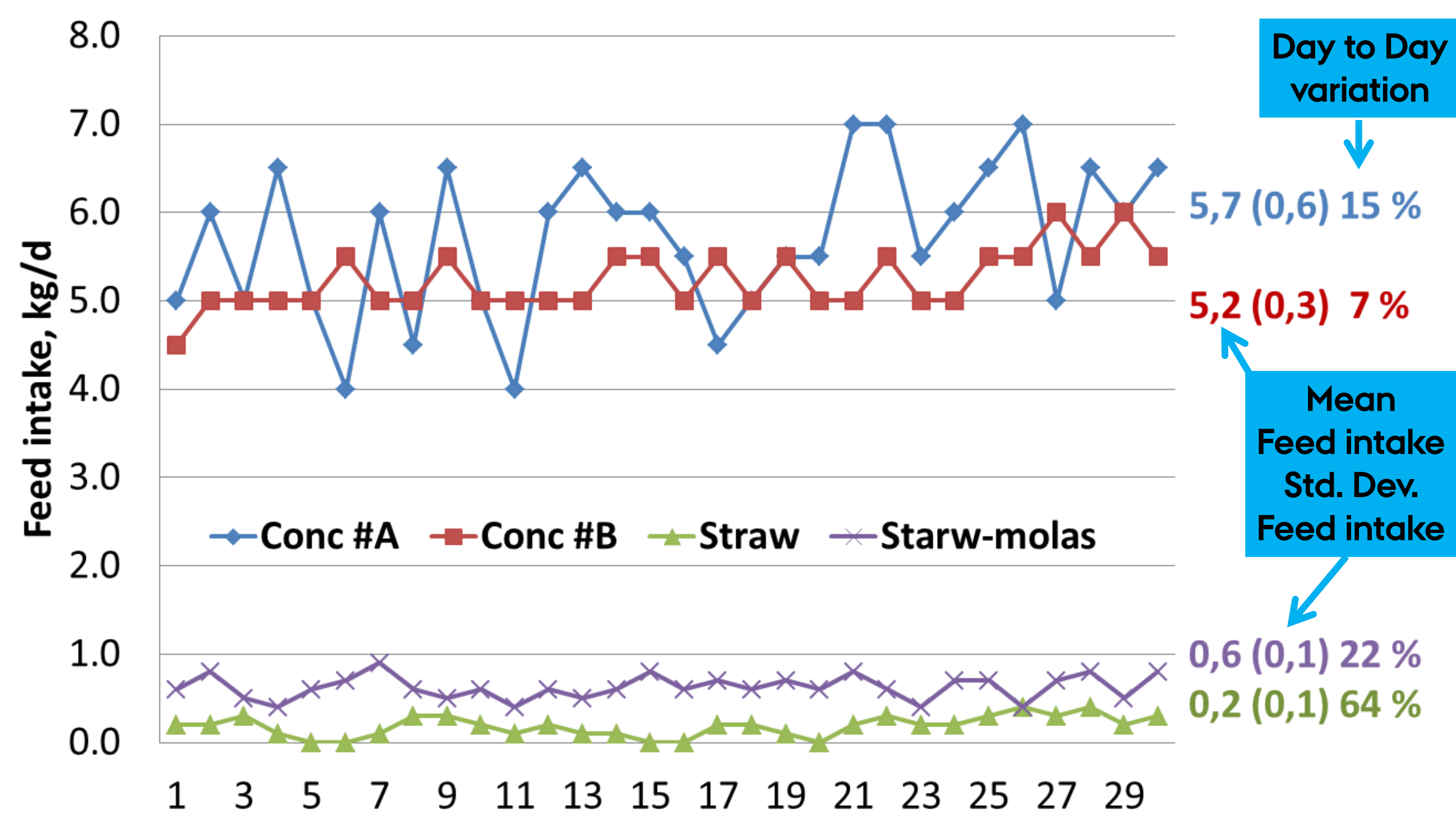


Fig.1. Examples of calculating Day to Day variation in feed intake per calf

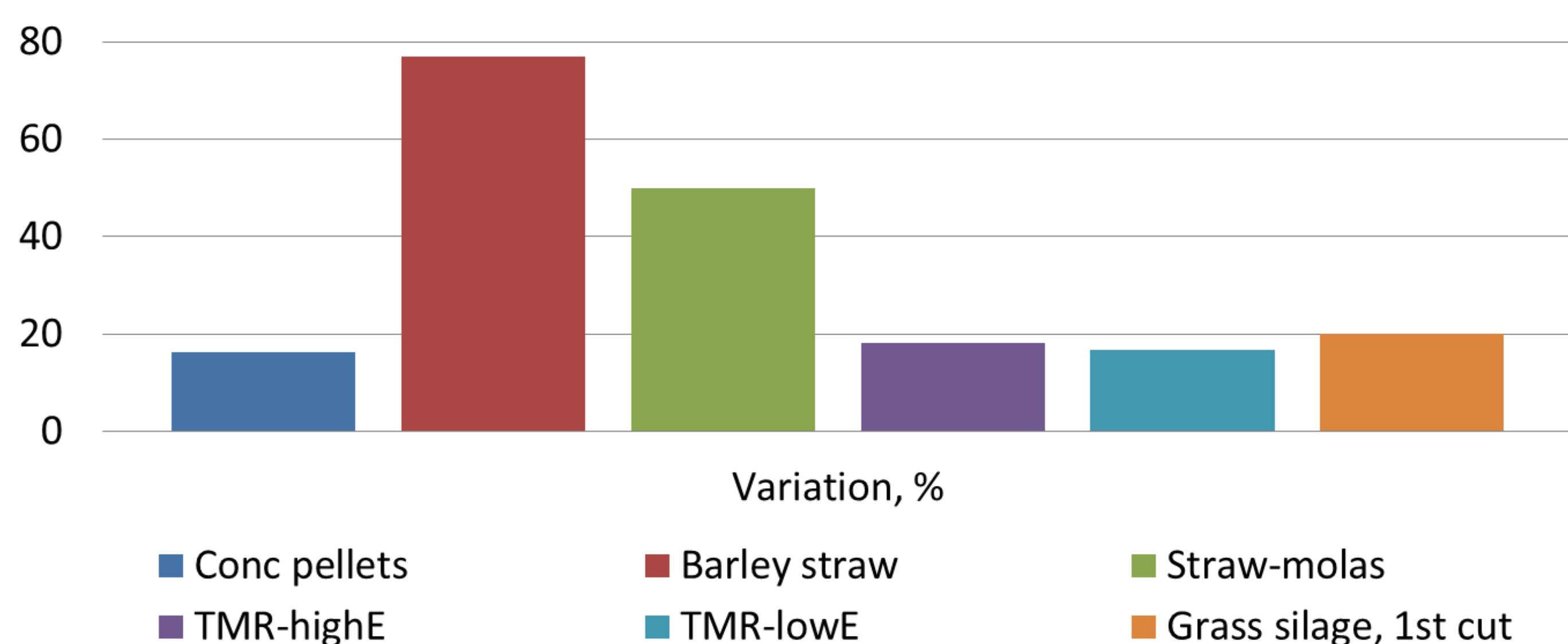


Fig.3. Day to Day variation in feed intake for various groups of feed stuffs

Materials and Methods

- Data from 4 experiments with a total of 15 different feeds and rations, and 271 bull calves were included.
- Data included individual daily feed intakes (Insentec feeders) measured over a 30-day period from 6 to 7 months of age; a period in which these calves typically attain growth rates of 1.4-1.8 kg/d.
- The Day to Day variation in feed intake (CV%) for a given feedstuff was calculated as the mean of the Std. Dev. for each calf receiving that feed stuff divided by the mean feed intake of that feed stuff.
- The Calf to Calf variation in feed intake (CV%) was calculated as the Std. Dev. for feed intake of the group of calves fed the same feed stuff divided by the mean feed intake of that feed stuff.
- Concentrates, pelleted, (15-17% CP):
 - #1= Low in starch (220 g/kg), #2= High in starch (370 g/kg), #3, #4 and #5= Standard in starch (280-320 g/kg) and NDF (180-200 g/kg) content for rosé veal calves
- Roughages:
 - Straw= spring barley straw, chopped;
 - Straw-molas= 25% molasses/75% straw, chopped
 - Hay= grass hay, artificially dried; Silage= grass silage, 1st cut

Conclusions

The results suggest that a more variable Day to Day intake for pelleted concentrate+straw-based rations compared to TMR is due to variation in the intake of straw and not in the pelleted concentrates *per se*.

The Calf to Calf variation in feed intake is similar for the pelleted concentrates and a high-energy TMR (usually fed to veal calves)

A low-energy TMR is expected to result in larger Calf to Calf variation in feed intake compared to a high-energy TMR or pelleted concentrate-based rations.

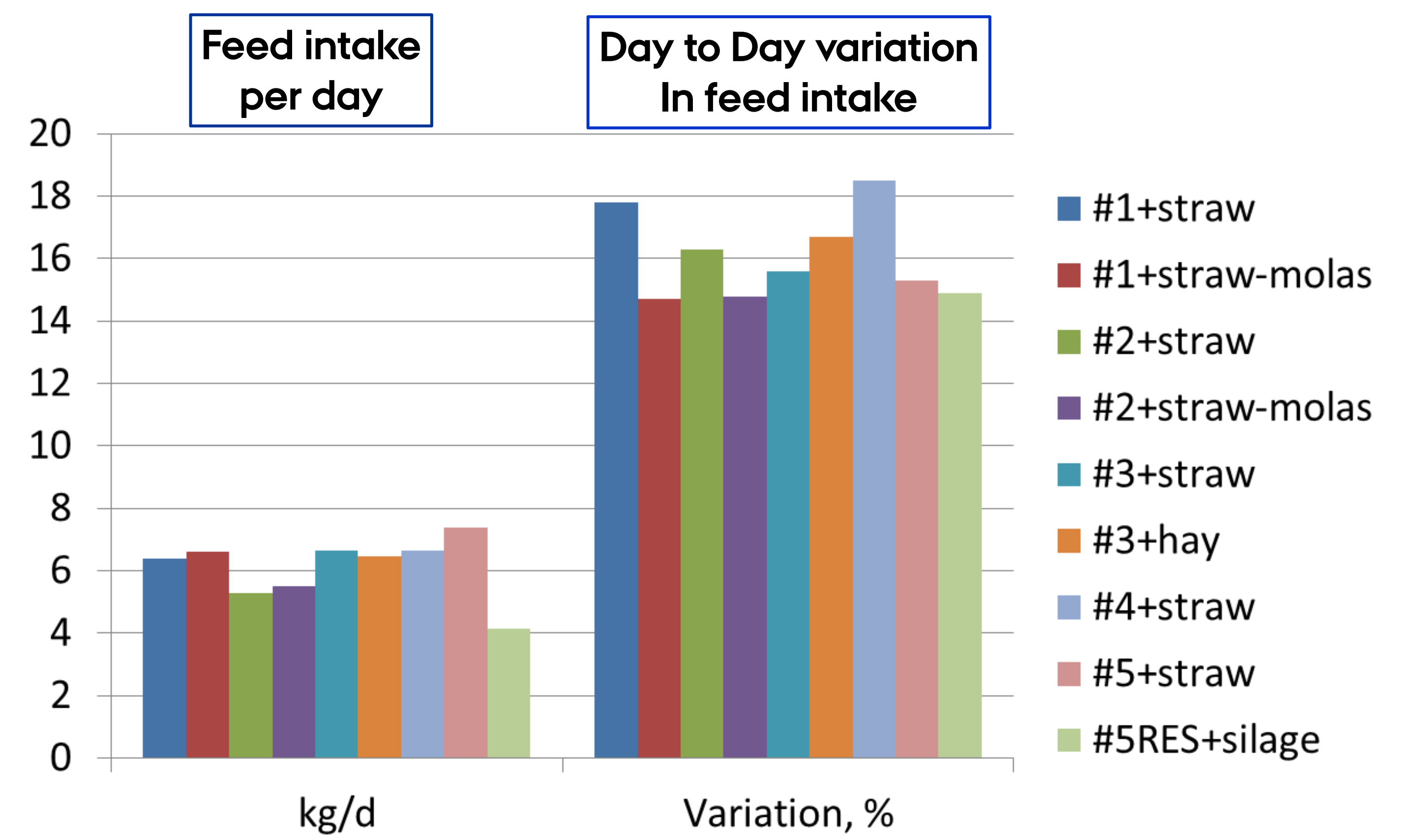


Fig. 2. Feed intake and Day to Day variation in feed intake of 5 different concentrates pellets fed together with different types of roughage (barley straw, straw-molasses mixture, hay or silage). Concentrate #1 is a low-starch pellet, #2 is a high-starch pellet, #3, #4 and #5 are standard concentrate pellets used for rosé veal calves. #5RES=restricted to 4 kg/d + silage *ad lib*

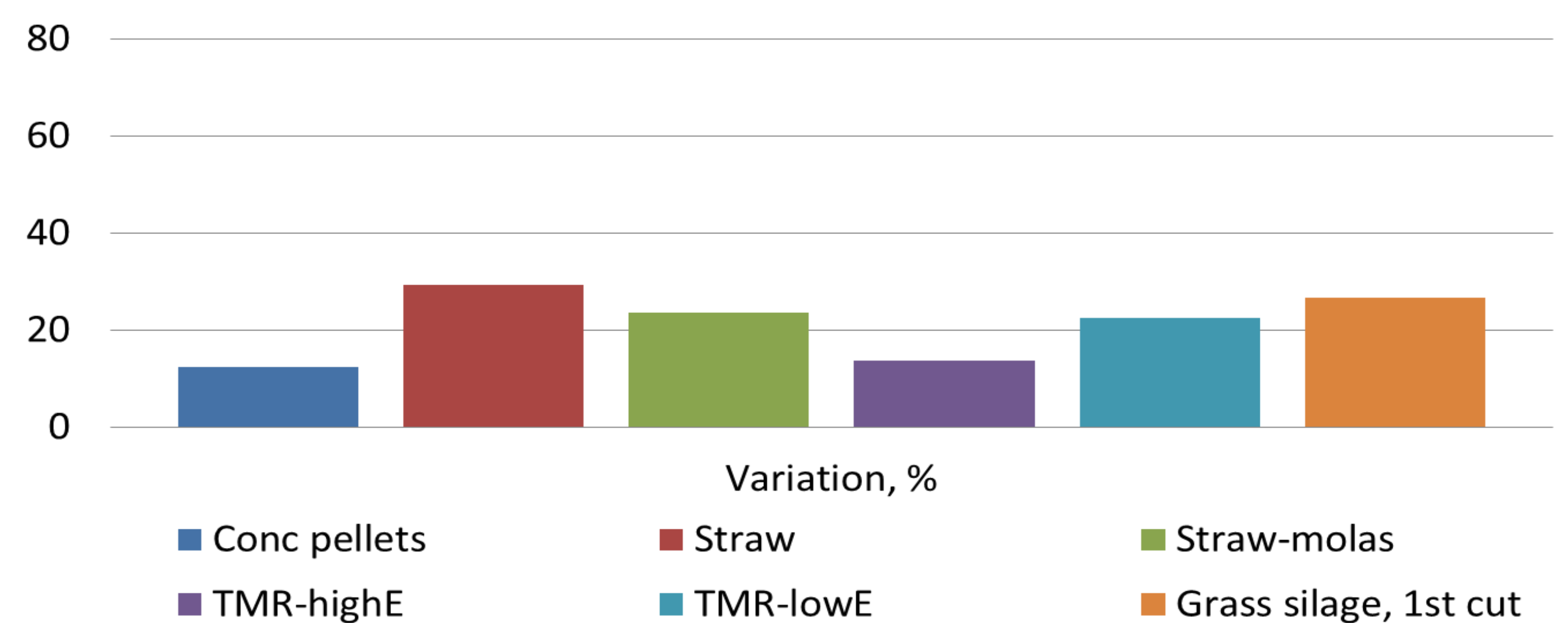


Fig. 4. Calf to Calf variation in feed intake for various groups of feed stuffs

Results

- For 5 pelleted concentrates varying in starch content from 22 to 37%, the average Day to Day variation was approximately 15% (min-max 13 to 18%).
- Barley straw is usually the only roughage supplied next to the pelleted concentrate and the Day to Day variation for barley straw varied from 50 to 100%.
- If barley straw was mixed with molasses, the Day to Day variation was markedly reduced compared to pure barley straw.
- Calves fed pelleted concentrates and straw had days with no straw intake at all.
- For TMR the Day to Day variation varied from 14 to 22%; with no clear relation to TMR energy density (high E vs. low E).
- The Calf to Calf variation in feed intake varied from 7 to 15% for the 5 pelleted concentrates, from 13 to 14% for high-energy TMR, from 24 to 27% for low-energy TMR, and from 24 to 36% for straw.