From 17 to 30kg milk per cow

Jahangir Tareen has big plans for his dairy farm in Pakistan. He wants to expand to 1,000 cows and almost double the production per cow. He uses Dutch genetics for this purpose.

The New Zealand couple Neville (61) and Jacqui Legg (56), runs the dairy

The dairy farm J K Dairies (Pvt) Ltd is located in the middle of Pakistan, on the eastern side of the town of Rahim Yar Khan. There is lots of construction activity going on. The owner Jahangir Tareen wants to take a big step forward. Herewith he is capitalizing on the increased demand for dairy products. He would like to milk 1,000 cows that produce on average thirty kg per day. At the moment that average is seventeen kg. In order to achieve this goal he uses foreign genetics. In addition, an improvement to the housing system will also help. New barns will be built, featuring flexible stall dividers. Sand is used as bedding. A drip irrigation system keeps the cows wet to cool them down, the entire year.

Presently, the dairy farm has 783 milking cows as well as 213 bred heifers. An enthusiastic management team, led by the New Zealand couple Neville (61) and Jacqui Legg (56), runs the dairy. Within a few years they want to bring the farm to a higher level. Dr. Waseem and dr. Erwanto, two veterinarians from Indonesia, are assisting them. Together with the other employees they quickly want to turn this dairy into an outstanding and modern operation. The use of foreign genetics will form an important part of this effort.

Crossbred blood

At first J K Dairies imported cows from Australia four years ago. Most of these were crosses based on breeds like HF and Jersey. The first year the cows were bred to crossbreds again. However, the results were not what they had envisaged. They therefore made the decision to start breeding with purebred, herd-book dairy genetics, which can perform well under various circumstances. However, Manager Neville does want to preserve crossbred blood in the herd, in order to give the herd sufficient resistance against the extremely high temperatures and the high humidity in the summer.

The choice mostly fell on semen from Dutch bulls. They now have beautiful heifers, daughters of Paramount, Olympic, Sherman, Valley, Manders Marius, Fortune, Parra, and Tyson, as well as from the New Zealand bull Top Deck. This genetic improvement should result in two-year-olds that easily produce 7,000kg of milk, and in their 2nd and 3rd lactations increase to 8,500kg.

Low cell count

Current milk production is 17.2kg milk per day with 4.6% fat and 3.6% protein. Thanks to the high percentages the milk price currently amounts to 46 Rupees (more than 37 eurocents) per kg. The low plate and cell counts are remarkable. The milk has a plate count of only 4,000 cells/ml and the cell count is below 200,000 cells/ml. As a result the prevalence of mastitis is low.

Only in summer and during wet periods with lots of rain the number of cases of mastitis (coli mastitis) increases.

Neville Legg attributes that mostly to feeding. "When the feeding is good, ninety percent of the problems are solved." He is right, many problems like fertility, displaced abomasums, and feet problems are related to feeding problems.

The ration for the high producers consists of 22kg fresh chop sorghum, 22kg fresh chop corn (stalk + cob), and 40kg fresh alfalfa. Supplemented with a maximum of 6kg concentrates these cows produce 26kg of milk per day.

The cows look shining. That

New barns are built. Sand is used as bedding

Manager Neville Legg wants to preserve crossbred blood in the herd, in order to give the herd sufficient resistance against the extremely high temperatures and the high humidity

Pakistan

was quite different two years ago, when the cows often had a pale brown color. "This was due to a shortage of minerals, and the calves and cows mostly suffered from a shortage of copper," explains Jacqui Legg. Today they add copper sulfate to the drinking water and the calves receive copper boluses, which has solved the problem. The good consistency of the manure is conclusive evidence.

Molasses for feed

Owner Jahangir Tareen also has a sugar factory processing sugar cane from 30,000 acres (more than 13,500ha). The dairy farm benefits by having access to sugar molasses. The sweet product works well in two ways. Firstly, addition of molasses to the ration improves the quality and the palatability of the feed. Secondly, in a wet alfalfa silage molasses helps to develop bacteria that enhance proper conservation.

Around the farm are hundreds of hectares of emaciated land. The soil consists of dusty sand, which is a result of wrong fertilizing methods. Continuous use of fertilizer instead of organic manure has resulted in the level of organic matter dropping to almost zero. The dairy is trying to turn this situation around. After leveling an area of land, the crop residues of the sugar cane are now being plowed in. Subsequent irrigation cleans the salty layer. As a result organic life returns little by little. Seeding alfalfa supplies the soil with nitrogen. After two years of intense cultivation, the soil prepared in this way now produces no less than three wonderful corn crops of 36,000 kg product each in one season.

Big Winner

Ariena 22 (s. Big Winner): 2.07 305 days 7,968kg milk 4.31% fat and 3.32% protein

What's in a name? Big Winner does not do credit to part of his name as he certainly does not sire very big progeny.

His daughters are moderate in size, strongly built with good capacity. However he is a winner as his progeny stays in the herds, are late maturing and extremely suitable to grassland grazing. Their average size helps them to a long herdlife while big cows as is generally known have a shorter productive life.

Winner's key to breed more durable cows is to be found in his origin. His pedigree seems in conflict with the theory that with shorter generation intervals better genetic products are to be obtained.

High lifetime production in three generations is the most characteristic feature of Winner's family. His dam (Ex90), his granddam (Ex90) and his grandgranddam (VG89) were all impressive lifetime producers with resp. 74,000kg (5,3% fat and 3,9% protein), 110,000kg and 139,000kg. Old cows can be super bull dams! From such a family one may expect better than average lifetime producers. Late maturing is often connected with a long herdlife. This late maturing quality, that Winner's daughters are getting better with age, is one of the strong points of his transmission.

The second lactation of the older one of his 274 test period daughters show not only an enormous increase in production but also an extreme high percentage still present in the herds.

Another quality of this sire is his completely different bloodline. His sire is the very reliable milktransmitter Art Acres Win 395. As a son of Winchester he certainly brings fresh blood into the population. So does his dam's sire Lucky Leo as a son of the famous French transmitter Ugela Bell. In difference with his sire Big Winner is first of all a sire for components both fat and protein. Functional traits with very good scores for calving ease, milking speed and fertility make him a very attractive partner for cows needing more strength and staying power. He is indeed a sire to provide grassland grazing herds with the profitable no-nonsense cows required to maintain an economical enterprise.

Production index

rpty	kg milk	% fat	% prot.	kg fat	kg prot.	Inet*	longevity	NVI	cell counts	calf ease	ferti-lity
83	+142	+0.43	+ 0.16	+ 42	+ 18	€96	+ 340	+ 170	97	102	101

*milkmoney in euros

Conformation

Pregnancy test via milk

Determining a pregnancy through the milk. Wageningen University is researching the possibilities. The first steps have been taken. Researchers have identified five milk proteins that release a signal in the case of a pregnancy. A pregnancy test via the milk comes within sight.

Dairy farmers want to know whether a cow is in-calf. With tools such as ultrasound equipment or measuring for the progesterone hormone, this can be determined. Wageningen UR is busy developing a new method: predicting pregnancy via the milk, or, to be even more precise, via milk proteins. That is unique in the world. It is already known that it is possible, however, researcher Henri Woelders is cautious about stating whether in the end it will result in a viable and affordable test for the dairy industry.

Why the caution?
"You aim for a high level of certainty and reliability. If you know from 80 percent of the tests that cows are pregnant, that certainly is nice, but it isn't very meaningful yet. You want it to be 95 percent or more. In a trial with 32 cows, we have looked at the sensitivity and the specificity. Sensitivity is the extent to which you can actually identify a pregnancy, specificity indicates whether you can identify an animal that is not in-calf. The sensitivity was high, while the specificity ended up at 85 percent, That is high for a first experiment, but the number of 32 cows was too small to exclude the coincidence factor. When you analyse combinations of 780 proteins from 32 cows, the possibility of errors in estimation is high. We also want to take samples earlier – before day 21 after insemination. That is important for farmers. If there is no pregnancy, they can keep a closer eye on these cows for a heat during the next cycle.'

Henri Woelders is a researcher at Wageningen UR Livestock Research. He is involved in research on the reproduction and fertility of domestic animals used in agriculture. For measuring pregnancies in milk protein, he has worked closely together with Yvette de Haas.

What will be the next step?
"We now want to conduct a larger trial. We are in the process of making preparations. First goal is that we determine that it is possible. Second goal is to develop a testing method that is available for the field. That will happen in conjunction with a firm that will market it. You could think of something like the pregnancy tests that are available for women, where a small stick changing colour indicates whether a woman is pregnant or not."

When will a test like this for pregnancy proteins become available?
"I don't dare make a prediction. First we will have to see if the large trial actually provides us with a testing method that offers a high level of certainty about whether a cow is pregnant or not. That trial will easily take a year or two. After that another three years will be necessary to develop a test that is ready for use in the field."

And is it better?
"Today, progesterone can be tested inline, however, with such a test you cannot determine with certainty that a cow is pregnant. Pregnant cows have an increased progesterone level, but non-pregnant cows also have this around ten days after a heat. Measuring progesterone via the milk is too expensive."

Is it revolutionary?
"Yes, as far as we can determine. We are more or less working in the same way as with genomics and biomarkers. We apply new techniques, that are also used for human health. There are 780 traceable proteins in milk. You don't look for a specific individual protein, but for a combination of proteins which are distinguishable and as such also release a signal when a cow is in-calf. That is called proteomics. We have found five proteins that are clearly distinguishable."

Are there also proteins that indicate a heat?
"We have not done any research on this yet, but in theory that should be the case. During the heat cycle, you see that the hormones respond, just like during a pregnancy. We don't know whether there are proteins that release a signal with heat, but we certainly need to look into their existence. We are busy formulating research programs for this purpose. It would be an ideal instrument for farmers to trace heat via proteins in the milk. Heat is an important point, anyhow. It is not always easy to detect, and with the expanding herds, farmers also can give less attention to each individual cow for heat detection."

What else is there in those 780 traceable proteins?
"Perhaps there will be other traits that can be identified, such as general health or mastitis, although for the latter there are also other methods available for identification, such as somatic cell count." |

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Veepro dairy management

Milking parlour in Pakistan

Milking is an art

The milking process must be efficient as well as ergonomic to guarantee the operator's safety and health. Each step of the milking process needs clever management for the best results of pretreatment, pulsator, liner and right time of removal of the teat cups.

Dairy farming has changed dramatically in recent decades. Farms have grown considerably. Thanks to advanced breeding techniques cows now produce significantly more milk. The amount of milk per milking has gone up a lot. The farmer himself or his trained and experienced milkers use modern milking equipment. In large parlours we often see several milkers. Their work must be coordinated. One milker takes care of the pretreatment, another connects the cluster at the right moment. And there are more steps such as pre-dipping, fore-stripping, teat sanitation and teat disinfection. All these steps must be properly coordinated. Therefore a good working protocol and monitoring activities of the milking process are very important.

Robot systems

The computer takes an increasingly leading role in this proces. Modern software programs record the performance of the individual operator and the results of each step during the milking process.
Cows must be made to feel comfortable during milking. This stimulates the milk flow so that the cow can be milked well. A cow likes regular milking and a constant interval. The optimal number of milkings per day depends on the milk yield. In robot systems cows like be milked three times a day, but cows that are at the end of lactation come into the automatic system twice. With robots farmers can decide how many times cows are milked per day.