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- Key nutrients in sow nutrition
- Feeding to support the gestating sow
- Optimal nutrition during lactation



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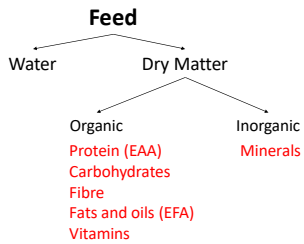
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### Protein

- Building blocks of muscle, tissues, hair and skin
- Used in metabolic processes
  - E.g. cell reproduction, enzymes
- Each protein is made up of amino acids in specific sequences

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### Sources of Protein and Essential Amino Acids

#### Highly valuable sources

- Soya
- Rapeseed meal
- Fishmeal
- Linseed



#### Remember, it is illegal to feed

- Animal by-products, with few exceptions (pasteurised milk, eggs)
- Catering waste
- Kitchen scraps




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### Amino Acids

- Essential**
- Isoleucine
- Leucine
- Valine
- Lysine (1.05%)
- Methionine
- Threonine
- Phenylalanine
- Tryptophan
- Histidine

Cannot be synthesised in vivo, must be in diet

Sow feeds – 18% protein, approx. 1.05% lysine

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## Energy

- 1<sup>st</sup> limiting factor in terms of performance
- Gross energy = total amount of energy available from a diet
- Digestible energy = the gross energy minus the energy lost in faeces



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## Carbohydrates

- Major source of energy within the diet
- Sources:
  - Cereal grains, molasses, fruit pulps, cereal coproducts
- Main carbohydrate of importance is starch which is digested to produce simple sugars (e.g. glucose)



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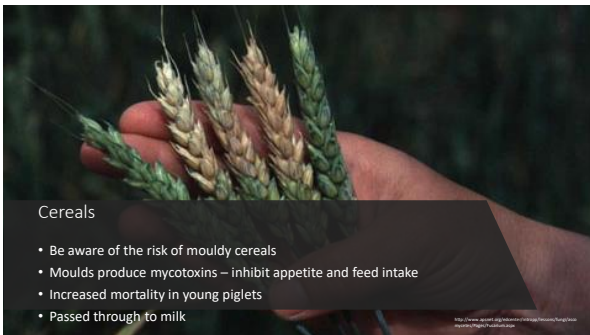
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### Cereals

- Be aware of the risk of mouldy cereals
- Moulds produce mycotoxins – inhibit appetite and feed intake
- Increased mortality in young piglets
- Passed through to milk

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### Ergot

- Plant disease which attacks the ear at flowering
- Produces toxic **alkaloids**
- Thrives in wet weather and wet soil

Causes spontaneous abortion




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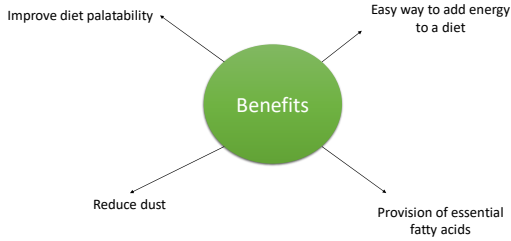
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### Fats and Oils




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### Essential Fatty Acids

Must be supplied in the diet, NOT synthesised by the animal

#### Omega 3 fatty acids

- Linolenic acid
- EPA, eicosapentaenoic acid
- DHA, docosahexaenoic acid

#### Omega 6 fatty acids

- Linoleic acid




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### Essential Fatty Acids

• Deficiencies result in growth and development retardation, increased susceptibility to bacterial infections and sterility

• Sources: soya oil, sunflower oil, rapeseed oil, linseed oil, fish oil



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### Vitamins and Minerals

If not feeding a balanced dry sow or lactating sow feed, or if adding extra feeds to supplement commercial feed, it is recommended to feed a sow vitamin/mineral supplement

- Calcium
- Vitamins

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### Vitamins

Organic constituents of the diet which is required in small amounts but is essential to the life and well-being of an animal

- Vitamin A
- B Vitamins: B1, B2, B6, B12, biotin, folic acid, pantothenic acid
- Vitamin D
- Vitamin E
- Vitamin K

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### Minerals

- Inorganic constituents of the diet, making up the ash content
- Macro mineral – large quantities in the body and diet e.g. calcium, phosphorus
- Trace mineral – small quantities in the body and diet e.g. selenium, Zinc



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### Calcium requirement for sows

- Calcium levels in a sow's blood are likely to play a role in the farrowing process
- Requirement in late gestation – 8-12g/day (0.6-0.8% depending on parity)
- Requirement in lactation 20-30g/day (0.7%)

#### Calcium deficiency in gestational sows

- posterior paralysis toward the end of lactation or after weaning
- Reduced litter size, prolonged delivery time, increased stillbirths, higher occurrence of skeletal problems in piglets

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### Fibre

- Important for gut fill in dry sows
  - Hay, straw
  - Bulky vegetables
  - Sugar beet pulp
- Low in energy for lactating sows
  - Takes up room- reduces potential intake
  - Low nutrient density



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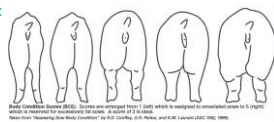
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### Body Condition Score

• By 4-5 weeks of gestation 85-90% of sows should be BCS 3

- Thin sows during gestation:
  - May not be able to maintain pregnancy
  - Unable to support adequate foetal development
  - Poor body reserves to maintain early lactation
- Excessively fat sows during gestation:
  - May have farrowing problems
  - May produce small litters



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### Early Pregnancy (Days 1-75)

- Gilts: do not switch onto a high energy diet for the three days post-mating
  - High energy diets can lead to embryo mortality in early pregnancy and reduced litter size
- Sows: switching to a high energy diet is not as detrimental as in gilts
  - Thin sows: recommend switching to a high energy diet after mating to restore BCS (aim to achieve ideal BCS by day 45 gestation)
- Low energy diets day 0-45 can result in small litter sizes

In general, a daily feed allowance of 2.3-3.5kg per sow is sufficient

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### Mid Gestation (Days 75-100)

- **Critical period for mammary gland development**
  - Minimal addition to sow requirements
  - High energy intakes can negatively impact lactation
- During this period of time it is advised to only feed enough to maintain the sow and the foetal growth
  - Do not want the sow gaining excess body condition during this stage



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### Late Gestation (Day 100+)

- **Rapid foetal growth**
- Feed intake should be increased by up to 1kg during this period to prevent the sow from losing condition
- Failure to increase feed may result in sows entering a catabolic state at farrowing
  - Contributes to gorging and sows 'going off feed' during lactation
- Avoid ad libitum feeding as this can negatively impact the sows appetite during lactation
- Ensure mineral intake (calcium/phosphorus)

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### Summary

- High energy diets in gestation can negatively impact:
  - Litter size
  - Embryo survival
  - Mammary gland development
  - Intakes during lactation
  - Milk yield in lactation
- Keep a close eye on sow BCS



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### Feed Intake: Sow vs Gilt

- Can be affected by the feeding of the sow during gestation
- It is important to remember that sows in their 2<sup>nd</sup>/3<sup>rd</sup> parity will have a higher intake compared to gilts in their 1<sup>st</sup> parity
- It will be beneficial to consider that gilts need for a more nutrient dense diet to support them during lactation
  - This may require the use of two different feeds on farm or the use of a higher nutrient dense diet and supplement the older sows with fibrous feed to achieve gut fill without oversupplying nutrients

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### How much to feed?

- Objective is to maximise feed intake to meet requirements of lactation, minimising the use of body reserves
- Amount of feed offered should be increased gradually as the sow's appetite increases
- Sows should be fed at least twice a day
- Ad libitum feeding systems are common during lactation



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### Heat Stress

- Outdoor pigs have a lower thermoneutral zone as they are accustomed to the colder winter temperatures, however this means they are more sensitive to the higher temperatures during summer
- Warm weather will likely result in the sows feed intake dropping which can cause:
  - Reduced milk production
  - Poor piglet growth and weaning weights
- To avoid drops in performance keep the sows as cool as possible providing lots of shade and water, feed more frequently and during the cooler times of the day
- As feed intake drops offer a feed with a higher nutrient concentration

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### Take Home Messages

- BCS sows regularly aiming for an optimum score of 3
- Do not overfeed during gestation as this can impact litter size and lactation performance
- Gilts in their 1<sup>st</sup> parity require a more nutrient dense diet
- Increase feed offered in lactation gradually
- Pigs kept outdoors are more at risk of heat stress




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### Feeding Guide

**Gestation**

- 2-3kg/day commercial dry sow feed
- Restrict energy
- Balance minerals
- Include gut fill
- Feed twice per day

**Lactation**

- 6kg/day commercial lactating sow feed
- Increase energy
- Balance minerals
- Feed adlib

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Supplementation

- Sunflower oil, flaxseed oil
- Fibrous material for gut fill
- Vitamins and Minerals (where diluted)

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