

Møde med Foderteknik vedr. NIR kalibrering for råprotein i majshelsæd

11. September 2024

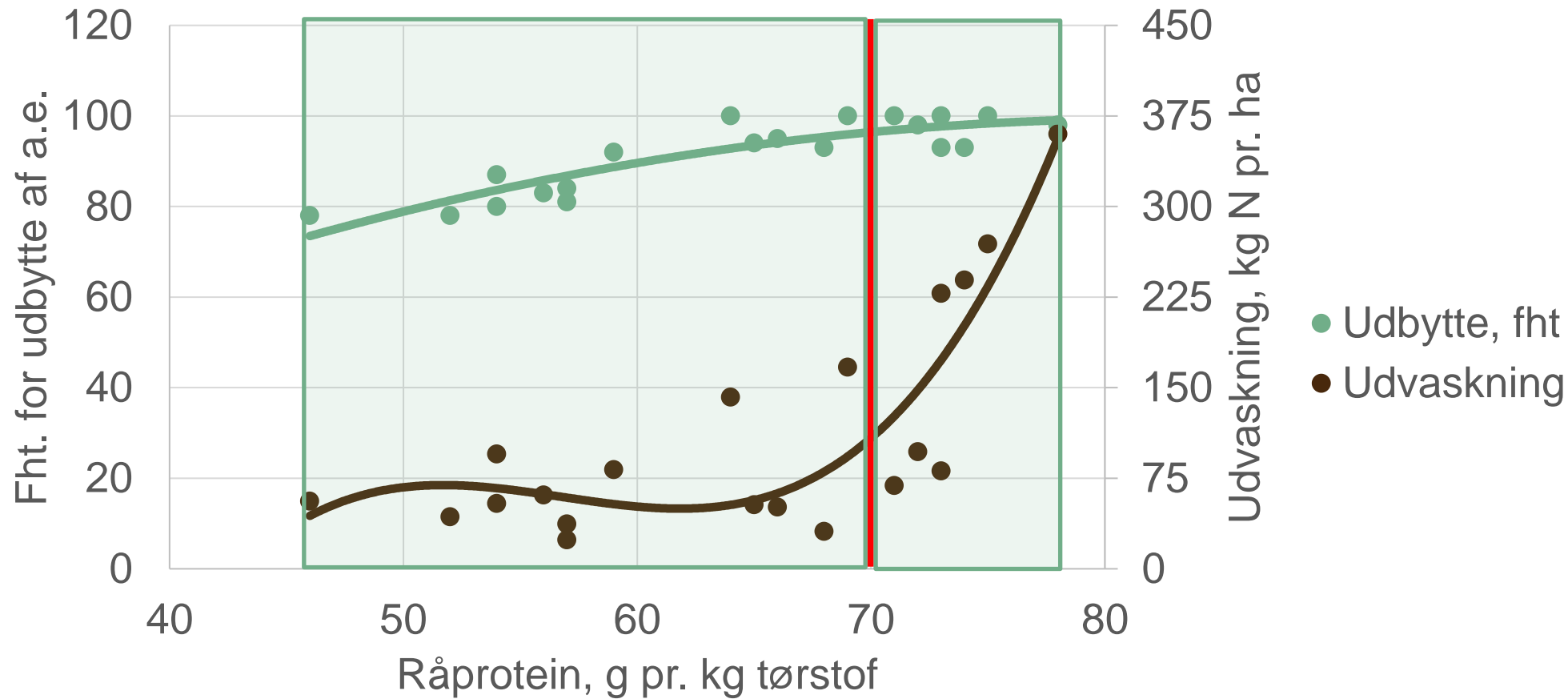
STØTTET AF

Planteafgiftsfonden

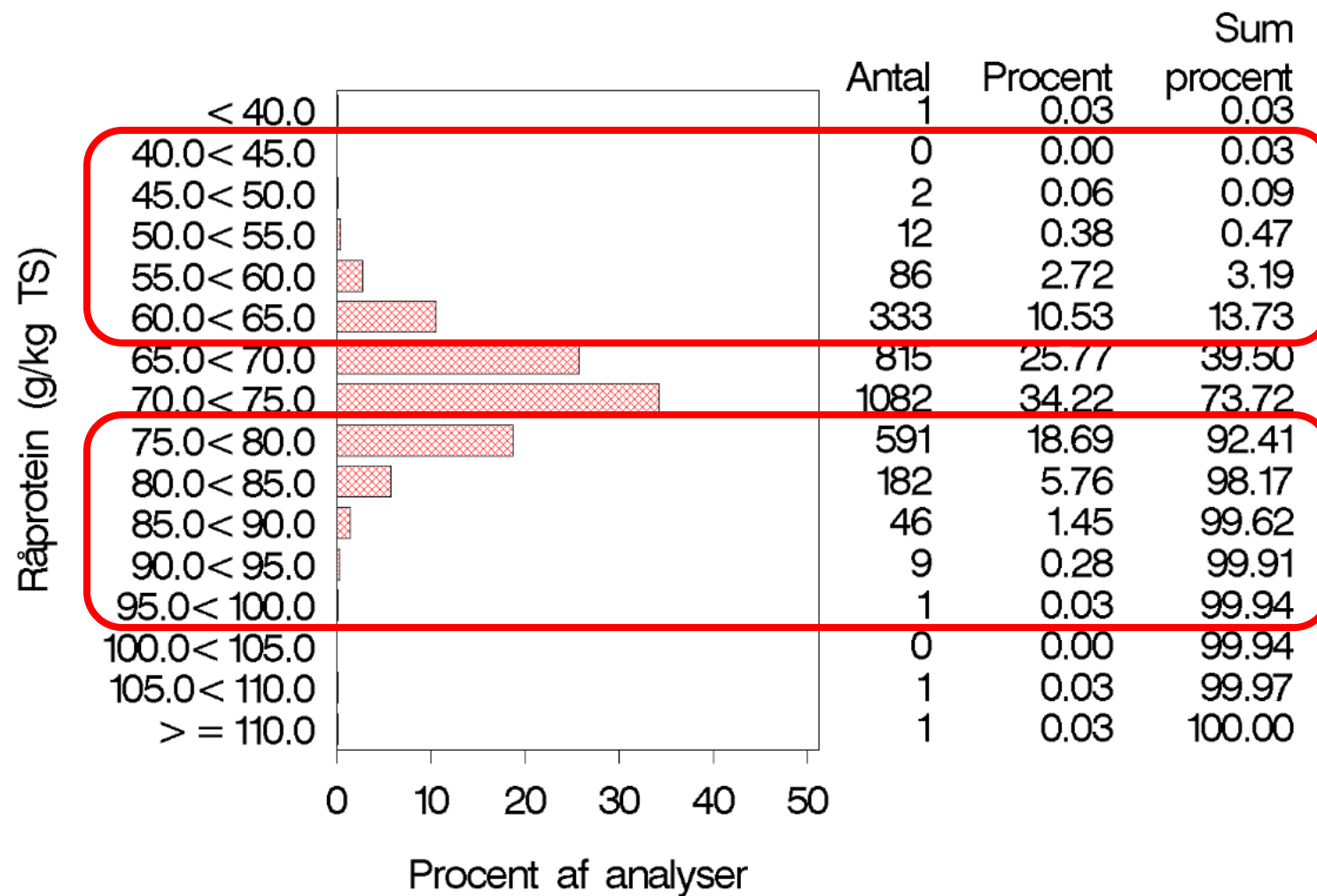
SEGES
INNOVATION

Råprotein, udbytte og kvælstofudvaskning

5 forsøg 2021 og 2022, alm. rajgræs sået i st. 16, forfrugt majs



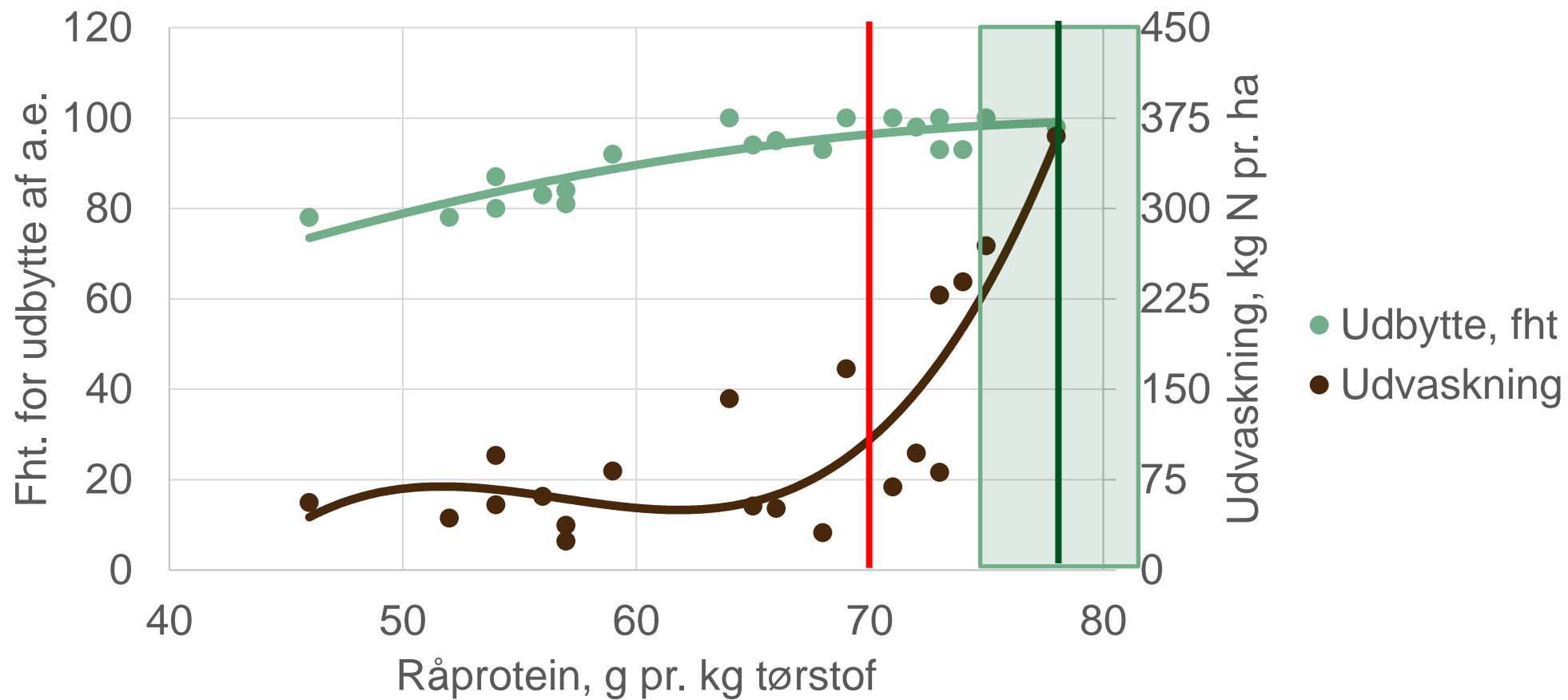
3100 majsanalyser – høst 2022



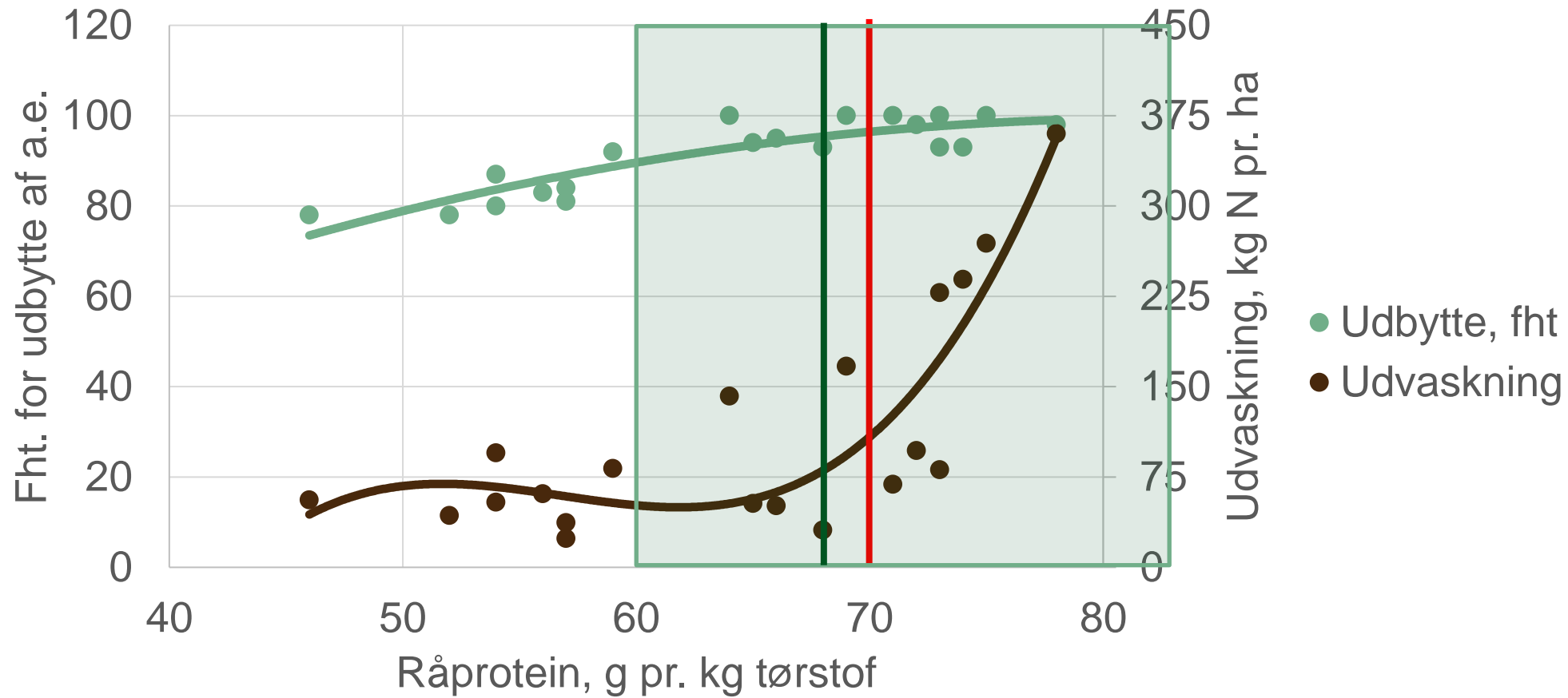
Råprotein i 3 majsmarker på samme bedrift, høst 2023

	Forfrugt	Antal prøver	Gennemsnit	Variationsbredde
			<i>gram råprotein pr. kg tørstof</i>	
Mark 1	kløvergræs	8	78	74-82
Mark 2	3 år med majs	7	68	60-82
Mark 3	Kartofler, majs, byg	8	60	47-68

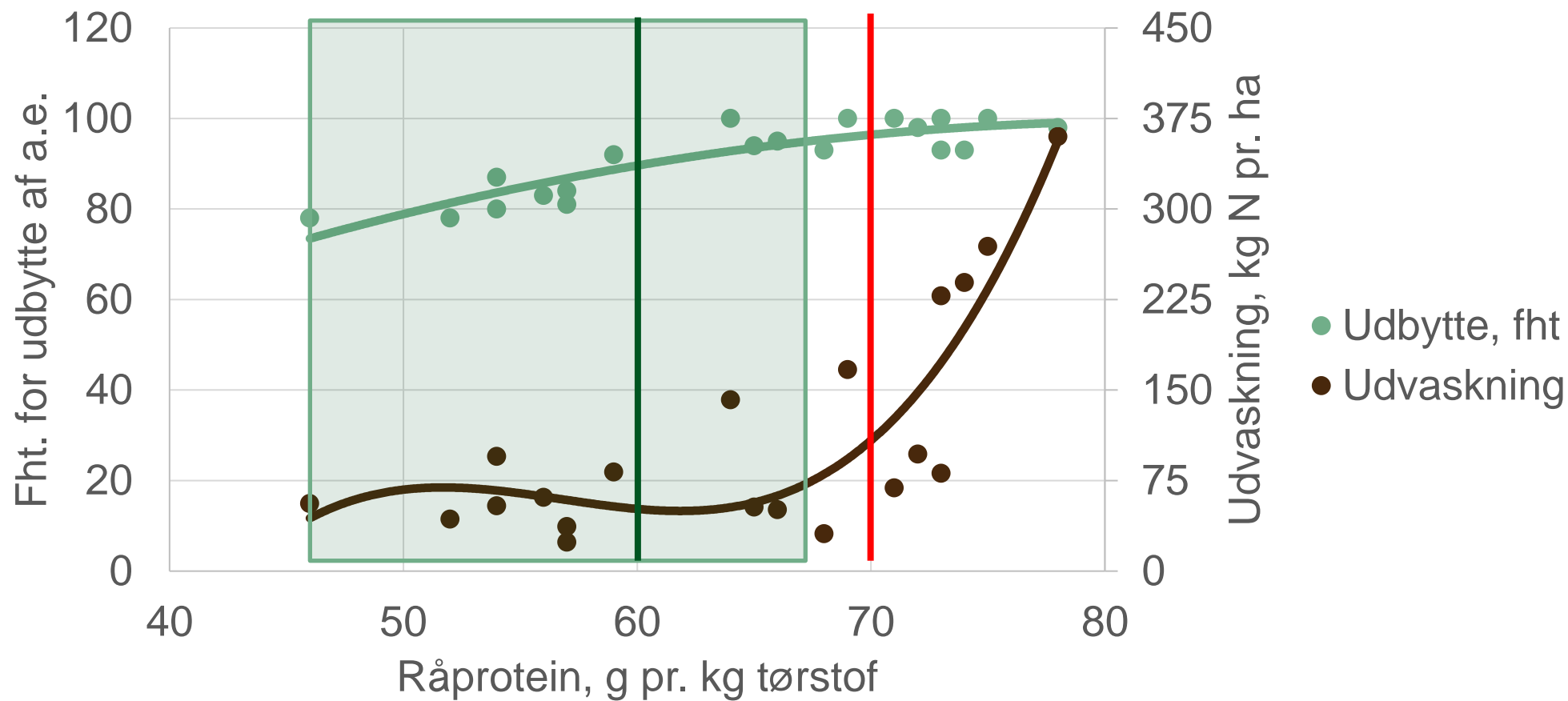
Mark 1 – forfrugt kløvergræs



Mark 2 – forfrugt flere år med majs



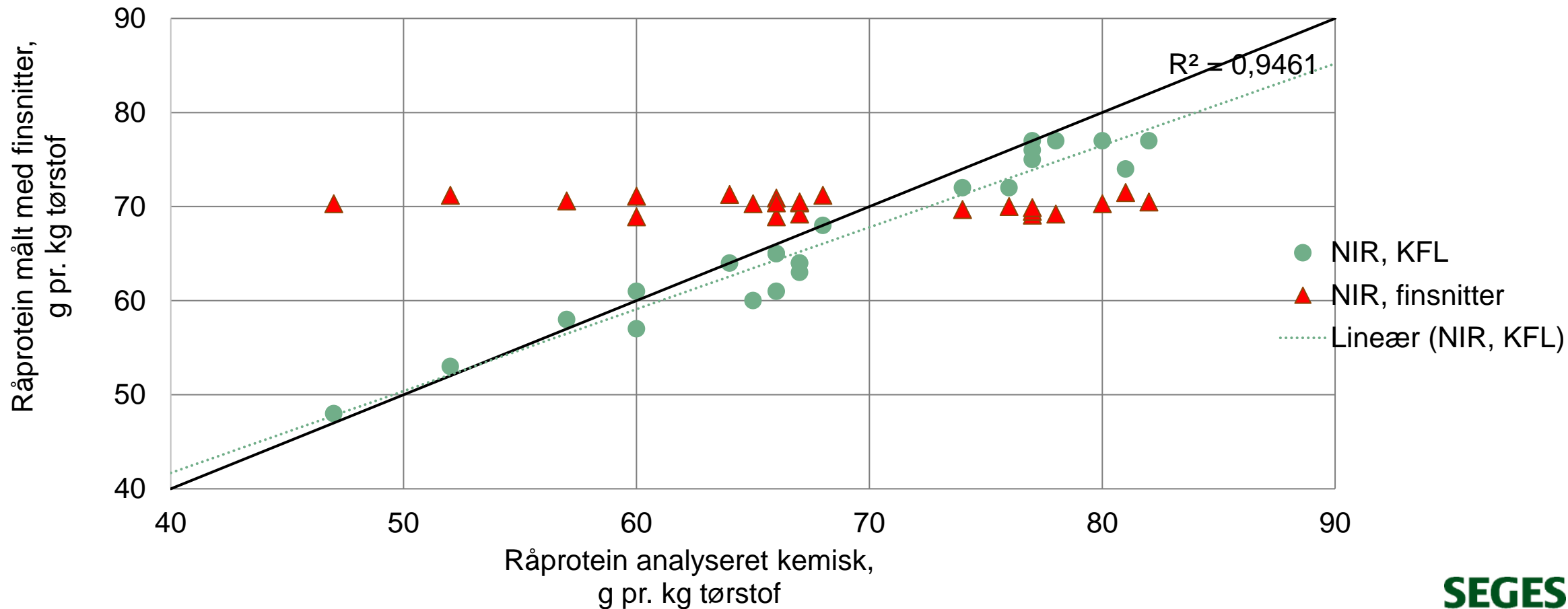
Mark 3 – forfrugt kartofler, majs, korn



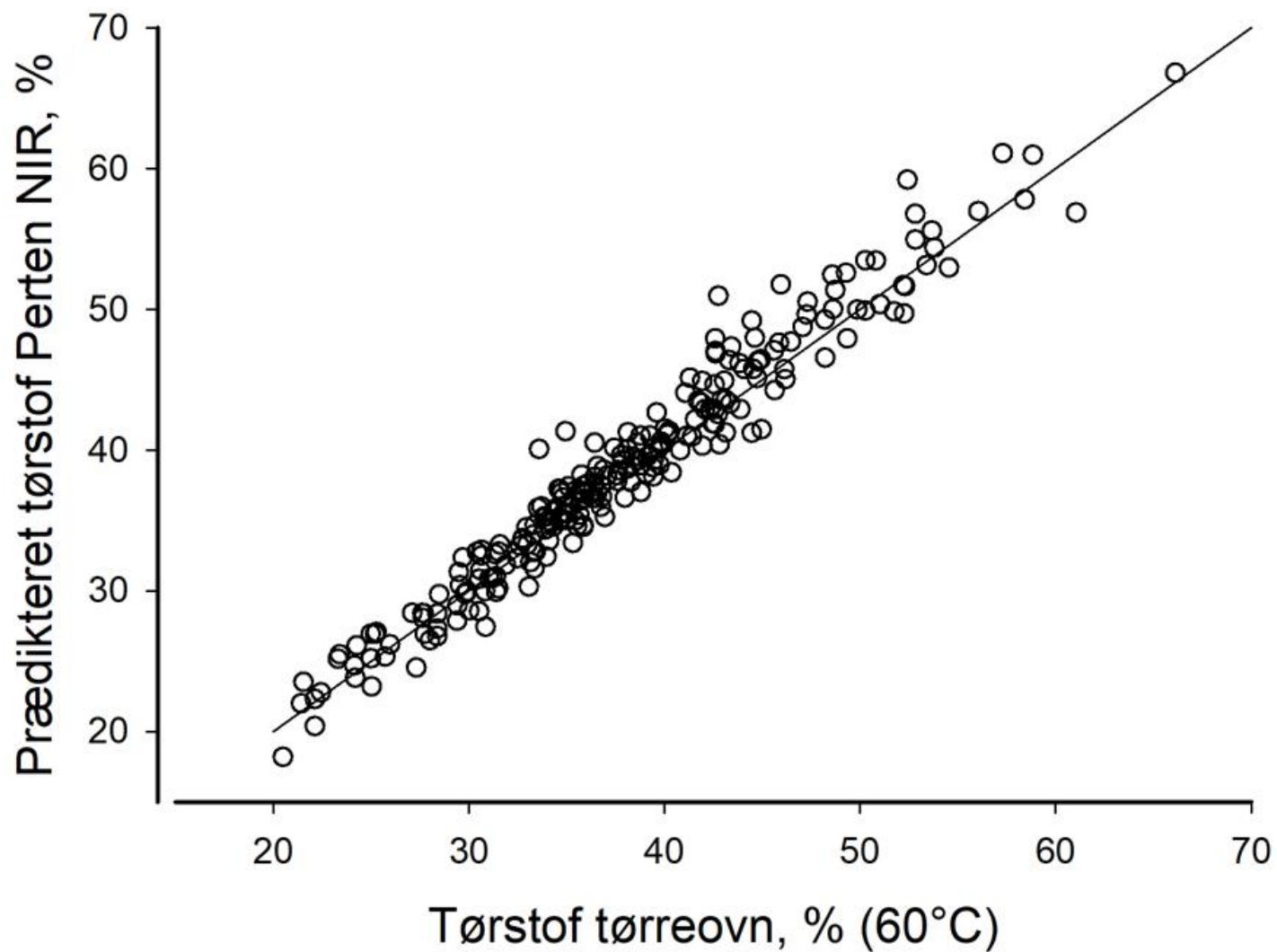
Ringe præcision med NIR-sensor på finsnitter

23 prøver i 2023

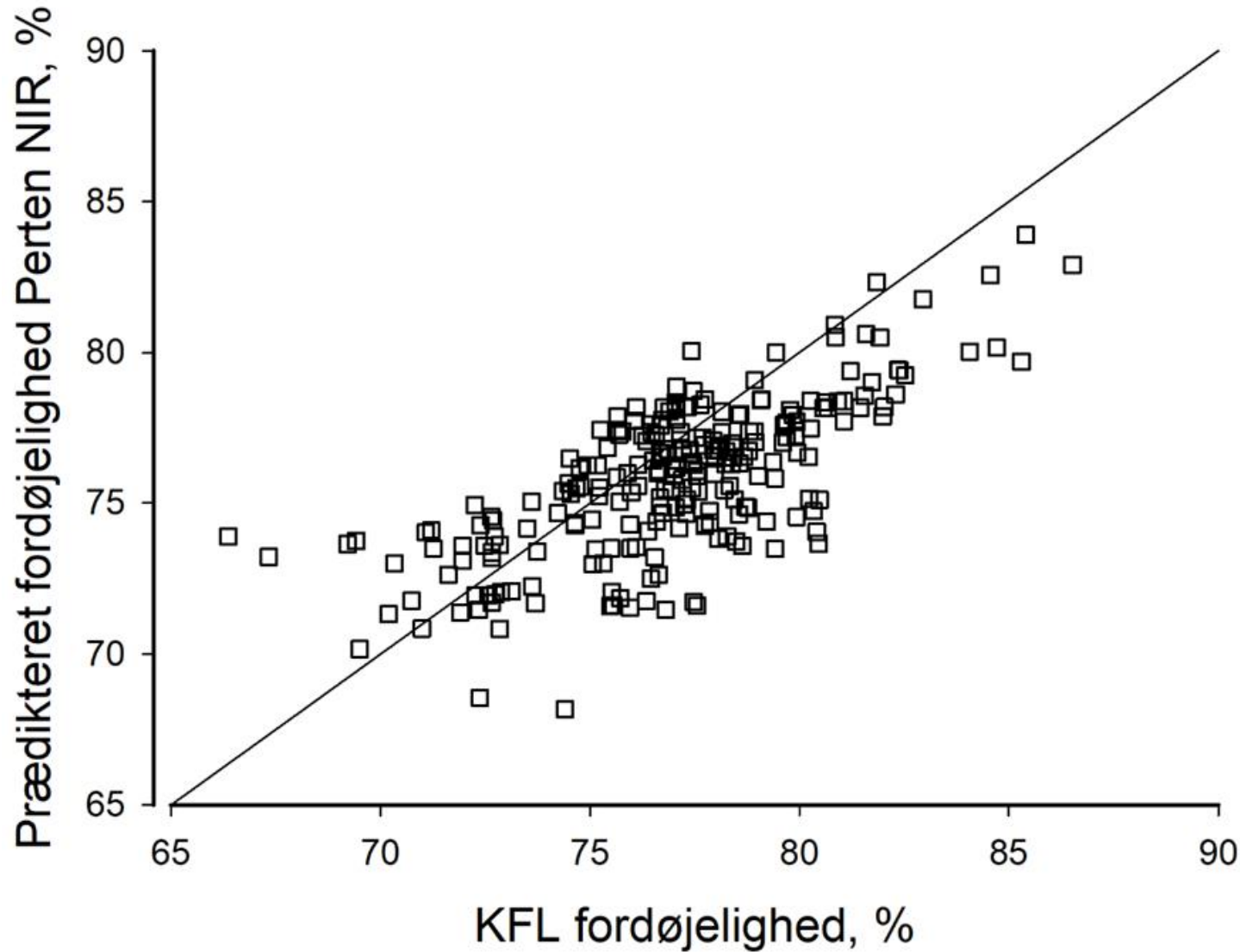
Råprotein målt kemisk og med NIR på laboratorie og finsnitter



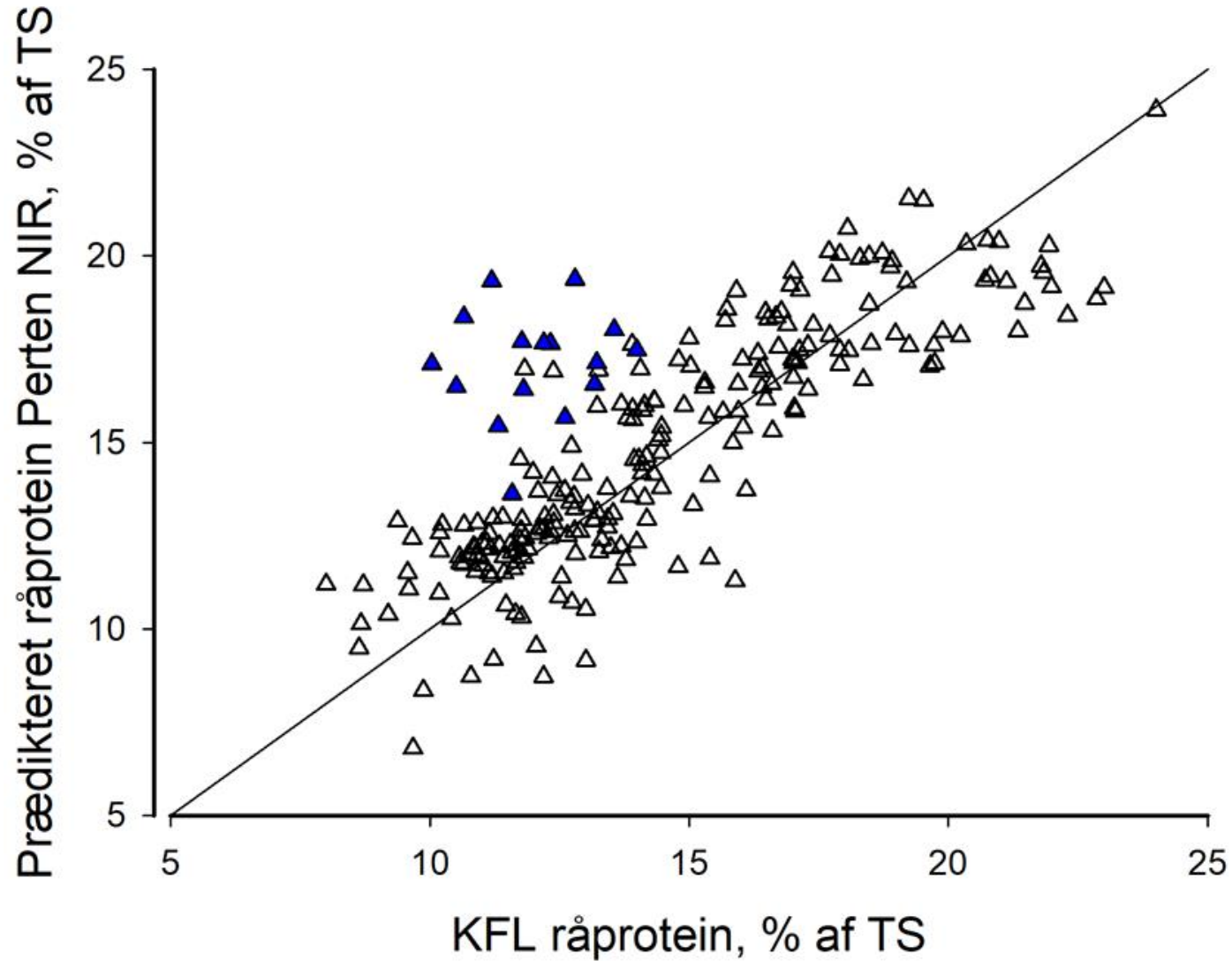
Tørstof #134 (bias = 0,7 %, SEP = 1,8 %, n = 237)



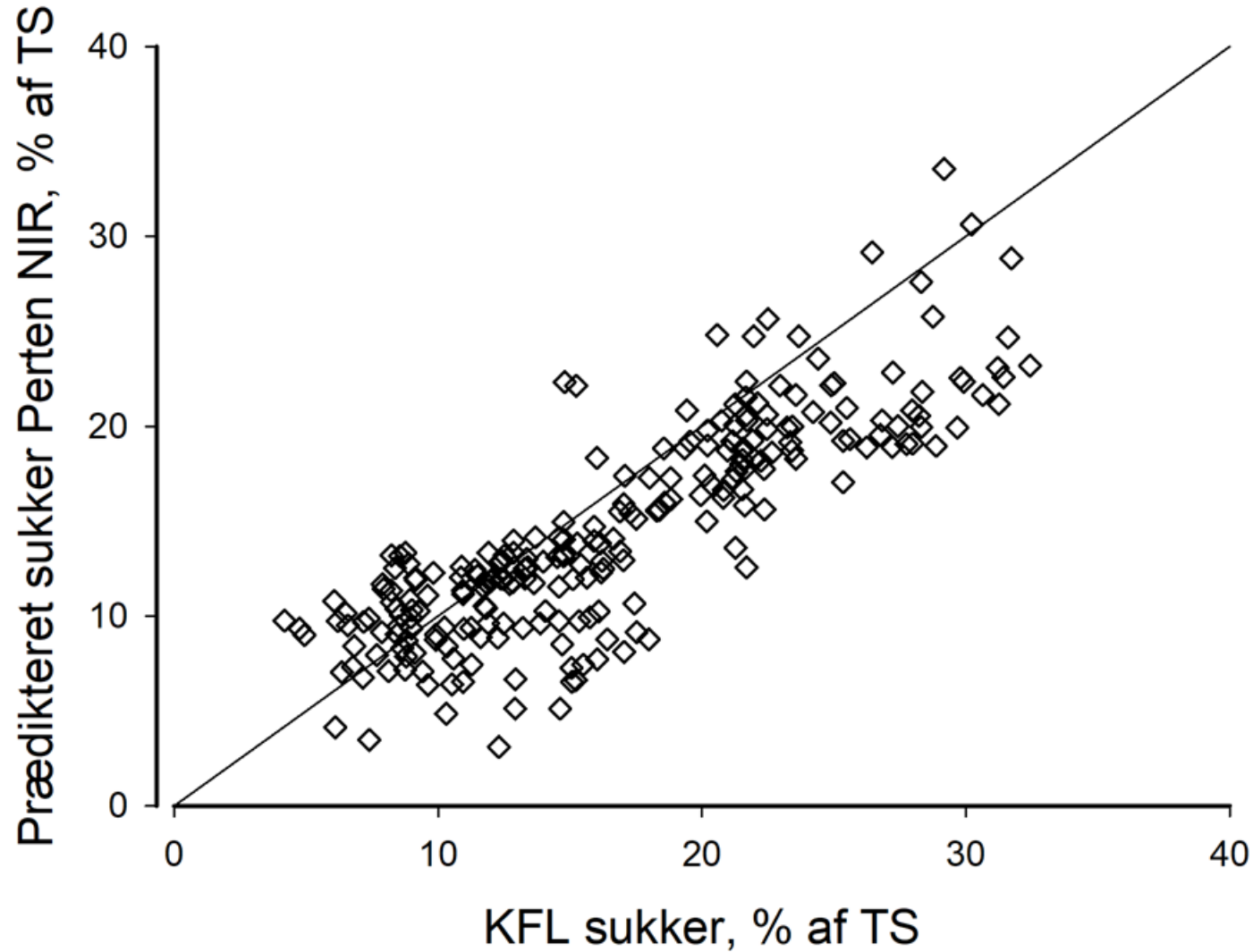
Fordøjelighed #134 (bias = -1,2 %, SEP = 2,1)



Råprotein #134 (bias = 0,6 %, SEP = 2,1 %)



Sukker #134 (bias = -2,2 %, SEP = 3,7 %)



EVO NIR accuracy test

Dinamica Generale

Season 2024



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- EVO NIR accuracy check
 1. Harvesting Green Maize in Denmark

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Green Maize harvesting in DK with EVO NIR



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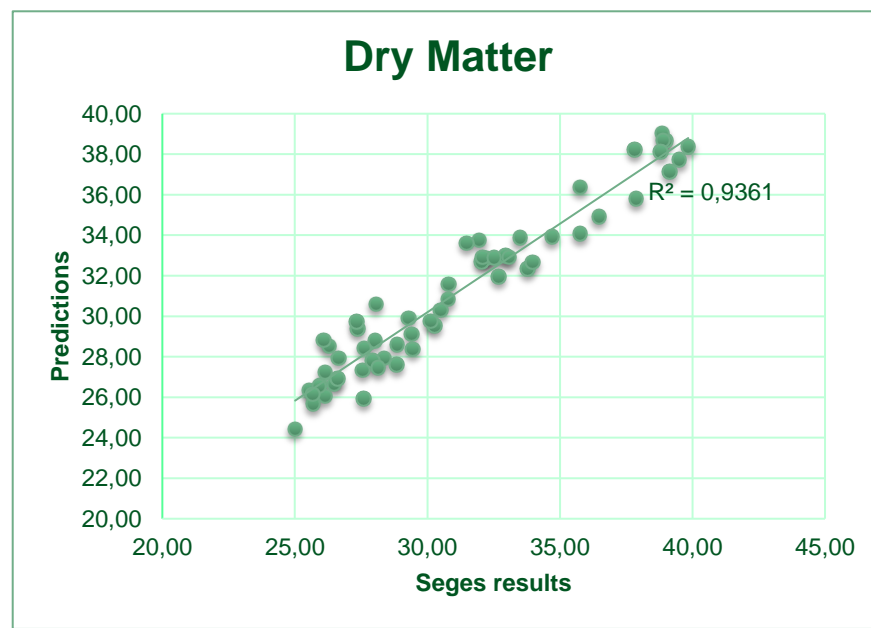
EVO NIR on storage harvester green maize : accuracy evaluation with LAB

SEGES lab collected 58 green maize samples and sent them in Dinamica Generale together with lab values. We scanned all samples with our EVO NIR master instrument and verified the readings of our calibration

SEGES							
Statistic	DM	Starch	C.Protei n	NDF	Ash	Sugar	DOM24
Average	31.0	8.3	2.2	11.8	0.9	2.7	78.6
SD	4.5	2.5	0.3	1.4	0.1	0.6	1.2
MIN	25.0	4.0	1.6	9.9	0.7	1.6	76.1
MAX	39.8	13.1	2.9	15.6	1.2	3.7	82.2

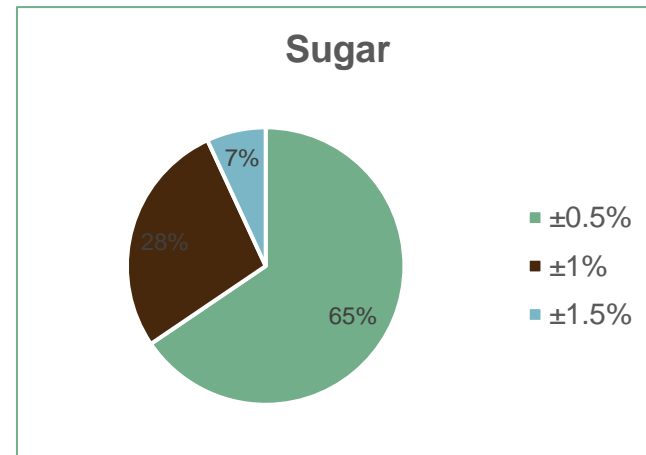
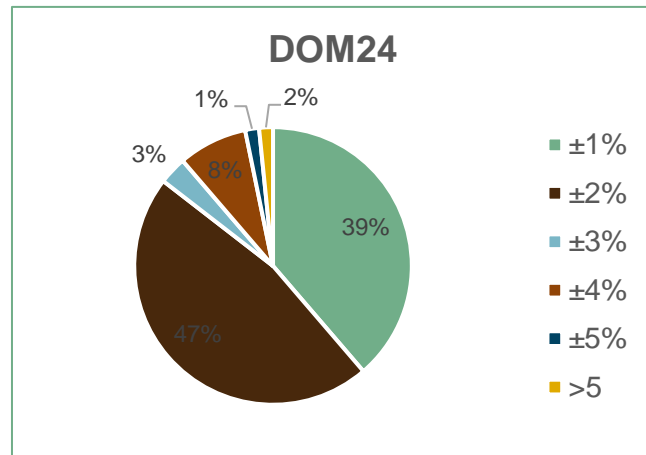
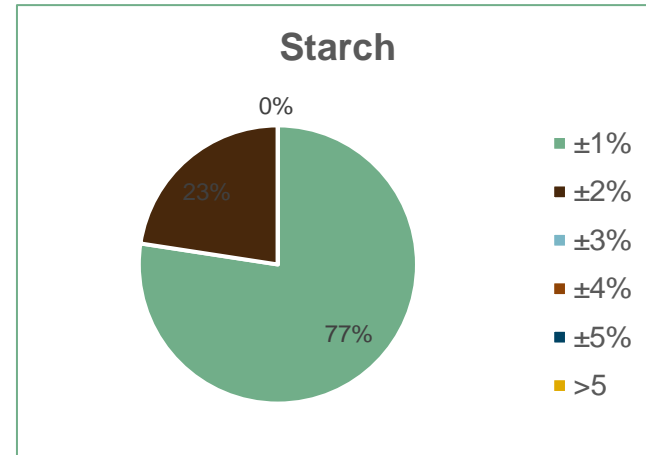
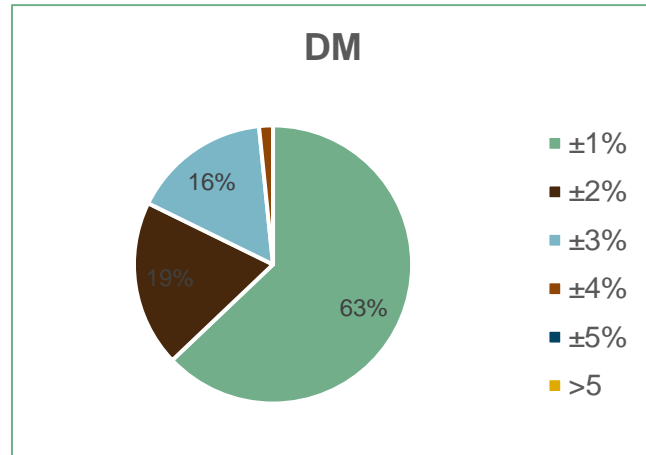
EvoNIR Master							
Statistic	DM	Starch	C.Protei n	NDF	Ash	Sugar	DOM24
Average	31.1	8.5	2.2	12.1	0.9	2.5	78.6
SD	4.0	2.0	0.3	1.6	0.1	0.3	1.1
MIN	24.4	4.1	1.7	9.4	0.6	1.7	76.8
MAX	39.0	12.4	2.7	15.2	1.1	3.2	80.8

Reported here the variability of nutrients on the 58 samples of green maize.
Green Maize is a crop that typically has a huge variability



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EVO NIR on storage harvested green maize - accuracy evaluation with LAB



deviatio n	C.Protei						
	DM	Starch	n	NDF	Ash	Sugar	DOM24
±1%	38	44	58	53	58	54	21
±2%	12	14	0	5	0	4	28
±3%	8	0	0	0	0	0	2
±4%	0	0	0	0	0	0	5
±5%	0	0	0	0	0	0	1
>5	0	0	0	0	0	0	1

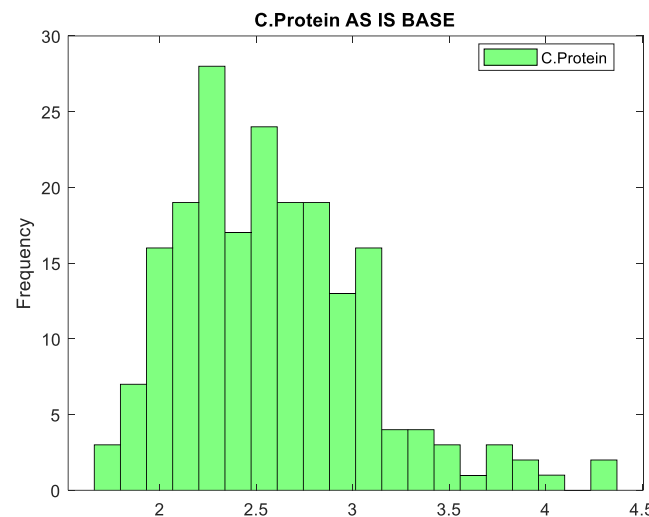
Reported here the results of the comparison of SEGES values and readings of EVO NIR with DG calibration.

Starch, C.Protein, NDF, Ash and Sugar are expressed AS IS base.

Considering the huge variability of the nutrients on the batch of 58 samples, EVO NIR is performing very well

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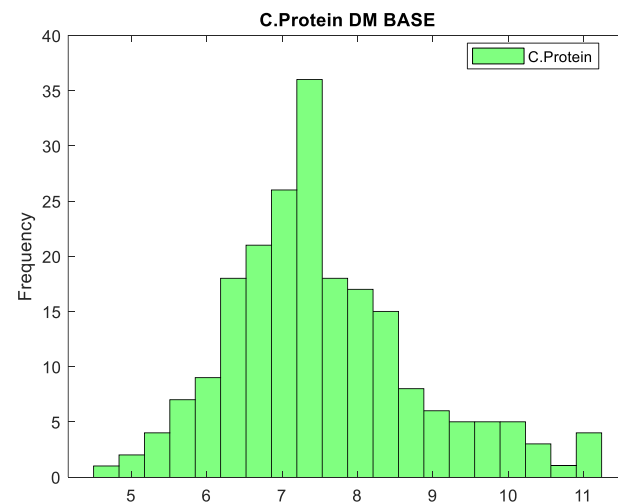
EVO NIR on storage harvest green maize - Crude Protein Dataset



Our dataset covers following range of values and calibration is developed on AS IS BASE

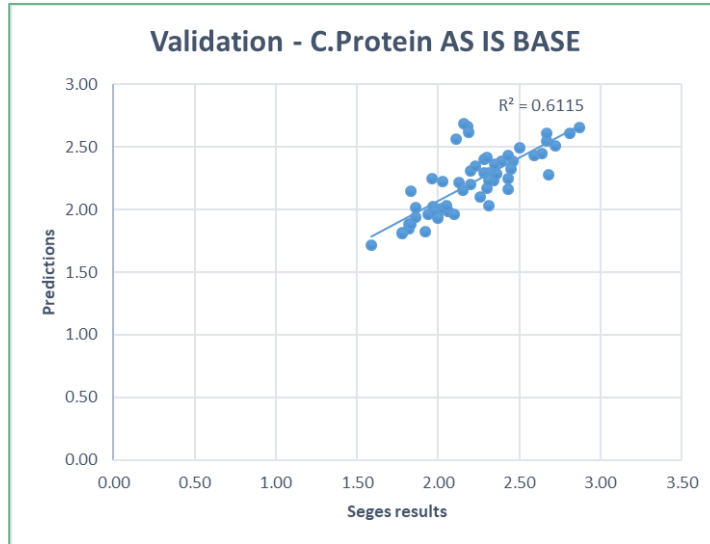
	AS IS BASE	DM BASE
Average	2.6	7.5
SD	0.5	1.3
MIN	1.7	4.5
MAX	4.4	11.2

R2 obtained on dataset is 0.72, while expected error is 0.27.



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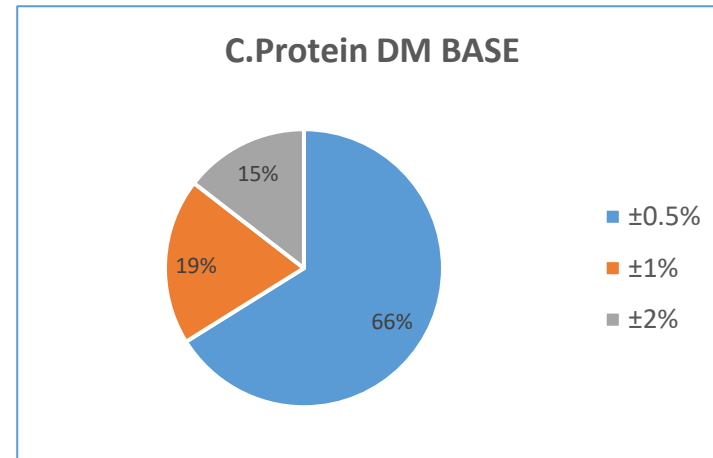
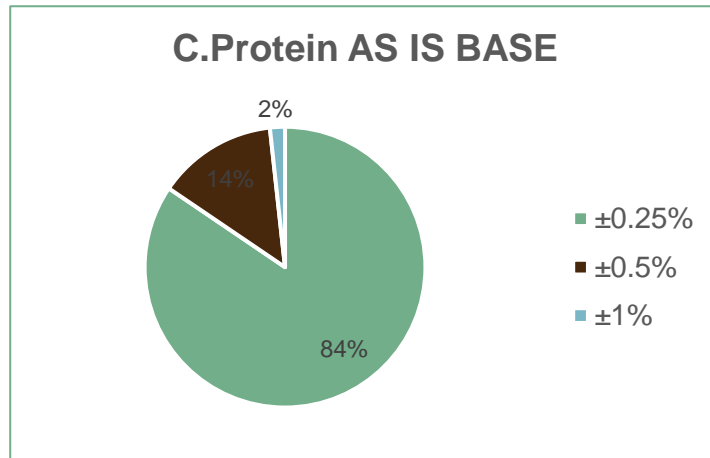
EVO NIR on storage harvester green maize - Crude Protein Validation



Validation set is composed by 58 samples with following values

	AS IS	DM
Dataset	BASE	BASE
Average	2.2	7.2
SD	0.3	0.8
MIN	1.6	5.5
MAX	2.9	8.8

Comparing predictions DM based with Seges results we see that 66% of the samples have maximum deviation of 0.5%.



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