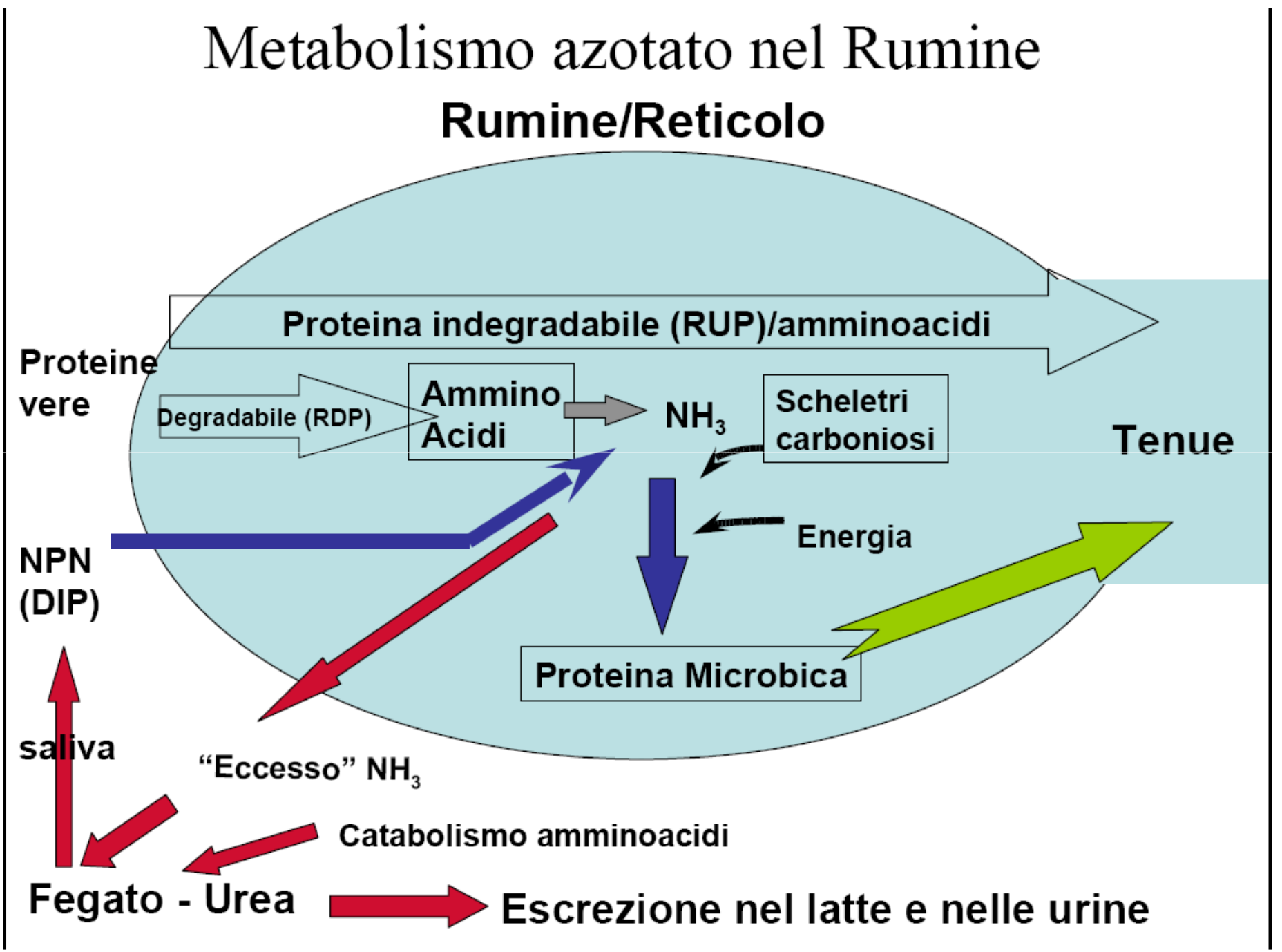
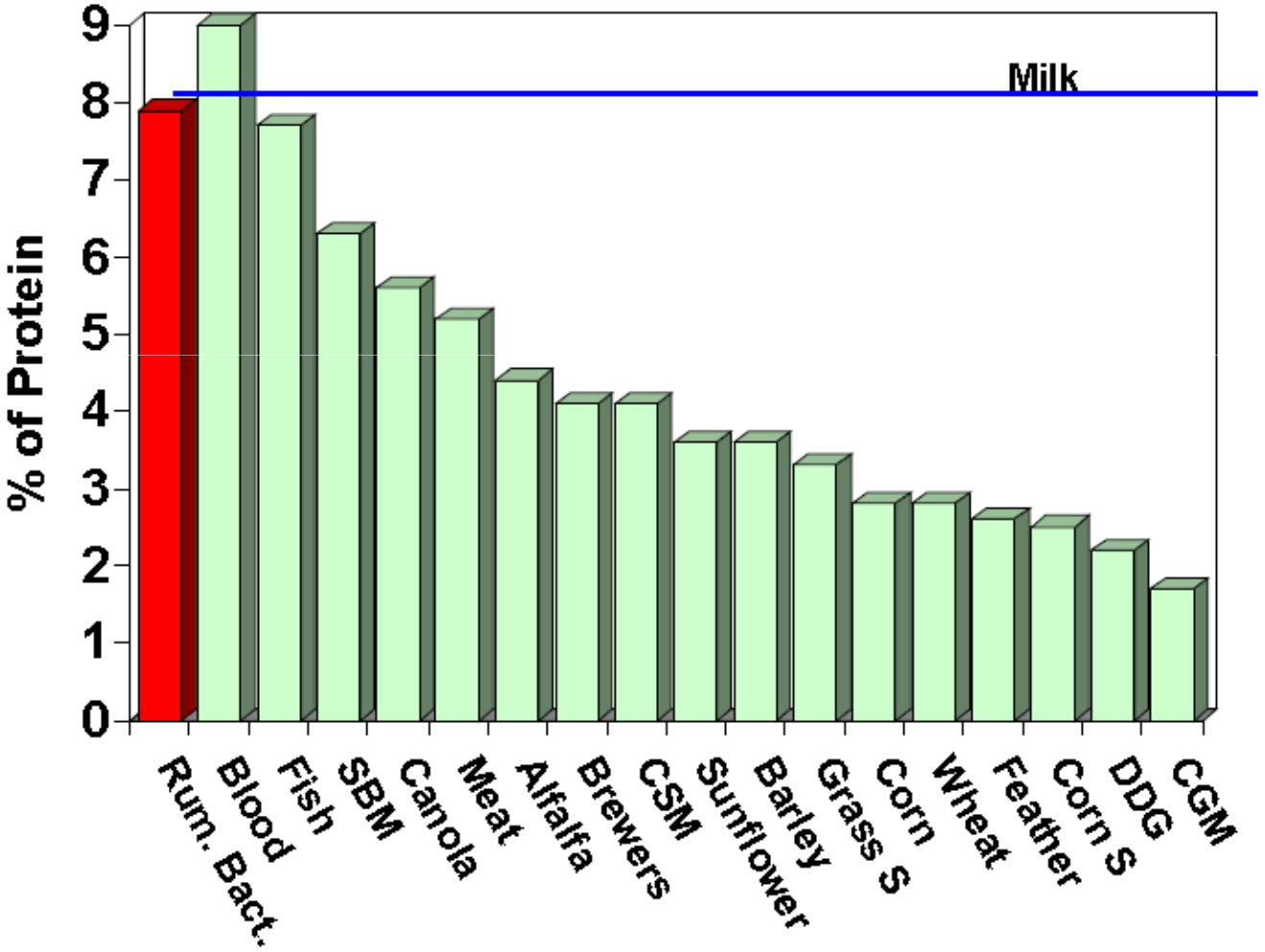
Metabolismo azotato nel Rumine



Type of Protein

- Rumen Degradable Protein (RDP)
  - Provide peptides and aminoacids to bacteria
  - Eventually destroyed into ammonia
  - It supports microbial N growth
  - If in excess, it is lost as urea
- Rumen Undegradable Protein (RUP)
  - Provide aminoacids to the intestine
  - They may not be digestible

Lysin in protein sources



Schwab, 2003

Milk Urea as Protein indicator

- It is in equilibrium with blood urea
- It’s level depends on:
  - Dietary protein
  - Metabolic state of the animal
  - Production level
  - Energy/protein ratio fermentable in the rumen
- It’s a indicator of N non retained by the animal

Milk Urea and N excretion

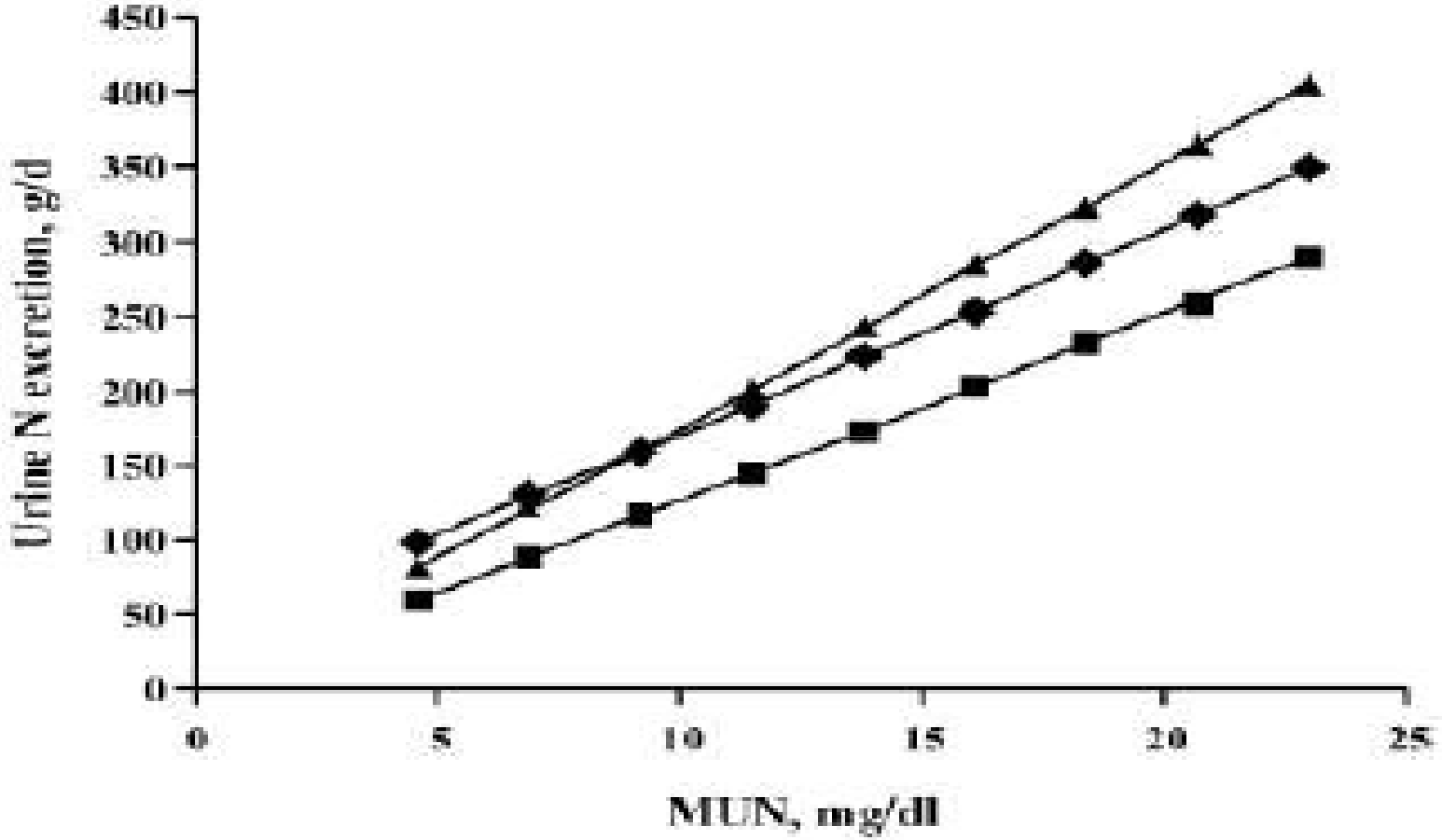
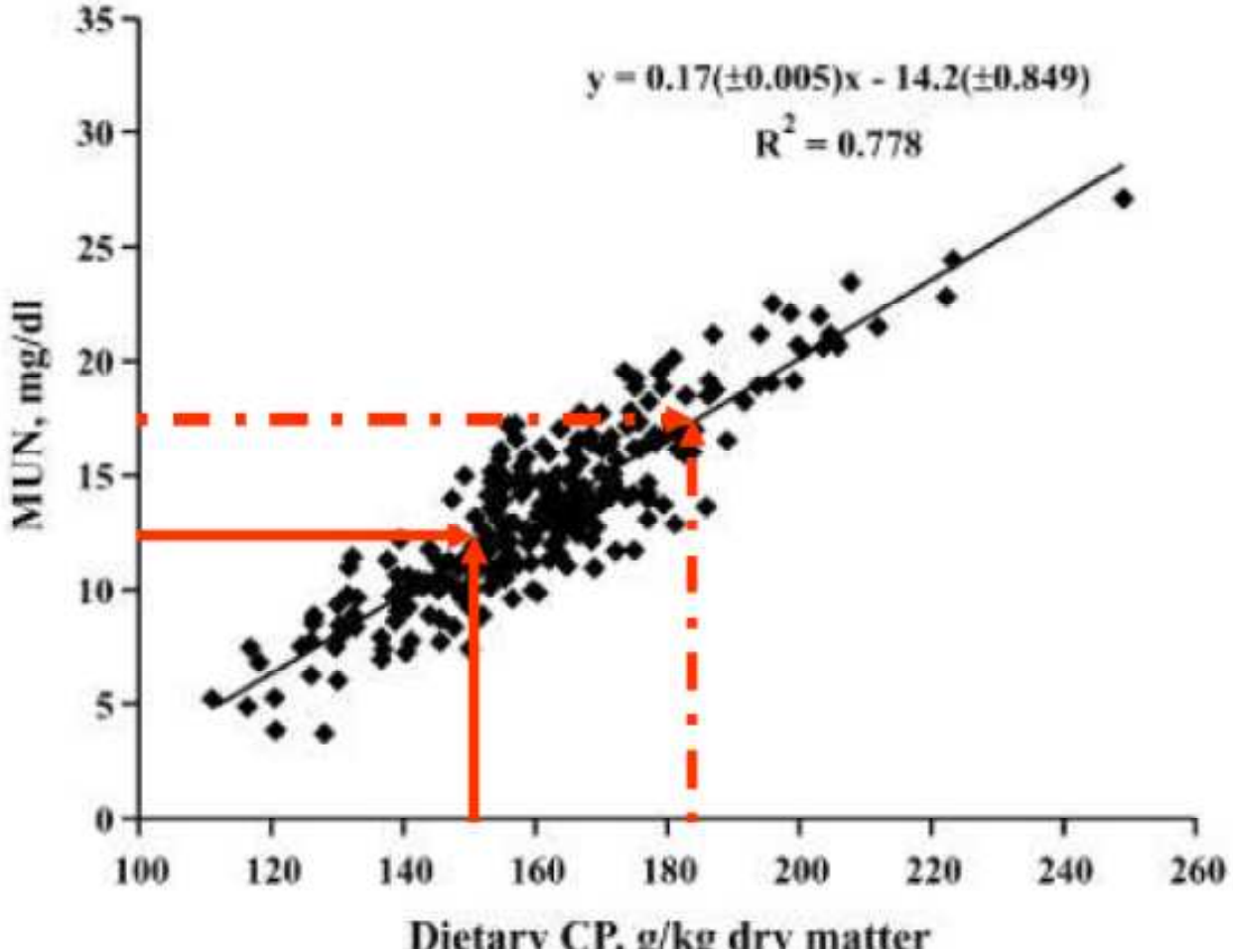


Figure 3. Comparison of the predictions of urinary N excretion based on milk urea nitrogen (MUN) according to (◆) present data, (■) Jonker et al. (1998), (▲) Kauffman and St-Pierre (2001).

Urea is highly correlated to dietary Protein



Relazione fra proteina della razione e MUN

(Nousiainen et al., JDS, 2

Efficiency of N utilization

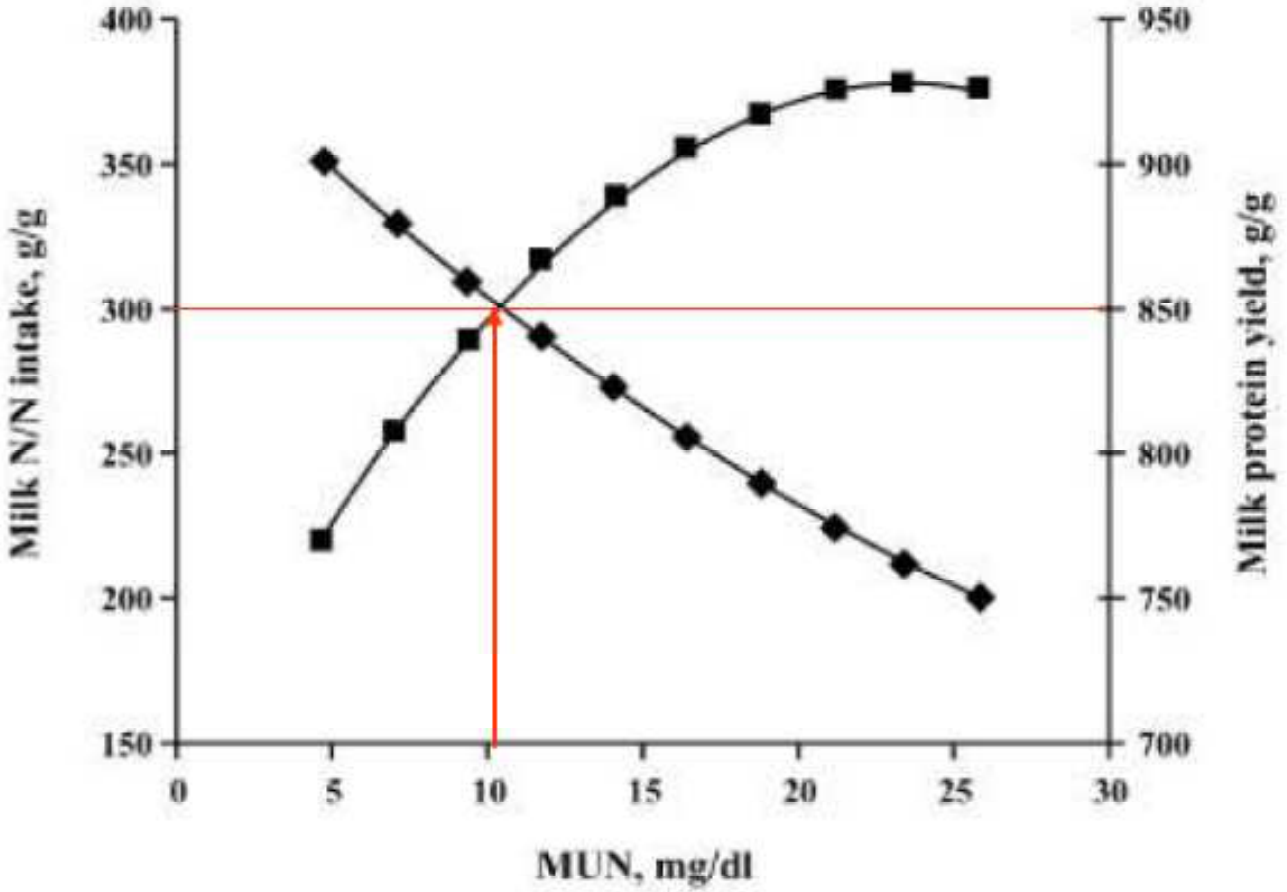
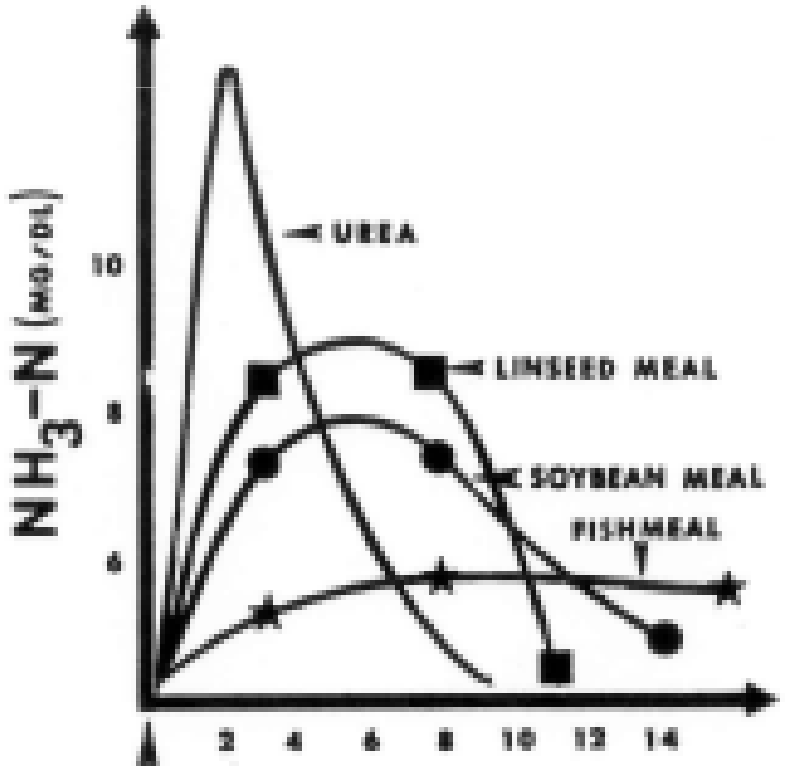
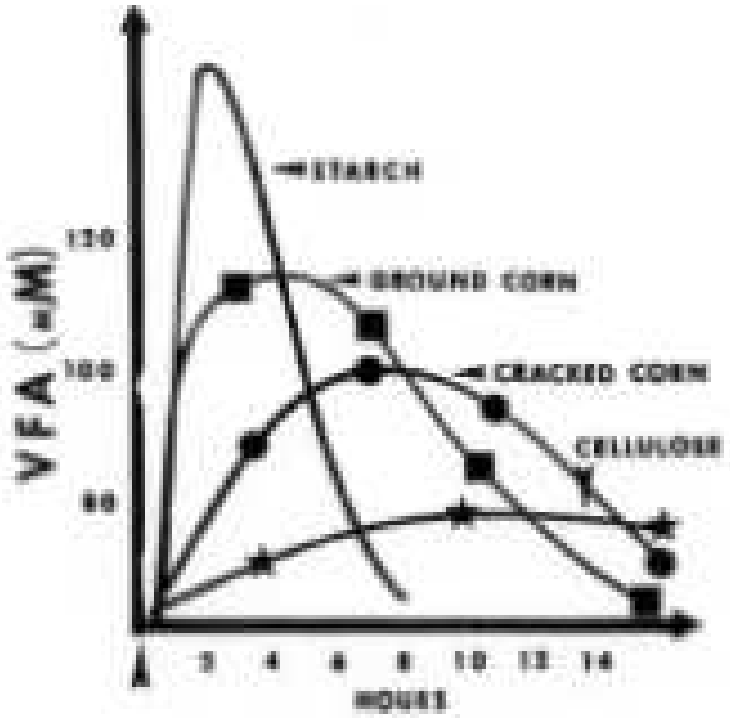


Figure 2. Association between the efficiency of dietary N for milk protein production [◆; $y = 0.0049(\pm 0.00198)x^2 - 10.3(\pm 1.15)x + 397(\pm 8.6)$, $R^2 = 0.914$, RMSE = 8.7] and milk protein yield [■; $y = -0.021(\pm 0.0001)x^2 + 20.9(\pm 5.69)x + 681(\pm 44.6)$, $R^2 = 0.833$, RMSE = 41.8] with MUN based on data derived from protein supplementation studies (n = 188).

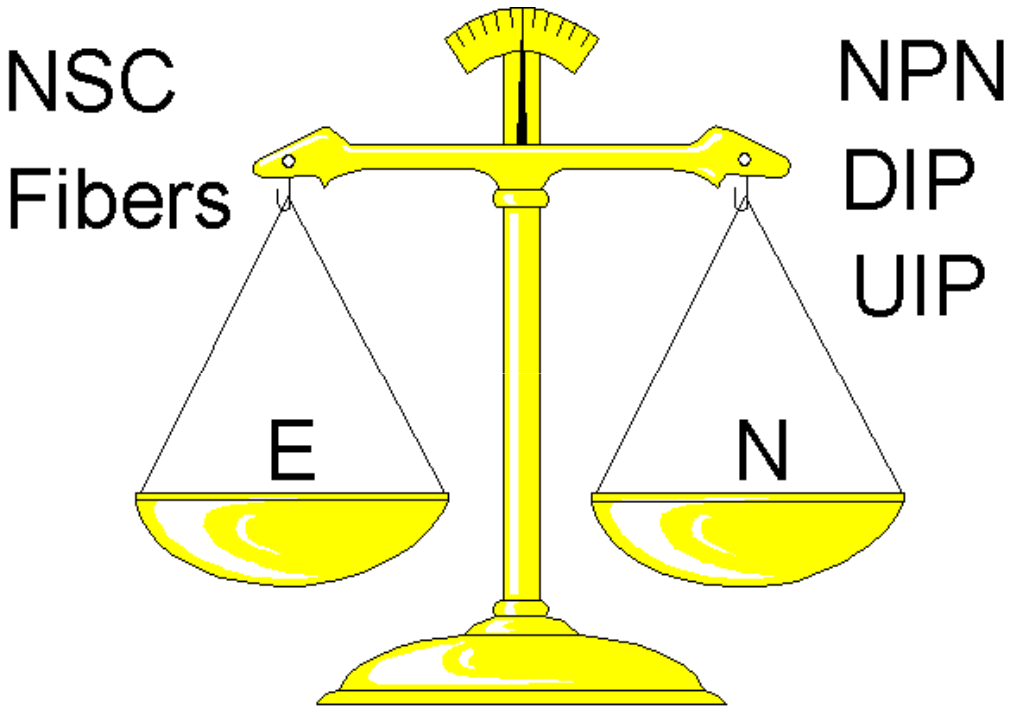
N – Energy synchronization

N and energy should be synch in the rumen for greater efficiency





Optimizing dietary protein



Milk Urea varies between 19-32 mg/dl
Optimum between 22-27 mg/dl

Milk Protein %	Milk Urea (mg/dl)	Causes
<3.00	<22 23 - 32 >32	deficiency di Energy e protein deficiency di Energy deficiency di Energy + excess di protein
3.00 - 3.30	<22 23 - 32 >32	deficiency di protein Good TMR excess di protein
>3.30	<22 22 - 32 >32	excess di Energy + deficiency di protein excess di Energy excess di Energy and protein