

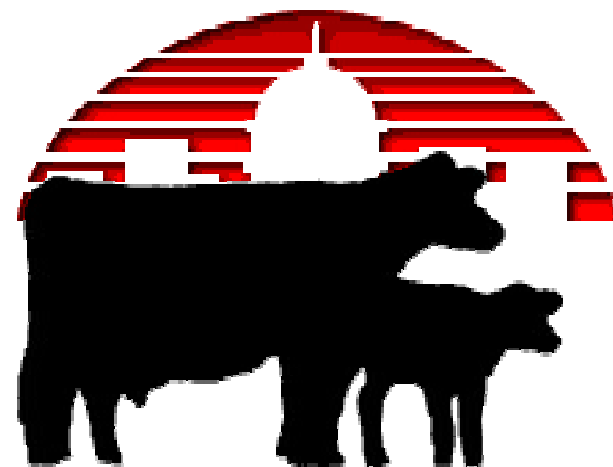
Utilizing canola seed and canola by-products in dairy cattle feed

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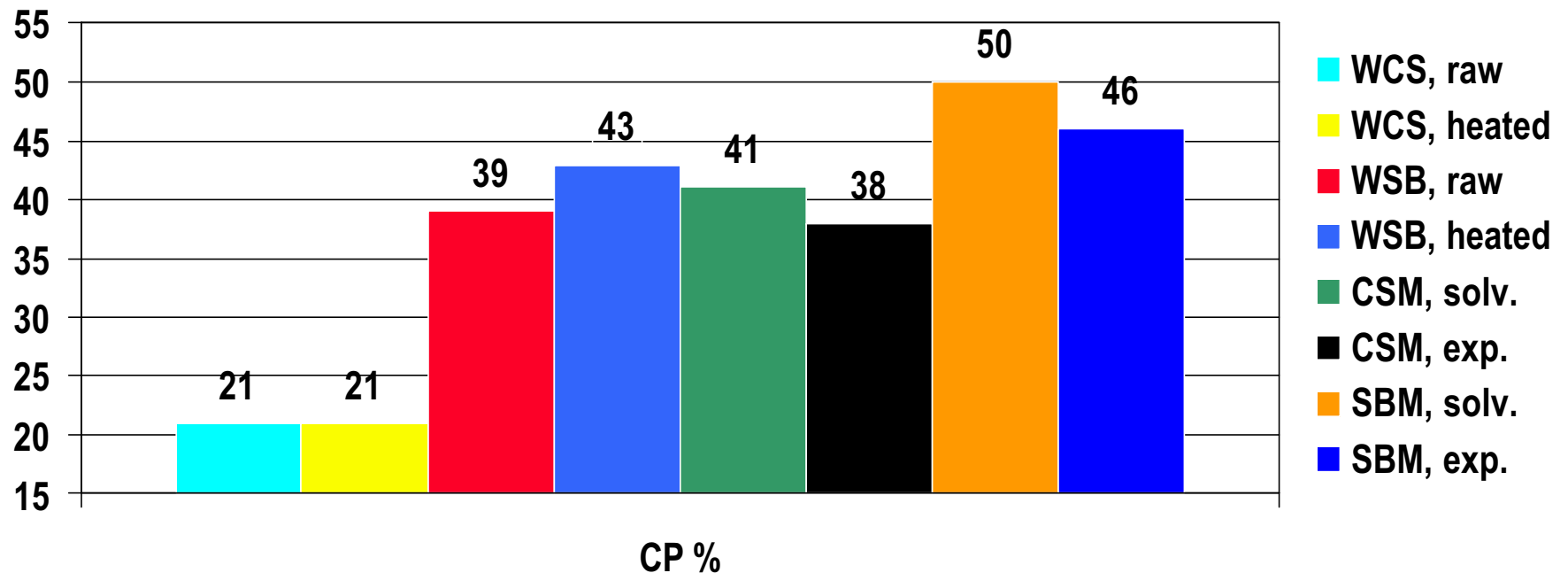
University of Wisconsin - Extension



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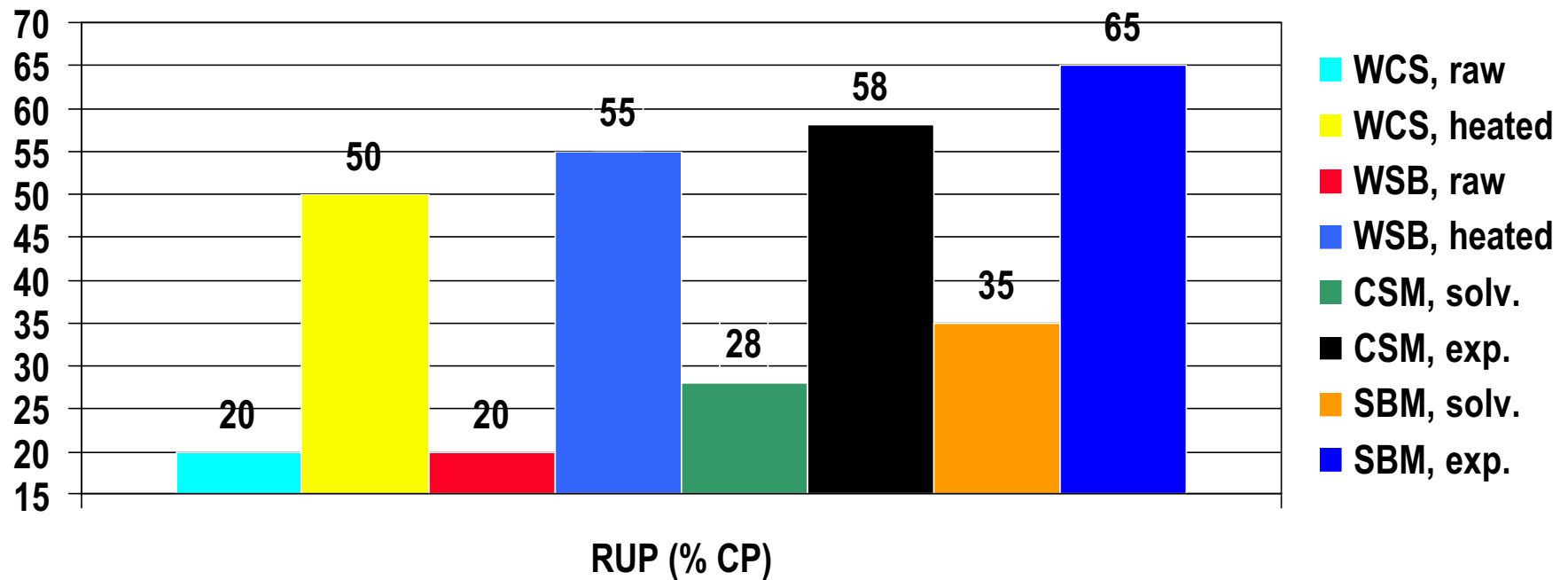
Canola vs. soybeans

Crude Protein (CP; % of DM)



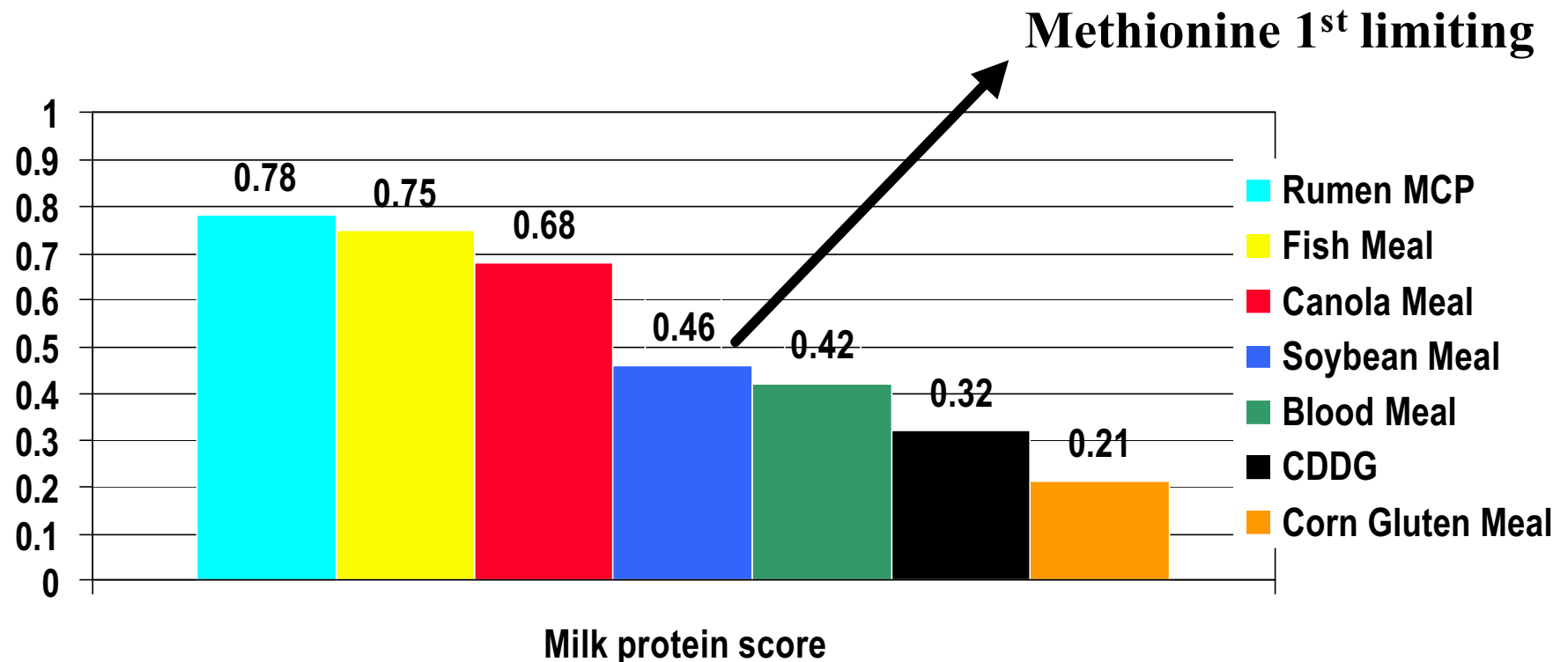
Canola vs. soybeans

Rumen Undegraded Protein (RUP; % of CP)



Relative Amino Acid Quality of CP Supplements

Milk protein score (Schingeothe, SDSU, 1991)



Lactation response to high-RUP canola meal

Rode, Ag Canada, Lethbridge, Alberta

<u>Item</u>	<u>0</u>	<u>33</u>	<u>67</u>	<u>100</u>
CSM solv. (% of DM)	15%	10%	5%	0%
AB Gold (% of DM)	0%	5%	10%	15%
DMI, lb./d	41	42	44	45
Milk, lb/d	64	66	65	70

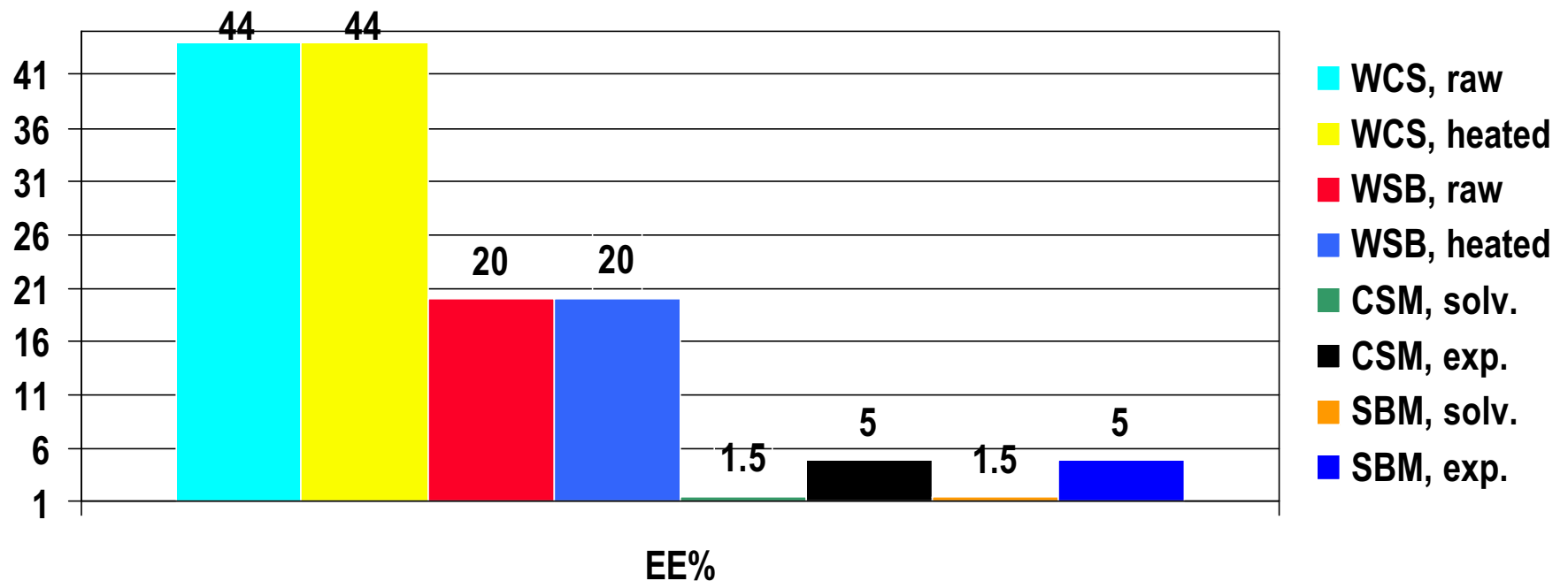
Lactation response to high-RUP canola meal

Rode, Ag Canada, Lethbridge, Alberta

<u>Item</u>	<u>0</u>	<u>33</u>	<u>67</u>	<u>100</u>
Milk fat, %	3.3	3.4	3.5	3.3
lb/d	2.0	2.2	2.3	2.1
Milk CP, %	2.8	3.1	3.2	2.9
lb/d	1.8	2.0	2.1	1.9

Canola vs. soybeans

Crude Fat (EE; % of DM)



Lactation response to high-RUP canola seed

Khorasani et al., 1991, JDS 74:1904-1911

<u>Item</u>	<u>0</u>	<u>4.5</u>	<u>9.0</u>	<u>13.2</u>	<u>17.4</u>
CSM solv. (% of DM)	13.2%	11.1%	9.3%	7.4%	4.2%
WCS, Rst. (% of DM)	0%	4.5%	9.0%	13.2%	17.4%
DMI, lb/d	39	41	40	36	37
Milk, lb/d	72	76	75	73	66

Lactation response to high-RUP canola seed

Khorasani et al., 1991, JDS 74:1904-1911

<u>Item</u>	<u>0</u>	<u>4.5</u>	<u>9.0</u>	<u>13.2</u>	<u>17.4</u>
<u>Milk Fat</u>					
%	3.1%	2.9%	3.1%	2.8%	2.8%
lb/d	1.9	2.5	2.3	2.0	1.8
<u>Milk CP</u>					
%	3.0	3.1	2.9	2.8	2.8
lb/d	2.2	2.2	2.1	2.1	1.9

Canola vs. soybeans

Feeding limits (as fed basis)

<u>Ingredient</u>	<u>lb/cow/day</u>	<u>Limiting Factors</u>
WSB, raw	2 - 3	RDP, Trypsin Inhibitor
WSB, roasted	6 - 7	Fat
WCS, raw	2 - 3	Fat, RDP
WCS, roasted	2 - 3	Fat
SBM, solv.	variable	RDP, forage base
SBM, heated	variable	RUP, forage base
CSM, solv.	variable	RDP, forage base
CSM, heated	variable	RUP, forage base

Canola vs. soybeans

Break even price

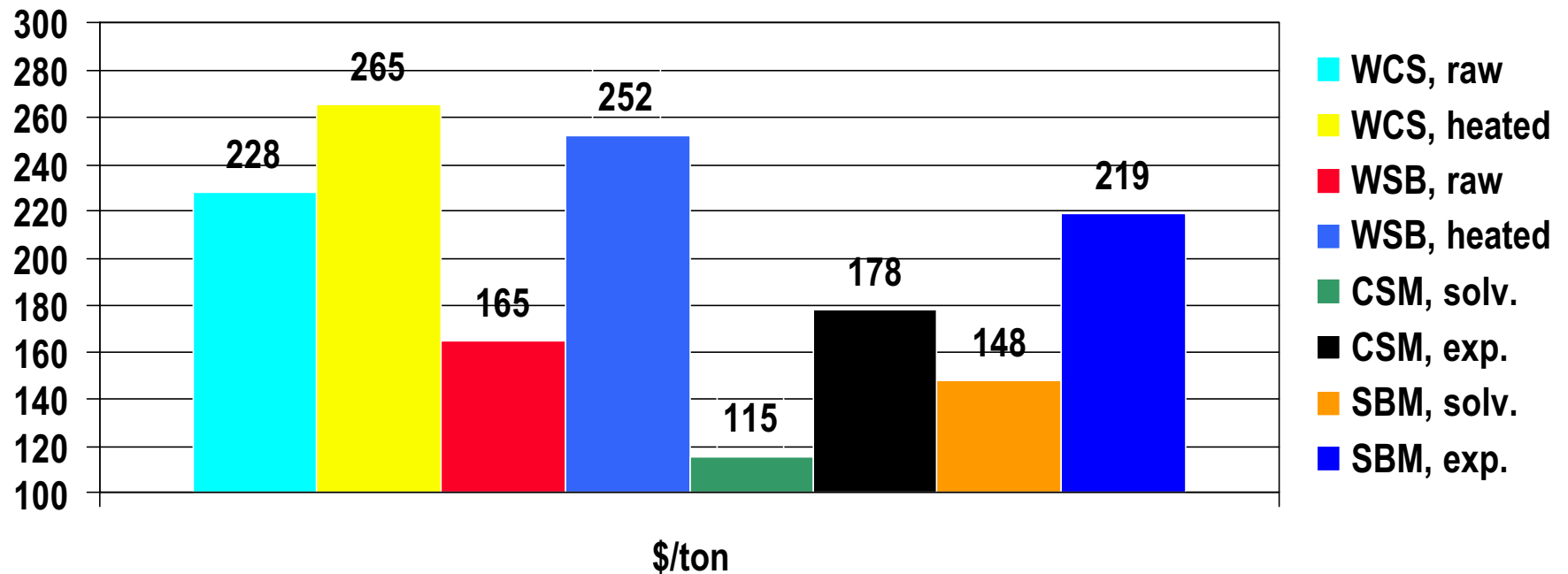
□ FEEDVAL4 (UW-Extension)

- Referee feeds

- Blood Meal (RUP; \$450/ton)
- Urea (RDP; \$300/ton)
- Corn (TDN; \$2.00/bu.)
- Tallow (EE; \$0.25/lb)
- Limestone (Ca; \$7/cwt.)
- Dical (P; \$18.5/cwt.)

Canola vs. soybeans

Breakeven price (\$/ton as fed)



Summary and Conclusions

- ❑ Low feeding rate of WCS because of high fat content
- ❑ Like WSB, WCS will need to be rolled to crack seed coat
- ❑ Roasting adds less value to WCS than to WSB because the CP content of WCS is lower

Summary and Conclusions

- ❑ When economical, solv. CSM can replace solv. SBM
- ❑ Although head-to-head comparisons were not found, it appears that when economical heated CSM can replace heated SBM
- ❑ Based on amino acid profile heated CSM may have added value over heated SBM, but research is needed to justify a cost for heated CSM above its break even
- ❑ Equipment and technology is available in the Midwest for heat processing