

The Use of Sunflower Meal in Livestock Diets

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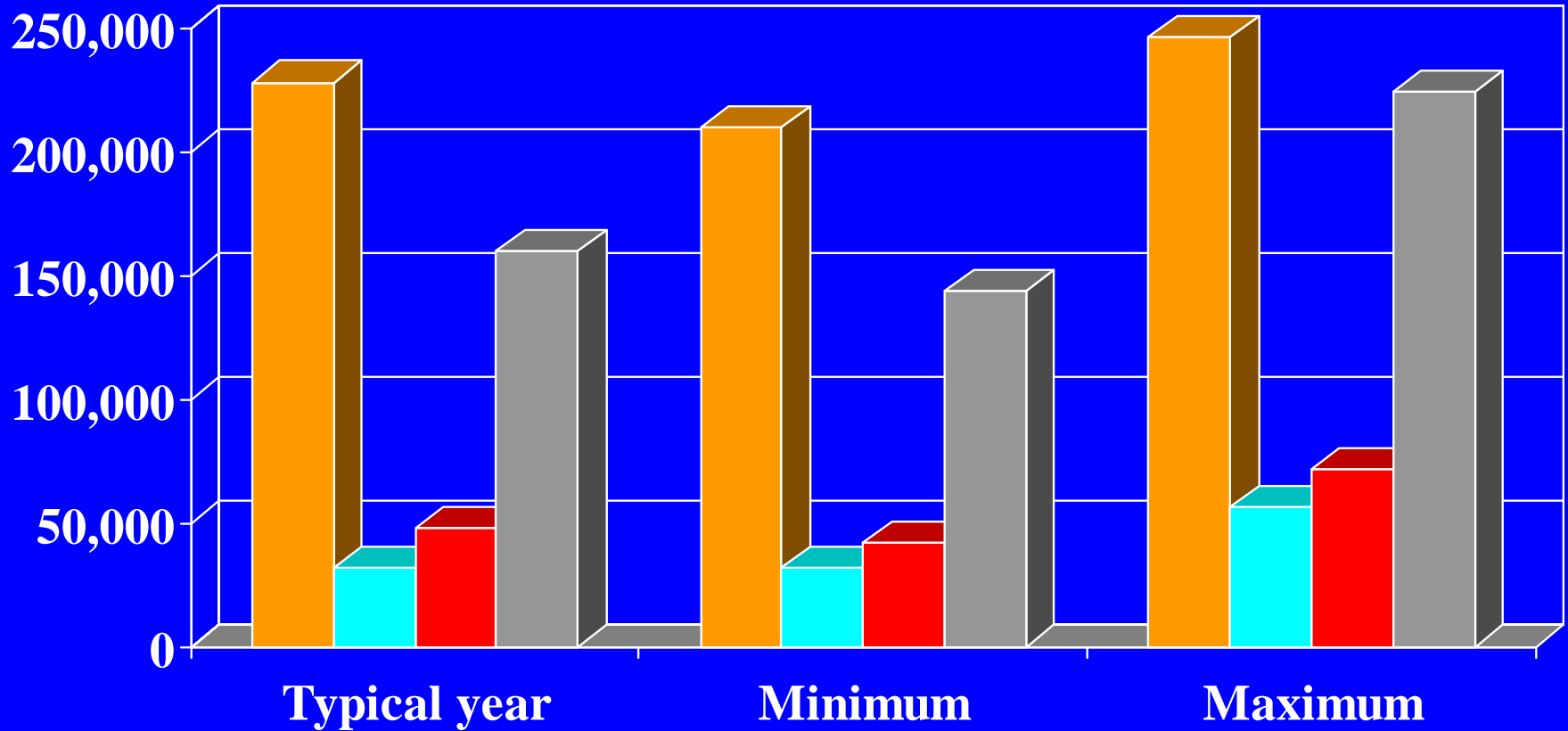
Sunflower Meal in Livestock Diets

Presentation Overview

- Oilseed meal production and consumption
- Nutrient composition of sunflower meal
- Comparison with other meals
- How it is used in livestock diets
- Summary

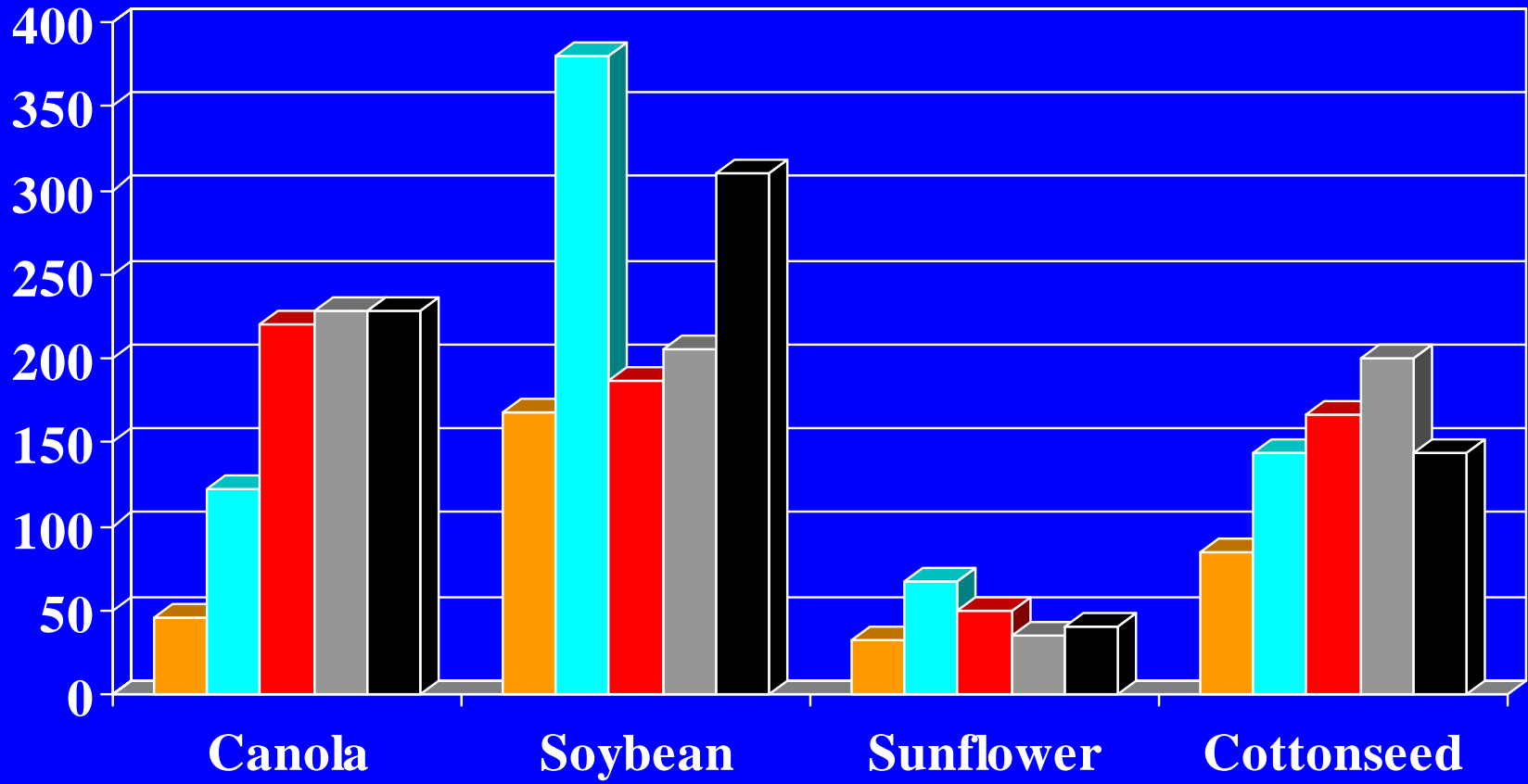
Estimated Annual Meal Production (Tonnes)

Canola Soybean Sunflower Cottonseed



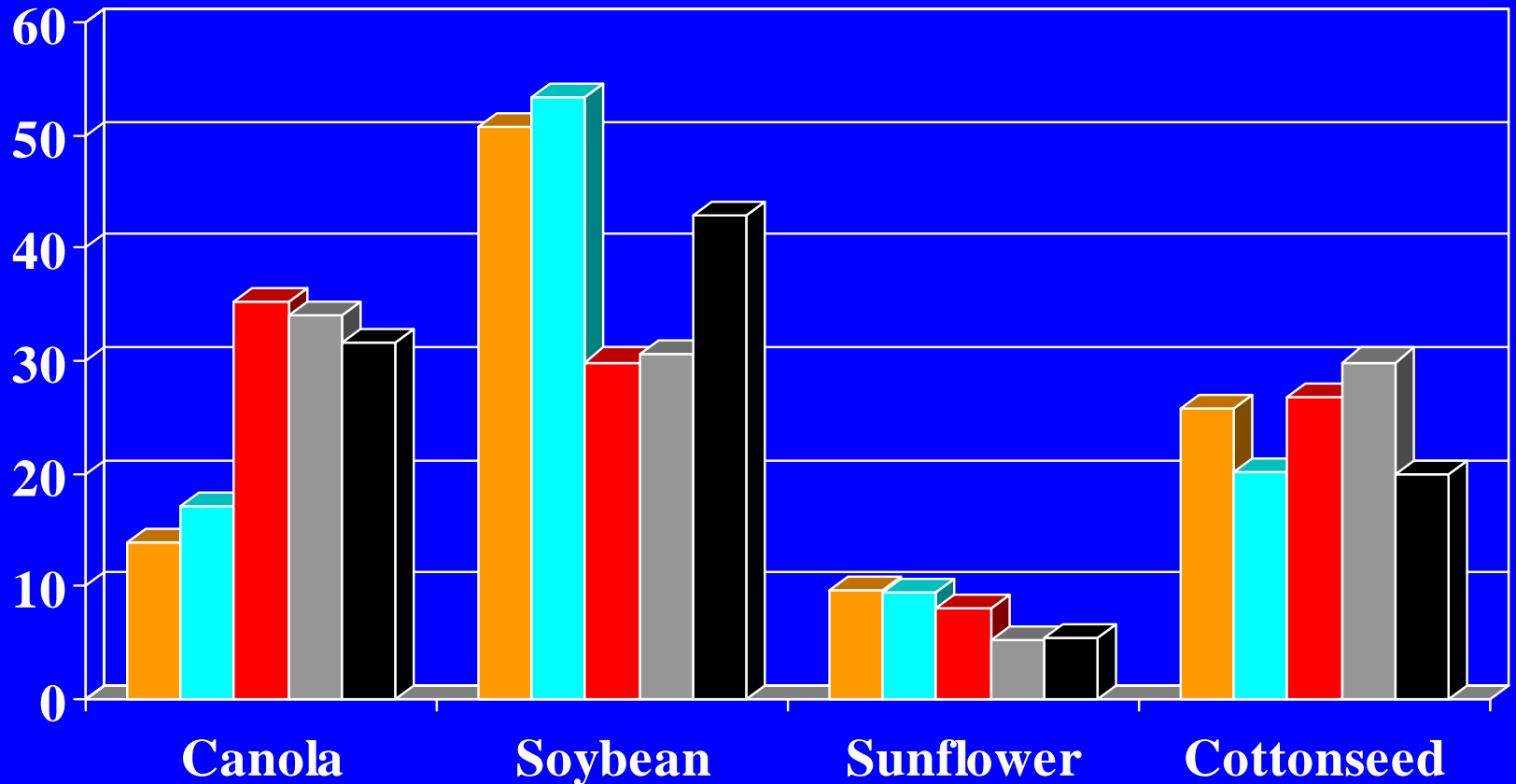
Oilseed Meal Consumption ('000 tonnes)

89/90 94/95 99/00 00/01 01/02

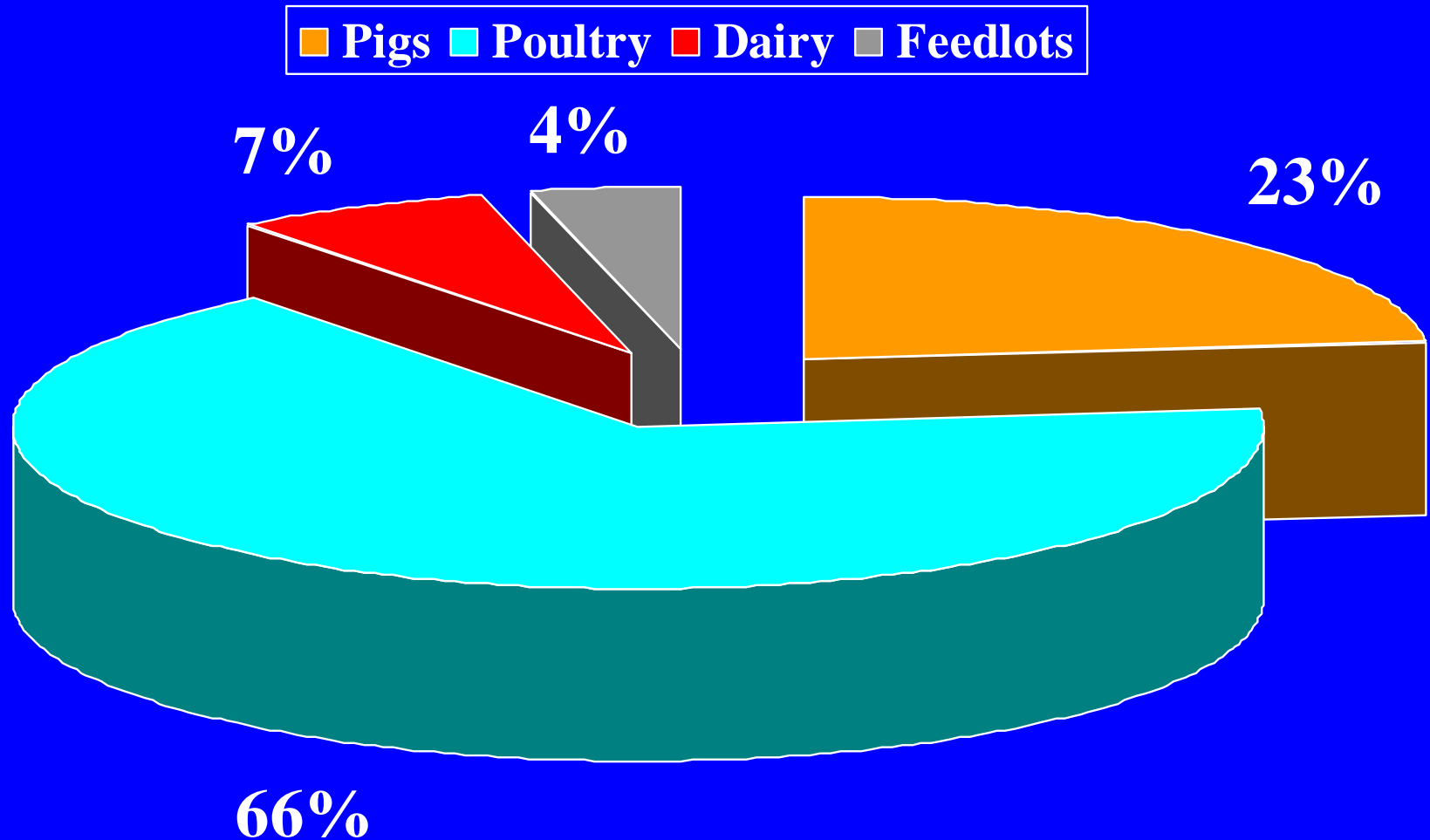


Oilseed Meal Consumption (% of total)

89/90 94/95 99/00 00/01 01/02



Oilseed Meal Consumption by Species



Oilseed Meal Production & Consumption

- Variable annual production due to weather etc.
- Consumption is increasing.
- Sunflower meal usage has declined to 5.5% of the total.
- Pig and poultry consume 90% of the oilseed meals.

Nutrient Composition of Sunflower Meal

- **Dependent on:-**
 - Oil content of the seed
 - Extent of hull removal
 - Efficiency of oil extraction
 - Processing temperature

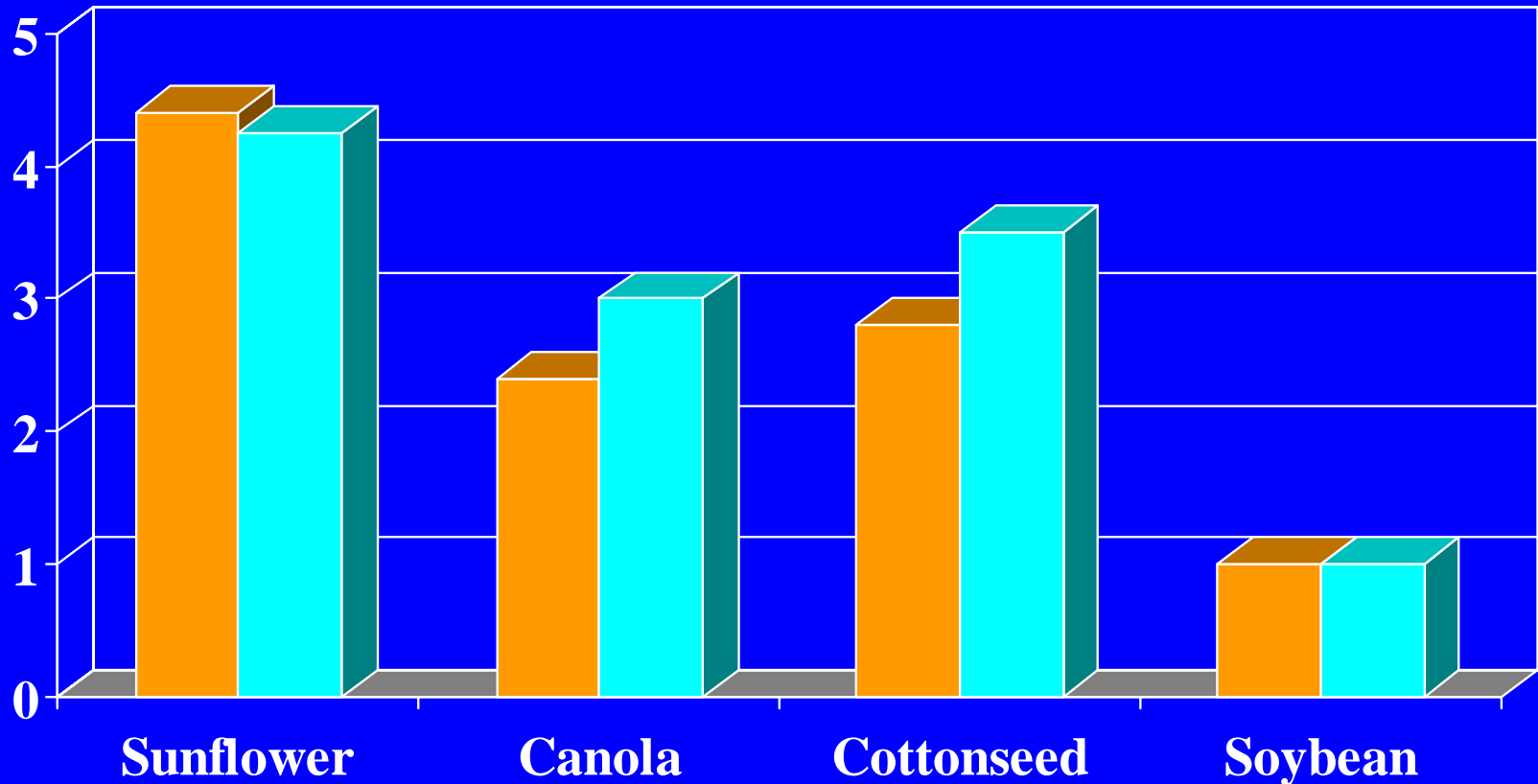
% dry matter	No hulls removed	Partially dehulled	Dehulled
Crude protein	28.0	34.0	41.0
Fat/oil	1.5	0.8	0.5
Crude Fibre	24.0	21.0	14.0
Ash	6.2	5.9	5.9

Nutrient Content of Whole Seed and Meals

%	Seed	Meal			
		Expeller	Extracted	Semi-d.	Decort.
Oil	34.5	15.4	2.1	2.6	2.7
Protein	16.2	24.5	31.1	35.8	41.3
DUP	2.9	4.0	4.4	6.4	7.4
Lys	0.57	0.86	1.10	1.26	1.46
Met	0.37	0.56	0.72	0.82	0.95
NDF	37.8	42.6	44.2	41.3	31.3

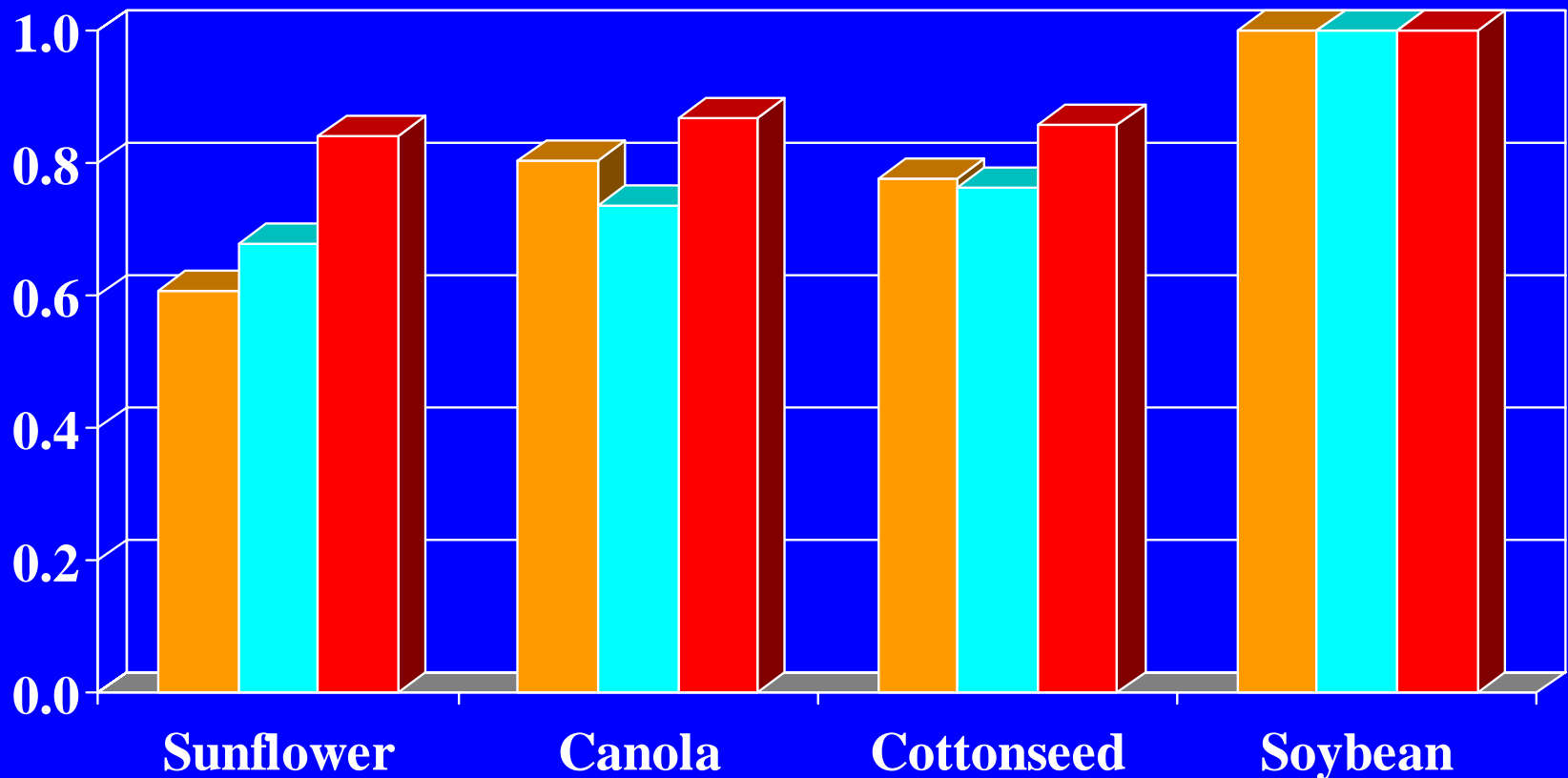
Fibre in Vegetable Protein Meals (Relative to soybean meal)

Crude fibre Neutral detergent fibre

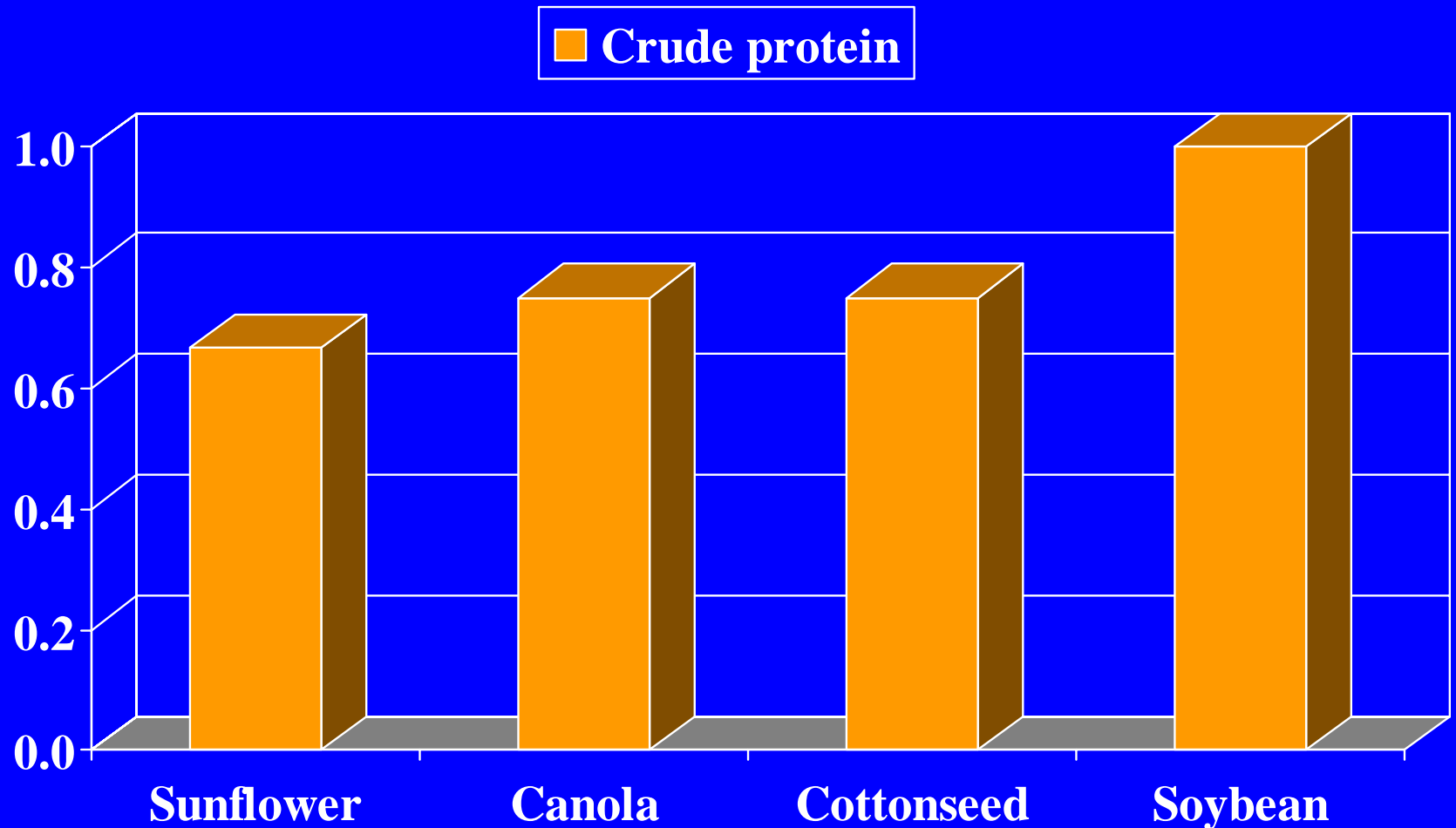


Energy in Vegetable Protein Meals (Relative to soybean meal)

■ DE (pig) ■ ME (poultry) ■ ME (ruminant)

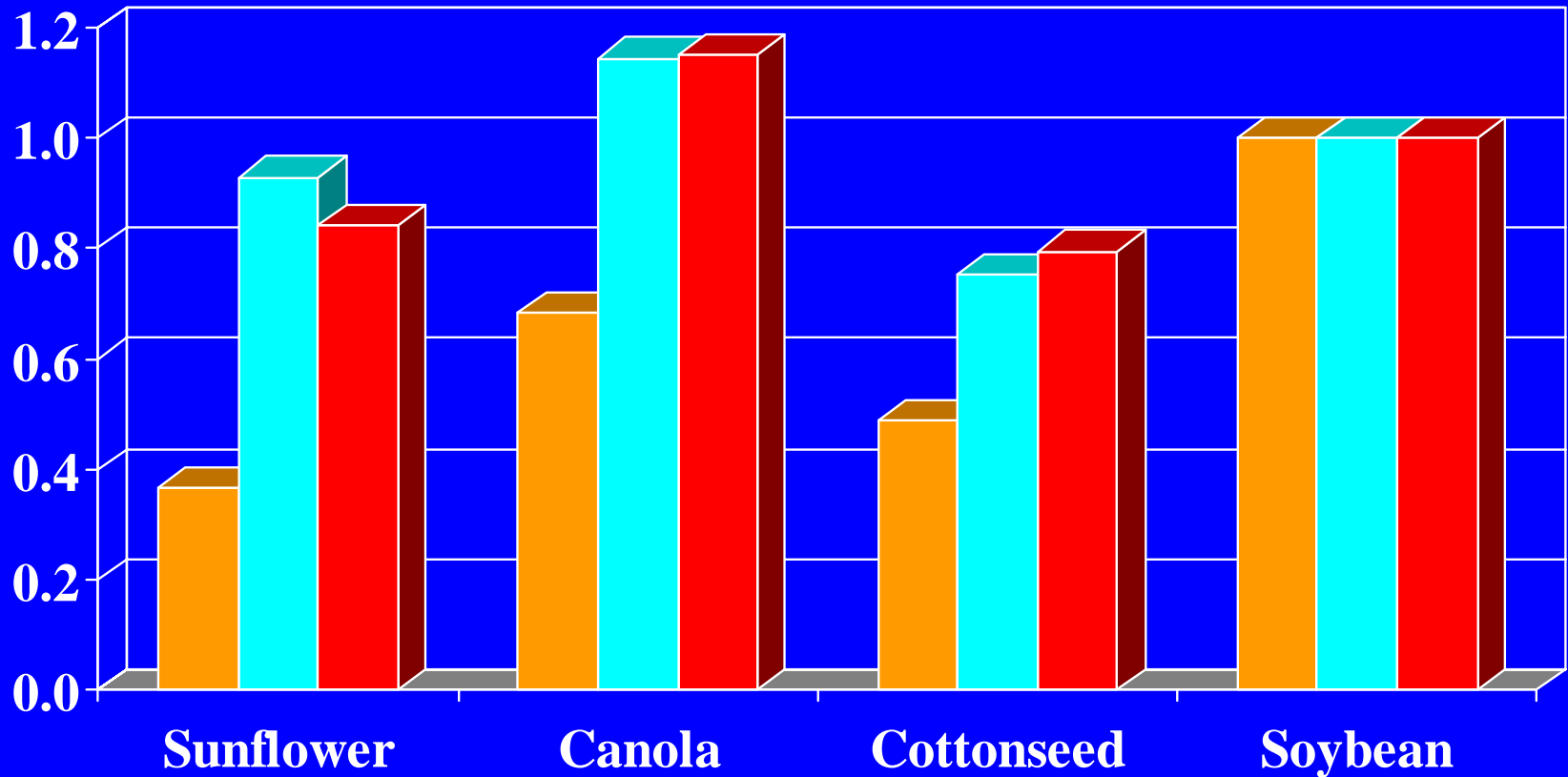


Protein in Vegetable Protein Meals (Relative to soybean meal)



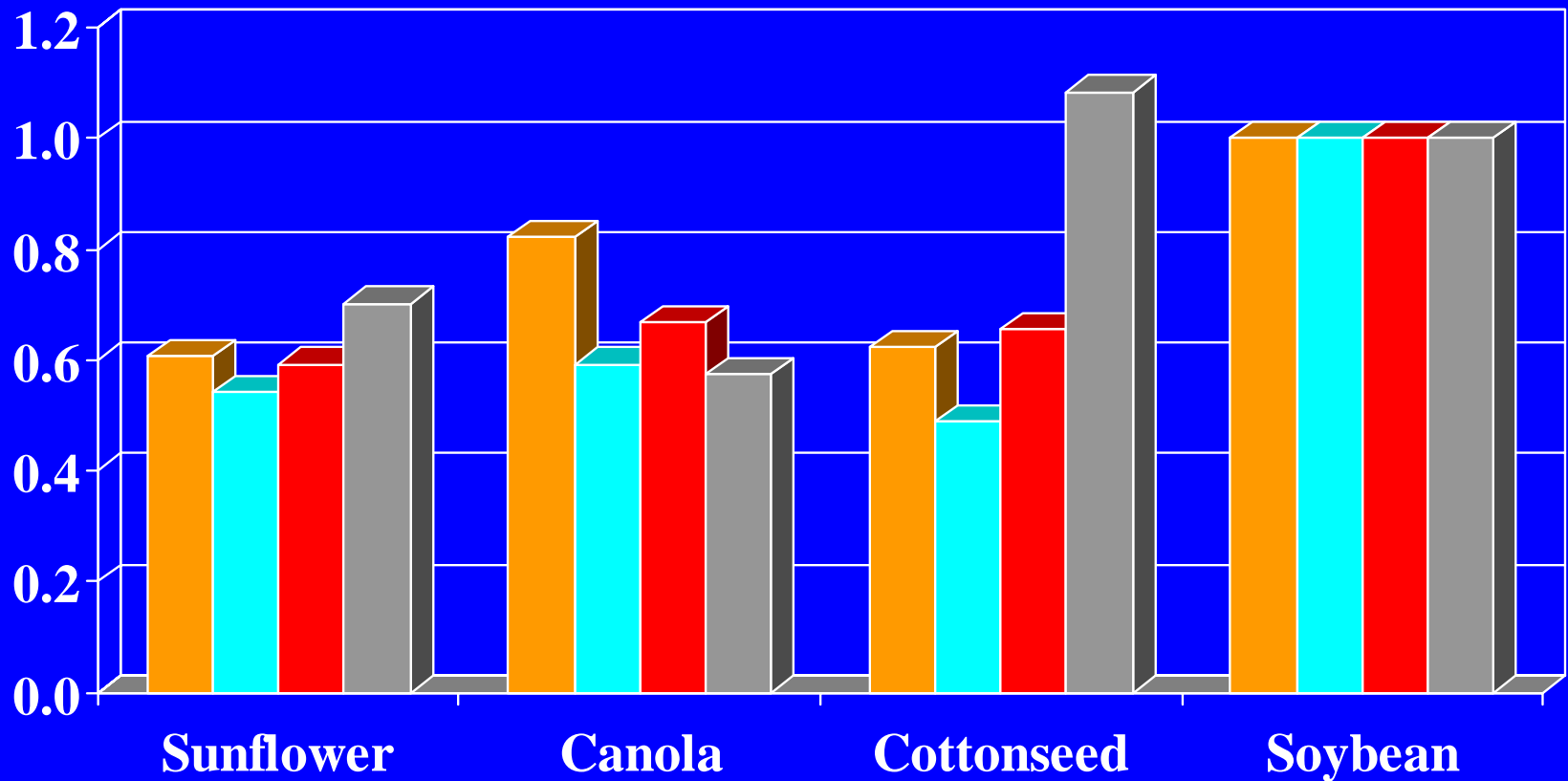
Amino Acids in Vegetable Protein Meals (Relative to soybean meal)

■ Lysine ■ Methionine ■ Methionine + Cystine



Amino Acids in Vegetable Protein Meals (Relative to soybean meal)

■ Threonine ■ Isoleucine ■ Tryptophan ■ Arginine



Nutrient Composition of Sunflower Meal

- Hull content has a major effect
- Sunflower compared with other oilseed meals:
 - Higher in fibre
 - Lower in energy
 - Lower in protein
 - Lower in amino acids

Sunflower Meal in Ruminant Diets

	Typical inclusion in supplementary feed (%)
Calf	2.5
Dairy	20 – 25
Beef	20 – 25
Lamb	2.5
Ewe	15 - 20

Sunflower Meal in Ruminant Diets

- Growing heifers
 - comparable with soybean meal
 - comparable with soybean meal or distillers' grains
- Steers
 - comparable with cottonseed meal
- Beef cows
 - comparable with canola or beans
- Dairy cows
 - comparable with other vegetable protein meals
 - feeding whole sunflowers increases the level of C18:0, C18:2 and C20:0 compared with control-fed cows

Sunflower Meal in Pig Diets

- Ideal ratios for amino acids for growing pigs are exceeded in all cases in sunflower meal

BUT

- It has a relatively low lysine level

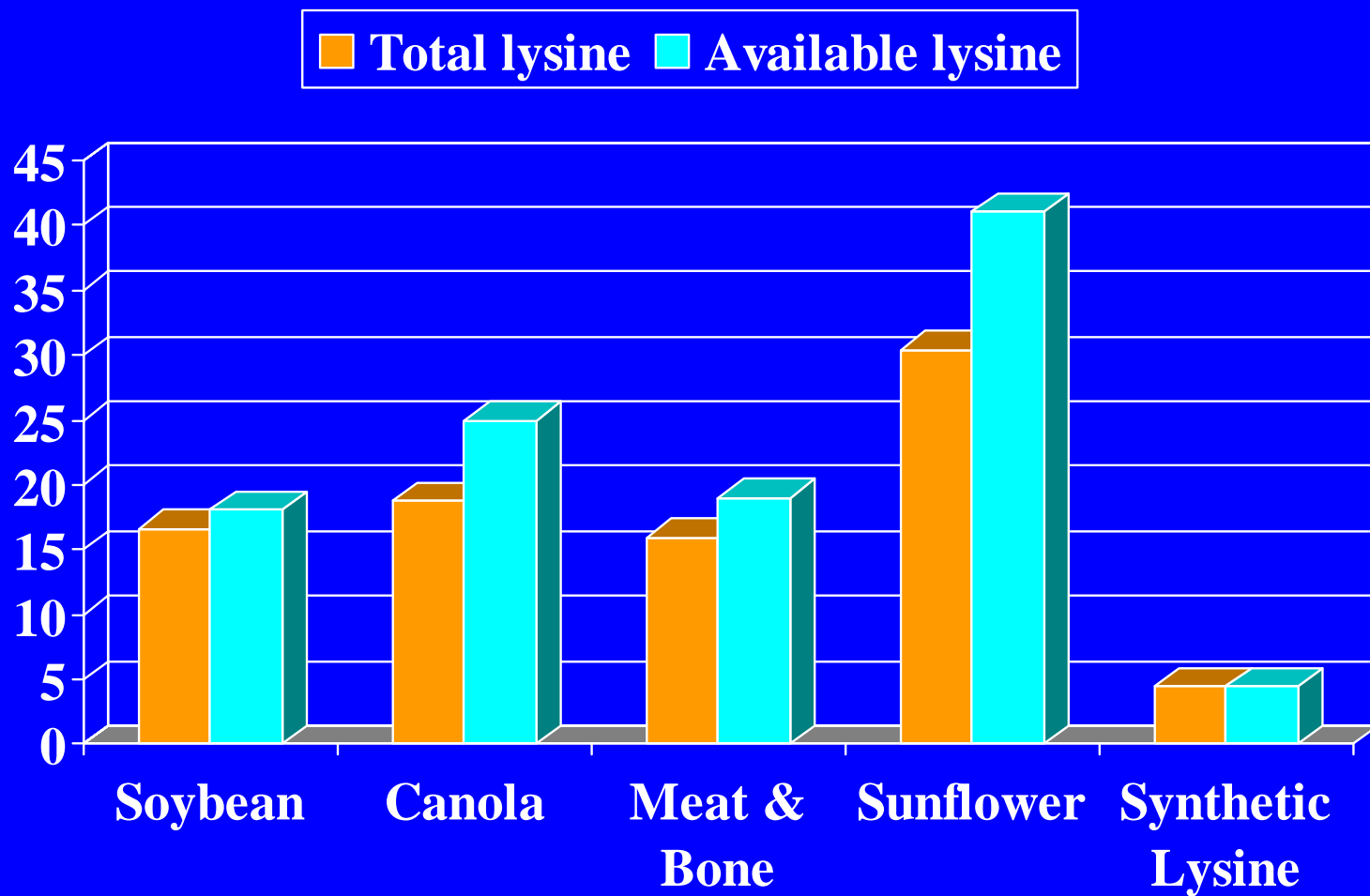
LEADING TO

- Oversupply of other amino acids
- Inefficient feed utilisation
- Overcome by using synthetic lysine

OTHER ISSUE

- Not cost effective at current prices

Relative Costs of Lysine Sources (\$/kg)



Sunflower Meal in Poultry Diets

- Maximum of 5% in layer diets
 - Egg staining, litter quality, odour
- Maximum of 7.5% in broiler and grower diets
 - High fibre level, lowered digestibility
- Can use slightly higher levels in pelleted feeds compared with meals/mash
 - Fibre is compacted by pelleting
 - Bulk in meal/mash can increase feed consumption
 - But higher fibre can reduce pellet quality

Sunflower Meal – Summary 1

- Changing nutrient composition by breeding needs to be accompanied by yield increase for maximum benefit
- GMO status has implications for its use in some markets
- Important issues for the animal feed industry
 - Variability in product
 - Variability in supply

Sunflower Meal – Summary 2

- A useful protein source for all classes of ruminant livestock
- Limitations in pig and poultry diets due to nutrient balance
- Use is determined by cost relative to other protein sources