

**Livestock Nutrition in the Future:
taking into account climate change,
restricted fossil fuel and arable and used
also for bio fuel leading to high grain
prices**

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RECENT PROBLEMS

- 1) **Competition of arable land for production of bio fuel**
- 2) **Rationing of fossil fuel and elevated prices of fossil fuel**
- 3) **Climate change causing problems of draught in some areas**
- 4) **Hugely elevated prices of grain**



Feeding of ruminants in so-called developed countries

- 1) Dairy cows receiving 60-70% concentrates, mainly grain
- 2) Many beef cattle finished in feed lots or sometimes all life in feed lots on concentrate, mainly grain
- 3) Cattle selected to achieve high dressing percentage and thus selected against rumen volume and thus ability to consume large amounts of roughages.



Monogastric animals in so-called developed countries

Pigs fed entirely on concentrate, mainly grain. Large intestine very small. High growth rate and reproduction

Chickens entirely fed on concentrate, very little food from scavenging, high egg yield of layers and growth rate of broilers



Monogastric animals in many developing countries

- 1) **Pigs have a big intestine and well adapted to consume high quality roughages eg. Sweet potato tops etc.**

- 2) **Most poultry are scavengers, lower production but cheap. Some receive additional high quality by-products**
- 3) **Ruminants with large rumen volumes enabling them to consume large amount of poor quality roughages but of course with lower growth rates and milk production*****







Solution for developed countries

- 1) Selection of monogastric animals for capacity to consume high quality by-products and maintain relatively high level of production**
- 2) Selection of ruminants for high rumen volume to enable them to eat large amounts of roughages and maintain relatively high level of production**
- 3) Selection for high quality by-products for ruminants eg. Straw and other by-products provided no loss of main product**



Table 2.22 Effects of variety of barley on straw utilization by steers also fed 1.5 kg of concentrate per day

Variety	Intake dry matter kg/d	Digestibility	Metabolisable energy MJ/kg	Growth rate g/d
Gerbil	3.43	40.9	7.23	106
Igri	3.56	41.2	7.16	126
Golden Promise	4.43	45.2	7.35	198
Corgi	5.16	48.4	7.82	400
SE	0.18	1.2	-	40



Distinction between market oriented and single product animals and social value oriented and multipurpose animals

	<u>Single purpose Market oriented</u>	<u>Multi purpose Social value oriented</u>
Economic goal	Profit maximization Cash generation	Risk minimization Family support
Control of environment	Human control	Environmental control
Breeding goal	Homogeneity	Biological diversity
Product targets	Single purpose Increased potential for production Nutrient mobilization	Multipurpose Improved maintenance potential Nutrient storage
Philosophical approach	Specialistic	Holistic
Scientific approach	Single discipline Design of system	System discipline Management of ecosystems
Statistical emphasis	Mean	Variance
Statistical emphasis	Main effects	Interactions



- ❑ April 2008 Road Transport Fuel Obligation (RTFO)
- ❑ 5% of all sales by volume to be from biofuels by 2010
- ❑ Biodiesel and Bioethanol will receive 20p/litre fuel duty incentive (normal fuel duty is 50.35ppl) until 2010
- ❑ If all the bioethanol and biodiesel were to come from UK sources then the RTFO target would require **approximately 20% of all UK arable land** (source NFU 2006)
- ❑ If 10% European transport fuel from domestic biofuels then **need over 70% of all European arable land** (Worldwatch Institute 2006)