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GRASSLAND

What do grass growth and milk production curves have in common?

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The Costello's pasture-based dairy farm in Brandenburg, Germany specialises in forage production. A few years ago, the Irish Costello brothers took over a bankrupt dairy farm in Kloster Lehnin to the west of Potsdam in the German state of Brandenburg. They switched dairy operations to the pasture-based system they knew from home, which works comparatively well with the dry, sandy soils on their farm. They graze their cows outdoors all year round. Innovation spoke to Paul Costello about this special farming system.

Innovation: Mr Costello, what's different about your dairy system compared to other farms?

We currently have 650 Jerseys and 190 Holsteins on a fully pasture-based system and plan to increase the herd to 1000 head in the medium term. Our cows graze outdoors all year round and only return to the yard for milking. We employ a grassland manager whose job is to divide up the pastureland and plan the grazing rota. Our aim is to produce as much home-grown forage as possible to keep costs down in a difficult dairy market. The cows consume around 14.5 kg dry matter (DM) of grass per day, which is topped up with 3.5 kg of concentrates in the milking parlour. The Holsteins produce more milk and need far more concentrates, so these are allocated individually according to yields. With our system we achieve an annual average milk yield per cow of around 5000 kg, which we think is quite impressive.

Grazing manager Kevin Kearns (left) and Paul Costello talking with DSV consultant Hans-Jürgen Pfannkuchen.

How does the grazing system work?

We have around 400 hectares of grassland as well as some leys. The cows graze outdoors all year round. Grazing manager Kevin Kearns tours every field once a week to measure the grass growth with a plate meter. He takes twenty measurements on each field. We have a grassland management software in which we have entered the size of each paddock and the site conditions. When he puts the data into this program, it calculates the amount of grass growth on each paddock. Kevin uses this information to decide which field to turn the cows on to next. The cows are moved to a new paddock every 12 to 24 hours. They graze the grass down to a height of 4 cm and then we move them on. This intensive

grazing system encourages the grass to tiller and regrow more quickly. We have noticed a significant improvement in grassland quality and we produce enough grass and grass silage to cover almost all our feed requirements. In 2018, we produced around 10.5 tonnes of dry matter per hectare on average, despite the drought. In 2019 this increased to around 12 tonnes of dry matter per hectare.

What is the idea behind this system?

If you look at grass growth throughout the year and compare it with a cow's milk production curve, the two curves follow roughly the same trajectory, although slightly offset. Our aim is to align these two curves. That's why we calve all the cows in winter. They benefit from the flush of new growth in the spring to kick-start lactation. In May the grass grows more quickly than the cows can eat it and in winter the grass doesn't grow, but with our system we can even out these differences. Seasonal calving, cows that adapt effectively to seasonal grass growth and intensive grazing are the key to ensuring that the system functions correctly.

Why are Jersey cows so well-suited to this grazing system?

After taking over the farm, we crossed the existing Holstein cows with New Zealand and Irish genetics. Jerseys are smaller-framed, lighter cows and more aggressive grazers. You can tell as soon as the cows are turned on to a new paddock. The Jerseys start grazing straightaway. They are well adapted to the pasture-based approach and clearly thrive in the conditions here. Furthermore, they are very 'adaptable'. When there is less energy available, Jerseys can reduce their output without suffering any ill effects. With Holsteins, it's different. They don't cope as well.

What steps did you take when you took over the farm?

First we made a map of all the pastures. This hangs in the corridor outside our office so we can always see the full picture. The map also shows us how the various fields were created. Then we fenced the pastures and divided them into paddocks of two to three hectares. We have started to manage the grassland more intensively, which has led to huge improvements. We understand how important it is to find the right grasses and mixes for the dry conditions, and of course to make sure that the grasses are suitable for frequent grazing. With the help of Hans-Jürgen Pfannkuchen, consultant with Deutsche Saatveredelung AG (DSV), we soon found the right mixes for our needs and have succeeded in improving the quality of our grassland. But this is an ongoing process and we're still working on it.

"THIS INTENSIVE GRAZING SYSTEM ENCOURAGES THE GRASS TO TILLER AND REGROW MORE QUICKLY."

Paul Costello
Kloster Lehnin, Brandenburg, Germany

How do you ensure a reliable feed supply in winter?

Damage caused by trampling when the grass is too long leads to heavy losses. Especially in May, the grass grows more quickly than the cows can graze it. So we mow these pastures and ensile the grass in bales to provide winter fodder. We stack the bales close to the winter paddocks to reduce the distances when it comes to feed-out and the stack also provides a useful wind break. The winter paddocks are sown with the Landsberger Mix, which we supplement with grass silage. Feeding the cows in winter is a full-time job.

How does calving work outside?

The cows are kept outside all year round. Ninety percent of the herd are inseminated in the milking parlour over a three-week period. The aim is for all the cows to calve in winter within a six-week period. And that's what happens in 80 % of the cases. Then all cows are dried off in December within three weeks, regardless of the calving date. This explains why successful insemination is so important. When the first cows start to calve, we work with seasonal staff round the clock to ensure that the calves get the right care and nutrition. The Jerseys are very easy calvers, so we have hardly any problems with difficult births.

We patrol the paddocks regularly because we want to ensure that each calf gets at least 2.5 to 3 litres of colostrum within the first two hours. We test the cows' colostrum with a refractometer. If the quality or constituents are not good enough, we provide supplementary colostrum. Then we bring the calves into the old converted cowshed. Our 'calf hotel' can accommodate 600 calves, which are kept in groups of ten. Last winter we reared 450 calves here and didn't lose a single one.

What are your conclusions after four years?

In the beginning most people in the area were very sceptical about us and our ideas. But after the great drought in 2018, some of them began to see the benefits of the system because we didn't have the serious problems with feed procurement that the other farms had. As we see it, our farming system is not organic, but it's not conventional either. Sustainability is our main focus. Our cows should achieve 6 to 7 lactations in their lifetime. Little by little, we have transformed the farm to reflect our vision. For example, after the first successful years, in 2018 we replaced the unsuitable old milking parlour with a modern rotary parlour from New Zealand designed specifically for smaller-framed cows. It is the first rotary milking parlour of its kind in Germany. We work in close contact with our DSV consultant Hans-Jürgen Pfannkuchen, which is very important for us. He has been a great help with restoring the grassland and making it more productive. In future we plan to use our proximity to Berlin to market the milk as 100 % pasture milk.

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