

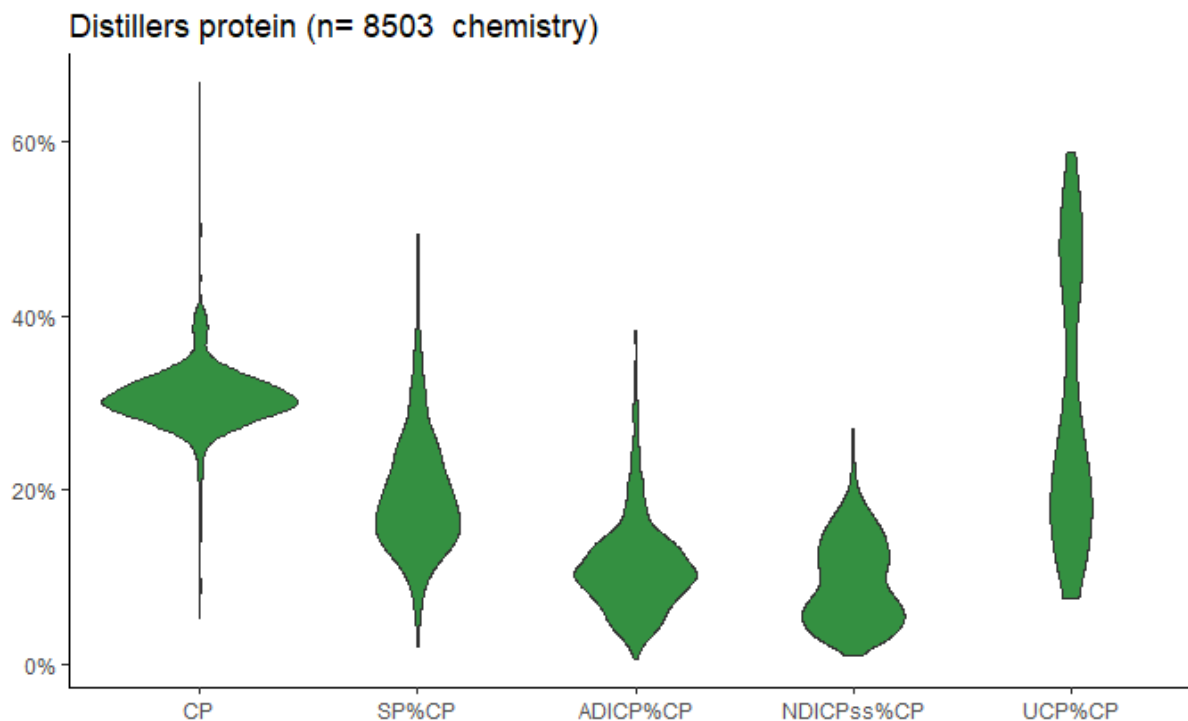


Nutrient Variation: Corn Distillers' Grains

Corn distillers' grains are a major ingredient in most beef and dairy markets, with the U.S. producing over 40 million tons of dried distillers' grains last year (USDA-ERS). In markets near ethanol plants, wet and modified distillers can provide additional value, and occasionally additional challenges. In this article, we will highlight the primary nutrient variations within distillers' grains.

Protein

Within the samples we have analyzed, there is a normal distribution of crude protein between 23% and 37% of dry matter. While this is a wide range, and there are certainly specialized "high protein" distillers' grains in the market, a larger issue is the variation in the digestibility of protein. While ADICP is a reasonable indicator of heat damage in forages, it is not a reliable indicator of protein digestibility in non-forages. For example, most samples only range between 5% and 20% ADICP as a percentage of crude protein, while the Ross UCP chemistry shows that digestibility for ruminants' ranges from 10-60% of crude protein.



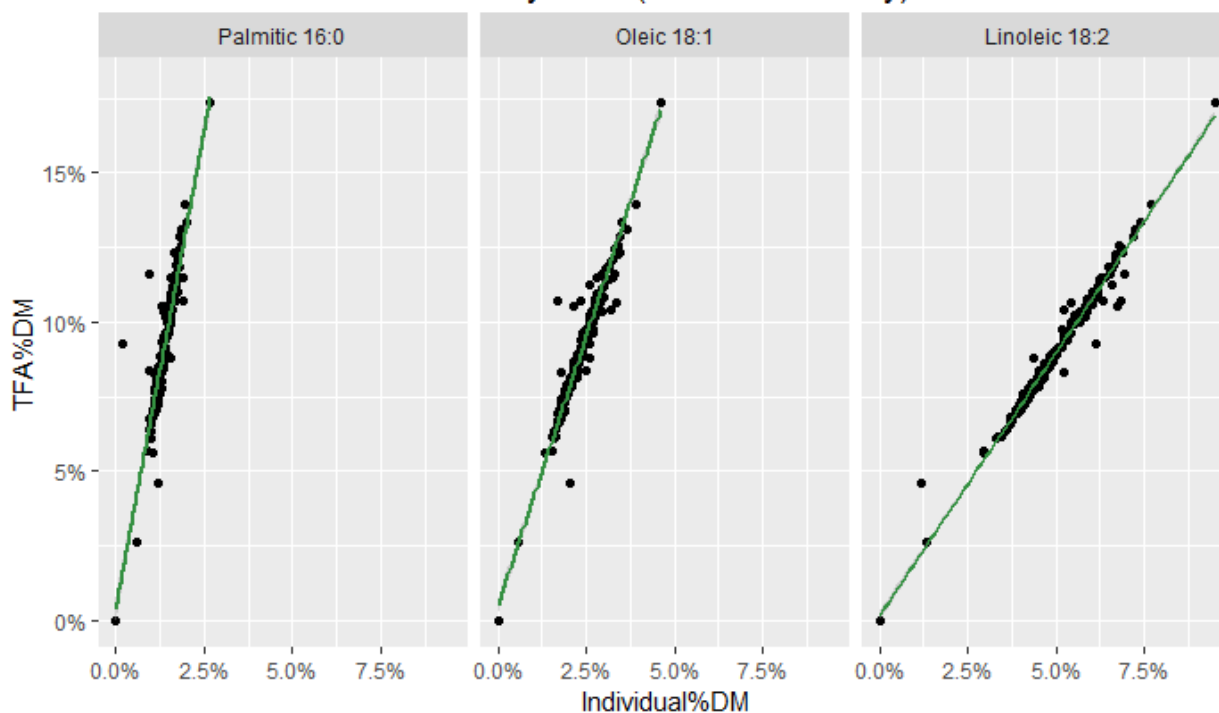


Nutrient Variation: Corn Distillers' Grains

Fat

Distillers' grains can have a wide range of total fat (4.6 - 12.6% when looking at more than 15,000 NIR samples), but their fatty acid profile is nearly fixed at 55% linoleic (18:2), 25% oleic (18:1), 15% palmitic (16:0), and less than 5% other fatty acids. In other words, corn oil is always corn oil, then it's just a question of how much oil is left in the distillers' grains after ethanol production.

Distillers TFA vs individual fatty acids (n= 173 chemistry)

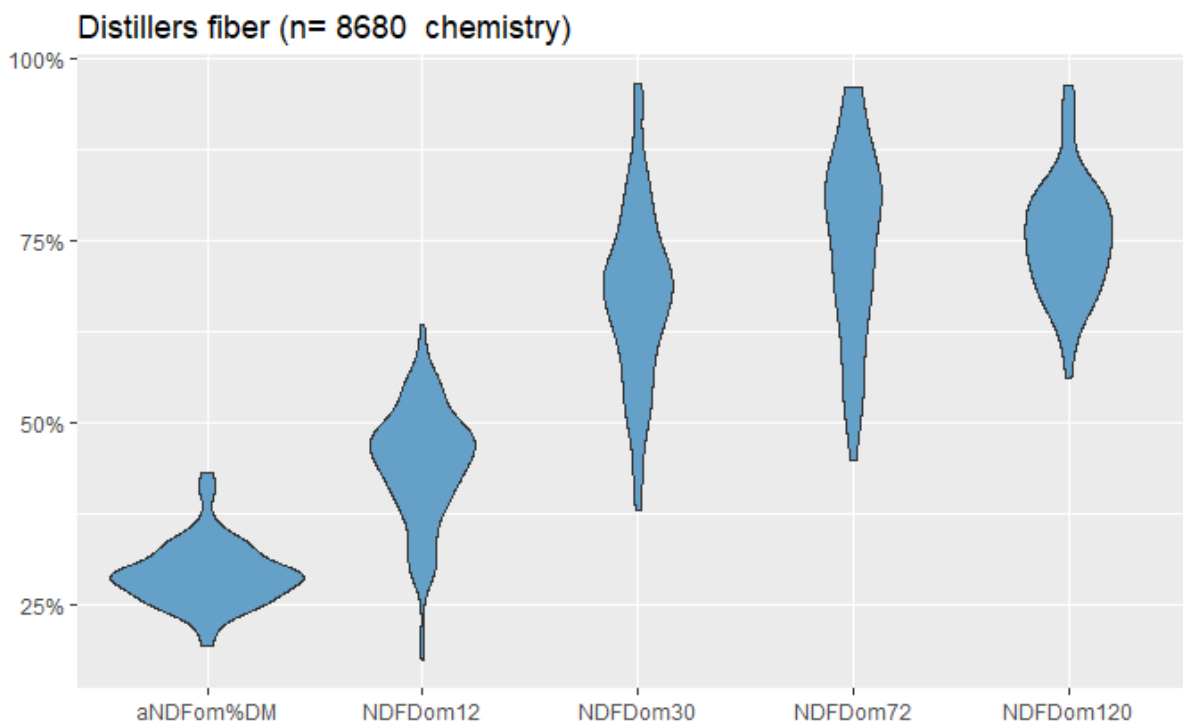


Fiber

aNDFom in distillers grain ranges from 20 - 40%, mostly due to the variation in other nutrients like protein and fat. One aspect of fiber in distillers' grains that may be surprising is how variable the digestibility can be. While we find NDFD's as high as 95%, we also find them as low as 50%, even at long time points where the chemistry repeatability is very stable.



Nutrient Variation: Corn Distillers' Grains



Analysis options

Currently, Dairyland's NIR Select (\$19.00) package includes all the traditional nutrients for diet formulation including CP, ADICP, aNDFom, TFA, and Ash. Ross UCP and all NDFD time points are also available by chemistry. Our calibration development work on UCP and NDFD looks promising and should be available in the higher NIR packages during the 2nd quarter of 2019.