



FEEDING THE SOW PART 1: THE DRY SOW

Efficient and adequate sow nutrition and feeding are important for successful, profitable pig production. Sow nutrition during gestation is directly linked to sow condition and litter quality at farrowing. Therefore, it is directly linked to unit profitability.

Swine genetics have changed rapidly in recent years. This is evident in many areas of the production cycle, but perhaps most noticeable in the increased number of piglets born at each farrowing. There are still some limiting factors on how many piglets a sow can successfully rear. These include productive teat numbers, intra uterine capacity and the amount of antibodies in each unit of colostrum. As colostrum volume increases, antibody production generally does not increase linearly with it, which can result in a dilution effect.

Providing the sow with adequate nutrition to meet her needs before, during and after each gestation period influences the quality of pig born, pig weaned and reproductive performance.

Correct dry sow nutrition encourages:

- Early heats with good ovulation rates
- High conception rates
- Good spacing of embryos in the uterine tract (limiting IUGR piglets)
- Appropriate litter development throughout gestation
- Sows farrowing down in the correct condition
- Sows fit enough for a successful, drama-free farrowing
- A large litter of viable, vigorous piglets at birth
- A healthy sow with sufficient milk production after farrowing
- Maximised feed intake in lactation
- Sows that rear a big, healthy litter of strong piglets

Of course, there are other factors that will determine the reproductive efficiency of a pig farm. These include genetics, space, environmental conditions, heat detection, artificial insemination, care of animals by stock people and attention to detail.

Why is sow condition so important?

Sows need to be in the best possible shape at every stage of gestation in order to support piglet development, to facilitate efficient farrowing and to rear a healthy, strong litter of piglets.

Over-conditioned sows are prone to:

- A higher number of piglets born dead due to lack of fitness at farrowing
- Poor colostrum and milk production post-farrowing
- Poor mothering and increased crushing of piglets
- Reduced feed intake during lactation: Fat sows will 'milk off their back' which can cause other issues like body sores, dehydration and huge losses of body condition
- Weaning lighter litters due to poor milk production
- Often unsuccessful return to heat post-weaning resulting in a long wean-to-service interval
- A short reproductive life (less parities)
- Heat stress

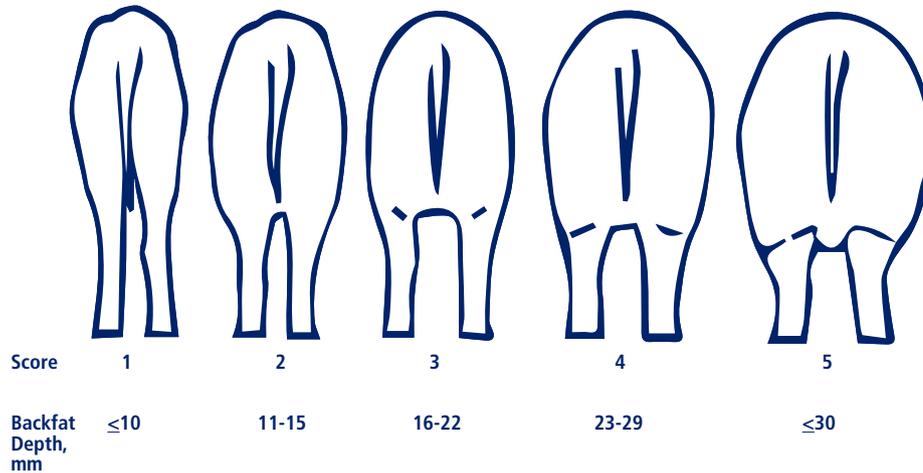
Under conditioned sows can also have issue such as:

- Poor litter growth in final weeks of gestation resulting in small piglets born
- Lack of energy for the farrowing process
- Poor milking ability due to slow mammary tissue and gland development
- Poor reproductive performance e.g. not maintaining pregnancy, not returning to heat post-farrowing, abortions
- Loss of muscle & ability to have numerous litters
- A short reproductive life (less parities)



Sow Body Condition

Figure 1
Sow body Condition
Score Scale



Sow body condition is almost always measured by eye, unless you are lucky enough to have access to back fat measuring. Remember, if your average sow condition across your unit is 'perfect' (score 3) you'll have some slightly thin sows and some slightly fat sows. This is okay. However, if either group of 'few' sows goes to the extreme of being thin or fat, or if 'some' becomes 'many', then your feed allowance should be addressed immediately. Try to identify where in the cycle it is going wrong. Often, it may only be one part of a feed curve that needs to be adapted.

Generally, older sows tend to gain condition more readily during gestation than younger sows. Therefore, if it is possible to group sows by age and /or weight (depending on the size of your unit), then this should be considered.

Fat sows require more intervention from humans at farrowing. They can also run out of energy during the farrowing process as they are not fit. If you are consistently seeing piglets at the end of the litter born dead, this may be an indication that your sows are too fat.



Remember that any changes you make to diets or feed curves should be done gradually. It will take time to see the result of a small change to the feed curve, so don't panic and expect sow condition to change overnight.

How should dry sows be fed?

Feeding dry sows requires a combination of an appropriate diet and an appropriate feed curve. Within the diet, sows need the correct, but not excessive supply of energy, protein, fibre, fat, vitamins and minerals. Sows need to feel full and happy daily, while also receiving enough nutrients to maintain & support pregnancy and thrive themselves. However, they should not receive too much feed, or too much of a high-spec diet in particular, as this will result in excess condition. Sows also need a good water supply.

Feeding gestating sows can be sub-divided as follows:

- ~ 75 – 85% of requirement: Sow's own maintenance.
- ~ 15 – 25% of requirement: Pregnancy maintenance & developing products of conception such as mammary tissues, foetuses and placenta.
- ~ 5 – 10% of requirement (where applicable): Development of the female if she is not already at mature weight (gilts and parity 1, sometimes parity 2). However, if gilts are bred at the correct age and weight, this requirement is quite small (Gilts should be bred at an absolute minimum of 235 days of age, 145kg liveweight and served on her second cycle).

1. Diet Quality & Density

Ensure your diet is balanced in terms of energy, protein, fibre, vitamins and minerals.

Fibre: A hugely important component of dry sow feeding for satiety. Fibrous feed sources have a lower energy density than cereals, so they are ideal for dry sow feeding, ensuring they feel full. Sources commonly used include soya bean hulls, beet pulp, wheat bran, wheat middlings and rice bran. Soya hulls and beet pulp are most popular on Irish units. Barley is often the cereal of choice for feeding dry sows which has its advantages:

- Barley is lower in energy per kg than wheat so will make the sow feel full
- Barley contains more fibre than wheat
- Barley grinds coarser than wheat so helps to maintain bulky nature of the diet



Energy: On many units, dry sow energy intake is minimised by using a combination of ingredients that keep the energy supply per kg low. Mammary gland development can be negatively affected if sows eat too much energy during gestation. Gestation diets are normally formulated around 12 – 12.5 MJ DE per kg. This ensures that sows eat enough volume per day to keep them happy, without allowing them to get fat. Dry sow energy intake must be limited by a feed curve. This ensures that the sow receives adequate but not excessive energy from feed throughout gestation so she can farrow down in the best possible condition. This will also help to ensure a smooth farrowing.

Protein: Dry sows have specific requirements for amino acids throughout gestation. It is unusual to use synthetic amino acids during gestation and generally, producers will use soyabean meal to meet requirements.

Minerals & vitamins: Calcium and Phosphorus are important minerals in sow nutrition. Vitamin E is also vital and levels should be considered prior to farrowing. B vitamins are also important for gestating sows; particularly biotin, folic acid and vitamin B12. Carnitine is often used in dry sow diets due to its positive impact on litter quality. Consult our nutritionists to find out more about mineral and vitamin requirements in gestating sows.

2. The importance of feed curves

Feed curves determine body condition in gestating sows. It is imperative that sows receive adequate nutrition at each stage of pregnancy; however, over or under-feeding sows at any stage of gestation can have a negative impact.

Weaning to service; Day 1 – ~5

Sows should be fed ad-libitum from weaning to service. Sows must successfully come into heat post-weaning for service & then receive the nutrients required to support the beginning of her next pregnancy.

Service to day ~30

Sows need to be fed on a high plane of nutrition for this period. Reasons for this include promoting good conception rates, supporting the recovery of body condition lost during lactation and good embryo spacing and attachment. Generally, 30 – 40MJ per day is the range used on Irish units for this period. Many sows are still kept in stalls at this stage of gestation. An effort should always be made to either separate the heavier sows and put them on a minus, or at the very least, keep them as far away from the feed-out valve as possible.

During this period, the placenta needs to develop, and implantation needs to occur. Embryo attachment happens ~day 12 – 15. A minimum of 4

embryos must attach to the uterine wall in order for the sow to maintain the pregnancy. If you scan sows on your farm, you'll know you can confirm pregnancy by day 30. Sows can then be grouped (if not done immediately after breeding) as the attachment of the placenta is considered strong enough to withstand any fighting that may occur.

Mid-gestation; ~Day 31 – 80

Sow condition must be closely monitored during this period. The feed curve is generally reduced here, so sows can be fed for maintenance and to support piglet growth, without gaining excessive weight. Piglets' bones begin to calcify around day 35 – 46 so consult your nutritionist to ensure the dry sow diet supports this. Typically, a range of 22 – 28MJ is fed during this period. Older and/or fat sows will generally benefit from a lower feed allowance during this period. These sows tend to have lower levels of activity and if fed high levels of feed, will rapidly put on condition.

Late gestation ~Day 81 – 115

The final expansion of the placenta occurs at this stage. The growth of piglets from day ~75 increases rapidly. Foetal and mammary tissue development require more nutrients at this stage, so feed allowance is often increased. This supports the rapid foetal growth that occurs and prevents sows breaking down their own tissue for energy. In the final days of gestation, mammary gland development, milk and colostrum production and energy stores are prioritised. A normal feed level for this period is 30 – 38MJ.

Every production unit will have its own unique feed curve. Generally, they'll follow the same shape (lowest for the middle section of gestation) but the number of MJ may differ slightly from farm to farm. This is okay and comparing feed curves should be avoided. Depending on the energy density of the diet, age profile of the herd, time of year (winter vs summer) and type of housing (particularly air quality, insulation and ventilation) feed curves can differ significantly. What is important is that the MJ listed for each ingredient are correct on your feed system (if home mixing).

The same goes with day numbers. Some producers may need to pull down the feed curve around day 24 post-weaning, others wait until day 30 or 32. This depends on the practices on your unit and your own circumstances. The priority is that sow feed allowance per day is decided by a feed curve that provides adequate but not excessive feed at each stage of gestation. Genetics are important. Although there aren't many different maternal lines used in Ireland, producers must still feed sows appropriately.

Different characteristics of breeds such as average number of piglets born, temperament, size when fully mature, average number of parities etc can all influence how sows should be correctly fed. This might also apply to older sows as their maintenance requirements are lower than younger sows due to lower activity levels.

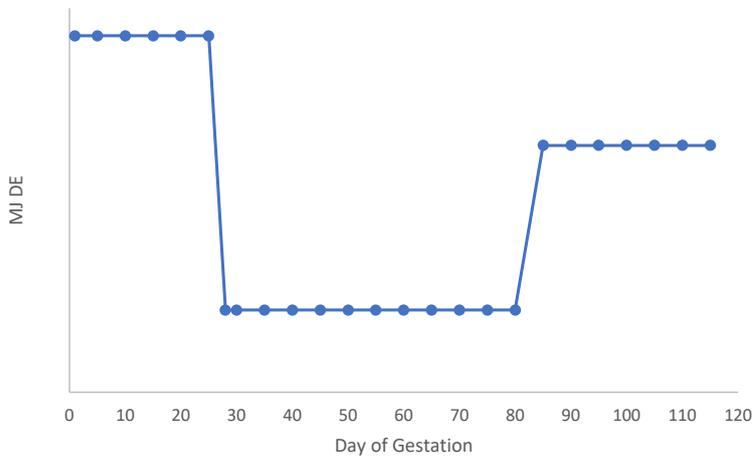


Figure 2. Sample curve to illustrate the shape of a typical dry sow feed curve. Every farm will have its own individual feed curve. Some may fall and increase more gradually than above. The MJ fed per sow per day should be specifically designed for your farm based on your individual conditions & diet specification. Make sure your dry sow feed curve promotes optimal sow condition at all stages of gestation.

3. Water, water, water!

Whether you are dry, wet/dry or liquid feeding your sows, it is vital that they have constant access to fresh water at an appropriate flow rate. Gestating sows need to take in 12 – 25 litres of water per day. Liquid-fed sows may take in considerably more water. Ensure there is enough water flowing and ensure troughs, bowls and/or nipples are cleaned regularly. A flow rate of between 2 and 4 litres per minute should be formally confirmed at least annually on your unit for gestating sows. However, quickly confirming that nipples are working properly should be carried out on a regular basis (daily).

Many dry sows are liquid-fed. This means we can use the water in the wet feed to manipulate how full the sow feels, while also ensuring she takes in sufficient water daily. Water-to-feed ratios used in liquid-fed gestating sows vary, but generally they are quite high. If we use an example of 5:1, a diet density of 12.5MJ and a daily feed allowance of 30MJ, this sow will receive 2.4kg feed and 12 litres of water via liquid feed. This is the minimum according to the recommendation above of 12 – 25 litres per day. Therefore, this sow, particularly in the middle of gestation will need to get water from the nipple in the pen.

FARROWMAX

Formulated for easy farrowing.
Feed for 5 – 7 days prior to farrowing – Read more in Part 2!



Practical tips and tricks



Summer cut: Naturally, sows use less energy to maintain body temperature during the summer months, so it may be necessary to cut the feed curve during the summer and push it back up a few MJ in the winter.

Seek a second opinion on condition: Most pig producers, due to internal and external biosecurity have the same sets of 3 or 4 eyes on their sows at all times. It's very difficult to see changes in condition when you are looking at the same animals constantly. Ask a pig-clean, external person (e.g. nutritionist, vet, advisor) to come in to look at your sow condition.

Group by body condition and/or age: This will depend on the size of your farm and group housing layout, but where possible, fat sows and/or old sows should be in a pen together. This allows either a separate feed curve, or a constant minus from the normal feed curve to be implemented.

Thin sows on the valve: Don't put fat sows beside the feed-out valve if this is something you can control (e.g. in a service house when sows are in stalls) as they will have access to the largest volume of feed. Put them at the edge of the trough and put thin sows on the valve.

Raw material values: This goes for feeding all pigs on your farm, but it's really important for restrictive dry sow feeding that raw material and/or diet values in your feed system are accurate, to avoid over- or under-supplying nutrients. Be particularly careful if you are using by-products that can vary in dry matter percentage.

Feed your breed: Ensure you are supplying all of the recommended levels of nutrients to your sows, based on the genetic company's recommendations. Consult your nutritionist for advice.

What can Inform Nutrition do for you?

At Inform Nutrition, we are passionate about high-welfare, efficient pig production, led by correct nutrition. We provide customer-specific premix and diet formulations to ensure you get the most out of your sows. We also discuss sow requirements and the effectiveness and accuracy of feed curves, in both dry and lactating sows on a regular basis. We can help with information regarding feeding by-products to sows, while also providing a background on feed additives. With 3 team members regularly walking through pig farms, we have informed opinions of sow condition across numerous farms. This results in active discussions around sow requirements and condition, leading to accurate sow feeding by tailored feed curves.

We support our customers in the following areas:

- Customised sow premixes
- Sow condition monitoring
- Grain quality inspection
- Mycotoxin analysis
- Developing unit-specific feed curves
- Diet formulation
- Background on feed additives
- Regulatory advice
- Advice on quality systems for inspections e.g. Bord Bia audit

Get in touch with our pig team today to discuss feeding sows at a commercial farm level!

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