Introduction:
- Ruminant dietary starch is becoming increasingly important to farm owners and consultants due to grain price increases and desire to maximize starch utilization.
- Starch is the primary form of energy for dairy cows, and its fermentation and utilization are key to overall farm performance.
- Starch types, rate and site of digestion, and starch digestibility are critical factors to consider when designing diets for lactating dairy cows.
- Ruminal starch digestibility is highly variable across and within feed types, and many factors can contribute to the ruminal starch D in different feeds.
- The rate and site of starch digestion are important to continue to advance the nutrition model and dairy performance.

Objective:
The objective of this study was to determine the degree of variability in starch digestibility as measured by in vitro and in situ starch digestion techniques.

Materials and Methods:
- Samples submitted to Rock River Laboratory for commercial nutrient analyses during October 2013 to December 2013 were selected for further digestion analyses.
- Samples were collected to vary in moisture, and soluble protein.
- The data set included whole plant corn silage (n=52) and high moisture corn (n=41).
- All samples were dried at 5°C for 48 h and ground to pass a 6 mm Wiley screen for rumen in situ digestion analysis, to maintain particle size characteristics.
- Samples for starch, DM, and digested residue were ground to pass through a 1 mm Udy Cyclone Mill.
- Samples were removed from the rumen at the same time.
- Sample bags containing residue were rinsed until efficient was clear to remove microbial protein.
- Residue samples were composited and ground to pass through a 1 mm Udy Mill to be analyzed for starch content.

Results and Discussion:
- Ruminin in situ starch D and DMD was substantially variable for HMSC and WPCS (Table 1). Coefficients of variation were greater than 15% across all measures.
- Rumen in situ incubations began for 7 and 3 h digestions at 900 and 1300 h respectively, and all samples were removed from the rumen at the same time.
- Sample bags containing residue were rinsed until efficient was clear to remove microbial protein.
- Residue samples were composited and ground to pass through a 1 mm Udy Mill to be analyzed for starch content.
- Starch content and DMD was calculated as 100 x (Starch [g] – Ash [g] residue) / (starch [g] 0 h).
- The data set was analyzed using SAS JMP version 11.0 for population descriptive statistics.

Conclusion:
- Corn grain and whole plant corn silage starch digestion within the rumen varied substantially.
- The in situ starch digestion technique can be a practical assay to evaluate starch digestion for whole plant corn silage and high moisture corn.