

FEEDING CONCEPT FOR DAIRY COW



PRODUCT OVERVIEW DAIRY COW

Sano is the major European brand for mineral feed, calf milk and specialties for modern animal feed. Convince yourself of our dairy cow concept with the products specially modulated to every life and performance phase for the healthy growth of your animals and the successful economic activity of your farm.

SANO MIPRO® – SANO MINERAL FEED COMPLETE SOLUTION WITH FUNCTIONAL PROPERTIES FOR MIXING RATIONS WITH BEST RUMEN PERFORMANCE



Dry Period



MIPRO PREN 400®
Nutrient synchronization for rumen preparation and milk fever prophylaxis for dry cow TMR



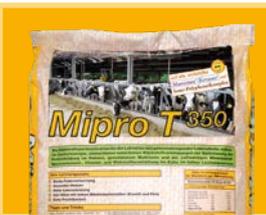
MIPRO PREN 250®
Nutrient synchronization for rumen preparation and milk fever prophylaxis for dry cow TMR



Lactation



MIPRO NU 350®
For rations with > 60% grass



MIPRO T 350®
For rations with balanced grass to maize ratio or > 50% maize



MIPRO RS 350®
For rations with balanced grass to maize ratio or > 50% maize



MIPRO NU 500®
For rations with > 60% grass



MIPRO M 500®
Complete solution with the best rumen performance for rations with a balanced grass to maize ratio or > 50% maize



MIPRO RB 600®
For rations with high maize and starch contents



MIPRO HP 600®
For rations with balanced grass to maize ratio or > 50% maize

SANO MINERAL FEED – FOR THE BEST POSSIBLE SUPPLY OF FEED WITH MINERAL AND ACTIVE SUBSTANCES OF HIGH QUALITY

 **Dry period** (Prenata50® should always be used in combination with one of Sano's lactation mineral foods)

			
PRENATA50® Dry cow supplement for milk fever prophylaxis	CAMISAN® Sano Mineral Complex for dairy cows with high performance	PROFISAN® Sano Mineral Complex for dairy cows with very high performance	TOPSAN® Sano Mineral Complex for dairy cows with maximum performance

 **Birth**

 **Lactation**

			
BOVIFIT® SC The fitness drink after calving	CAMISAN® Sano Mineral Complex for dairy cows with high performance	PROFISAN® Sano Mineral Complex for dairy cows with very high performance	TOPSAN® Sano Mineral Complex for dairy cows with maximum performance

SUPPLEMENTARY PRODUCTS

			
KRISTALL HEFE® Rumen power pack for more vitality in the rumen	DEXTROFAT PROTECT® Rumen-protected combination of sugar and fat for successful insemination and effective protection against ketosis	LINOMILK® Energy package made of CLA and propylene glycol for ketosis protection and an optimal lactation start	MULTISAN NEKTAR® Sugar cocktail for rumen-synchronization and optimization of fiber and nitrogen utilization
			
FERTISAN® Active ingredient complex with vitamins and trace elements for best fertility	STIMUDIGEST® Activates metabolism and rumen activity for effective ketosis prophylaxis	DEXTROFAT® RAPS Rumen-protected combination of sugar and fat for successful insemination and effective protection against ketosis	LABACASIL® Sano silage additive for tasty and high-quality grass and maize silage

LABACASIL®
Effective Sano silage additives for minimized fermentation losses, better feed quality and tasty silages

CONTENT

- 05 **Three factors for success**
- 06 **Development of metabolic diseases**
- 08 **How to get more milk into the tank**



DRY PERIOD

- 12 **What is it about?**
- 13 **Knowing why**
Connections in the dry period
- 16 **Product lines**
Mipro® and mineral feed
- 17 **Product recommendation**



BIRTH

- 19 **What is it about?**
- 20 **Knowing why**
Connections in the birth phase
- 21 **Product recommendation**



LACTATION

- 22 **What is it about?**
- 23 **Knowing why**
Connections in the lactation
- 29 **Product lines**
Mipro® and mineral feed
- 30 **Product recommendation**
- 33 **General product overview**



Our daily aspiration and motivator is to strive for healthy growth in general and particularly in modern animal nutrition. Consequently, the Sano sense is worded as follows:

“Sano has a global responsibility to develop agriculture day by day: Together with dedicated employees in all Sano companies worldwide, we make a significant contribution in the fields of animal nutrition and animal health. Sustainable and for the benefit of nature, man and animal.”

With 40 years of experience and competence in the field of modern animal nutrition, we provide farmers with the best possible service. Together we meet the daily demands of agriculture and make a decisive contribution to healthy growth with highly effective products, competent advice and future-oriented research.

Our Sano feeding experts stand for personal, cooperative and holistic advice on all aspects of your individual needs. The service to customers and animals and the associated improvement of the cost, husbandry and production structure on the farm are at the center of our activities. Our products guarantee you high-quality feed and high-performance ingredients. The Sano feeding concept is your daily companion for the professional implementation of this concept. Clearly arranged and scientifically based, structured according to life and performance phases, you will receive simple and comprehensive instructions for achieving individual farm goals, as well as answers to general feeding questions and valuable practical tips. Successful animal nutrition has never been so simple and effective at the same time.

Healthy growth is not just a slogan for Sano. As our contribution to your success, we develop these guiding principles on a daily basis in cooperation with scientists, nutrition specialists, veterinarians and practitioners.

Richard Waldinger, CEO



THREE FACTORS FOR SUCCESS



PRODUCTS

The challenges you face as an animal feed producer are becoming increasingly diverse. On the one hand, there is the need for sustainable, economical milk production and on the other hand, the question of how you can benefit from the latest nutritional findings and make the right decisions on rationing and animal welfare. The performance of your dairy cows is constantly increasing. Therefore, the supply of nutrients suitable for ruminants is more important than ever. Benefit from our products and functional active ingredient complexes developed especially for you and exceed your operational goals.



CONSULTING

The extension of chemical feed analysis with detailed digestibility parameters to dynamic ration calculation is tantamount to a revolution in demand-oriented dairy cattle feeding. For the first time, the door is wide open, from the “black box” dairy cow to the precision feeding. For example, fat is not just fat or just a source of energy, but the fatty acid pattern makes a decisive contribution to optimum performance, fertility and animal health. Feeding the ideal amino acid profile reduces costs and improves nutrient utilization. Benefit from the Sano consulting concept, the latest dynamic ration calculation software and the optimization of your income over feed costs (IOFC) – for a sustainable and successful milk production.



CONTROLLING

Further efficiency increases are possible and necessary in milk production in order to produce animal feeds economically in the long term. Take advantage of our know-how: with products tailored to your herd, with the most innovative consulting concept and with sustainable controlling of what has been achieved. We show you how to master company- and production-specific challenges in the long term and how to get more quality milk into your tank.

DEVELOPMENT OF METABOLIC DISEASES

FEEDING DEFICIENCY

Insufficient supply of trace elements, vitamins and antioxidants

DCAD in the dry period or magnesium deficiency

Insufficient supply of physically effective crude fiber

EFFECTS

Weakening of the immune system

Calcium deficiency

Rumen acidosis

DISEASE PATTERNS

Retained placenta and metritis

Mastitis

Milk fever

Displaced abomasum

Lameness

Displaced abomasum

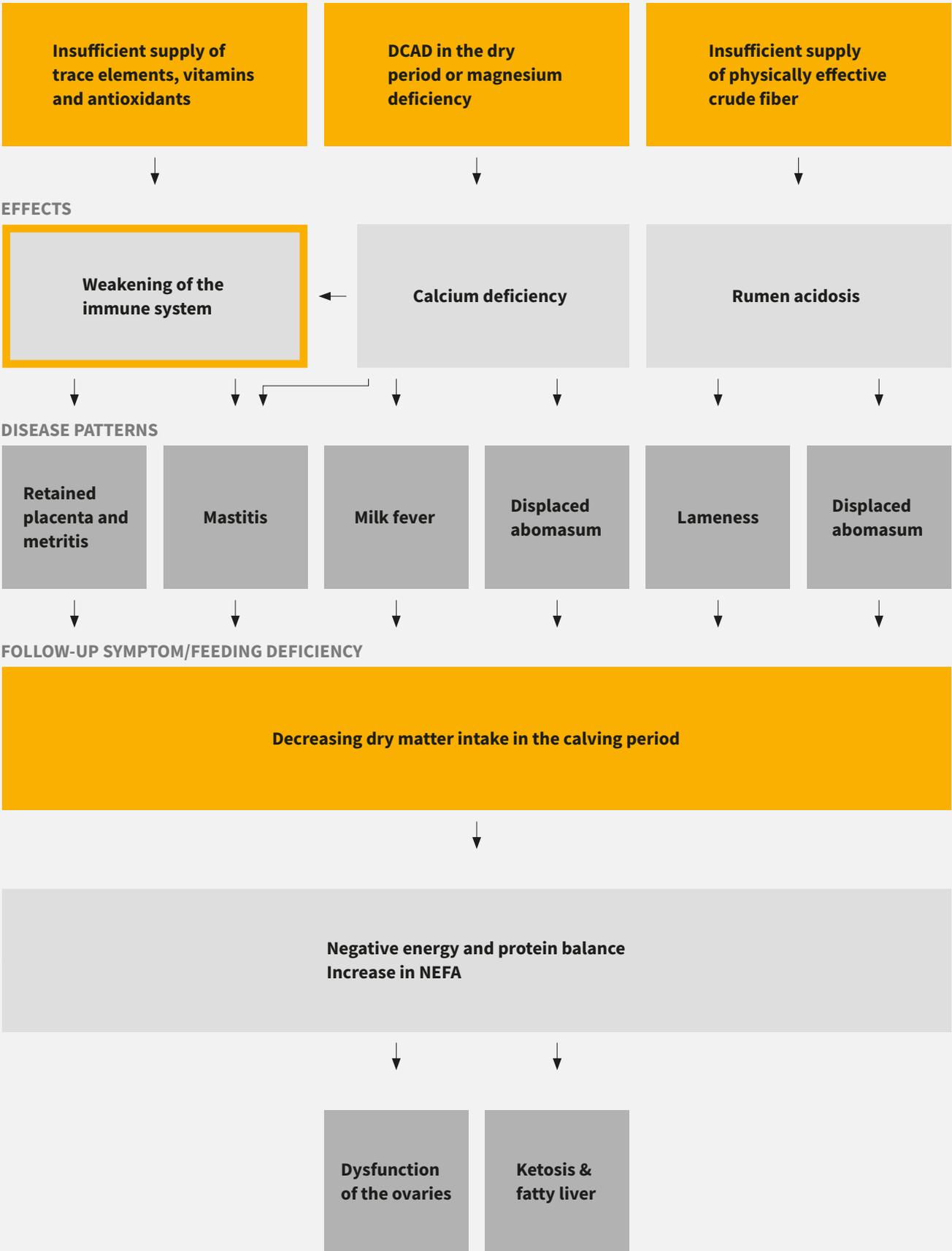
FOLLOW-UP SYMPTOM/FEEDING DEFICIENCY

Decreasing dry matter intake in the calving period

Negative energy and protein balance
Increase in NEFA

Dysfunction of the ovaries

Ketosis & fatty liver



THIS IS HOW YOU GET METABOLIC DISEASES UNDER CONTROL

THE IMMUNE SYSTEM

Mastitis, metritis and retained placenta are consequences of a weakened immune system (Goff and Horst 1997b). Several essential dietary nutrients are involved in its development (NRC 2001). We strengthen the immune system through:

- ▶ Targeted administration of vitamins, inorganic and organic trace elements and antioxidants
- ▶ Avoidance of milk fever
- ▶ Reduction of the negative energy balance through the use of additional energy products and fatty acids
- ▶ Balancing of amino acids in the ration

CALCIUM DEFICIENCY

It has been proven that calcium metabolism disorders are causally involved in the development of milk fever, displaced abomasum, retained placenta and mastitis (NRC 2001). By specifically acidifying the dry cow ration, including a balanced supply of magnesium to stimulate resorption, the cow can mobilize the required calcium from the body and the ration after birth (Horst and Goff, 1997, Goff et al., 1997). Whereas in lactation we consciously set the DCAD value positively through the use of cations. This enables us to increase feed intake and milk production (Iwaniuk and Erdmann, 2015). Target: 350 mEq/kg dry matter

NEGATIVE ENERGY BALANCE – UNBALANCED AMINO ACID SUPPLY

High milk yields at the beginning of lactation always result in a negative energy balance. This often leads to ketosis and as a long-term effect to fatty liver (Havlin et al., 2017). In addition, ovarian function is suppressed because the cow's nutritional and hormonal balance does not provide sufficient energy for pregnancy (Staples et al., 1998, NRC 2001). The only solution for this is the optimization of the ration by:

- ▶ Increase in dry substance absorption before calving
- ▶ Supplementary feeding of functional fatty acids – omega fatty acids – already in the dry period and a balanced fatty acid pattern in lactation. Particular attention should be paid to palm fatty acid, stearic fatty acid and unsaturated fatty acid content in the ration.
- ▶ Use of metabolically active substances such as niacin and choline
- ▶ Increase of the blood sugar content by **DextroFAT Protect®**
- ▶ Balanced ration with optimal lysine-methionine ratio
- ▶ Improvement of the digestibility of the ration through selected feed and rumen-active regulators such as **SANABI+**, **live yeasts**, **rapidly available nitrogen compounds and sugar**
- ▶ Balancing of the amino acids in the ration



HOW TO GET MORE MILK INTO THE TANK

MILK YIELD

The shape of the **lactation curve** can be used to identify potentials for increasing the performance and optimizing the herd. The lactation peak is a significant point. The height and time of the **peak** provide information on the **lactation performance LP** ($LP = \text{peak kg} \times 200$) or rather the potential **lactation extra performance LEP** ($LEP = \text{increase peak kg} \times 200$), for example. For instance, a cow with peak at 60 kg daily milk volume and optimal persistence achieves an expected lactation performance (LP) of $60 \times 200 = 12,000$ kg milk. A delayed increase in the lactation curve (peak \gg 60th day in milk) or a too shallow peak indicates metabolic disorders such as ketosis or calcium deficiency or diseases such as mastitis, metritis and retained placenta.

EFFICIENCY

The length of the lactation curve, on the other hand, is a decisive criteria for assessing the **profitability** of milk production. It shows the proportion of cows that cause additional costs due to their advanced lactation stage. The lower the **lactation day**, the higher the **IOFC** from milk production. Also the risk of overconditioning (**too high BCS**) of the cow increases with very high lactation day, whereby metabolic diseases are pre-programmed in the subsequent lactation. In addition to feeding, the key to more milk in the tank and the appropriate length of the lactation curve is good reproduction management (e.g. **voluntary waiting time** and **average herd lactation day**).

FEED INTAKE

Dry matter intake is closely linked to the cow's milk yield and live weight and is strongly influenced by her health status. The dry matter intake and the milk yield are used to calculate the feed efficiency – kg milk per kg feed DM.

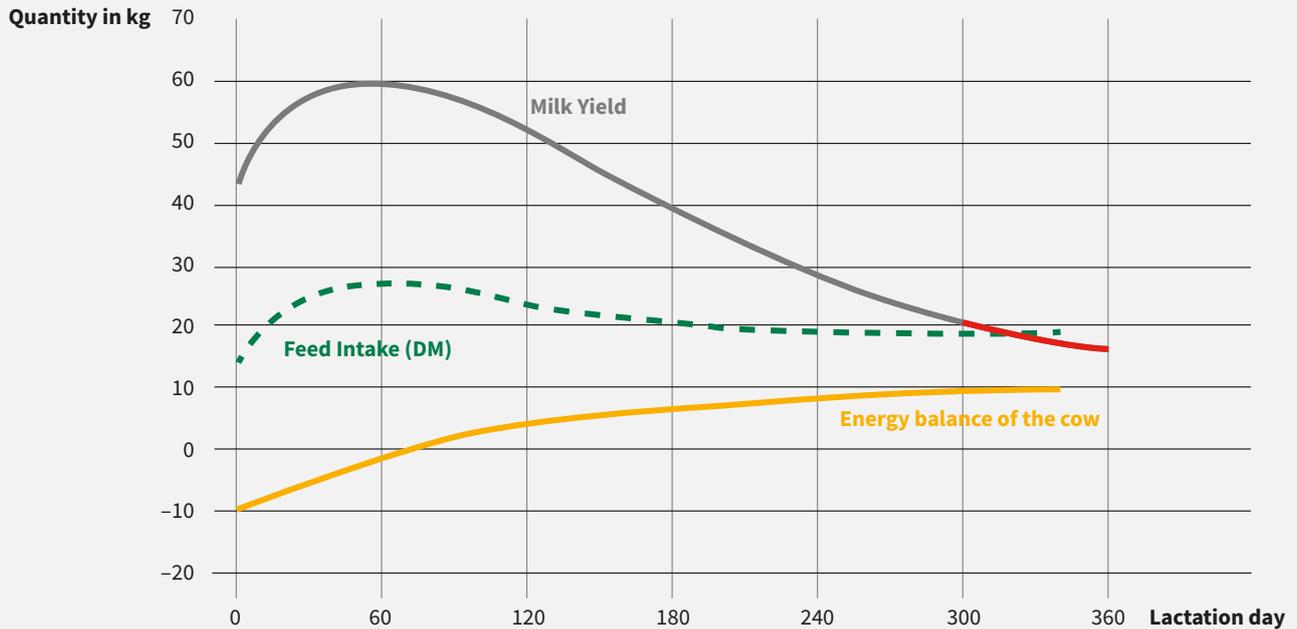
ENERGY BALANCE & DCAD

The inconsistent increase in milk yield and dry matter intake at the beginning of lactation is the cause of the initial negative **energy balance (NEB)**. The height and duration of the NEB can be controlled by the design of the feed ration and the use of feed fats. The cation-anion balance (**DCAD**) describes the ratio between the cations (sodium, potassium, calcium, magnesium) and the anions (chlorine, sulphur, phosphate) in the fed ration. Depending on the performance phase, a positive (lactation) or negative DCAD (dry period) is optimal for the cow. The fed fatty acid pattern or omega balance (Ω -Balance) contributes decisively to the cow's milk yield, fertility and the development of a stable immune system. The optimal balance between omega-6 and omega-3 fatty acids also depends on animal health, body condition and performance phase. It directly influences pro-inflammatory and anti-inflammatory regulatory processes for the prevention of e.g. metritis, retained placenta, ketosis and mastitis.

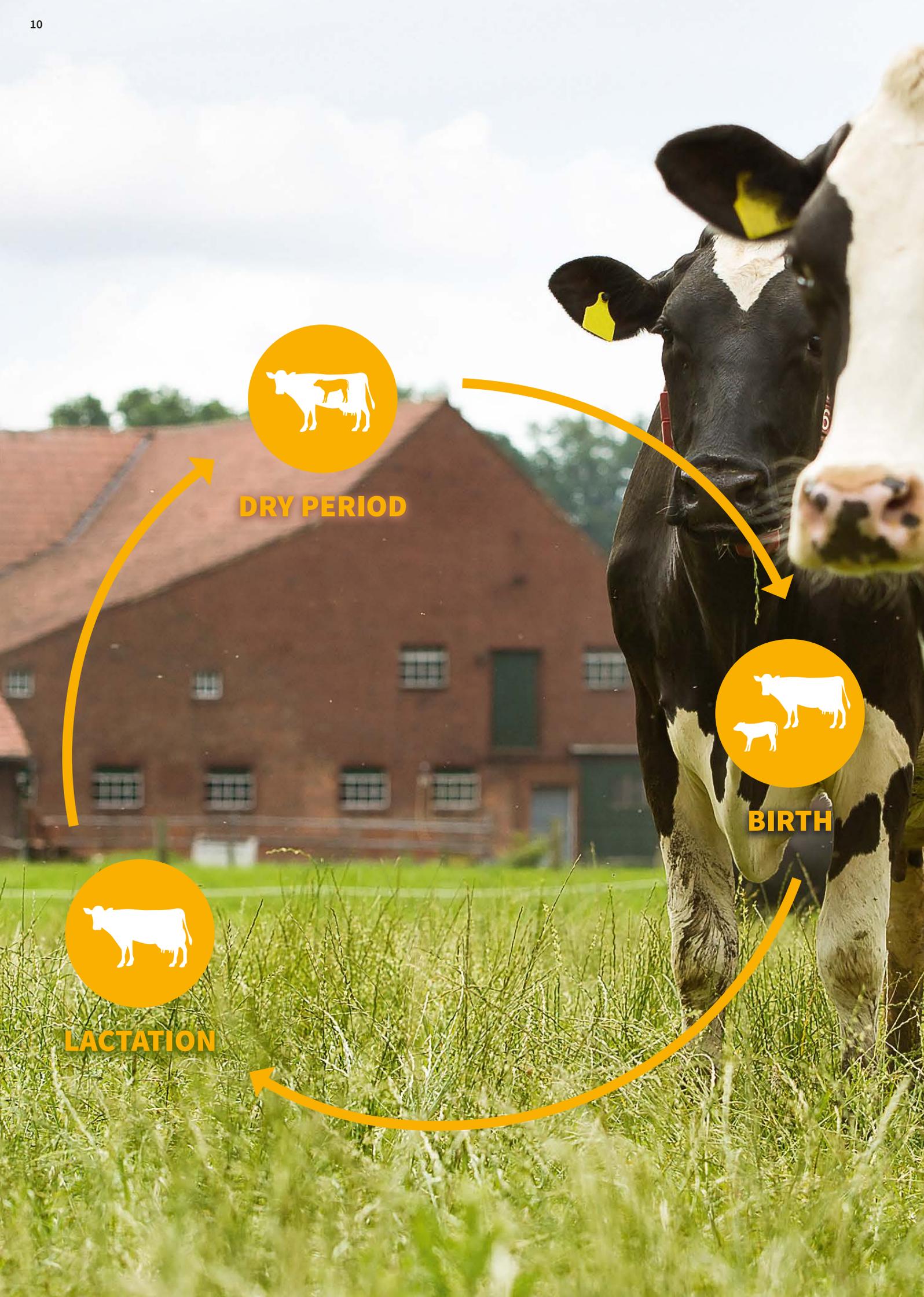
IMMUNE SYSTEM

The cow's own biological defense mechanisms (**immune system**) comprise a complex network of different organs, cell types and molecular structures. The development and activity of the immune system can be fed above all by the correct ration composition. Because the sentence also applies to the cow: "You are what you eat!" All these parameters make a decisive contribution to the sustainable increase in performance and economy of your herd. With constant monitoring of these parameters you get more milk in the tank and your herd can achieve top performance of > 2.7 kg fat + protein per cow per day.

COURSE OF LACTATION



Income over Feed Cost/IOFC	++	+++	++	+	+	-	---
Feed conversion in kg milk/kg feed dry matter	>2	1.8	1.7	1.5	1.2	1	0
Average herd lactation day	Seasonal calving	Seasonal calving	Objective	High	Too high	Too high	Too high
Status of the immune system	Pro-inflammatory	Pro-inflammatory	Anti-inflammatory	Anti-inflammatory	Anti-inflammatory	Anti-inflammatory	Pro-inflammatory
Reproduction management	Voluntary waiting period	Insemination period	Pregnant	Pregnant	Pregnant	Pregnant	Pregnant (Dry period)
Body condition (BCS)	2.5	2.75	3	3.25	3.5	3.5	3.5
Fatty acids	Ω-3	Ω-3 C16:0	C16:0				Ω-3
Cation-anion balance (DCAD)	+	+	+	+	+	+	-



DRY PERIOD



BIRTH



LACTATION





THE PERFORMANCE PHASES OF THE DAIRY COW

DRY PERIOD

1. How to train the cows' calcium metabolism for the beginning lactation?
2. How is it possible to ensure a good "energy supply" for the cow at the beginning of lactation?
3. Which parameters are available to maintain the condition of the cows?

BIRTH

1. How do cows quickly regain a high feed intake after calving?
2. How can the rumen be actively stimulated and thus the rumen performance increased?
3. Which parameters exist to prevent metabolic disorders such as ketosis and milk fever?

LACTATION

1. How is it possible to "feed" a high milk yield and high milk constituents?
2. How are fertility, hoof health and udder health promoted?
3. Which parameters exist to achieve a high income after feed costs?



DRY PERIOD

Note: The first day of lactation is not the first day after the calving but rather the first day of the dry period.

In the dry period the cow is prepared for the next lactation. In this phase, the foetus, uterus, placenta and amniotic fluid all increase strongly. The development of the mammary gland for the next lactation begins. Feeding must therefore be optimally prepared for lactation.

Above all, at the beginning of lactation, the daily increasing milk yield with accompanying high calcium and energy loss presents a great challenge for the metabolism of the dairy cow. The condition and the feed intake of the cow must also match: Cows that are too lean have reserves that are too low for lactation while overconditioned animals calve more difficultly and have a feed intake that is too low at the beginning of lactation.

The dry period forms, among other aspects, the cornerstone for the economic efficiency of the company. For an optimal management in the dry period, the following key questions must therefore be answered:

1. How is it possible to train the cows' calcium metabolism for the beginning lactation?
2. How is it possible to ensure a good "energy supply" of the cow at the beginning of lactation?
3. Which parameters exist to maintain the condition of the cows?

Your Sano consultant will be happy to assist you in answering these questions. Following you will find additional information on the nutritional requirements of your animals in the dry period and the specially adapted products of the Sano catalog.



YOUR GOALS IN THE DRY PERIOD



Optimal preparation for birth and lactation



Preventing metabolic diseases



Getting optimal cow conditions



KNOWING WHY – CONNECTIONS IN THE DRY PERIOD

QUICK READ:

- ▶ The dry cows must receive all the components of the lactating cows so that rumen bacteria and rumen villi remain potent.
- ▶ In-mixing of straw/hay ensures full cows and prevents overconditioning.
- ▶ Acid salts reduce the cation-anion balance (DCAD) and effectively prevent milk fever.

FEED INTAKE, CONDITION AND METABOLISM

Too little feed intake in the days and weeks after calving is the main cause of metabolic diseases. Feeding during the dry period has a great influence on this feed intake during lactation and thus also on the risk of metabolic diseases, such as milk fever or ketosis.

The aim of dry cow feeding is to put the cows in the right starting position for subsequent lactation, to protect them from metabolic diseases after calving and to prepare them for digestion of the lactation mixture. The mucous membrane of the rumen, reticulum and omasum plays an important role for undisturbed fore-stomach digestion and for the resorption of nutrients.

The distribution of villi size and number depend on the nature of the ration, especially the roughage feed to concentrate ratio. When changing from a ration rich in roughage feed to a ration rich in cereals or from a dry cow ration to a ration for lactating cows, the rumen mucosa needs an adaptation time of 2 to 5 weeks. The reason: The development of the villi in the rumen is directly related to the amount of fermented volatile fatty acids. An increase in propionic and butyric acid occurs in grain-rich rations and is accompanied by increased blood flow to the rumen epithelium.

This stimulates vascular sprouting and epithelial cell proliferation. The number of villi grows and also its length from 1.5 to 5.0 cm. At the transition from the dry period to early lactation, the cow must be given the opportunity to increase its villus population to increase the absorption area and thus optimize absorption. However, this process takes up to 90 days. A prerequisite for a good lactation start is therefore a dry cow feeding suitable for ruminants.

Each component should be fed every day. In this way there is never a feed change and the rumen can produce 100% performance at any time of the year. Feeding each component every day means that the cows receive all components of the lactating ration even in the dry period.

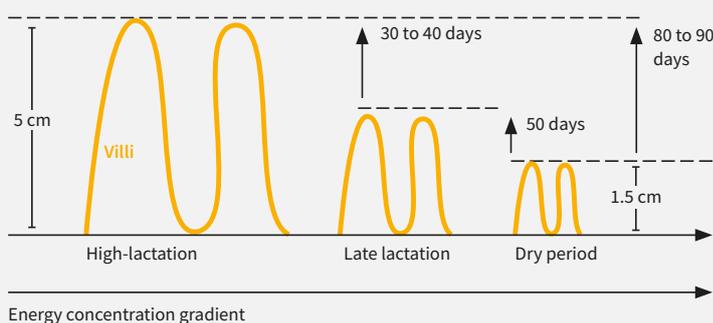
To adapt the feed to the lower nutrient requirement, this ration is “diluted” with straw/hay.

The solution: Lactating TMR + straw/hay

By adding straw/hay, the condition of the cows in the dry period can be “adjusted”. At the same time, the animals are satisfied by the large volume of the “diluted” ration. The volume of the digestive tract and the length of the rumen villi are maintained during the dry period. This allows cows to regain a high feed intake quicker after calving and reduces the loss of body mass and the risk of ketosis.

Resorption capacity – Villi development

Optimum rumen villi length (3.8 to 5.0 cm)



CALCIUM METABOLISM

The calcium metabolism is represented as follows: In the dry period, the cows require very little calcium because the milk is not present as the greatest cause of calcium extraction. If, during the dry period the cows were fed the same amount of calcium as in lactation, the calcium transport channels in the intestine would be reduced. However, a few of these channels can transport the animal's minimal requirement from the available "surplus" in the feed from the intestine to the blood. After the calving, the calcium requirement increases very rapidly with the growing amount of milk. Albeit, because only a few "transporters" are now available, not enough calcium can be transported to the blood even with very calcium-rich feed. The "post-production" of new calcium transporters is activated by the increased demand but it takes several days. Thus, the risk of parturient paresis (milk fever) is very high in the first days after the calving.

CALCIUM DEFICIENCY IN THE DRY PERIOD

Already in the dry period slight calcium deficiency should be produced by the feed. Low-calcium feeding, e.g. with calcium-free mineral feed, is difficult to implement due to the high calcium content in the basic feed, e.g. in grass silage. In most cases, the calcium content of the dry cow ration continues to exceed the dry cow's requirements. High cation contents in the basic feed – especially potassium in grasses and legumes – produce a positive cation-anion balance (DCAD) and thus increase the pH value in the metabolism.

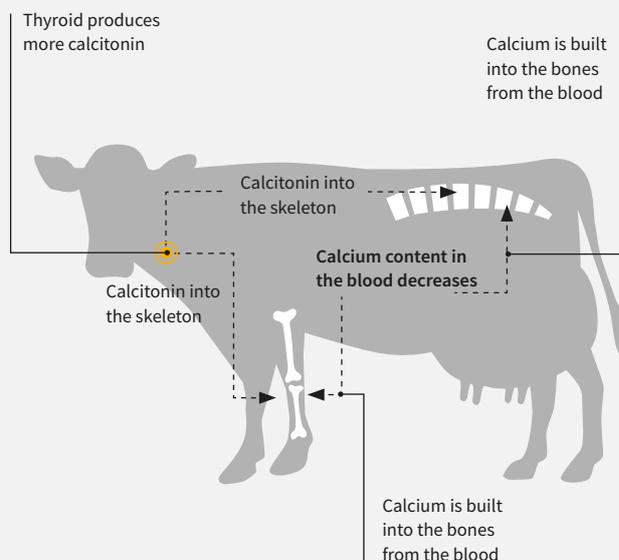
→ DCAD is calculated from the sodium and potassium (+, basic), chloride and sulphur (-, acidifying) contents in the feed:

$$\text{DCAD (mEq/kg DM)} = (\text{Na}\% \times 435 + \text{K}\% \times 256) - (\text{Cl}\% \times 282 + \text{S}\% \times 624)$$

When calculating with the DCAD formula above, a high grass ration has a DCAD of + 200 to + 250 meq/kg DM (milliequivalent per kg dry matter). During the dry period, however, this value should be significantly lower. (Staufenbiel, 2016)

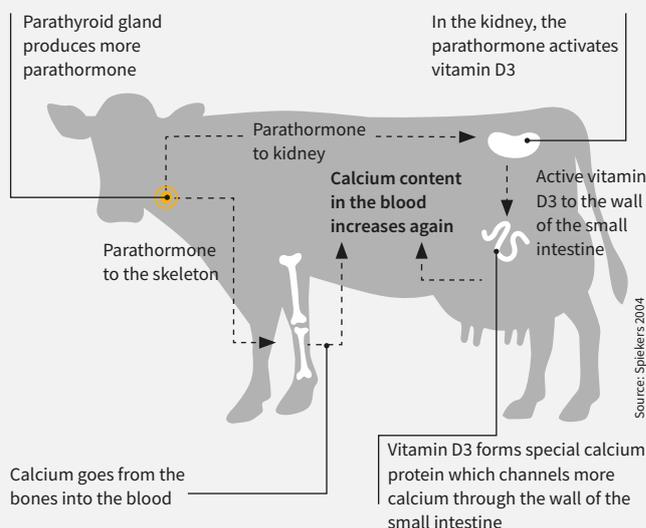
A high DCAD inhibits the mobilization of calcium from the skeleton and is the main cause of the occurrence of milk fever. Acid salts such as magnesium sulphate have a high proportion of anions (12% sulphur and 1.5% chloride). Anions lower the DCAD and have an acidifying effect. Therefore, they are an ideal antagonist to high potassium contents.

Problem: Too much calcium in the feed – calcium content in the blood increases



The concentration of free calcium in the blood increases with the use of acidic salts. This increase results in an elevated secretion of calcium through the kidneys as well as an increased calcium mobilization and an increased calcium absorption in the intestine. Through this enhanced calcium absorption, the number of "transporters" during the dry period remains high. During this, acidic salts such as, e.g., magnesium sulphate, improve the cow's calcium supply at the beginning of lactation and thereby significantly decrease the risk of milk fever and recumbency.

Problem: Too low calcium in the feed – calcium content in the blood decreases



DEVELOPED FOR YOU BY SANO: POWERFUL PRODUCTS FOR YOUR DRY COWS

Healthy, effective and full of innovative strength – that is the triad that distinguishes our products. Sano products guarantee our customers access to high-performance, high-quality feed with rich ingredients, perfectly embedded in the respective performance phase.

Prenata50®

Sano has developed the product **Prenata50®** with acid salt magnesium sulphate for the effective prophylaxis of milk fever. Together with the calcium from 200 g lactation mineral feed (e.g. **Topsan®** or a **Mipro®**), 50 g **Prenata50®** prepare the calcium metabolism for an optimal lactation start.

Mipro Pren®

Sano has developed **Mipro Pren®** for its own cow TMR. **Mipro Pren 250®** contains not only the acid salt magnesium sulphate for milk fever prophylaxis but also a complete range of minerals, trace elements, vitamins and active components as well as live yeast. **Mipro Pren 400®** also contains sugar and elementary nitrogen compounds to optimize the utilization of crude fiber and improve the synchronization of fermentation in the rumen. With 250 g **Mipro Pren 250®** or 400 g **Mipro Pren 400®** the cows are completely supplied with mineral feed and at the same time the calcium metabolism is prepared for an optimal lactation start.

RATION EXAMPLES FOR DRY PERIOD

PRENATA50®

Lactating TMR for	30 liter	35 liter
TMR of lactation with 200 g mineral feed	18 kg	16 kg
Straw/hay	3 kg	3.5 kg
Prenata50®	50 g	50 g



MIPRO PREN 400®

	A lot of grass silage Little maize silage	50% grass silage 50% maize silage	Little grass silage A lot of maize silage
Grass silage	12 kg	8 kg	5 kg
Maize silage	4 kg	8 kg	12 kg
Straw/hay	3.5 kg	3.5 kg	3.5 kg
Energy concentrate feed	2.5 kg	2.2 kg	1.8 kg
Energy concentrate feed	1 kg	1.2 kg	1.8 kg
Mipro Pren 400®	400 g	400 g	400 g





DRY PERIOD – PRODUCT LINES

SANO MIPRO®

Sano Mipro products are uniquely innovative mineral feeds supplemented with functional active ingredients for rumen synchronization and optimization of the rumen environment. Our Mipro product line offers successful dairy farmers everything that cows need for efficient milk production. The Mipro products boost the feed intake, stimulate rumen function, increase the milk yield with beneficial milk constituents and promote the health and useful life of the cows.

SANO MINERAL FEED

Mineral feeds are a special form of supplementary feed. They are mainly composed of inorganic constituents and are suitable for supplementing the ration with bulk and trace elements as well as vitamins. The patented Sano mixing process offers our customers an optimal homogeneity of the ingredients and ensures an optimized, targeted care of your animals.

SANO MIPRO® – THE SANO COMPLETE SOLUTION FOR MINERAL FEEDS WITH FUNCTIONAL PROPERTIES FOR MIXING RATIONS WITH BEST RUMEN PERFORMANCE

**MIPRO PREN®
Nutrient synchronization for the rumen preparation and milk fever prophylactics for the dry cow TMR**

	Minerals, vitamins, trace elements	Acid salts to prevent milk fever	Live yeast	Sugar	Nitrogen compounds	Product benefit
 Mipro Pren 400®	✓	✓	✓	✓	✓	<ul style="list-style-type: none"> ▶ Effective milk fever prophylaxis ▶ Healthy udders ▶ Fast expulsion of the afterbirth ▶ Fast sugar energy improves growth of desired rumen microbes ▶ Elementary, natural nitrogen compounds prepare the rumen even better for lactation start
 Mipro Pren 250®	✓	✓	✓			<ul style="list-style-type: none"> ▶ Effective milk fever prophylaxis ▶ Healthy udders ▶ Optimum lactation start ▶ Fast expulsion of the afterbirth

SANO MINERAL FEED – FOR THE BEST POSSIBLE SUPPLY OF ANIMALS WITH MINERAL AND ACTIVE COMPONENTS OF SPECIAL QUALITY

**PRENATA50®
Dry cow supplement for milk fever prophylaxis**

	Minerals, vitamins, trace elements	Acid salts to prevent milk fever	Product benefit
 Prenata50®	Supplemented from additional lactation mineral	✓	<ul style="list-style-type: none"> ▶ Neutralizes potassium as a problem factor ▶ Stabilizes muscle metabolism ▶ Prevents stress ▶ Ensures that cows are more calm ▶ Prevents recumbency

SANO SUCCESS STORY

25%

**less cell numbers and
udder inflammations**

“Our cows also no longer have any stress with the feed switch. With this, the cell numbers and udder infections have dropped by a good 25%. We have exceeded all goals with Sano. Since the feeding of Mipro Pren 250®, the initial capacity has grown considerably and the feed intake at the beginning of lactation has markedly increased.”

Udo Karstens

Company profile:

Agrargesellschaft Krusendorf mbH

790 ha farmland

676 ha pasture

22 employees

400 dairy cows

400 young cattle

230 mother cows



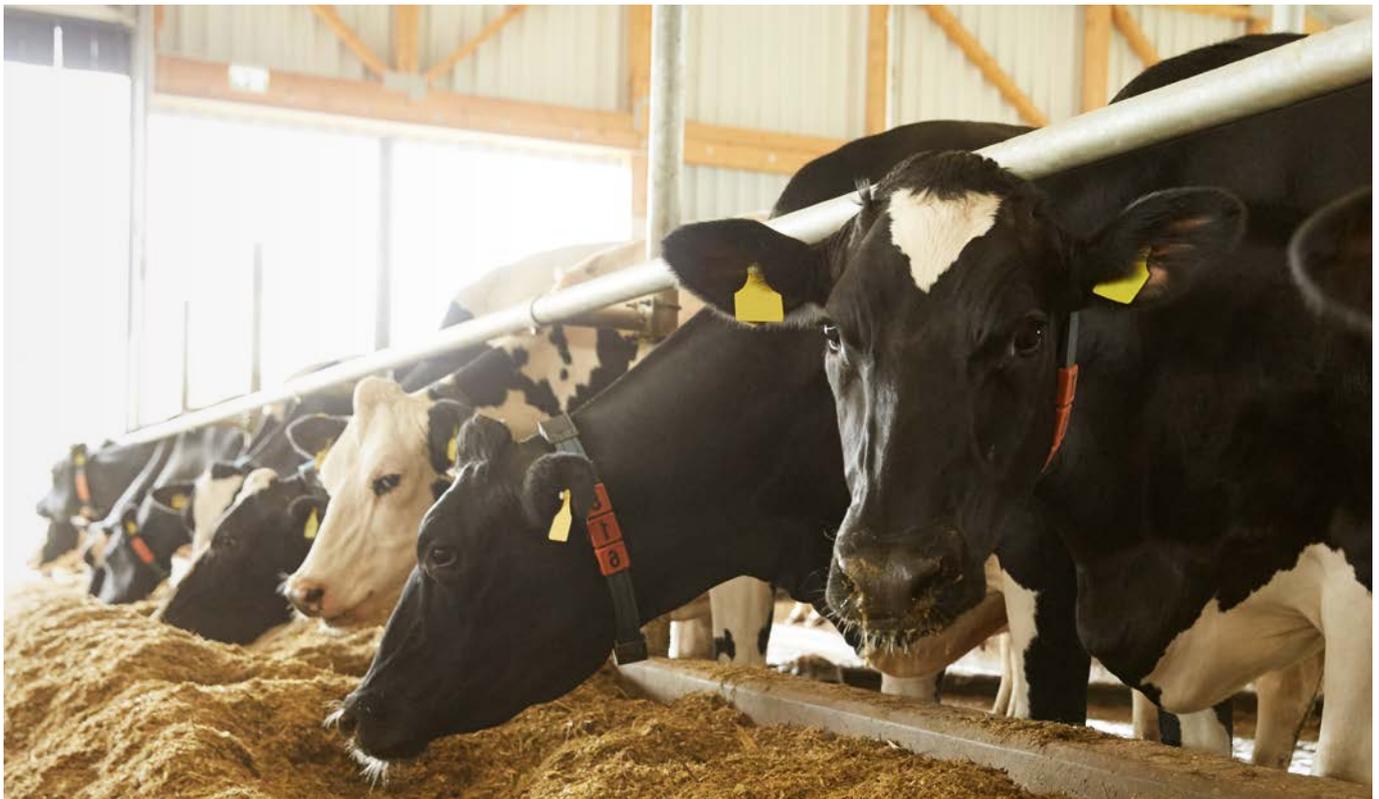
BIRTH

With calving, the feed intake of the cow is still very low. The biomass in the rumen decreases. The lactation begins after calving. With this, the daily milk yields increase very intensely during the first weeks. Many cows, however, exhibit a low feed intake at the beginning of lactation. The nutrient demand for the milk extraction is not covered in the first days and weeks. The greater the resulting negative energy balance in individual animals, and the longer this endures, the higher the risk of metabolism disorders such as ketosis, abomasal displacement and retained placentas. The challenge: To quickly prompt the animals to feed again.

Therefore, the following key questions need to be answered for optimal postnatal management:

1. How do cows quickly regain a high feed intake after calving?
2. How can the rumen actively be stimulated and thus the rumen performance increased?
3. Which parameters are available to prevent metabolic disorders such as ketosis and milk fever?

Your Sano consultant will be happy to help you in answering these questions. Following you will find additional information on the nutritional requirements of your cows during the birth phase and the specially adapted products of the Sano catalog.



YOUR GOALS REGARDING THE BIRTH



High feed intake early on



Active rumen stimulation



Preventing metabolic disorders



KNOWING WHY – CONNECTIONS IN THE BIRTH PHASE

QUICK READ:

- ▶ A fitness drink with plenty of water after calving fills the rumen, is quickly resorbed and thus stimulates eating.
- ▶ Brewer's yeast and linseed stimulate the cows' appetite and thus reduce the risk of ketosis.
- ▶ Live yeast improves rumen environment and fermentation performance.

FEED INTAKE AND RUMEN-STIMULATION

A high feed intake and activation of the rumen can be achieved by stimulating, tasty components and a lot of fluid. This is because when the cow absorbs a lot of fluid, the rumen fills up. The fluid is quickly absorbed through the villi and the rumen is empty again. This animates the cow to refill the rumen. For cattle, brewer's yeast and linseed are particularly appetizing components. These stimulate feed intake and the cow starts eating large quantities early on. After the low feed intake before and during birth, the conditions for rumen microbes immediately after birth are sub-optimal.

In this case, live yeast improves the rumen environment and thus supports fermentation performance. The activation of energy metabolism and rumen fermentation in combination with the most important aspect – the high feed intake – helps to effectively prevent metabolic disorders.

SANO FITNESS DRINK FOR OPTIMAL LACTATION START AND BEST ENERGY METABOLISM

Healthy, effective and full of innovative force – that is the triad that distinguishes our products. Sano products guarantee our clients access to effective, high-quality feed products with nourishing contents, perfectly embedded in the respective performance phase.

BOVIFIT® SC

Sano has designed **BoviFit® SC** to stimulate the feed intake of rumen microbes and energy metabolism. The advantage of **BoviFit® SC** is the combination of various stimulating components such as brewer's yeast, linseed and live yeast to form a tasty drink for cows.



Application:

Dissolve one bag of **BoviFit® SC** (1 kg) in 20 liters of warm water (25–30 °C) and administer to the cow immediately after calving.

BOVIFIT® SC: Sano fitness drink after calving



Electrolytes	Dextrose and lactose	Brewer's yeast and linseed	Live yeasts
✔	✔	✔	✔

Product benefit

- ▶ High feed intake
- ▶ Optimum lactation start
- ▶ High milk yield
- ▶ Long service life
- ▶ Promotes the expulsion of afterbirth
- ▶ Causes a quick filling and activation of the rumen
- ▶ Improves feed conversion in the rumen
- ▶ Reduces displacement of the abomasum





LACTATION

In lactation, especially at high milk yields, it is very important that cows absorb and optimally convert many nutrients to ensure high milk yields, good milk ingredients, good fertility and animal health.

The following key questions must therefore be answered for optimal management in the lactation phase.

1. How is it possible to “feed” a high milk yield and high milk constituents?
2. How are fertility, hoof and udder health promoted?
3. Which parameters exist to achieve a high income after feed costs?

Your Sano consultant will be happy to help you in answering these questions. Following you will find additional information on the nutritional requirements of your lactating cows and the specially adapted products in the Sano catalog.



YOUR GOALS IN LACTATION



High milk yield and valuable milk constituents



Fertile cows with healthy udders and claws



High Income over Feed Cost (IOFC)



KNOWING WHY – CONNECTIONS IN THE LACTATION

QUICK READ:

- ▶ You will reach the highest rumen biomass and thus more milk if all energy and protein components are optimally synchronized.
- ▶ The cow loses 10 g of raw ash for every liter of milk. Therefore: Feed 10 g of mineral feed per liter of milk every day.
- ▶ Disease patterns can be effectively avoided with a demand-oriented, targeted supply of nutrients and active substances.
- ▶ Sano works with the ration calculation program AMTS. This allows us to calculate the nutrient supply and rumen synchronization even more precisely.
- ▶ AMTS can optimize your ration individually to achieve a higher IOFC (Income over Feed Cost).

MILK YIELD AND MILK CONSTITUENTS

The basis for successful lactation is already laid during the dry period with the Sano feeding concept for dry lactation. Feeding each component every day means always keeping the rumen at 100% performance. Therefore, lactation feed must meet certain criteria:

1. The basic feed must be of high quality. Avoid nutrient losses and secondary fermentation. Before ensiling, treat your basic feed with a silage additive, e.g. **Labacsil Duo®**.
2. The feed must smell and taste good so that the cows consume at least 22 kg dry substance daily starting on the thirtieth lactation day.
3. The feed must neither be too moist nor too dry. The highest feed intake is achieved at 42 to 50% dry matter in the TMR.
4. Mix all the components that are fed very well into the ration to ensure that the cow is unable to select.
5. Make the ration suitable for ruminants (lactating cows: about 55 ± 5 chews/bites).
6. The components of the ration must be available throughout the year.
7. The nutrients in the feed must be coordinated. This means: The ratio of energy to the other nutrients must be right.
8. With a slight protein surplus in the ration, especially in the last third of lactation, you reduce the risk of obesity and promote body condition.
9. The feed must stimulate the animals' metabolism and return minerals, trace elements and vitamins lost through milk: One liter of milk contains approx. 10 g raw ash. The crude ash consists of bulk elements (such as calcium), trace elements and vitamins. Therefore: feed 10 g of mineral feed per liter of milk every day.
10. Offer free feed and water.

Note: The rumen performance is optimal when the microbial biomass is at its highest and the rumen environment is precisely adapted to the needs of the microbes. You can achieve the highest microbial biomass if the ration is optimally synchronous. This means that all nutrients are present in the rumen at the same time in constant amounts. Also, slow, medium and rapid degradable crude protein and slow, medium and rapid degradable energy fit together. In addition, there must be enough sugar available for a good digestion of raw fiber. In accordance with the sugar content, the microorganisms also need rapidly available nitrogen sources as "nutrition". The rumen environment is optimal for the microbes if the pH value is permanently slightly above 6 and no oxygen is present.



UDDER AND HOOF HEALTH, FERTILITY STIMULATION

In order to optimally ensure the performance potential of your animals in the lactation phase, disease patterns must be prevented. To do so, the following must be observed:

1. Promote udder health with a combination of vitamin E and selenium, niacin and zinc (active ingredient complex **Mastitisan**[®]). With this and an optimal hygiene management and milking technique management, you will effectively decrease the number of mastitis incidents and the cell content of your bulk tank.
2. Support hoof health with the combination of biotin, zinc, copper and sulphur (**Kerasan**[®] complex of active substances). With suitable floors in the stable and optimum hoof care management, you can effectively reduce the number of hoof diseases in your herd.
3. Stimulate the fertility with a combination of vitamin A, vitamin E, selenium, manganese and zinc (active ingredient complex **Fertisan**[®]). With this and a high supply of energy for an appropriate blood sugar level for the stimulation of ovulation and lodging of the egg, you improve the insemination success.

HIGH INCOME OVER FEED COSTS

The income over feed cost (IOFC) is an important indicator of the economic efficiency of feed use for the produced milk yield. The IOFC is calculated as follows:

$$\text{IOFC} = (\text{milk price} \times \text{milk quantity/cow and day}) - (\text{feed costs/cow and day})$$

Since feeding, feed costs and milk yield vary from farm to farm, the IOFC must be calculated individually for each farm. In addition, the IOFC is also dependent on fluctuating milk prices and feed costs. IOFC should always be as high as possible, regardless of milk price, milk yield and feed costs. Because the dairy farm generates its income from the IOFC.

You can achieve a high IOFC by adjusting feed costs (feed components) and milk yield:

- ▶ Use only high-quality components, because any component in the feed that does not enhance the ration costs money. Every component that upgrades the ration brings more milk and therefore more money.
- ▶ Ration determination: Where is the procurement profitable, where is the use of components of one's own cultivation preferable? Which concentrated feed components are appropriate for the potential of your herd, for your basic feed and for your farm conditions and in what quantities?
- ▶ Make the ration as simple as possible. This reduces the amount of work involved in feeding and possible errors are avoided.

MANAGING FEED COSTS SUCCESSFULLY WITH SANO AND AMTS

Sano exclusively offers its customers the improvement of company-specific IOFC using the latest American calculation methods (AMTS). The Sano Ration Calculation 2.0 is based on the American model and optimizes milk yield and feed efficiency.

If you are interested in an exclusive Sano Ration Calculation 2.0 with AMTS, please contact your Sano consultant



DEVELOPED FOR YOU BY SANO: POWERFUL PRODUCTS FOR LACTATION

Healthy, effective and full of innovative strength – that is the triad that distinguishes our products. Sano products guarantee our customers access to high-performance, high-quality feed with rich ingredients, perfectly embedded in the respective performance phase.

Mineral feed

- ▶ **Camisan®** for dairy cows with the active ingredient combination **Kerasan®** for healthy claws and **Mastitisan®** for a healthy udder
- ▶ **Profisan®** for dairy cows at a very high performance level with all **Camisan®** components and additionally with partially organically bound trace elements, vitamin C and choline
- ▶ **Topsan®** for dairy cows at the highest performance level with all components made of **Profisan®** and 100% organically bound copper and zinc, higher vitamin content and the active ingredient combination **Fertisan®** to stimulate fertility

Mipro® – Mineral feed with functional properties for the rumen
Sano has developed an innovative, unique product line for farms with TMR feeding, which supplements and combines the classic mineral feed with active ingredient combinations for rumen synchronization and optimization of the rumen environment.

The Mipro® product line consists of the following high-quality components and acts as follows:

- ▶ The “mineral core” made of **Profisan®** with minerals, in part organically bound trace elements, vitamins A, D, E, C and vitamin B complex, biotin, choline, **Kerasan®** and **Mastitisan®**.
- ▶ The active ingredients of live yeast cultures, buffers and **RumenSan®** optimize the rumen level, improve the feed conversion ratio and boost the output of the starch-digesting bacteria
- ▶ The active ingredients sugar and elemental nitrogen improve rumen synchronization and optimize fiber utilization
- ▶ Rumen-protected methionine optimizes the amino acid pattern on the small intestine and thus improves milk protein synthesis

SANO SUCCESS STORY

INCREASE IN MILK YIELD TO 12,000 KG

per cow per year



“My cows are worth it to me that I supply them with **Mipro HP 600®** in the best possible way with minerals, vitamins, trace elements and active substances. And they thank me with lots of milk, high constituents and good health.”

Farmer Friedrich Köster

Company profile:
Köster KG
100 Holstein dairy cows
Holstein breeding farm



SANO MIPRO® – SANO MINERAL FEED COMPLETE SOLUTION WITH FUNCTIONAL PROPERTIES FOR MIXING RATIONS WITH BEST RUMEN PERFORMANCE

PARTIAL TMR WITH MIPRO®

Partial TMR for 25 liters	A lot of grass silage Little maize silage	50% grass silage 50% maize silage	Little grass silage A lot of maize silage
Grass silage	28 kg	20 kg	12 kg
Maize silage	10 kg	20 kg	28 kg
Straw/hay	0.3 kg	0.5 kg	0.5 kg
Energy concentrated feed	4.7 kg	2.9 kg	1.7 kg
Protein concentrated feed	1.2 kg	2.4 kg	3.2 kg
Mipro T 350®	350 g	350 g	350 g



FULL TMR WITH MIPRO®

Full TMR for 35 liters	A lot of grass silage Little maize silage	50% grass silage 50% maize silage	Little grass silage A lot of maize silage
Grass silage	28 kg	20 kg	12 kg
Maize silage	10 kg	20 kg	28 kg
Straw/hay	0.3 kg	0.5 kg	0.5 kg
Energy concentrated feed	6.5 kg	6.0 kg	5.0 kg
Protein concentrated feed	2.5 kg	3.0 kg	4.0 kg
Mipro M 500®	500 g	500 g	500 g



MINERAL FEED – FOR THE BEST POSSIBLE SUPPLY OF ANIMALS WITH MINERAL AND ACTIVE SUBSTANCES OF SPECIAL QUALITY

PROFISAN®

TMR for 33 liters	A lot of grass silage Little maize silage	50% grass silage 50% maize silage	Little grass silage A lot of maize silage
Grass silage	29 kg	18 kg	10 kg
Maize silage	10 kg	18 kg	27 kg
Straw/hay	-	0.3 kg	0.8 kg
Energy concentrated feed	7 kg	6 kg	4.5 kg
Protein concentrated feed	2.5 kg	3.5 kg	4.5 kg
Profisan®	330 g	330 g	330 g



SANO SUCCESS STORY

+ 1,000 KG

more milk yield per cow per year



“The feeding concepts with Sano products are successful and the price-performance ratio is ideal. That’s why I use Profisan®.”

Christoph Angermair

Milk yield per cow per year increased by 1,000 kg on his farm within two years.

Company profile:

- 55 diary cows
- 65 young cattle
- 26 ha farmland
- 32 ha pasture





LACTATION – PRODUCT LINES

SANO MIPRO®

Sano Mipro® products are uniquely innovative mineral feeds, supplemented by functional active ingredients for rumen synchronization and optimization of the rumen environment. Our Mipro® product line offers successful dairy farmers everything that cows need to produce milk in a profitable way. Mipro® products increase feed intake, stimulate the rumen function, increase the quantity of milk with good milk ingredients and promote health and useful life.

SANO MINERAL FEED

Mineral feeds are a special form of supplementary feed. They are mainly composed of inorganic constituents and are suitable for supplementing the ration with bulk and trace elements as well as vitamins. The patented Sano mixing process offers our customers an optimal homogeneity of the ingredients and ensures an optimized, targeted care of your animals.

SANO MIPRO® – SANO MINERAL FEED COMPLETE SOLUTION WITH FUNCTIONAL PROPERTIES FOR MIXING RATIONS WITH BEST RUMEN PERFORMANCE

OVERVIEW OF THE FUNCTIONAL ACTIVE COMPONENTS

	MIPRO® line	Minerals, vitamins, trace elements	Live yeast	Sugar	Nitrogen compounds	Rumen-protected methionine	RumenSan®	SANABI+
Full TMR	 Mipro RB 600®	✓	✓	✓	✓	✓	✓	✓
	 Mipro HP 600®	✓	✓	✓	✓	✓	✓	
	 Mipro M 500®	✓	✓	✓	✓	✓		
	 Mipro NU 500®	✓	✓	✓	✓	✓		
Partial TMR	 Mipro RS 350®	✓	✓	✓	✓		✓	
	 Mipro T 350®	✓	✓	✓	✓			
	 Mipro NU 350®	✓	✓	✓	✓			

SANO MIPRO® – Sano mineral feed complete solution with functional properties for mixing rations with best rumen performance

For partial TMR feeding (25–30 kg milk from partial TMR): 350 g/animal per day

- Mipro NU 350® – for rations with >60% grass
- Mipro T 350® – for rations with balanced grass to maize ratio or >50% maize
- Mipro RS 350® – for rations with balanced grass to maize ratio or >50% maize

For full TMR feeding (> 30 kg milk from full TMR): 500 or 600 g/animal per day

- Mipro NU 500® – for rations with >60% grass
- Mipro M 500® – for rations with balanced grass to maize ratio or >50% maize
- Mipro HP 600® – for rations with balanced grass to maize ratio or >50% maize
- Mipro RB 600® – for rations with high maize and starch contents

Benefit from our product know-how and let your regional consultant advise you by our expert consultants from the region in an individual business interview

MINERAL FEED – FOR THE BEST POSSIBLE SUPPLY OF ANIMALS WITH MINERAL AND ACTIVE INGREDIENTS OF SPECIAL QUALITY

MINERAL FEED PRODUCT LINE

Mineral feed	Minerals, vitamins, trace elements	Active ingredients	Product benefit
 <p>Topsan® Sano Mineral Complex for dairy cows with maximum performance</p>	✓	Mastitisan® , Kerasan® , choline, vitamin C, partially organically bound trace elements, zinc and copper 100% organically bound, Fertisan®	<ul style="list-style-type: none"> ▶ High milk yield ▶ Healthy udders ▶ Stable claws ▶ Best fertility
 <p>Profisan® Sano Mineral Complex for dairy cows with very high performance</p>	✓	Mastitisan® , Kerasan® , choline, vitamin C, partially organically bound trace elements	<ul style="list-style-type: none"> ▶ High milk yield ▶ Healthy udders ▶ Stable claws ▶ Long service life
 <p>Camisan® Sano Mineral Complex for dairy cows with high performance</p>	✓	Mastitisan® , Kerasan®	<ul style="list-style-type: none"> ▶ High milk yield ▶ Healthy udders ▶ Stable claws

SANO ACTIVE INGREDIENT COMPLEX

Kerasan®

Kerasan® is an active ingredient complex specially developed for cows, consisting of vitamins, organically bound trace elements and specialties that promote the health of the claws. Biotin reduces horn abrasion and hardens the claws.

Mastitisan®

Mastitisan® is an active ingredient complex specially developed for cows, consisting of vitamins, organically bound trace elements and specialties that promote udder health and prevent udder diseases. Mastitisan® reduces the duration of existing udder diseases.

Fertisan®

Fertisan® is a complex of active ingredients specially developed for cows, consisting of organically bound trace elements, vitamins and specialties that stimulate the fertility of cows and additionally improve the health and vitality of calves.

SANO SUCCESS STORY

+ 1,300 KG**more milk yield
per cow per year**

“The consultancy provided by Sano has enabled us to develop steadily. We use the mineral, vitamin and complex of active ingredients Mipro NU 500®. In this way I have everything in one product.”

Annika Rose

Increase in milk yield by 1,300 kg per cow

Company profile:
Erzeugergesellschaft Branchewinda mbH
450 Holstein dairy cows plus own offspring
2.000 fattening pigs
Sheep farming
Biogas

PRODUCTS FOR DAIRY COWS

SANO MIPRO® – THE COMPLETE SOLUTION FOR MINERAL FEEDS WITH FUNCTIONAL PROPERTIES FOR MIXED RATION WITH BEST RUMEN PERFORMANCE

Dry period			Birth	Lactation		
 MIPRO PREN 250® Prevention of milk fever for dry cows	 MIPRO PREN 400® Milk fever prophylaxis and best fiber utilization for dry cows		 BOVIFIT SC® The fitness drink after calving	 MIPRO NU 350® For partial TMR with >60% grass	 MIPRO T 350® For partial TMR with ≥50% maize	 MIPRO RS 350® For partial TMR with ≥50% maize
				 MIPRO NU 500® For full TMR with >60% grass	 MIPRO M 500® For full TMR with ≥50% maize	 MIPRO HP 600® For full TMR with ≥50% maize
				 MIPRO RB 600® For full TMR with high maize and starch contents		

SANO MINERAL FEED – FOR THE BEST POSSIBLE SUPPLY OF FEED WITH MINERALS AND ACTIVE INGREDIENTS OF HIGH QUALITY

Dry period			Birth	Lactation		
 PRENATA50® The TMR dry cow supplement	 CAMISAN® For dairy cows with a high performance level		 BOVIFIT SC® The fitness drink after calving	 CAMISAN® For dairy cows with a high performance level	 PROFISAN® For dairy cows with a very high performance level	 TOPSAN® For dairy cows at the highest performance level
 PROFISAN® For dairy cows with a very high performance level	 TOPSAN® For dairy cows at the highest performance level					

SUPPLEMENTARY PRODUCTS

Dry period			Birth	Lactation		
 DEXTRIFAT® RAPS, DEXTRIFAT PROTECT® Highly concentrated energy for cows	 LINOMILK® The energy package for an optimal lactation start		 STIMUDIGEST® The appetite stimulator for rumen stimulation and metabolic activation	 DEXTRIFAT® RAPS, DEXTRIFAT PROTECT® Highly concentrated energy for cows	 LINOMILK® The energy package for an optimal lactation start	 DAIRYFAT C16 Rumen-stable C16:0 fatty acid for more milk and milk fat
 MULTISAN NEKTAR® Subar cocktail component for rumen synchronization and optimization of rumen metabolism	 FERTISAN® Fertility activator	 LINAMIN Linseed and amino acids for fertility, more milk and milk protein		 MULTISAN NEKTAR® Subar cocktail component for rumen synchronization and optimization of rumen metabolism	 FERTISAN® Fertility activator	 LINAMIN Linseed and amino acids for fertility, more milk and milk protein
 LABACSIL® For tasty grass and maize silages	 KRISTALL HEFE® The rumen power pack for more life in the rumen			 LABACSIL® For tasty grass and maize silages	 KRISTALL HEFE® The rumen power pack for more life in the rumen	 STIMUDIGEST® The appetite stimulator for rumen stimulation and metabolic activation

PRODUCTS FOR CALVES

SANO MILK REPLACERS, SUPPLEMENTS AND ADDITIVES – FOR THE BEST POSSIBLE SUPPLY OF FEED WITH NUTRIENTS AND ACTIVE SUBSTANCES OF HIGH QUALITY

Colostrum phase		Drinking phase		
 COTOSAN PLUS® The colostrum supplement for healthy and resistant calves	 LATTECCINO® Makes cow's milk valuable and promotes resistance	 SANOLAC STARTINO® Calf milk for the metabolic sprint	 SANOLAC® SPRINT Acidified milk for intensive rearing	 AM18 Thick and creamy milk with skimmed milk powder
		 MILSAN® Calf milk for rapid rumen development and safe weaning	 SANOLAC LILACITRO® The milk replacer including acidification	 MILLI M® Colostrum milk for the first weeks of life
 MEGGI MÜSLI® Top calf muesli for quality calves	 MEGGI 10® The safe calf starter concentrate for quality calves	 MEGGI 10® The safe calf starter concentrate for quality calves	 MEGGI MÜSLI® Sano calf starter for best rumen development	

SUPPLEMENTARY PRODUCTS

Colostrum phase		Drinking phase	
 ACIDOSAN® Makes calf's milk durable and protects against diarrhea	 SANOLYTE® Best electrolyte supplement for calf diarrhea	 ACIDOSAN® Makes calf's milk durable and protects against diarrhea	 SANOLYTE® Best electrolyte supplement for calf diarrhea
 ANTILAXAN® The active ingredient combination against calf diarrhea		 ANTILAXAN® The active ingredient combination against calf diarrhea	

PRODUCTS FOR YOUNG CATTLE

SPECIAL YOUNG CATTLE TMR

Young cattle rearing 1, 2, 3



PRIMASAN®
The Sano Mineral Complex for a good development in young cattle

SUPPLEMENTARY PRODUCTS

Young cattle rearing 1, 2, 3



KRISTALL HEFE®
The rumen power pack for more life in the rumen



FERTISAN®
Fertility activator



LABACSIL®
Sano silage additives for tasty and high-quality grass and maize silage

PRODUCTS FOR BEEF CATTLE

SANO MILK REPLACERS, SUPPLEMENTS AND ADDITIVES – FOR THE BEST POSSIBLE SUPPLY OF FEED WITH NUTRIENTS AND ACTIVE INGREDIENTS OF HIGH QUALITY

Drinking phase

 <p>AM18 Thick and creamy milk with skimmed milk powder</p>	 <p>MILLI M® Colostrum milk for the first weeks of life</p>	 <p>MILSAN® Calf milk for rapid rumen development and safe weaning</p>	 <p>SANOLAC LILACITRO® The highly soluble milk with acid combination</p>	 <p>MEGGI MÜSLI® Top calf muesli for quality calves</p>	 <p>MEGGI 10® The safe calf starter concentrate for quality calves</p>
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SANO MIPRO® – THE COMPLETE SOLUTION FOR MINERAL FEEDS WITH FUNCTIONAL PROPERTIES FOR MIXED RATION WITH BEST RUMEN PERFORMANCE

Starting phase

 <p>MIPROBULL 250® The Sano nutrient complex with best rumen performance for bull fattening TMR</p>	 <p>MEGGI 10® The safe calf starter concentrate for quality calves</p>
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Bull fattening

 <p>MIPROBULL 250® The Sano nutrient complex with best rumen performance for bull fattening TMR</p>
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SANO MINERAL FEED – FOR THE BEST POSSIBLE SUPPLY OF FEED WITH MINERAL AND ACTIVE SUBSTANCES OF HIGH QUALITY

Starting phase

 <p>BULLY® For resistant bull fattening with best weight gain</p>	 <p>BUMISAN® For resistant bull fattening with good weight gain</p>	 <p>MEGGI 10® The safe calf starter concentrate for quality calves</p>
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Bull fattening

 <p>BULLY® For resistant bull fattening with best weight gain</p>	 <p>BUMISAN® For resistant bull fattening with good weight gain</p>
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SUPPLEMENTARY PRODUCTS

Drinking phase

 <p>ACIDOSAN® Makes calf's milk durable and protects against diarrhea</p>	 <p>SANOLYTE® Best electrolyte supply for calf diarrhea</p>
 <p>ANTILAXAN® The active ingredient combination against calf diarrhea</p>	

Starting phase

 <p>KRISTALL HEFE® The rumen power pack for an ideal rumen environment and better nutrient utilization</p>	 <p>MULTISAN NEKTAR® Sugar cocktail component for rumen synchronization and optimization of the utilization of fibers and nitrogen</p>
 <p>LABACSIL® Sano silage additives for tasty and high-quality grass and maize silage</p>	

Bull fattening

 <p>KRISTALL HEFE® The rumen power pack for an ideal rumen environment and better nutrient utilization</p>	 <p>MULTISAN NEKTAR® Sugar cocktail component for rumen synchronization and optimization of the utilization of fibers and nitrogen</p>
 <p>LABACSIL® Sano silage additives for tasty and high-quality grass and maize silage</p>	

THE MOST IMPORTANT KEY FIGURES FOR PROFITABLE MILK PRODUCTION

KEY FIGURES DAIRY COWS

Dairy cows	Dual purpose breeds	Dairy breeds
Lactation performance (305 days)	8,000–10,000 kg	8,000–12,000 kg
Lifetime performance	> 24,000 kg	> 30,000 kg
Milk fat	4.2%	4.0%
Lactoprotein	3.5%	3.4%
Somatic cells	< 150,000	< 150,000
Herd lactation day	150–180	150–180
Useful life (lactations)	> 3	> 3
Remounting rate	< 30%	< 30%
Feed intake lactation day 30–100	> 23 kg	> 25 kg
Feed efficiency (kg milk/kg dry substance)	1.3–1.5	1.5–1.7
Performance/lifetime	> 15 kg	> 15 kg
Performance/lactation day	> 25 kg	> 25 kg

Objective 1 is IOFC: Income over Feed Cost = milk income minus feed costs

Calculation IOFC = kg milk × price per kg milk – feed costs

MANAGING FEEDING COSTS MORE SUCCESSFULLY: RATION CALCULATION 2.0

MORE MILK PERFORMANCE AND FEED EFFICIENCY – WITH SANO AND AMTS CLOSER TO REALITY

Get consulting on the benefits of American feed analysis and ration calculations for German farmers and improve your operating results. The feed analysis according to American methods with determination of the digestibility of the various nutrients and subsequent ration calculation with a dynamic calculation program can predict the actual digestion processes in the rumen and small intestine much more accurately. The advantages of the American method for you are clear:

- ▶ More precise feed inspection with the American CNCP analysis system
- ▶ More precise ration calculation with the AMTS dynamic feed calculation program
- ▶ Higher Income over Feed Cost (IOFC) through optimized use of nutrients

If you are interested in Ration Calculation 2.0 with AMTS, please contact your Sano consultant. For a non-binding date enquiry send us an email to info@sano.de

You also benefit from our know-how and can be advised by our expert consultants from your region in a non-binding individual business interview