

# NIRS prediction comparison between UMN and Europe

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On 14Sep2022, we collected forage quality samples from a sorghum sudangrass stand as part of the LegacyNet experiment. We processed and then predicted forage quality using the Hay equation with our Perten NIRS at UMN. Then we shipped the samples to Europe where they predicted forage quality using their Foss NIRS. Here we compare the predictions.

The common predicted values between UMN and Europe were crude protein (CP), acid detergent fiber (ADF) and neutral detergent fiber (NDF).

These forage quality parameters were adjusted to a percent of dry matter basis

Based on the maturity of the Sorghum Sudangrass at the time of cutting, I predict CP~9, ADF~40, NDF~65 for the plants with emerged seedheads and CP~11, ADF~35 NDF~60 for the less mature plants

I conclude that UMN underestimated CP, ADF and NDF relative to Europe and relative to what we expected to observe.

Forage	DM	CP	ADF	NDF	TDN	Ca	P
	%, as is	----- %, DM basis -----					
Forage sorghum							
silage, dough stage	28	6.0	--	--	55	0.29	0.26
Sorghum-sudangrass							
fresh, early vegetative	18	16.8	29	55	70	0.43	0.41
fresh, mid-bloom	23	8.8	40	65	63	0.43	0.36
hay, full bloom	91	8.0	42	68	57	0.55	0.30
silage	28	10.8	42	68	56	0.46	0.21
Corn							
silage, well eared	33	8.1	28	51	70	0.23	0.22

Figure 1: <https://www.extension.iastate.edu/sites/www.extension.iastate.edu/files/iowa/SudanFS50.pdf>

Table 1: Predicted forage quality with NIRS of sorghum sudangrass when cut at heading stage

method	CP	ADF	NDF
Europe	10	34	64
UMN	8	32	61



Figure 2: Sorghum Sudangrass at time of cutting. Zadocks between 4 and 6. Some plants had full seedhead emergence some plants did not have a seedhead. Note this was the second cutting of this sorghum sudangrass stand, which may explain the wide range of maturity stage.

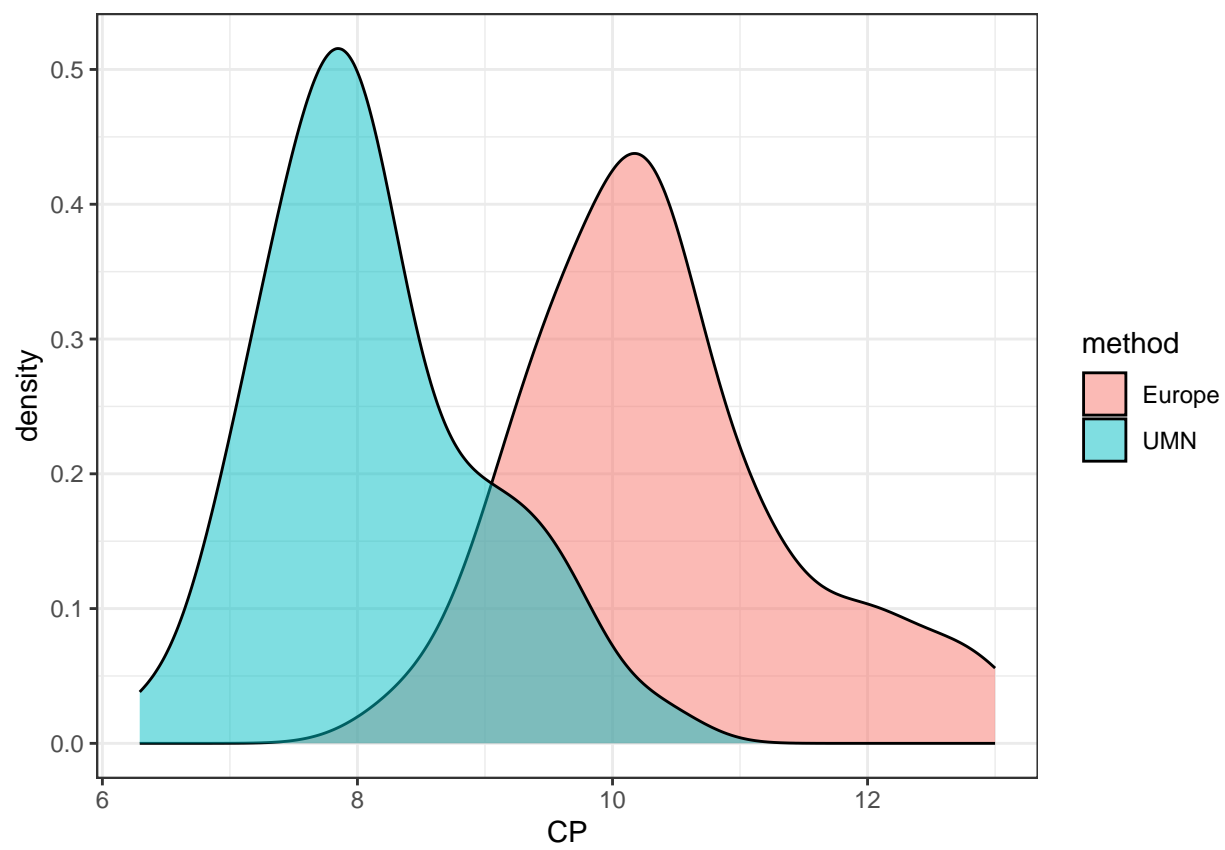


Figure 3: Crude Protein

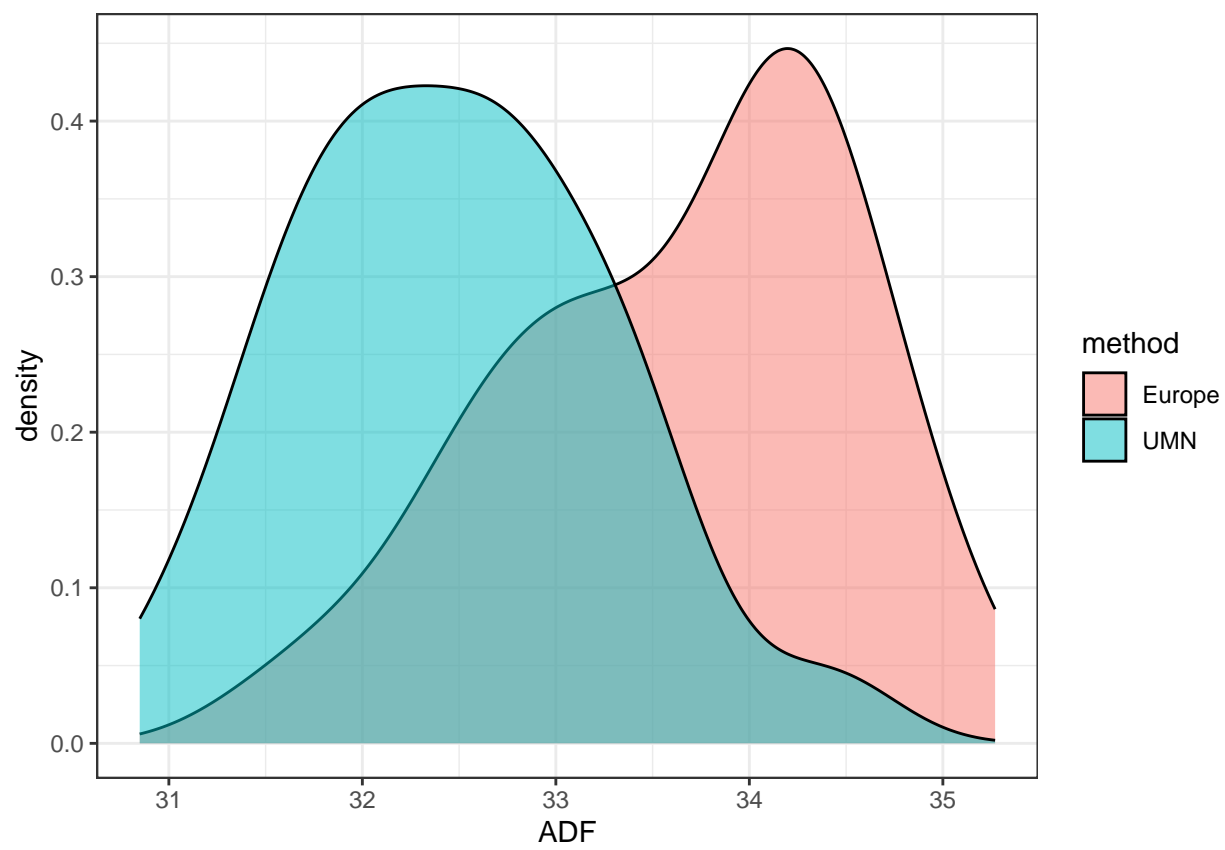


Figure 4: ADF

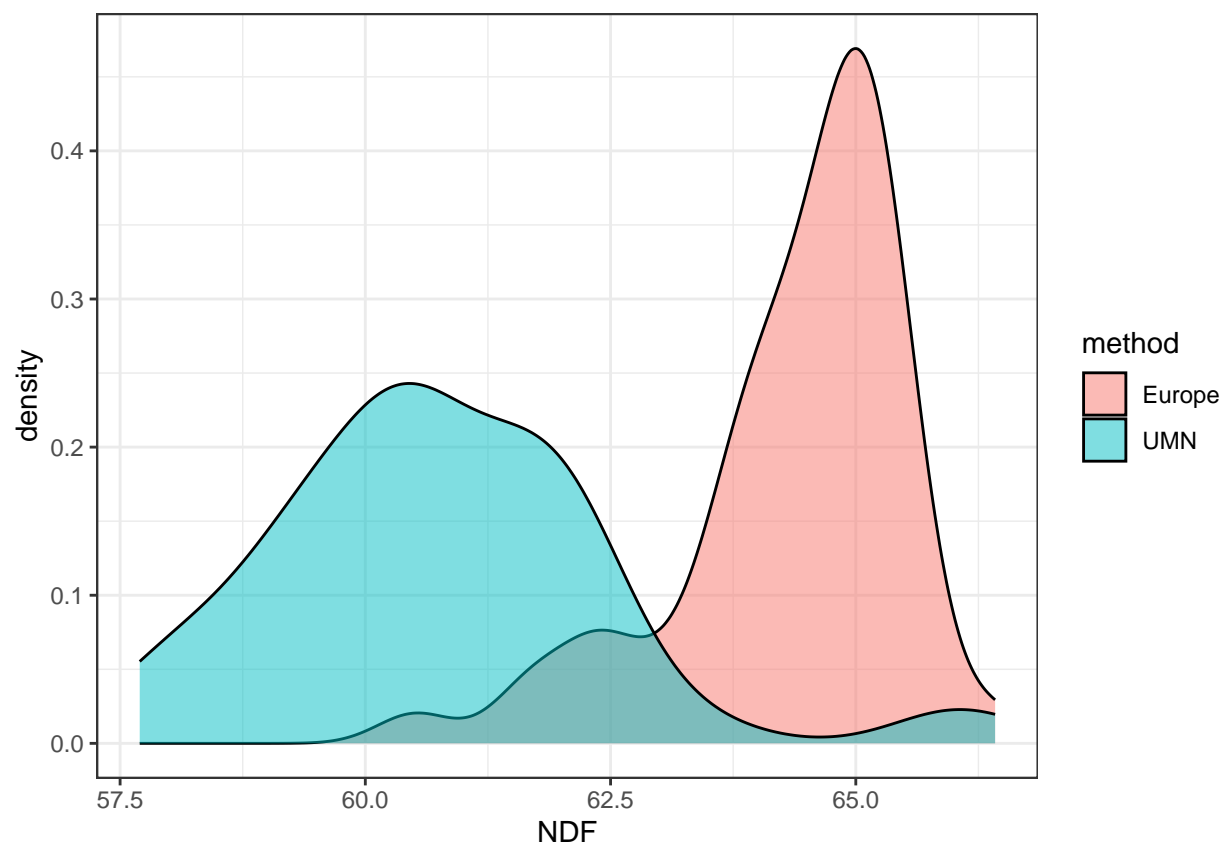


Figure 5: NDF