

Improving protein value by toasting on farm- recent results DK

12th feb. 2013

European Advisers Training

EAT-Workshop: Protein sources- cropping and feeding

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The AAT/PBV System

- PBV: Protein balance in the rumen tells us whether there will be enough ammonium available for the rumen bacteria with the actual level of energy available
- AAT: Amino Acids reaching the intestine thus being available for absorption

Farm toaster tested in 2012



Dilts-Wetzel Soybean Roaster

VFL Kvæg, Økologi & Agrotech A/S





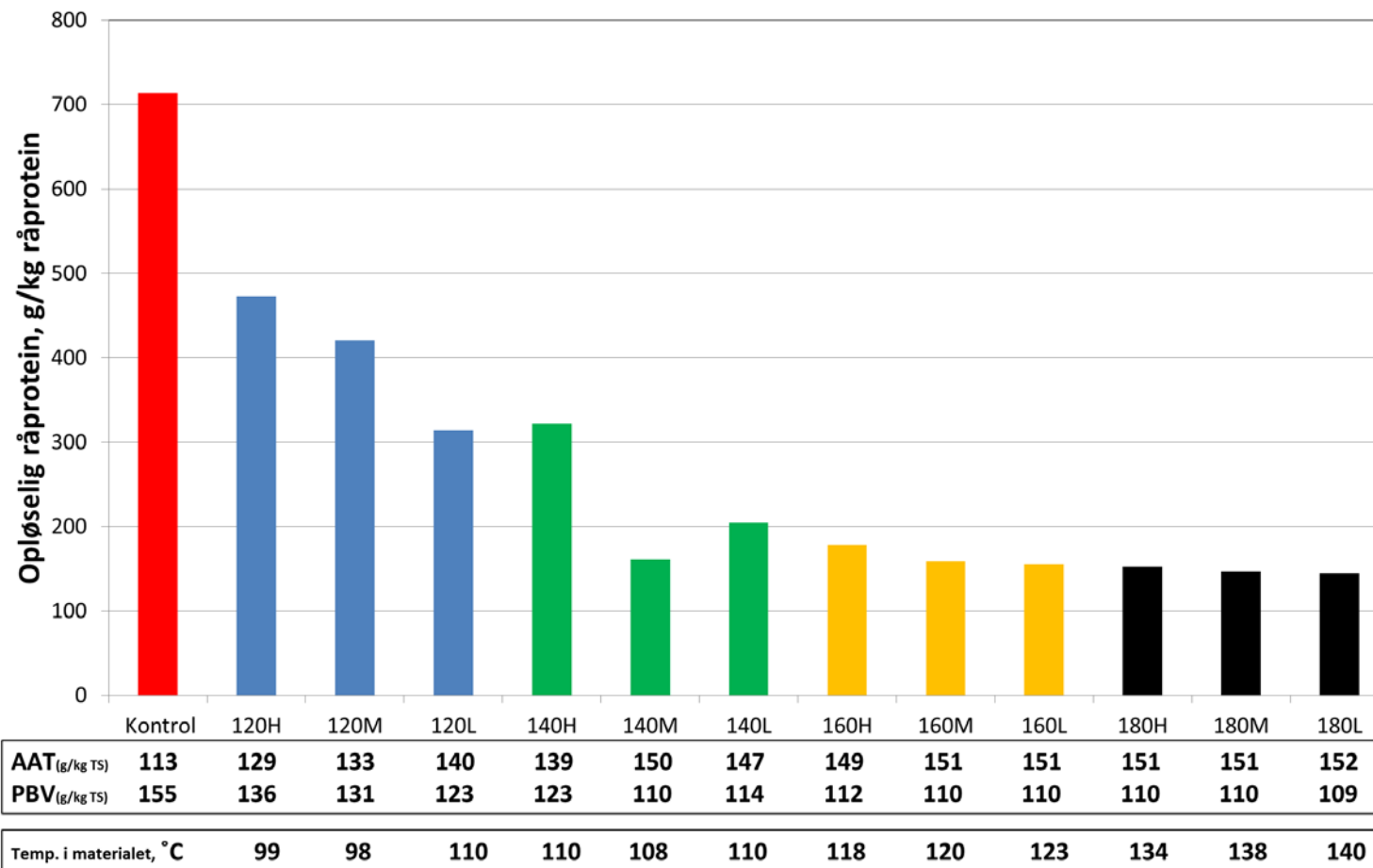
Capacity and economy

- 2,2-2,3 ton pr. 24 hrs
 - Energi consumption pr kg feed:
 - Heating up 0,04 euro pr ton feed (200 ton*)
 - Running 16 euro pr. ton
- Price: ca. 25.000 euro. (Mosegården A/S)

Total cost pr ton	39,21 euro	3,92 cent pr kg
Total cost pr year (200 ton)	7.843 Euro	

Expected effect of toasting- field beans

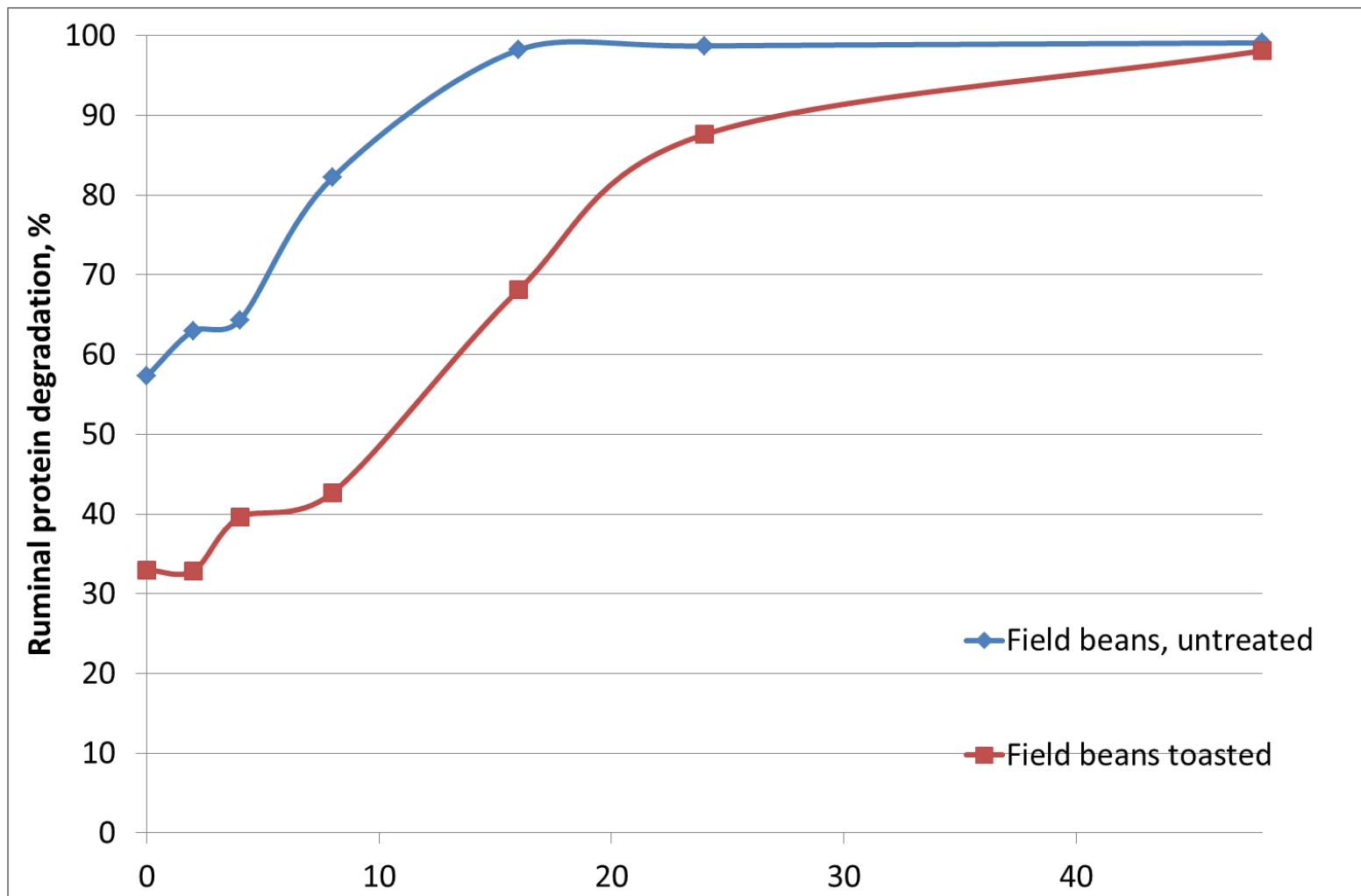
Hestebønner: Effekt af forskellig temperatur og hastighed



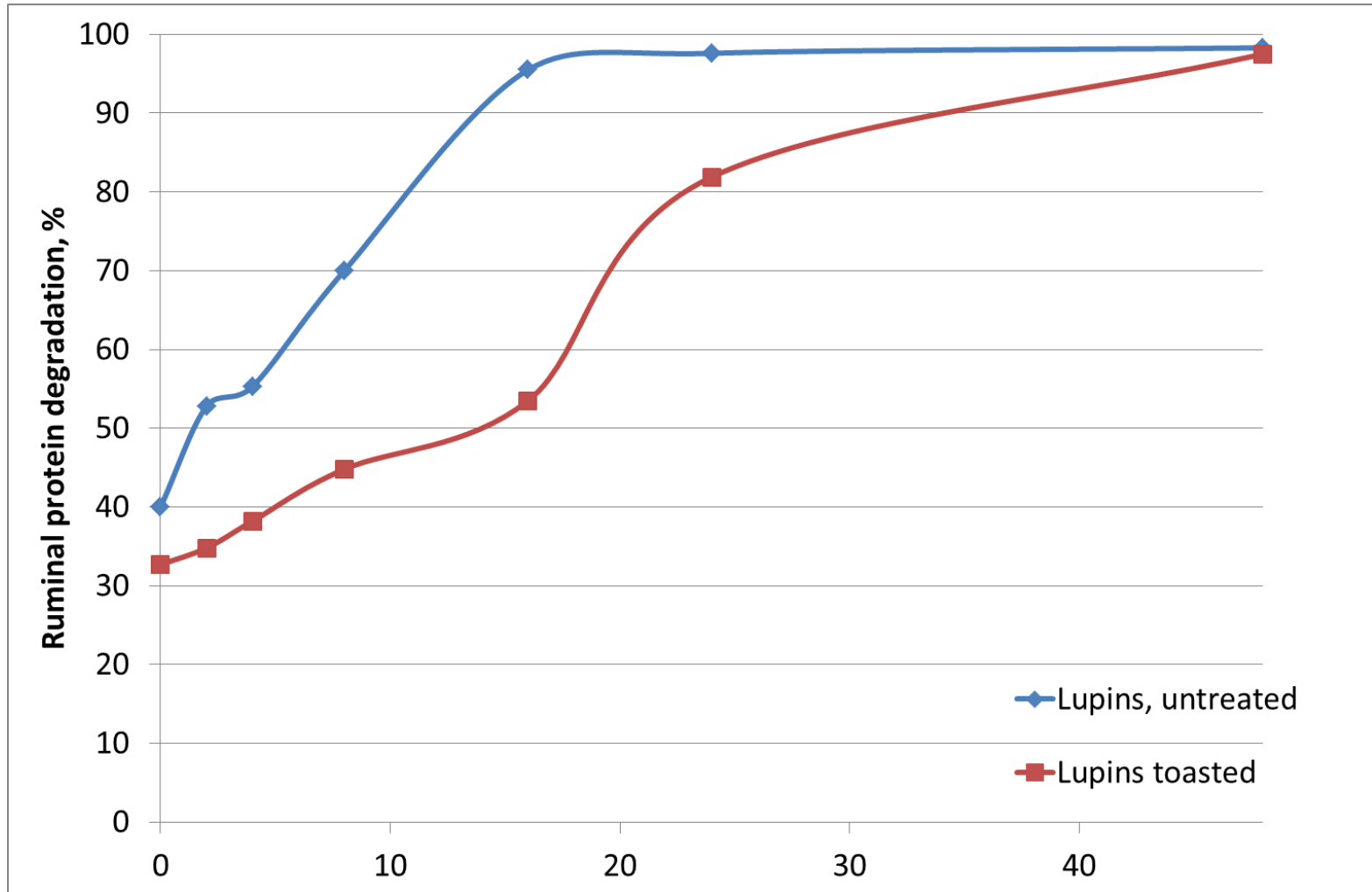
Effect of toasting- *in sacco* results (160 C° in the oil, 120-125 C° in the material)

- Effective degradability was reduced from 78 to 53% in field beans and 75 to 50 % in lupins
- Total tract digestibility was unaffected

Ruminal *in sacco* protein degradation Field beans



Ruminal *in sacco* protein degradation Lupins



Effect of toasting *in sacco* results

	Field beans untreated	Field beans toasted	Lupins untreated	Lupins toasted
Soluble protein, g/kg protein	713	159	673	206
Rumen degradation rate, %/hour	10,6	3,9	10,1	2,4
AAT gram/kg DM	115 →	206	119 →	230
PBV gram/kg DM	168 →	61	174 →	49

PROJEKT ØKOPROTEIN:

Feed demonstrations in 3 dairy herds

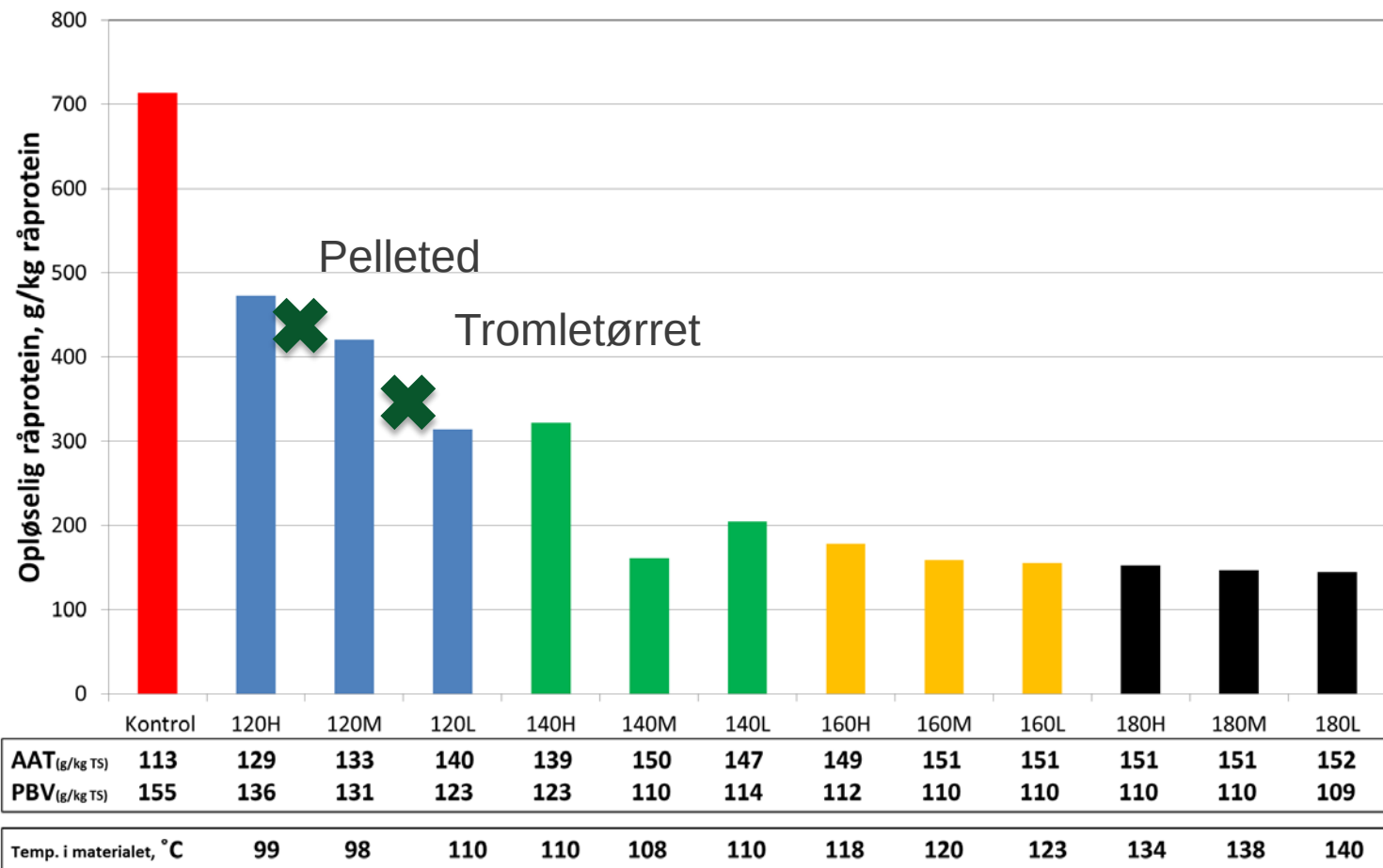
- effect on 'feed intake', milk yield, milk quality, taste and egenskaber (forostningsevne)

Field beans (FB)- processing experiments

- FB harvested with high water content (>30%). Dry at max temperatur in a 'tromletørreri'(110-115 C)
- FB harvested with high water content (>30%), dried once then rolled, dried and pelleted



Soluble Protein, gram pr kg crude protein



Feeding demo in 2 herds- 'tromletørret' FB

Besætning 1					Tidsramme i alt
HOLD A	Kontrol	Test	Kontrol	Test	
HOLD B	Test	Kontrol	Test	Kontrol	
	4 uger	4 uger	4 uger	4 uger	16 uger
Besætning 2					
HOLD A	Kontrol	Test	Kontrol	Test	Tidsramme i alt
HOLD B	Test	Kontrol	Test	Kontrol	
	4 uger	4 uger	4 uger	4 uger	16 uger

Feeding demo in 1 besætning- pelleted FB

Hold A (= alle køer)

Kontrol	Test	Kontrol
3 uger	3 uger	3 uger

Experiences from the demo so far...

‘Tromletørret’ FB

- Rolled FB fed in TMR-ok eatable
- Less effect on protein quality than expected due to a too low temp.!!
- Herd1 (9500 kg ECM)-seems to be no difference in the yield
- Herd2 (10500 kg ECM) yield loss!!

Pelleted FB

- Feeds 2,9 kg/cow in TMR
- Very eatable-problems with sorting if not dissolved
- Yield ok-happy farmer😊

Bulldog Agri

**Bulldog toaster from Mecmar Italy- 2 ton/hrs
Transportable**





Projektet er støttet af Promilleafgiftsfonden for landbrug

Projektet er støttet af Fonden for Økologisk Landbrug

