Nutrition and emissions

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Factors influencing ammonia emission from urine and manure

- ammonium content
- urea and uric acid contents
- urease activity
- pH
- emitting area
- temperature
- airflow
- infiltration rate of urine in soil
- mineralization rate of organic nitrogen
- immobilization and nitrification rates of ammonium

Main options to influence ammonia emissions by livestock feeding

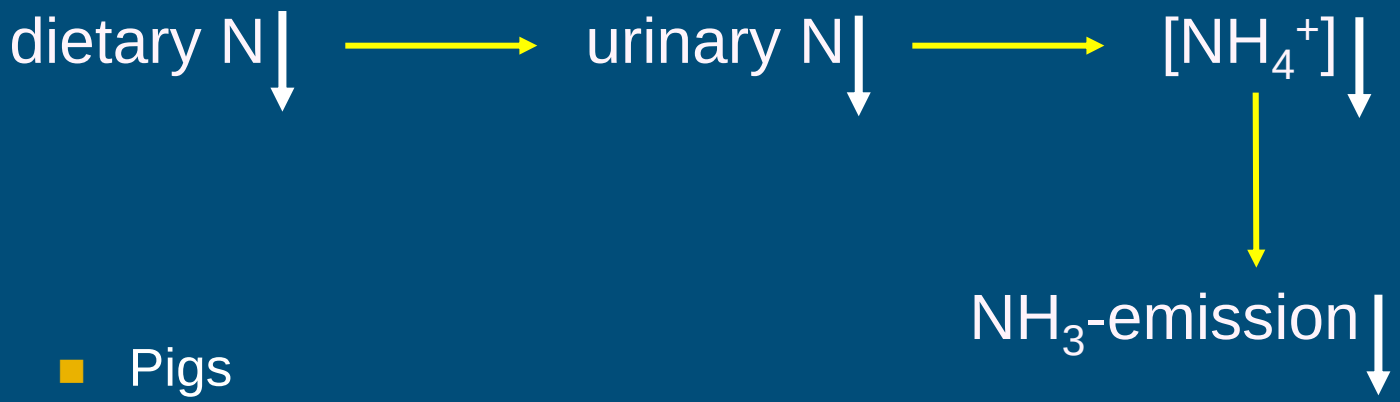
- Lowering ammonium, urea and uric acid contents by:
  - Reducing nitrogen excretion by lowering crude protein intake;
  - Shifting nitrogen excretion from urea/uric acid in urine to protein in faeces;
- Lowering pH of manure by:
  - lowering the pH of faeces;
  - lowering the pH of urine.

Target levels for some indicators in animal production

Animal Species		CP/DM	FCR	EUN	ATR
Cattle	milk + maintenance	150	0,81	0,30	0,20
	replacement	125	9,92	0,10	0,20
	veal	185	2,03	0,45	2,00
	beef	125	6,05	0,25	0,67
Pigs	breeding sows	153	3,15	0,30	0,45
	fattening pigs	155	2,23	0,40	1,86
Poultry	laying hens	150	2,50	0,35	0,68
	broilers	200	1,75	0,50	8,49

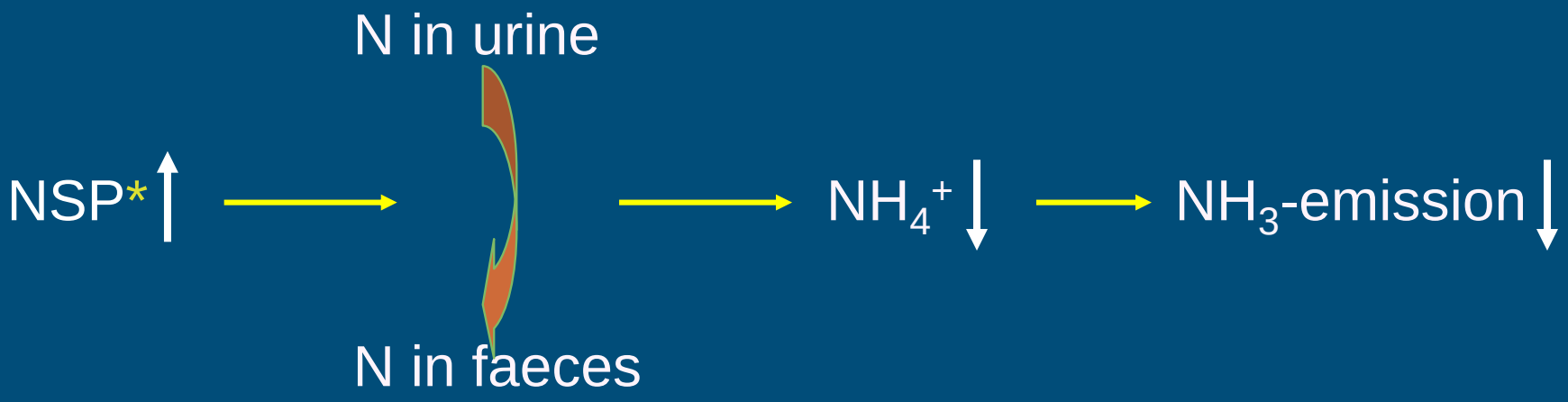
CP = crude protein; FCR = feed conv. ratio; EUN = eff. of N util.; ATR = animal turnover ratio

Reducing ammonia emission by decreasing dietary crude protein



- Pigs
- Cattle
- Beef
- Poultry

Shifting nitrogen excretion from urine to faeces



**non-starch polysaccharides in diet*

- Pigs
- Cattle
- Beef
- Poultry?

Disadvantage: higher methane emission

Reducing ammonia emission by lowering manure pH

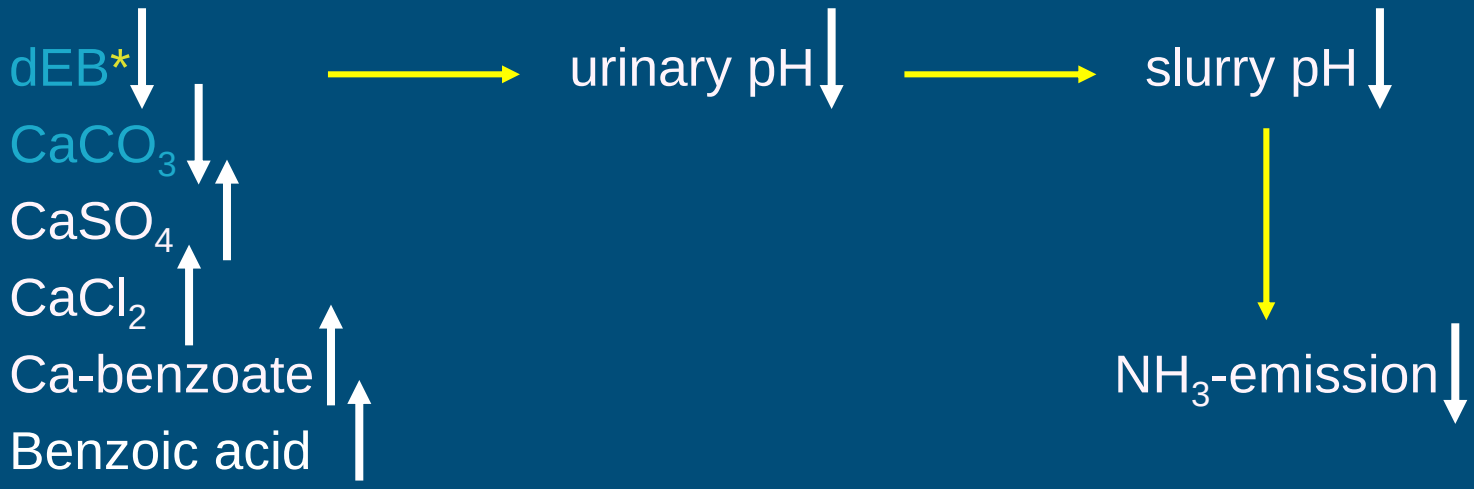
**non-starch polysaccharides in diet*

***volatile fatty acids in faeces and slurry*

- Pigs
- Poultry?

Disadvantage: higher methane emission

Reducing ammonia emission by lowering urinary pH



**dietary electrolyte balance*

- Pigs
- Cattle
- Beef
- Poultry?

Thanks!

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