The importance of condition scoring

Body condition score has a major impact on the productivity and profitability of dairy herds. Discussion group facilitator and consultant Mary Kinston BSc Agriculture PhD provides a guide to achieving key targets

Dairy cows that calve in the right body condition, that lose no more than 0.5 of a body condition score (BCS) after calving, and are gaining weight, will maximise dry matter intake, milk production, reproduction function, cow health and welfare. Therefore, BCS has a huge bearing on a dairy herd's ability to be productive and profitable. Research has also indicated that the condition of a cow in early lactation will also influence the sex of future calves and the productive and reproductive capacity of heifers yet to be born. Yet while the importance of having cows hitting BCS targets has been well known for decades, its assessment and, subsequently, its management, is one of the most under-utilised techniques applied on the dairy farm. Irrespective of the farming system or cow genetics, milk production is optimised when a mature cow calves at a BCS between 3 and 4. For example, a study by McNamara et al in 2001 showed that cows that calved below a BCS of 2.75 produced, on average, four litres per day less during the first eight weeks of lactation, compared to cows that calved at a BCS of 3. Other studies have also shown negative effects on the anoestrus period, being 8-10 days longer, and the pregnancy rate to first service being 7% less. Another consequence of these negative effects on reproductive performance is the reduction in milk production in the following year due to a prolonged calving interval. The milk-production double-whammy! However, production benefits do decline with increasing body condition and increase the risk of metabolic health disorders at calving when the BCS increases beyond 3.25 in a mature cow, and 3.5 in first and second calvers. So,

for a production system to run smoothly, BCS does need to be managed, rather than become a result of either good or bad silage, high or low milk price, and the old constraints that milk quota posed.

HOW TO CONDITION SCORE COWS

Being able to condition score cows is a valuable tool and is not a hard skill to learn. Essentially, condition scoring is an assessment of the relative amounts of subcutaneous body fat or energy reserves in the cow. The cow is appraised through a combination of handling and visual assessment, and ranked relative to a condition scoring system. The main scoring system in use in Ireland runs from a score of 1 (extremely thin/emaciated) to 5 (very fat) but, in general, scores of <2 and >4 are rarely found on commercial dairy farms. As a BCS is a subjective measure, all dependent on personal opinion, it is important to regularly calibrate your eye. To calibrate your eye, you need to line up 12-15 cows of varying condition in a collecting yard or crush. Handle the animals to determine the amount of flesh covering the key body points, being the backbone, ribs, short ribs, hip bone, thurl (between hip bone and pin bone), pin bone and tail head. Table 1 outlines the key differences you are looking for.

The aim is to differentiate cows with condition scores between 0.25 of a score, as listed in Table 1. A quarter-score system is used as it is simpler and more reliable than spending five minutes debating whether the animal in question is a 2.9 or a 2.8. For example, determine whether the animal is closer to a condition score of either 3 or

Table 1: Key differences.
NB: Sacral ligament is the ligament visible between the hip bone and backbone.

Score	2.0	2.5	2.75	3.0	3.25	3.5	4.0
Target			Mating and late dry off		Calving cows	Calving heifers	
Description	Very lean	Lean	Lean but fit	Fit	Firm not very fat		Fat
Ribs	Obvious and feel hard	Obvious, little suppleness	Feel flatter and smoother	Smoothness	Flat	Flat and not easily felt	Fat under skin obvious
Backbone	Prominent, saw-toothed	Obvious notches	Few notches	Smooth	Smooth	Flat	Flat
Short ribs	Sharp. Corrugations visible three-quarters way tip to spine	Obvious	Smooth, pressure to identify individual ribs	Flat	Flat and not easily felt	Flat and not easily felt	Tip barely visible
Hip bone	Sharp edges. Depression on sides	Very angular	Angular	Rounded	Sacral ligament visible	Sacral ligament barely visible	Sacral ligament not visible
Thurl		V-shaped	V-shaped	Flattened V	U-shaped	Well fleshed	Flat
Pin bones	Sharp, no fat on points	Angular, fat pad on points	Feel smooth, padded	Rounded	Rounded	Well rounded	Fat becoming apparent
Tail head	Very depressed	Depressed	Depression	Depression is fuller	Full but firm, ligaments visible	Full and obviously fat	Ligaments not visible. Very fat

2.75. In practice I find it is easier to consider a cow in two halves. I score the front half of the cow first, by considering the backbone, rib and short ribs, and then the back half by looking at the hips, pins and tail head, and then average out the score. My reason for doing this is that some cows can be fit at the front and lean on the back. This is a characteristic typical of the Holstein Friesian, which has a very angular body shape, but with good coverage over the ribs. In comparison, an animal with New Zealand Friesian breeding is blockier, shorter and rounder, with fat distributed more evenly around the body. Finally, remember animals with prominent Jersey breeding have a very narrow body with prominent hip bones which make them look around 0.25 of a score less than they actually are. So take consideration of these breed differences.

Once you've calibrated your eye, it's time to score around 20-30% of the herd (eg. herd 100 cows, score 30 cows, which should take no more than 15 minutes). Scoring visually in the paddock relies on the animals being judged with quick, snapshot decisions. This number of repeated assessments and variation within the herd will actually determine a reliable average score for the herd. I use a simple table, which shows an example, to help with the calculations (see Table 2).

Having done this, the average score in this spring example is 2.8, which is good post-calving. The targets are to achieve a herd that has no more than 15% of the herd with a BCS of less than 3.25 at calving. Ideally, the BCS for the herd will fall no more than 0.5 of a score post-calving, and for no more than 15% of the herd to be below 2.75 at mating. Hitting these targets will often require decisive action during the winter prior to calving, prior to mating, and in the autumn prior to drying off. It's also important to note how many cows have a BCS of 2.5 or less. In the above example, 13% of the herd are less than 2.75 and these 13% will require proactive management such

as milking once a day prior to and during mating to aid breeding. If farmers repeat this exercise every other month from calving, it allows farmers to identify and manage thin cows and will ultimately improve the average BCS by decreasing the percentage of animals falling into these low scoring categories.

As the application of condition scoring and its management on farm has been universally hit and miss, industry bodies in New Zealand have implemented an accreditation scheme. This has offered farmers the opportunity to avail of a certified assessor (often the local vet) who assesses the herd's BCS at regular intervals. Farmers have found this to be very beneficial and feel it reduces the risk of subjective interpretations when scoring the herd, with a clear benefit in someone else who knows the herd but doesn't see them every day.

SEASONAL TARGETS
AUTUMN
As previously outlined, the aim of BCS management is for cows to achieve target scores at key stages of lactation. BCS management starts in the autumn. However, this obviously can conflict with the aim of a farmer to produce autumn milk and an income. Where a cow's BCS is low, this cow needs to be identified and dried off with adequate time to gain condition prior to calving, rather than succumbing to the temptation to milk on and forego BCS to chase milk litres in the tank. While the efficiency of weight gain is better during lactation, the inability to dose a cow during lactation and the reduction in diet quality, be it silage, meal feeding or grazing, often sees BCS at best holding or declining as cows continue to milk from late November into December. The only strategy that appears to yield significant weight gain during lactation is once-a-day milking, and this needs to be implemented early enough in mid-to-late lactation to avoid issues associated

Table 2: Calculating average BCS.

Body condition score (BCS)	2.25	2.5	2.75	3.0	3.25	3.5	
Total no of cows	1	4	22	9	2	0	38 (A)
Total BCS	2.25	10.0	60.5	27.0	6.5	0	106.25 (B)
% of sample	2.6% (1/38 x 100)	10.5% (4/38 x 100)	57.9% (22/38 x 100)	23.7% (9/38 x 100)	5.3% (2/38 x 100)		
Average BCS:		Total BCS (B)		Divide by total no of cows (A)		Average BCS	
		106.25		38		2.80	

Table 3: Drying-off decisions.

Dry off: Oct 15-Nov 1	Dry off: Nov 1-30	Dry off: Dec 1-30
Low body condition score <2.75	Body condition score ≤2.75	Body condition score <3.0
January/February calvers	February/March calvers	April calvers
First-lactation heifers	First/second-lactation heifers	First/second-lactation heifers

with cows drying off or low lactose milk tests. Therefore, using Table 3 allows farmers to make strategic drying-off decisions during the autumn. For example, mid-October, if a cow is 2.5 and is a February calver, she should be dried off. This is even more important if she is a first-lactation animal.

You may feel these drying-off rules are a degree extreme and that condition can be gained in a shorter dry period. However, in the last eight weeks of pregnancy, cow liveweight increases by almost 0.6kg per day due to the growth of the foetus and placenta alone. Consequently, over this eight-week period, a well-fed animal achieving a good daily liveweight gain of 1kg is only equivalent to about 0.4kg in actual body weight and will result in an increase of only about 0.5 units in condition score. Taking into consideration that during the actual process of drying off, where cows do not put BCS on and may actually lose some for a good week or two, by mid-November mature cows need a minimum condition score of 2.75-plus, to hit the target calving condition score of 3.25 by February.

WINTER
The winter feeding period is a crucial time where cows should be mob-managed and fed according to the level of condition they need to gain. Once-a-month sorting of thin and fat cows, early and late calvers will allow farmers to achieve the target of no more than 15% of the herd at <3.25 at calving. Unfortunately, even with this active management there will always be a cow that is incredibly hard to flesh and a cow that is exceptionally good at looking after herself, but without management there would be a whole lot more. Farmers should also take this opportunity to mob together younger and lighter cows to reduce competition with mature heavier cows.

SPRING
Once a cow has calved, the aim is to reduce BCS loss to less than 0.5 score and have no more than 15% of the cows at less than 2.75 at mating. Calving condition will have a huge bearing on this target, but getting cows to grass and supplementing them adequately post-calving

will be critical to avoiding excessive condition score loss. Where cows and heifers are <2.75 or are rapidly losing weight, once-a-day milking is again the best tool to keep a cow milking and optimise their chances during breeding. Essentially, having the herd right at calving, combined with good spring feeding, simplifies management by resulting in a herd which requires less intervention and less proactive management of the mating season compared to a herd which calves light and is fed poorly.