polmass

For start. For health. For sure.

PRODUCT CATALOGUE

I would like to encourage everyone to read the offer prepared by POLMASS SA.

Products manufactured at our premises define the highest quality at every stage of production starting from the selection of raw materials throughout performing laboratory analyses, all this possible due to full automation of the Production Plant which is equipped in an integrated computer system, and on top of that to close the list is our team of animal husbandry nutritional advisors.

Polmass SA is a European manufacturer of feed and feed additives for cattle and young animals. From the early beginnings of its activity the company has creatively and permanently joined the mainstream of the development of cattle breeding and rearing, promoting innovative cattle feeding habits and implementing solutions in everyday collaboration with the leading Pedigree Breeding Centers and Cattle Rearing Centers.

Products and nutritional solutions have been created and improved during the cooperation with leading research centers in Poland and in Europe. Our relationships with contractors, customers and the whole business environment are based on partnership and trust.

We have created and built our brand of products in Poland. Today, our experience and products are being implemented in other countries in Europe and in some countries around the world.

I would like to thank all of our current and future business partners for purchasing our products so far and entrusting us with co-operation.

Zbigniew Kotlęga

The President of the Management Board at Polmass SA

Professional nutritional advisory

Production Plant in Bydgoszcz

Wide variety of products

Table of content

About us 2
For start. For health. For sure. 5

CALVES 6
How to succeed in rearing calves? 6

MILK REPLACERS 9
Polmass Milk Red Full 9
Polmass Milk Red Power 10
Polmass Milk Red Classic 10
Polmass Milk Orange 11
Polmass Milk Extra Blue 12
Polmass Milk Blue 12
Polmass Milk Brown with Linseed 13
Polmass Millk with Fiber 13

PRODUCTS SUPPLEMENTING COLOSTRUM 15
All-natural colostrum 16
Colostrum Calf Paste 16
IMUPRO® 17
Probiotic pastes 17

OTHER POLMASS PRODUCTS USED IN CALF REARING 18
Primopasza 18
KCJ concentrate 18
Stopper drink 19

CATTLE 20
Why mineral and vitamin supplementation is so important? 20

VITAMIX 22
Extra Line – for highly productive cows 23
Dairy Cow's Line – for dairy cows with high milk yield 25
Dairy Cow's Line – for dairy cows with average milk yield 28
Dry cows' line 30
Heifers' and calves' Line 32
Professional Line 34

ADDITIONAL PRODUCTS 38
Energetic concentrates – ketosis prevention 39
Turbo drink – after-calving supplement 41

SILAGE ADDITIVES 42
Microbilogical silage additives designated for ensiling fodder 42

MICROBIOLOGICAL SILAGE ADDITIVES 44
Polmasil® 44
Polmasil EXTRA® 45
Polmasil BUCHNERI® 45
Polmasil CORN® 45

SILAGE ADDITIVES WITH MICRIBIOLOGICAL AND ENZYMATIC PROPERTIESE 46
Polmazym PREMIUM® 46

SILAGE ADDITIVES WITH MICROBILOGICAL AND CHEMICAL PROPERTIESE 47
Polmasil STABIL® 47

POLMASS SA

For start

POLMASS is a market leader for high quality milk replacers, mineral feed, silage additives and specialty products for young animals and cattle. The company started its activity during the profound changes in the polish cattle rearing system and milk production sector.

Our strengths "For start":

- Long-term cooperation with almost all of the Pedigree Breeding Centers in Poland, where all Polmass products are used and tested.
- Comprehensive experience in rearing and nutrition of young animals and cattle.
- Professional animal husbandry technicians providing high quality nutritional advice.
- Proven, recognized and widely used Polmass calf nutrition program.
- Our advisors help farmers and Pedigree breeding centers with cattle nutrition programs in order to reach full potential in milk yield and fattening.

For health

ProHealth Solutions in Polmass Products:

Immunoglobulins - Protect against harmful bacteria and dangerous viruses in the intestine. Act as an immune system support as well as promote health by raising the count of the bacterial flora in the intestinal system.

Probiotics – provide the right intestinal bacterial flora during the development of fore stomachs. Promote healthy development and protect against diarrhea. Through the so-called "the effect of the occupied space" probiotic bacteria make it impossible for the bacteria conditionally and absolutely pathogenic to deposition on the small and large intestinal epithelial cell surface.

Prebiotics - previously referred to as yeast culture, provide support and energy to the 'good' bacteria in the gastro intestinal tract. In our products we use fragments from yeast cells *Saccharomyces cerevisiae Mannanooligosacharydy (MOS)* and *Beta 1.3 glucans (BG).*

Vitamin E - plays an important role in the prevention of diseases acting as a immune stimulator what's more it also improves the condition and functioning of epithelial cells.

Mineral Chelates - provide high bioavailability of micronutrients, and hence better use of minerals. Protected choline and selenium – both mitigating the effects of the negative balance of energy in cows during the transition period. They also protect the liver against steatosis and prevent ketosis. In addition, they support the strengthening of the immune system.

Sodium butyrate - through its bacteriostatic properties it positively affects the digestive tract, while improving the appetite which increases roughage consumption and enables higher daily weight gains.

For sure

Polmass Products guarantee top nutritional value as well as provide and support health and well-being of calves and heifers and fattened bulls.

Pedigree Breeding Centers in Poland have been using Polmass products because they are a guarantee of quality and efficiency at every stage of rearing and breeding. Trust that we are given by our customers, animal husbandry technicians and breeders is confirmed by many research results achieved when using Polmass products, which creates essential advertisement for the company.

Full transparency of each Polmass Product's content is possible due to full automation of the Production Plant which is fully equipped in an integrated computer system that manages precise, electronic identification of each raw material as well as our end products.

Integrated IT system allows us to monitor each stage of the production process. In consequence we monitor each stage of the raw material dispensing as well as each phase of product's manufacturing

Since the year 2000 Polmass has been manufacturing products in accordance with the highest international standards ISO 22000:2006 and HACCP. We are in the process of GMP+ implementing.

Polmass Products guarantee the highest production parameters for rearing calves and milk yield as well as animal health.

How to succeed in calves rearing?

Animal husbandry nutritional advisor – Krzysztof Kreft, PhD

The utmost important issue when rearing calves is raising healthy and properly growing young animals. In the first months of life calves' tissue and internal organs growth is very intensive, that's when the fore-stomachs start developing. It is also very crucial time when the animal's immune system starts adapting to the environment. Proper rearing of calves influences not only the future growth of these animals and their health, but also the development of significant organs that are responsible for the future milk yield as well as the heifer's and fattener's value for the farm. Especially important is the milk replacer feeding period when calves' rumen is not yet fully developed and digestive enzyme activity is limited. Proper nutrition of calves has the crucial influence on the future milk yield of the heifer.

How to measure the quality of colostrum

For the first-born calves, the single and the most important food is mother's colostrum. Good quality colostrum is the perfect source of nutrients and antibodies (immunoglobulins) for the developing gastrointestinal tract. A very important role in the proper development of calves' gastrointestinal tract play bioactive components present in the colostrum. Immune protection is provided against infections during the colostrum period, mostly in the first three weeks called the "period of passive immunity". Colostrum also carries a number of antibacterial and immunomodulating ingredients, which additionally boost the gastrointestinal tract's resistance. Life's bioactive components absorbed from colostrum during the first days of calf's life (the first 12 hours are most important) are transported into the bloodstream and thus have a positive effect on growth and physiological performance of the calves' body. Proper colostrum feeding is therefore important not only because it covers the immunoglobulin demand but also it provides adequate development of the gastrointestinal tract. One of the best ways to ensure a successful colostrum-management program is by testing colostrum on-farm and verifying passive transfer of immunity. It can be easy, affordable, and the health and productivity of our calves are worth the effort. Colostrum's quality estimate is based on its specific gravity measured with a hydrometer, also known to most as a colostrometer, which is a glass float submersed into about a cup of colostrum within a holding cylinder. Often, due to intensive feeding of the colostrum quality and quantity do not correspond with the physiological norms (sometimes the lack of appropriate transitional period). Variable and poor quality colostrum is common in HF cows. In such cases, as well as in other, the quantity or quality of colostrum administered immediately after the calf's birth is questionable. At that time it is necessary to use dried colostrum. (Colostum calf paste) and immunoglobulins (Imupro®). Imupro® is a unique combination of immunoglobulins and selected probiotics allowing the complete elimination of antibiotics added to the feed. An adequate supply of immunoglobulin level prevents diarrhea, inflammatory bowel syndrome and acts against emerging infections, strengthens the innate as well as supports early ontogenetic formation of the immune system. Colostrum that does not contain sufficient antibodies for the newborn can be a good source of added nutrients and local immunity for older calves.

If maternal colostrum fails a quality test, an all-natural cow's colostrum replacer , providing at least 100 grams of IgG should be used assuring the best passive immunity transfer. Colostrum replacers undergo a strict quality assurance that the calf will achieve successful passive transfer since these products must undergo stringent quality assurance tests before they are sold. The recommended amount of colostrum that the calf should receive during the first days of life, is about 10% of the calf's body weight (about 4 liters). The first portion of colostrum (about 2 l / pcs.) should be given as soon as possible – right after birth (up to 1 hour), and the remaining amount (2 l) in the next 1 to 3 hours after the calf's birth. Proven and frequent practice is a method of collecting and storing colostrum in the freezer. If necessary, the colostrum after thawing (in a water bath at the appropriate temperature) is used later for feeding calves.

During this period it is significant to use the probiotics when feeding calves. Their task is to colonize the gastrointestinal microflora providing healthy start into the young calf's life. Probiotics prevent hypothetically pathogenic bacteria deposited on the villi of the gastrointestinal tract from developing through so called "effect of the occupied space". Microorganisms such as *Escherichia coli*, pass later through the digestive tract, without causing damage to the young animal's body.

Use of milk replacers in calves' rearing

After the colostrum period Polmass quality milk replacers are the right choice for the beginning of calf's life. Providing high nutritional value, low fiber content as well as high levels of nutrients. Therefore appropriate feeding (eg in terms of age) of the milk replacer can start immediately after the colostrum period. Milk replacer should be introduced over a period of 3 to 5 days initially mixed in half and half ratio with good quality cow's milk – that is the best approach.

Feeding schedule of milk replacers:

Calf's Age	Milk replacer/day	Other fodders
Birth	2 liters of high quality colostrum administered during the first 30 minutes of calf's life	Colostrum calf paste
1st day	min. 2x2 liters of colostrum	Lactiferm calf paste – administer 2 doses
2nd- 3rd	min. 2x2 liters of colostrum	Lactiferm®
4th – 7th day	2x (1.5 liters of milk + 1,5 lites of milk replacer destined for after-colostrum period)	PRIMOPASZA (prestarter in the granular form as much as preferred)
2nd week	2x3 liters of milk replacer formula	PRIMOPASZA as much as preferred
3rd week	2x3 liters of milk replacer formula	PRIMOPASZA as much as preferred
4th – 5th week	2x3 liters of milk replacer formula	PRIMOPASZA as much as preferred
6th – 7th week	2x3 liters of milk replacer formula	PRIMOPASZA as much as preferred
8th – 10th week	2x2-3 liters of milk replacer formula	PRIMOPASZA as much as preferred
11th - 12th week	2x 1-2 liters of milk replacer formula	1.5 – 2 kg PRIMOPASZA

Remember! Calves should have unlimited access to fresh, clean water from the 1st day of their life. Milk replacer's temperature should be at 37-42°C.

Concentration of the liquid feed should be 1:6 or 1:8 (125 g -175 g of milk replacer's powder for 1 liter of water) - one has to keep in mind that the nutritional value is in the milk replacer's powder not in the water. In the first two weeks calf should be fed daily in the quantity 4 to 6 liters, 2 to 3 a day. From the 3rd to the 7th week of calf's age liquid feed serving should be 6 to 8 liters per day fed two times a day. In the forthcoming weeks, the amount of milk replacer, should be reduced down to 1 or 2 liters fed once a day. Calves 3 to 4 weeks old can digest a milk replacer with a greater share of plant protein – concentration of the liquid feed should be 1:8 or 1:10 (100 g – 125 of milk replacer's powder for 1 liter of water). Liquid feed should be given during the first 8 to 12 weeks of calf's life. Often older calves are fed with milk replacers with share of linseed. Linseed pectin dissolved in water produce mucus. A protective layer coating the calf's intestinal tract, acting as an anti-inflamatory agent in the esophagus, posing a barrier to the proliferation of the pathogenic bacteria on the intestinal tract, for example micro-organisms causing diarrhea as well.

Why use milk replacers?

The use of Polmass milk replacers when rearing calves provides a number of benefits. First of all, you can:

- replace whole milk in 100% when rearing calves
- shorten the milk feeding period by 2 to 4 weeks
- expect a faster and more efficient development of the rumen
- calves continuously and steadily gain weight
- minimize the risk of diarrhea
- be sure of the well-being of the calves
- reduce the cost of rearing (whole milk costs 2-3 times more than the milk replacer).

Water in calves' rearing

An extremely important aspect, which is often forgotten in the rearing process of young animals, is providing constant, unlimited access to the fresh drinking water. It is essential from the point of any physiological and biochemical processes happening in the calf's body. Moreover, in a significant way it also affects the consumption of the solid feed – calves are more eager to eat. It is known that calves drink water more eagerly from so called "water surface" – that is why we encourage to use paddle type water bowls.

How to speed up the development of fore-stomachs and why?

In most cases it is achieved by shortening the period of feeding the calf with a milk replacer, offering reduced amounts of the liquid feed, and the earliest possible start of the roughage feeding. In the initial period of the calf's abomasum growth pace changes significantly in a physiological way referring to the animal's with single stomach chamber. In a relatively short time there's an evolution of the stomachs in the ruminants. The breeder may stimulate the anatomical and functional development of fore-stomachs by introducing from the 3rd day of calf's life a feed mixture - called calf's starter (CJ)- Primopasza. As soon as a calf starter – Primopasza is provided it speeds up the development of the rumen and thus shortens the period of feeding with the milk replacer. It also allows to reduce the total cost of calf's rearing, limiting the amount and period of the milk replacer. Similar Calf starter can be prepared individually by the breeder with the use of the KCJ concentrate and farmer's own kibbled grain (cracked grain) – usually triticale, corn and oats. One needs to use the proportion of 50% of the KCJ concentrate and 50% of the kibbled grain. In order for a calf to intake 1 kg of fodder it needs to drink at least 4 liters of water – that is why using an appropriate paddle type water bowl is so important.

Goals when rearing heifers

Heifers' good start into their first lactation is represented in the care that the calf receives in the first days of its life. The first and undoubtedly the most important period in the calf's development is the time from birth up to 12 weeks. Most importantly one can notice rapid weight gain (420-500 g / day) but what is crucial at this time is that the gains should occur without the excess fat, which is a key task during this period. Nutrients that are given to the calf at this age, should be used for its development and growth in the most effective way.

Properly selected program enables the rearing of calves raised for breeding tasks:

1. At the age of two months the calf should double their birth weight.
2. At the age of about 15 months, weighing around 380 kg with height at the withers at minimum of 125 cm heifer should be successfully fertilized.
3. Certain way of calf rearing should allow the use of genetic potential of the future cow.

Recommendations for dietary intake of crude protein and metabolic energy for breeding heifers (Professor Kowalski)			
Age (in months)	Body weight (kg)	Crude protein (% dry matter)	Metabolic Energy (MJ kg dry matter)
3-6	100- 180	16-17	10,8-11
6-8	180-270	16-17	10,5 – 10,8
8-12	270 - 360	15-16	9-10
12-15	360-450	14-15	9,5-9,8
15-23	450- 610	13-14	9,4-9,5
24	630-650	14-15	10-10,3

Goals when rearing fattened bulls

Modern methods of fattening cattle are designed to achieve high growth potential and the possibility of greater deposition of protein than fat in the animal's body. The level of nutrition should allow an optimal use of genetic potential of an animal in order to achieve adequate growth of muscle tissue.

Properly selected program when rearing fattened bulls assumes the implementation of the basic breeding tasks:

1. Achieving optimal weight gain levels 600-1000 g/a day depending on the rearing phase, age and the expected rearing results.
2. Obtaining a slaughter weight of 500-550 kg at the age of 16 months when scheduled daily weight gains occur as planned.
3. Weight gains of 1000 g/ a day guarantee optimum advantage of muscle over fat in animals' body (an average ratio of 64% meat and 17% fat)

Milk replacers for calves

Red Line of Calf Milk Replacers

Innovative, high quality milk replacers featuring Polmass Milk Red Full with IMUPRO®, Polmass Milk Red Power with IMUPRO®, Polmass Milk Red Classic with IMUPRO® designed for demanding breeders and farmers, promote health and growth, better lifetime productivity, and achievement of calves' genetic potential in sight of the future heifer. Guarantee of health, growth performance and consisted development of calves.

Red line of the calf milk replacers is designated to achieve the highest rearing outcomes of the future dairy cow. Red line of CMR are product that contain only milk derived raw ingredients. The crude fiber level of these milk replacers is 0.0% as there are practically no plant derived ingredients added.

The most significant part of a good calf rearing program is to grow healthy, frisky calves at the lowest possible cost.

FEATURES:

- designated for the after-colostrum period (3rd- 6th day of calf's life)
- contain the highest quality of milk derived protein and skimmed milk powder
- provide a unique blend of immunoglobulins and probiotics as well as other anti-diarrhea supporting agents - IMUPRO®
- optimal share of skimmed milk powder
- can be used in the automatic feeding machines.

BENEFITS:

- optimal development of the udders
- guarantee of high muscle weight gains
- healthy, frisky calves.

Red Line of calf milk replacers features: POLMASS MILK RED FULL, POLMASS MILK RED POWER and POLMASS MILK RED CLASSIC

POLMASS MILK Red Full with IMUPRO®
- FOR DEMANDING BREEDERS

Special labor saving top-quality, high fat and milk protein formula. It has been formulated to support higher growth rates of the future heifers designated for the most demanding breeders.

Polmass Milk Red Full - milk replacer with a special instant formula containing only milk derived components.

Polmass Milk Red Full contains only milk derived components and the best-possible digestible crude fats such: as coconut oil and palm oil. It is a simple and easy dissolving formula – which saves time, and is perfect for any type of calf rearing system. Polmass Milk Red Full contains 15% of the skimmed milk powder. The Imupro® complex is designed to stimulate resistance to diarrhea and favorably influence the development and health of the young organism. Polmass Milk Red Full provides excellent results for breeders and when rearing calves where the weight gains in calves are higher than with the use of the whole milk.

ALL-MILK PROTEIN 21 %
CRUDE FAT 18 %
CRUDE FIBER 0.0 %

ALL-MILK PROTEIN 23 %
CRUDE FAT 18 %
CRUDE FIBER 0.0 %

POLMASS MILK Red Power with IMUPRO®

- FOR MODERN HEIFERS – with the optimal content of skimmed milk powder.

Polmass Milk Red Power is a milk replacer designed for the most demanding European markets tested in the Polish Pedigree Breeding Centres.

It contains the highest quality of milk derived components, including skimmed milk powder at an optimal level of 20%.

Polmass Milk Red Power is intended for use right after the colostrum period. This milk replacer ensures excellent rearing results, healthy and strong calves as well as weight gains at a level higher than rearing on the whole milk.

Immupro® complex stabilizes the immune system, ensures good health status and prevents diarrhea.

TRIAL'S OVERWIEV:

- the period of colostrum and whole milk feeding lasted for 5 days.
- a two-day transition period was applied, 2 liters of milk with 2 liters of milk replacer were mixed together,
- from the 10th to 70th day of rearing the calves received a milk replacer in the amount of 6 liters per day,
- Calves of all groups received granulated forage mixed with corn kernels from the 3rd day of life, the protein level in the forage was on the level of 20%.
- Calves had constant access to clean, fresh water.
- Calves up to 30 days of age were housed in booths outside. Then they were transferred to the collective pens in the building.
- The calves were weighed at intervals of 10 days.

TRIAL'S RESULTS AND CONCLUSIONS – REARING CALVES WITH POLMASS MILK RED CLASSIC:

- provides average daily weight gains on the level of 750-820 g over the 70 days of rearing,
- used in the ratio of 1:9 gives a similar weight gain compared to whole milk, but at lower rearing cost,
- reduces problems associated with heifers' insemination,
- allows to use genetic possibilities of the future heifers - milk yield at a sufficiently high level.

ALL-MILK PROTEIN 25 %
CRUDE FAT 18 %
CRUDE FIBER 0.05 %

POLMASS MILK Red Classic with IMUPRO®

- DESIGNED TO INCREASE THE GENETIC POTENTIAL OF THE FURUTE HEIFER.

Top proven milk replacer on the market used in Pedigree Breeding Centers throughout the country. Guaranteed average growth over the 70 days of rearing on the level of min. 750-820g.

FEATURES:

- high content of easily digestible protein (25%) and appropriate level crude fat (18%) in order to obtain optimal health status of the heifer,
- composition based on the higher share of crude protein of the best quality along with controlled level of crude fat,
- high digestibility and bioavailability of the nutrients,
- guaranteed average growth rate over the 70 days of rearing on the level of min 750-820 grams/a day.

REARING RESULTS ACHIEVED OVER THE 70 DAYS OF REARING AT THE ŻOŁĘDNICA PEDIGREE BREEDING CENTER LTD		
Specification	Dissolving ratio of POLMASS MILK RED CLASSIC	
	1:7	1:9
Agerage daily weight gains (g)	823	750
Amount of the milk replacer (kg)/ whole milk (l) for the rearing period	42,0	38,5

Orange Line of Calf Milk Replacers

POLMASS MILK Orange

– HIGH QUALITY MILK REPLACER FOR AFTER-COLOSTRUM PERIOD.

Excellent milk formula for starting and raising heifers. It's a high energy, soluble and digestible formula provides maximum performance under all conditions for cost effective rearing.

Young calves diets begin with milk replacer and should provide proper ingredients in order to replace cow`s milk from the 5th or 6th day of a calf's age. Polmass Milk Orange is enriched with a unique solution IMUPRO®, which improves calf's immunity and prevents diarrhea. IMUPRO® features synergic action of several elements such as: immunoglobulines, lactic bacteria and other precisely chosen ingredients. Milk replacers include: Polmass Milk Orange.

Simply the best choice to help achieve your calves' full potential, helps set your calves up for optimal health and growth and efficient lifetime productivity designed for economic rearing.

FEATURES:

- Based on the highest quality of the milk raw materials, including lactose, coconut and palm oils and well as valuable blend of vitamins and minerals.
- Featuring only the best quality milk proteins
- Includes fully homogenized and emulsified combination of palm and coconut oil
- Contains IMUPRO - a blend of natural antibodies (incl. immunoglobulins), desirable probiotics along with anti-diarrheal protectors and gut health promoting agents to aid digestion and healthy growth
- Promotes optimum growth rate 650-700 g/day
- Approximately 80% of dairy raw materials, provides protein and energy relationship, as well as a complete set of minerals and vitamins.

All-Milk Protein 21 %
Crude Fat 18 %

Blue Line of Calf Milk Replacers

Proven milk replacers for economic rearing, successfully used for many years at the majority of breeding farms. The Blue Line is meant for traditional rearing of calves, starting from the 7th and 14th day of their life. All nutritional ingredients are carefully selected such as: the protein, fat, vitamins, as well as micro- and macro-element levels correlated to developmental needs of a young animal. The Blue Line combines cost effective rearing, healthy start and good growth. The Blue Line of calf milk replaces features - Polmass Milk Extra Blue and Polmass Milk Blue.

ALL-MILK PROTEIN 21 %
CRUDE FAT 16 %

POLMASS MILK EXTRA BLUE®
- FOR EFFECTIVE CALF REARING

Specially designed for early feeding to provide good lifetime performance. The complete range of whey based products allows to start feeding on the 7th day of calf's life.

- Contains a blend of desirable probiotics along with anti-diarrhea protectors and gut health protectors to stimulate digestion and healthy growth
- Palatable and easy to dissolve and mix
- Using only the best quality milk and vegetable raw materials
- Includes fully homogenized and emulsified palm and coconut oils blend
- Complety replaces whole milk
- Guarantees optimal daily weight gains

ALL-MILK PROTEIN 21 %
CRUDE FAT 12 %

POLMASS MILK BLUE®
- FOR OPTIMAL CALF REARING

Cost effective milk replacer formulated to reduce the incidence of calf scours and to increase the calves' natural immunity to diseases. It was designed to stimulate the rumen development, improve digestion and to obtain good growth potential.

The complete range of whey based products and plant based raw components allows to start feeding on the 14th day of calf's life.

- Featuring optimal amino acid profile as well as high level of vitamins and microelements for successful performance of dairy calves
- Provides the foundation for building better cows
- Guarantees overall improvements in body condition
- Completely replaces whole milk

The Brown Line of Calf Milk Replacers

Budget milk replacer for strong calves, which contains more vegetable derived raw ingredients in its composition along with high level of crude protein (21%). It promotes early rumen and papillae development. Calves fed with The Brown Line Milk Replacers reach steady performance and possible digestive problems are reduced to a minimum.

It is designed for older calves, after the 2nd and 3rd week of their age. It can be used earlier when mixed half and half with cow's milk. Provides Economic rearing and good start. These milk replacers contain an optimal level of fiber which stimulates steady development of fore-stomachs. Designated for bucket feeding.

The Brown Line Milk Replacers features Polmass Milk Brown with Linseed and Polmass Milk Brown with Fiber.

BENEFITS:

- optimal development of fore-stomachs
- calves start eating fodder earlier and more eagerly
- tasty, eagerly drunk by the calves – few times cheaper than whole milk and white milk replacers (Red Line, Orange Line and Blue Line)
- contain natural anti-diarrheal protectors: linseed and yeast
- account for rearing strong and healthy calves.

POLMASS MILK BROWN with Linseed®
- ANTI DIAHARREAL MILK REPLACER FOR STRONG CALVES

It is an "anti-diarrheal" milk replacer. It has precisely balanced combination of whey and vegetable derived raw ingredients. It is considered more cost effective milk replacer that promotes and improves calf's good growth and health. At the same time it's minimizing rearing problems and helping to increase roughage and starter intake, which stimulate early rumen development. It is dedicated for older calves, after 2nd week of their age. Sets calves up for efficient lifetime productivity.

- Linseed is a rich source of the omega-3, polyunsaturated alpha-linolenic acid high in protein which also serves an excellent source of energy
- You can be sure that linseed -fed calves will produce milk higher in protein
- Promotes increased energy balance naturally resulting in healthier herd.
- Designated for bucket feeding
- Completely replaces the whole milk 1:1
- Stimulates early development of the fore-stomachs.

ALL-MILK PROTEIN 21 %
CRUDE FAT 12 %

POLMASS MILK BROWN with fiber®
- ECONOMIC MILK REPLACER FOR OLDER CALVES

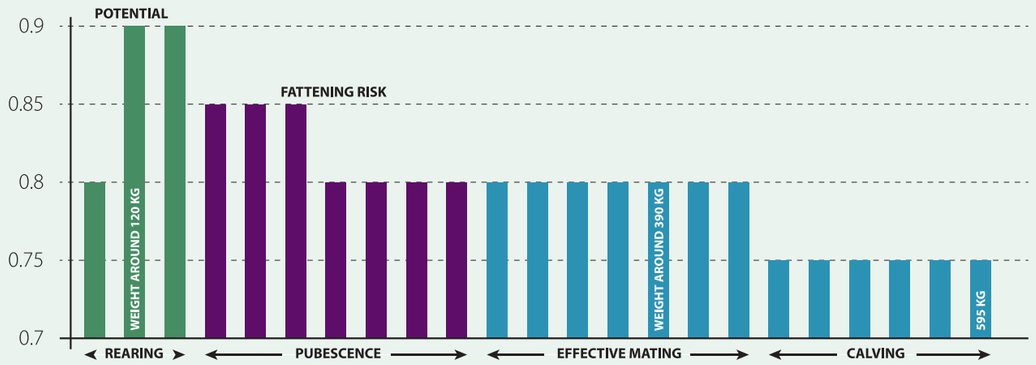
Calves fed with this milk replacer reach steady performance and possible digestive problems are reduced to a minimum. It is designed for older calves, after the 3rd week of their age. It can be used earlier when mixed half and half with cow's milk.

- It has been formulated with vegetable derived ingredients along with optimal amino acids profile and precisely evaluated vitamin levels together with microelements balanced properly for the older calves
- The result is fewer digestive upsets and reduced mortality.
- Combines the advantages of milk replacer and the first fodder
- Encourages the calf to eat the calf-starter
- Economical, good and proven for many years on the Polish farms
- It can be used over a longer rearing period as it optimally supplements the forage.

ALL-MILK PROTEIN 21 %
CRUDE FAT 12 %

The nutrient content in 1kg of formula									
Component	Unit	POLMASS MILK RED FULL	POLMASS MILK RED POWER	POLMASS MILK RED CLASSIC	POLMASS MILK ORANGE	POLMASS MILK EXTRA BLUE	POLMASS MILK BLUE	POLMASS MILK BROWN WITH LINSEED	POLMASS MILK BROWN WITH FIBER
Crude Protein	%	21	23	25	21	21	21	21	21
Crude Fat	%	18	18	18	18	16	12	12	6
Crude Fiber	%	0,0	0,0	0,05	0,15	0,7	0,9	max 3,4	1,0
Crude Ash	%	9,5	9,0	9,5	8,0	8,0	9,0	8,0	8,0
Calcium	%	0,8	0,8	0,8	0,8	0,9	0,8	0,9	0,75
Phosphorous	%	0,7	0,7	0,6	0,5	0,6	0,6	0,6	0,45
Sodium	%	0,9	0,85	0,7	0,7	0,6	0,5	0,4	0,3
Lysine	%	2,5	2,4	2,3	2,3	2,0	1,7	1,3	1,5
Methionine	%	0,50	0,56	0,55	0,53	0,44	0,39	0,40	0,38
Vitamin A	j.m.	50.000	50 000	50.000	50.000	50.000	50.000	50.000	50.000
Vitamin D_3	j.m.	4 000	4 000	4 000	4 000	4 000	4 000	4 000	4 000
Vitamin E	mg	350	350	350	260	100	100	100	100
IMUPRO®	- / +	+	+	+	+	-	-	-	-
Sodium butyrate	- / +	+	+	+	+	-	-	-	-
Probiotic	- / +	+	+	+	+	+	+	+	-
MOS Yeast	- / +	-	-	-	-	-	-	+	-
Skimmed Milk Powder	- / +	+	+	+	+	-	-	-	-

Guidelines for rearing calves designated for heifers.



Products supplementig colostrum.

Our cows are fed more and more intense and this approach stimulates the level of milk yield. One of the effects of targeted feeding of dairy cows is the increase in the quality of colostrum. Increasingly the physiological quantity and quality of the colostrum does not meet the calf's needs.

Variable and poor quality colostrum is common in HF cows. This is shown in the table below.

Cattle breed	IgG1 (mg/ml)
Charolais	159
Limousin	170
Simental	168
HF	83

(Source: milkproduction.com)

Therefore, before administering the colostrum to the calf it is necessary to determine its quality and nutritional value. This is particularly important in the first and second day after calving. To test the quality of the colostrum one should use the colostometer.

The proper dose of colostrum of good or very good quality determines the life and health of the calf. 1 ml colostrum of good quality should contain a minimum of 50 mg or more immunoglobulin. Optimally, the newborn calf should get at least 100g of immunoglobulins within the first 30 minutes of its life. 2 liters of good quality colostrum should be provided in each barn along with good animal husbandry practices and keeping the proper hygiene for the calves. In herds where one encountered pre-existing problems when rearing calves such as: diarrhea and upper respiratory tract infections it is recommended that the first dose of colostrum is 3 liters.

Why immunoglobulins are so important?

Immunoglobulins (antibodies) are the most important component of bovine colostrum because they are a source of passive immunity protecting against infections for calves in the first weeks of their life (4-6 weeks). There are three classes of immunoglobulins in cattle's colostrum such as: IgG, IgM and IgA. IgG type of immunoglobulins is the most common and constitutes for 80-90% of all the antibodies. Antibodies penetrating into the bloodstream protect calves against many infections, especially diarrhea (caused by bacterial or viral infections), as well as diseases of the upper respiratory system all the above being the main cause of increased mortality in calves. Immunoglobulins also exhibit antibacterial activity localized in the gastrointestinal tract by blocking the implantation of micro-organisms to the intestinal wall and their proliferation.

The content of in the colostrum and its absorption in the gastrointestinal tract changes very quickly time wise. During the first two hours. after the birth the absorption of immunoglobulins is the highest and is on the level around 95%. After 12 hours the content of immunoblogulin in the colostrum drops down to 20-25%, and the absorption rate is around 45%. That is why it is so important to administer good quality colostrum as soon as possible (> 50mg/ml) preferably immediately after the birth or in the first 30 minutes. The second dose of the colostrum should be administered between 6^{th} and 12^{th} hour of calf's life. Calves that have been properly fed with colostrum have developed intestinal villi, which contributes to a better absorption of the vauable nutrients.

Concentration of immunoglobulin is the highest in dairy cows after their 3^{rd} lactation. High quality colostrum should be frozen and administered to calves when the mother's one is of insufficient quality.

Red Line of Polmass Milk Replacers as well as Polmass Milk Orange contain in their composition, these valuable immunoglobulines.

If the quality or quantity of colostrum administered shortly after birth raises farmer's doubt frozen colostrum should be administered. If one does not have frozen colostrum available on hand one can purchase dried colostrum and / or immunoglobulines in the form of powder or calf paste.

Below Polmass suggests products for substituting or supplementing the colostrum:

All-Natural Colostrum - dried colostrum for calves.

COMPOSITION:

Crude protein	45,0 %
Crude Fat	25,0 %
Lactose	15,0 %
Immunoglobulins IgG	38,0%

SPECIAL FEATURES:

- Extracted from dairy cow's colostrum during the first two milkings after calving (only from herds free from IBR)
- A very valuable colostrum concentrate that contains 38% IgG in the protein
- Given as soon as possible after birth accounts for the extra immune resistance and protects well against calf diarrhea.

BENEFITS:

- Supports the immune system of young calves,
- Strengthens the health and vitality of calves,
- Improves weight gains,
- 100% all- natural product.

APPLICATION:

1. As a colostrum supplement: Mix 100 g of the dried colostrum powder with two liters of mother's colostrum.
2. As a colostrum replacer: Mix 400 g of the dried colostrum powder with two liters of warm water (temperature max.50°C). It is suggested to administer two times a day within two consecutive days, the solution should have the temperature of 37-40°C.

Colostrum Calf Paste – dried colostrum calf paste with probiotic

Dried colostrum fortified with essential nutrients found in healthy heifer's colostrum. The very first hours after birth are critical for the survival and health of calves. In case of not receiving the immune and growth factors in colostrum, newborn calves fail to thrive and their ability to fight diseases is greatly diminished. Colostrum Calf Paste can start the components of colostrum working in a calf until a full feeding of colostrum can be administered. The colostral IgG in Colostrum Calf Paste helps to assist in the transfer of immunity when used in conjunction with a high quality colostrum feeding program.

- Polmass Brand provides an optimal start for a calf and is an important support for a healthy calf
- This colostrum paste provides fast and convenient colostral immune support to newborn calves and helps address stress-related issues in high-risk animals
- It can be used if the calf's colostrum intake is insufficient, delayed, or of poor quality
- Is a feed additive designed for newborn calves to complement and improve the quality of natural colostrum
- Includes dried colostrum enriched with lactic acid bacteria, Vitamins: A, D_3, E, C and B vitamin complex
- Enriched with a high concentration of antibodies of all immunoglobulin isotypes (such as: IgG1, IgG2, IgA, IgY)

In addition, it contains lactic acid bacteria which stabilizes the stomach's and intestinal lining protecting the calf against diarrhea and flatulence.

APPLICATION: The whole syringe of the colostrum calf paste (15g) should be administered right after poor quality colostrum feeding but no later than 2 hours after birth. In case of high risk of bacterial and viral infections the application should be repeated after 6-12 hours.

IMUPRO® - immunoglobulin + probiotic

COMPOSITION: This is a unique combination of probiotic and immunoglobulin that comes in the form of powder. The antibodies selected for this product represent all major antibodies present in the most common diseases when rearing calves. IMUPRO®'s role is to combat viruses such as rota virus, corona virus, *E. coli*, and to prevent digestive tract disorders in young animals.

APPLICATION: This product is designated for calves up to the 4th week of life, so up to the time when their immune system is strong enough. This product can be used with milk replacer or whole milk (3-5 g/per calf/per day) or added to the fodder in the amount of 1-2 kg per 1 ton of fodder.

Probiotic pastes

Lactiferm is intended for use in young calves and piglets in order to stabilize the appropriate intestinal microflora.

- Polmass Lactiferm designed to feed and increase the microbial population whereas microbial bacteria or Probiotics are used to repopulate the intestine or stomach it simply helps feed the bacteria
- This product is designed to feed the ruminant animal and piglets intestinal bacteria as well as supply additional microbial bacteria to sick or low energy level animals
- The combination of vitamins A, D_3, E and probiotic boosts the formation of the immune system and strengthens the young calf's body
- Contains live, capable of developing a strains of lactic acid bacteria *Enterococcus faecium* at high concentration level. In one application dose there is at least 6.7 x 10^{11} CFU of live lactic acid bacteria cultures.
- As long as the proper balance of beneficial microflora to non-beneficial or pathogenic microflora exists, the intestinal tract functions essentially as it should. If this balance is upset and the beneficial microflora is reduced or loses its competitive edge, predisposition to various diseases can occur as well as reduced feed efficiency
- Microbial bacteria supplementation is especially useful under high stress conditions. It is well known that stress reduces the number of beneficial intestinal microflora (bacteria) and upsets the balance between beneficial and non-beneficial or pathogenic microflora (bacteria).

APPLICATION: Two application doses applied on the calf's tongue administered right after birth, following the first colostrum feeding

What are probiotics?

Bacteria are ubiquitous and are also present in the gastrointestinal tract of the newborn calf. The microflora of the gastrointestinal tract following the birth of the calf can be colonized by bacteria both beneficial and non-beneficial. However, only probiotic bacteria as those beneficial form a natural, healthy gut microflora. This type of bacteria occurs in the process of lactic fermentation.

Probiotic bacteria naturally proliferate the gastrointestinal tract of the young animal. One can introduce the beneficial bacteria into the calf's digestive tract, helping to create a proper, healthy microflora in young calf's sensitive digestive tract. The bacteria colonizes the intestinal wall and their job is to prevent pathogenic bacteria, such as *Escherichia coli* from colonizing the gastrointestinal tract. The beneficial bacteria creates so called „effect of the occupied space." If the beneficial probiotic bacteria proliferates the walls of the gastro intestinal tract first than the non-beneficial bacteria is unable to occupy the same space. Microorganisms such as *Escherichia coli*, pass than gently through the digestive tract, without causing damage to the young organism.

BENEFITS FROM USING PRODUCTS SUPPORTING THE COLOSTRUM:

- Prevent early onset of diarrhea, infectious enteritis
- Strengthen the calf's passive immunity
- Support earlier formation of the immune system.

Other Polmass products used in the calf's rearing.

The purpose of calf starter is to transition the calf from the milk–feeding period to the dry feeding period. Calf starter is very important to healthy rumen development, good body growth and successful weaning of the calf. Calf starter must be palatable and nutritious. One can start using the calf-starter from the 3rd day of calf's life. The first calf-starter suggested by Polmass can be PRIMOPASZA.

ALL-MILK PROTEIN 17 %

PRIMOPASZA

Micro-granular pre-starter stimulating the development of the fore-stomachs. Primopasza is TMR choice which stimulates early and proper development of forestomachs in young calf form the 3rd day of their life.

- Provides a rich, completely blended feed of plant components, a high concentration of protein, energy, minerals and vitamins and is low in fiber
- The job of a high quality calf starter Primopasza is to transition a calf from a liquid diet to dry feed at weaning while maintaining the growth and health of the animal
- Amino acids are needed for proper tissue growth. Carbohydrates are needed to provide energy for growth and proper development of the animal's rumen. Minerals and vitamins are needed to keep the bones strong and keep the animal healthy.
- Years of research have gone into every bag of Primopasza Calf Starter to get your calves through weaning and on their way to becoming a productive animal in the herd.
- reduces the period of drinking milk replacer – shortening the weaning process
- decreases the cost of rearing with milk replacer formula

APPLICATION:

- PRIMOPASZA is designed to be fed from 3rd day of calf's life,
- should be administered at will, in small quantities and prepared fresh daily,
- Polmass recommends to use feeders with the relevant teats to feed a constant fodder such as PRIMOPASZA, Once the calf consumes 1.5-2.0 kg PRIMOPASZA a day we can wean the calf off the milk replacer.

ALL-MILK PROTEIN 34 %

CONCENTRATE KCJ for calves and heifers

Granular mineral feed concentrate mixture for calves and heifers.

The calf-starter should be prepared with the use of KCJ concentrate and chosen cereals availible at the farm such as: corn or maize kernels, corn, barley, oats, wheat, triticale. Cereals should be crushed (in a kneading machine). The protein level in the prepared primer should be on the level of 20-21%.

An exemplary blend of calf starter on the level of 20% protein content.

- 50% of the KCJ concentrate
- 25% of the whole corn kernels
- 25% of oats or other grains

STOPPER DRINK

Powerful dietary supplement for calves inhibiting diarrhea intended particularly for calves suffering from severe diarrhea. This product quickly and effectively inhibits diarrhea conditions and regulates the intestinal flora function in calves. Stopper Drink supplies the calf's body with essential nutrients of which balance is disturbed when the diarrhea occurs:

- Provides young animals with easily digestible glucose, electrolytes, essential vitamins and minerals in order to boost the immune system
- A saline solution of potassium chloride effectively inhibits diarrheal conditions
- Horse chestnut extract supports antidiarrheal prophylaxis, which binds excess water not absorbed from the gastrointestinal tract
- Added glucose for vigorous energy as well as strengthening the sick calf's body
- Stopper drink is the supplementary feed for calves with diarrhea, contains all the necessary nutrients that the calf needs, has both preventive and curative use
- Indication: At the first signs of diarrhea, severe diarrhea, digestive problems or to prevent diarrhea

APPPLICATION

- First of all one packet (100 g) should be dissolved in 4 liters of warm water (about 45°C)
- The solution should be administered two times a day to the calf throughout the period of 2-3 days
- It can be administered through a probe

Feeding the solution throughout the period of 2-3 days should stop the diarrhea. However, in herds where diarrhea occurrence is higher the solution can be administered for a longer period of time throughout 4-5 days.

Mineral and vitamin blends designated for calves and heifers.

Young animals' demand for vitamins and minerals is greater than their availability in the fodder. In the first period of the animals' life the demand is fully covered by the milk replacer. Levels of minerals and vitamins in milk replacers such as POLMASS MILK RED LINE, POLMASS MILK ORANGE, POLMASS MILK BLE LINE AND POLMASS MILK BROWN LINE are 2-3 times higher than in the whole milk. Once the calf is weaned off the milk replacer we can supplement its diet with vitamins, micro- and macronutrients in one of the following ways:

3. Starting from the 3rd day of calf's life we can supplement the deficiencies using PRIMOPASZA, which contains VITAMIX C in its composition.
4. In the calf-starter pepared on the fam with the use of KCJ concentrate, which should be mixed with appropriate quantities of cereals. (see KCJ concentrate).
5. VITAMIX CJ (calves and heifers) dosed individually in the amount of 50-150 grams/per animal/per day. Should be mixed in with the served fodder.

Why mineral and vitamin supplementation in the cattle's nutrition is so important?

Animal husbandry nutritional advisor – Marcin Stasiak, M.Sc.

Current genetic progress and the improvement of cows' living conditions resulted in a significant raise in milk production. More and more cows obtain milk yield of 10,000 liters or more per lactation.

Yes, intensive production increases the demand for minerals and vitamins as well as other active substances. Even providing the best self-prepared feed is not able to provide the right amounts of vitamins and minerals.

It is significant to use mineral and vitamin supplements in the feed rations for cows and heifers – it is just like preparing a special diet for athletes before and during the event, which can be compared to subsequently lactating cows.

In the ruminants feeding, in addition to the fodders' actual level of minerals and vitamins, it is also necessary to be aware of the needs of animals when providing supplements. These recommendations are included in various nutritional standards determining the levels, which nutrients should be provided daily in each food ration for the proper function of cow's body.

Currently in Polish conditions there are three major systems implemented: INRA 2001 French standards, the German DLG 1997, U.S. NRC in 2001.

Demand for macronutrients (Ca, P, Mg, Na, K, Cl, S) is expressed in g/kg of the dry matter or in % of dry matter. The demand for trace elements (Fe, Cu, Zn, Mn, I, Se) is expressed in mg / kg DM or in ppm. (Ppm = mg per 1 kg of forage).

Recommendations for beta carotene mg / day (Prof. Hutjens 2006)

Dry cows	200 mg
The cows in lactation up to 20 kg of milk yield	300 mg
The cows in lactation of more than 20 kg of milk yield	400 mg

Ration Guidelines for Milking and Dry Cows				
	Milking Cows		Dry Cows	
All values on a 100% dry matter basis	High production	Med. production	Early	Close-up
Crude Protein (CP) % of diet	17 - 19	15 - 17	12 - 13	14 - 15
Soluble Protein % of CP	30 - 35	30 - 40	30 - 40	28 - 33
Undegraded CP (bypass), % of CP	34 - 40	34-38	30 - 35	33 - 38
ADF, minumum % of diet	17 - 19	19	30 - 35	21
NDF, minimum % of diet	27 - 32	27 - 35	35 - 40	31 - 38
NEl (Net Energy), Mcal/kg of diet DM	1.65 - 1.76 6.9 - 7.3	1.55 - 1.65 6.5 - 6.9	1.20 - 1.40 5 - 5.8	1.5 - 1.60 6.3 - 6.7
NFC (non-fibre carbohydrate) % of diet	35 - 40	30 - 35	30 - 35	34 - 38
Forage, % of diet	40 - 50	50 - 60	70 - 90	60 - 70
MACROELEMENTS IN % KG OF DRY MATTER				
Calcium, % of diet	0.8 - 1.1	0.70 - 0.80	0.50 - 0.70	0.60 - 0.75
Phosphorus, % of diet	0.40 - 0.44	0.35 - 0.40	0.24 - 0.28	0.28 - 0.32
Magnesium, % of diet	0.28 - 0.32	0.25 - 0.30	0.20 - 0.28	0.35 - 0.40
Potassium, % of diet	1.1 - 1.5 min.	1.1 - 1.5 min.	<1.5	<1.3
Sodium, % of diet	0.20 – 0.25	0.20 – 0.25	0.10 – 0.15	0.10 – 0.15
Salt, % of diet	0.50 – 0.63	0.50 – 0.63	0.25 – 0.40	0.25 – 0.40
Sulphur, % of diet	0.25	0.23	0.16 - 0.20	0.20 - 0.25
MICROELEMENTS IN MG PER 1 KG OF DRY MATTER				
Iron, mg/kg of diet	100	100	100	100
Zinc, mg/kg of diet	75	75	75	75
Copper, mg/kg of diet	15	15	15	15
Manganese. Mg/kg of diet	70	70	70	70
Cobalt, mg/kg of diet	0.20 – 0.40	0.20 – 0.40	0.20 – 0.40	0.20 – 0.40
Iodine, mg/kg of diet	0.60 - 0.80	0.60 - 0.80	0.50	0.50
Selenium, mg/kg of diet	0.30	0.30	0.50	0.50
Vitamin A IU/cow/day	175,000	125,000	100,000	150,000
Vitamin D IU /cow/day	55,000	40,000	30,000	40,000
Vitamin E IU/cow/day	600 - 800	400 - 600	1000	1000
Niacin, g/cow/day	6-12	6	6	6-12
Biotin g/ cow/day	20	20	20	20

Vitamix -

Mineral and vitamin solutions for cattle.

Polmass Vitamix provides key nutrients necessary to provide optimum milk production and accounts for the herd's health.

Vitamix line and long standing experience of our animal husbandry nutritional advisors and husbandry technicians, gained in cooperation with the Pedigree Breeding Center as well as Cattle Breeding Centers in Poland which enables us to develop customised and quality Vitamix for your cattle in sight of the nutrition demands of your farm.

Polmass Vitamix Nutrition Program can meet your herd's specific needs through a diverse portfolio of mineral and vitamin products formulated to compliment any forage and husbandry style. By providing highly bioavailable sources of macro- and trace minerals, in the proper balance with optimal vitamin levels, these compositions can enhance herd's performance and health and most importantly farmer's income. Vitamix blends contain monocalcium phosphate, magnesium and calcium phosphate, sodium phosphate, calcium carbonate, sodium chloride, magnesium oxide, vitamins and microelements– all these are essential and are synthesized in the animal's body, can be incorporated into the ration and/or made available as a free-choice supplement. Vitamix contain buffering agents and molasses and come in the form of "micro granules".

In order to satisfy all the nutritional needs in the Vitamix compositions we have provided innovative solutions described below.

All of the Vitamix supplements contain buffering agents, molasses and come in a micro-granulate form. Polmass Animal Feed Manufacturing Plant features fully computerized production line providing basics for the highest quality manufacturing practise. Polmass Products are manufactured in accordance with ISO 22000:2006 and HACCP requirements.

Polmass new line of Vitamix together with proven nutritional experience gained in cooperation with Cattle Breeding Centers and Pedigree Breeding Center. What is more important it gives a great opportunity to work together on the recipes catered to the customer's order – based on the certain fodder and nutritional needs present at the farm.

Vitamix wide variety in our portfolio is separated into the groups below:

Extra Line
Line designed for Dairy Cows with high milk yield
Dairy Cows' Line
Dry Cows' Line
Vitamix for Heifers
Vitamix for Calves
Vitamix O (fattening)
Vitamix Mineral Blend (MM)

– KW Extra Carrot, KW Extra, KW Rozrodowy
– KW –Somatic, KW Lacto, KW TMR, KW, KW – B-Carotene
– KM, KM TMR, KM-P
– KZ-I, KZ-II, KZ Cholina

Extra Line

Meant for Highly Productive Dairy Cows.

This mineral nutrition program is designed for cows that reach very high levels of milk production. Premixes included in this line are designed to solve and prevent problems in herds with high milk yield. Every breeder's and farmer's choice in maintaining: high fertility, health status of cloven hooves and udders of the dairy cows' herd. But more importantly they contribute to longevity of highly productive dairy cows.

VITAMIX KW EXTRA CARROT

A blend of vitamins and minerals for lactating cows with high milk yield improving breeding parameters.

Vitamix is characterized by a very high levels of digestible phosphorus and magnesium together with vitamins A, D_3, E, and selenium delivered in an organic form significantly boosts cow's immune system. Additional recommended levels of niacin and biotin are improving liver function. Biotin together with easily-assimilated forms of organic zinc, copper and manganese complex (bioplex) improves the condition of epithelial cells layer in milk ducts, as well as the health of the udder reducing the number of somatic cells cups in milk. Significantly affects the hardness of horn tissue of the first-calf cows. Addition of beta-carotene in the recommended amounts of (1,000 mg) significantly improves the rate of breeding and heat manifestation. It contains live yeast (*Saccharomyces cerevisiae*) that prevents ruminal acidosis through improved feed intake and balanced pH levels in the rumen. The whole composition KW Extra stabilizes milk yield at the maximum level and improves the longevity of cows.

- stabilizes milk yield on a high level
- stimulates feed intake
- increases the effectiveness of breeding and manifestation of heat
- shortens the period in between calving intervals
- reduces the occurrence of postpartum ketoses
- Improves longevity of heifers.

VITAMIX KW EXTRA

A blend of vitamins and minerals for lactating cows with high milk yield.

Vitamix is characterized by a very high level of digestible phosphorus and magnesium together with vitamins A, D_3, E, and selenium delivered in an organic form significantly stimulating cow's immune system. Additional recommended levels of niacin and biotin are improving liver function. Biotin together with easily-assimilated forms of organic zinc, copper and manganese complex (bioplex) improves the condition of epithelial cells layer in milk ducts, improved the udder's health. Reducing the number of somatic cells in milk and significantly affects on the performance of ceratin tissue in first-lactation cows.

It contains live yeast (*Saccharomyces cerevisiae*) preventing ruminal acidosis through improved feed intake and rumen pH stability. The whole composition KW Extra stabilizes milk yield at the maximum level and improves the longevity of cows.

- stabilizes milk yield on a high level
- stimulates feed intake
- reduces the occurrence of postpartum ketoses
- improves longevity of cows.

VITAMIX KW ROZRODOWY

The ideal solution for the post-calving period to improve breeding parameters.

Vitamix is the ideal solution for a post-calving period. High levels of vitamin A, D_3, E (6000 mg) and the recommended dose of beta-carotene (2000 mg) with the addition of organic selenium strengthens oestrus and improves the efficiency of breeding. The addition of high doses of niacin and biotin improves the health status of the liver which is responsible for the hormonal reproductive system. Organic forms of zinc, copper and manganese used in this blend will also affect the genital tract and improve the condition of the udder and cloven hooves. Dedicated for cows up to 100th day of lactation.

- improving the rate of the first artificial insemination
- reducing the incidence of resorption, and foetus deformations
- shortening the period between calvings
- improving the health of calves
- reducing the risk of ketosis after calving.

Extra Line				
Ingredient	Unit	KW Extra Carrot	KW Extra	KW Rozrodowy
Calcium	%	14	14	18
Phosphorus	%	6	6	6
Sodium	%	6,5	6,5	4
Magnesium	%	6	6	4
Vitamin A	j.m.	1 200 000	1 200 000	1 000 000
Vitamin D_3	j.m.	120 000	120 000	120 000
Vitamin E	mg	5 000	5 000	6 000
Vitamin B_1	mg	80	80	55
Vitamin B_2	mg	110	110	40
Vitamin B_6	mg	160	160	20
Vitamin B_{12}	mcg	2 500	2 500	220
Niacin	mg	30 000	30 000	25 000
Biotin	mg	190	190	50
Folic acid	mg	166	166	160
Ca pantothenate	mg	200	200	300
Zinc	mg	6 600	6 600	6 600
Zinc Chelate	mg	2 400	2 400	2 400
Manganese	mg	5 000	5 000	2 800
Manganese Chelate	mg	2 000	2 000	900
Copper	mg	760	760	900
Copper Chelate	mg	900	900	900
Selenium	mg	30	30	30
Organic Selenium	mg	10	10	10
Iodine	mg	100	100	65
Cobalt	mg	20	20	35
Yeast	CFU	5×10^{10}	5×10^{10}	+
Beta-carotene	mg	1 000	-	2 000
Dosage	g/per animal/ per day	200 - 250	200 - 250	200 - 250

Line designed for Dairy Cows with high milk yield

Meant for Maintaining the maximum Milk Production Level.

Stimulating and improving the immunity of the herd, improving the health status of the cloven hooves and udders. This specific mineral and vitamin blend accounts for reducing the somatic cell count in milk. All these supplements ensure optimal balance of minerals and vitamins in the fodder enhancing the health of heifers and maintaining high quality of milk.

VITAMIX KW SOMATIC

A blend of vitamins and minerals reducing the somatic cells cup number in milk.

KW Somatic is a blend of minerals and vitamins for lactating cows that fully covers the demand of highly-productive dairy cows' herd together with proper hygiene of milking, helps to reduce the number of somatic cells cup count in milk and improves the udder's health. Optimum levels of vitamin E and selenium stimulate the immunological system, regulate reproductive functions and facilitate timely insemination of cows. Biotin together with easily-assimilated forms of organic zinc, copper and manganese complex (bioplex) improves the condition of epithelial cells layer in milk ducts, improves the udder's health. Long-term use of this additive reduces the occurrence of lameness in the herd.

- healthy herd
- fewer cases of mastitis
- decreased count of somatic cells in milk

VITAMIX KW (Highly-productive Cows)

A blend of vitamins and minerals stimulating the metabolic rate of dairy cows.

Blend designed for dairy cows producing over or reaching the level of 8 000 kg of milk during the lactation period. VITAMIX KW is excellent feed component, which brings a whole range of active ingredients featuring A,D_3,E, vitamins, calcium pantothenicum, niacin and buffering agents added to the fodder provides optimal balance of the feed. B-vitamin complex stimulates the metabolic rate of dairy cows.

- good health status of the cloven hooves and the skin through adequate supply of zinc
- high efficiency during the lactation period
- stabilization of metabolic processes
- fewer culling cows.

VITAMIX KW LACTO

Designed for cows during the lactation period.

Proper balance of macro and micronutrients and vitamins in the KW-lacto fully meet the needs of high dairy herds. Long-term use of this Vitamix, while maintaining the principles of hygiene of milking, can decrease the number of somatic cells in milk and improve the health status of the udder. Chelate of Biotin and easily digestive organic zinc influence the claws health, help in the healing process when dealing with lameness which is one of the most significant welfare and productivity issues. Improves the epithelial cells layer in teat canal. These compounds also have a beneficial impact on the hoof horn. Selenium and Vitamin E content improves the herd's immunity and account for rumen's fermentation, optimizes the cow's fertility and enables timely insemination.

- optimum level of forage intake accounting for balanced nourishment of the cow
- reduced number of somatic cells cups
- healthy claws
- fewer cases of lameness
- increases fertility parameters

VITAMIX KW TMR

Designed for dairy cows with high milk yield fed with maize silage or other calcium deficient fodder.

VITAMIX KW-TMR contains biotin together with easily-assimilated forms of organic zinc, copper and manganese complex (bioplex) improves the condition of epithelial cells layer in milk ducts, improves the udder's health. Different from VITAMIX Somatic Vitamix KW-optimal level of Calcium: Phosphorous ratio (3:1) provides balance of the necessary supplements in the maize silage and other calcium-deficient fodder. Contains a buffering agent (acidic sodium carbonate) which is guarantee optimal level of the pH in the rumen.

- mineral mixture best for balancing fodder containing high amounts of maize
- accounts for better fodder intake
- ensures good performance during the lactation period

VITAMIX KW BETA-CAROTENE

Designed to improve the fertility parameters in herds with low reproductive rate.

Blend designed for dairy cows' herds that have reproductive problems. The composition is enriched with a large dose of beta-carotene in combination with an optimal level of vitamin A and E together with selenium, improves functioning of cow's reproductive organs and improves breeding results. In case of reproductive problems the most important issue is energy and protein balance in feed ratio. This blend helps to balance active substances, vitamins and other compounds important for the cow's digestive system. A high proportion of silage fed year-round contains 30 -50 % carotene compared to fresh fodder, you should pay attention to this component, making sure it's added to the fodder. The additive is particularly recommended in herds with low reproductive rates.

- improves herd's fertility as it contains of β –carotene
- improves the heat manifestation
- improves productivity

Highly Productive Cows						
Ingredient	Unit	KW SOMATIC	KW 17	KW LAKTO	KW TMR	KW BETA-KAROTEN
Calcium	%	16	17	17	19	17
Phosphorus	%	4	6	6	6	6
Sodium	%	5	5	5	2	4
Magnesium	%	7	5	5	5	5
Vitamin A	j.m.	1 000 000	1 000 000	1 000 000	1 000 000	1 000 000
Vitamin D_3	j.m.	120 000	120 000	120 000	120 000	120 000
Vitamin E	mg	5 000	4 000	5 000	5 000	4 000
Vitamin B_1	mg	150	150	150	150	150
Vitamin B_2	mg	100	100	100	100	100
Vitamin B_6	mg	50	50	50	50	50
Vitamin B_{12}	mcg	600	550	550	550	550
Niacin	mg	2 500	2 500	2 500	2 500	2 500
Biotin	mg	100	-	100	100	100
Folic acid	mg	160	30	30	30	30
Ca pantothenate	mg	300	300	300	300	300
Zinc	mg	7 800	9 500	7 020	7 020	9 500
Zinc chelate	mg	2 700	-	250	250	-
Manganese	mg	3 000	4 000	4 000	4000	4 000
Manganese chelate	mg	1 500	-	-	-	-
Copper	mg	900	1 150	1 150	1 150	1 150
Copper chelate	mg	1 000	-	-	-	-
Selenium	mg	45	45	45	45	45
Iodine	mg	100	90	100	100	90
Cobalt	mg	25	25	25	25	25
Beta-carotene	mg	-	-	-	-	200
Dosage	g/per animal/ per day	100-200	100-200	100-200	100-200	100-200

Dairy Cow's Line

Designed for cow's with average milk yield. Stimulating the health of the herd for cow's that yield between 7000-8000 kg of milk per lactation. Carefully selected composition of minerals and vitamins helps maintain a healthy herd and maintain high milk yield.

VITAMIX KM

Stimulates and improves high milk production as well as provides support of the dairy cow's reproductive system.

Vitamix KM is an ideal mix for dairy cows intended for use with the feeding of all the basic fodder plants. Optimum level of vitamins together with a correct energy and protein balance when added to the feed dose improves cows' fertility, artificial insemination efficiency and shortens the in between calving intervals. High levels of selenium stimulate the cow's reproductive system. The blend contains molasses and flavouring agents providing better palatability of the fodder which results in improving cow's feed intake and accounts for minimizing the risk of ketosis and other metabolic diseases present during the after calving period.

- optimal amount of vitamins and trace elements for dairy cows up to milk yield of 25 kg of per day
- great palatability
- improves longevity of cows.

VITAMIX KM-TMR (Total Mixed Ration)

Designed for dairy cow's mostly fed with maize silage and other Total Mixed Ration Systems.

VITAMIX KM – TMR contains high Calcium : Phosphorous ratio optimally balancing mineral and vitamin additive for calcium-poor food doses when in the farm's TMR system the basic roughage is maize silage, wherein the content of microelements is low. The proposed Vitamix perfectly supplements occurring deficiencies.

VITAMIX KM-TMR irrespective of the fodder's composition the blend is a perfect match, enriching the feed dose with active substances. Provides diverse and balanced mixture of supplements when added to cow's food which is a pre-condition for good animal health

- vitamin and mineral blend suitable for balancing rations with large amounts of maize silage
- high palatability
- promotes longevity of cow's.

VITAMIX KM-P (Dairy Cows - Pasture)

Designed for cows during grazing period.

Cattle's demand for minerals is higher than their availability in the fodder. VITAMIX KM-P Pasture is a mixture of minerals and vitamins, covering the basic needs of dairy cows with a milk yield up to 20 kg per day.

Fully covers cow's demand for mineral compounds not available in roughage. Enriched with magnesium offers a successful protection against tetany when cows are fed with young, potassium-rich green fodder. The optimum level of cobalt improves fibre digestion in the rumen.

- optimum ration balancing during the grazing period
- recommended when feeding roughage rich in potassium
- improves the palatability of roughage

VITAMIX KM Farmer

A mixture of minerals and vitamins designed for dairy cows.

Vitamix KM Farmer is a mixture of minerals and vitamins designed for dairy cows for use with the feeding of all the basic fodder plants. It contains all the essential vitamins and microelements necessary for feeding dairy cows. The addition of molasses and flavoring agents stimulates higher feed intake.

- optimal amount of vitamins and trace elements designed for dairy cows
- high palatability
- extending the life of dairy cows

Dairy Cows – Milk yield up to 8000 kg					
Ingredient	Unit	KM	KM TMR	KM PASTWISKO	KM FARMER
Calcium	%	18	21	15	30
Phosphorus	%	6	4	5	2
Sodium	%	5	5	3	3
Magnesium	%	5,5	4,5	13	2
Vitamin A	j.m.	750 000	750 000	500 000	400 000
Vitamin D_3	j.m.	120 000	120 000	100 000	64 000
Vitamin E	mg	1 500	1 500	600	800
Vitamin B_1	mg	55	55	-	30
Vitamin B_2	mg	40	40	-	20
Vitamin B_6	mg	10	10	-	6
Vitamin B_{12}	mcg	220	220	-	120
Niacin	mg	950	950	-	500
Biotin	mg	-	-	-	-
Folic acid	mg	12	12	-	6
Ca pantothenate	mg	115	115	-	60
Zinc	mg	5 000	5 000	9 500	3 21O
Zinc chelate	mg	-	-	-	-
Manganese	mg	2 800	2 800	4 000	1 720
Manganese chelate	mg	-	-	-	-
Copper	mg	800	800	1 110	500
Copper chelate	mg	-	-	-	-
Selenium	mg	45	45	45	26
Iodine	mg	65	65	90	40
Cobalt	mg	35	35	50	20
Beta-carotene	mg	-	-	-	-
Dosage	g/per animal/ per day	100-200	100-200	100-200	100 - 200

Dry cow's Line

Meant to prepare cows for birth and lactation. Preventing after calving diseases such as ketosis, hypocalcemia.

VITAMIX KZ-I (first stage of the dry period)

Formulated to provide the necessary supplemental vitamins and trace minerals during the first stage of the dry period.

Special mineral and vitamin mix for an actual dry-off period (8 - 4 weeks before calving)

Specialized blend of mineral- vitamin for proper dry period (8-4 week before calving). Composition of the VITAMIX is intended for cows that are not fed with balanced feed or receive a very small amount of fodder during the 8-4 weeks period before calving. Levels and ratios of macro- and microelements together with vitamins are designed to cover the demand of a heifer and a developing calf foetus as well as to prepare the cow for the next lactation.

VITAMIX KZ-I reduces the risk of hypocalcaemia and post-calvingl paralysis. Balanced level of Calcium stimulates secretion of parathormone responsible for better assimilation of Ca in the gastrointestinal tract. Due to its low sodium content VITAMIX KZ-I is beneficial to the udders' condition after calving. Improves the smooth muscle's condition in the uterus – as Calcium is the most important mineral in the colostrum and milk synthesis process.

- provides optimal proportions of Ca : P
- based on sulphates allows to easily assimilate the Mg preventing from the Mg deficiency
- contains high levels of vitamins A, D_3, E, responsible for boosting the immune system
- Stimulates the production of high quality colostrum.

VITAMIX KZ-II (second stage of the dry period)

A blend of minerals and vitamins designated for last 3 weeks of the cow's pregnancy (transition period).

Increased amount of anion salts (sulphates and chlorides) and lower amount of sodium together with higher calcium and magnesium concentration levels help to maintain proper level of Ca in the cow's blood, preventing after calving paralysis (milk fever) and many other metabolic diseases. Increased content of vitamin E and selenium helps cows to deal with calving-related stress more easily, prevents mastitis (together with low Na content and increased Mg levels). Stimulates the production of high quality colostrums improving the new born calves' health.

- has an optimal balance of cation - anion salt for the dry period
- regulates mineral balance before calving
- prevents from magnesium deficiency
- contains high levels of vitamins A, D_3, E, responsible for the stimulation the immune system

VITAMIX KZ-II Cholina

Mineral and Vitamin blend for the last 3 weeks of heifer's pregnancy.

An increased amount of anionic salts (sulphates and chlorides) and lower the amount of sodium together with a higher concentration of calcium and magnesium allow cows to maintain an adequate level of Ca in the blood, which prevents the occurrence of aftercalving dissorders (milk fever) and other metabolic diseases.

High levels of vitamin E and selenium allow the cow to easier cope with stress, which occurs after calving, and can cause udder inflammation whereas a high proportion of vitamin A - improves the quality of colostrum. Provides rumen protected choline which protects the liver and prevents aftercalving ketosis.

- influences a positive balance of cation – anion salts for dry cows
- regulates mineral balance before calving
- protects the liver from fatty liver syndrome and ketosis
- prevents from magnesium deficiency.

Dry Cows' Line				
Ingredient	Unit	KZ-I 1st Period	KZ-II 2nd Period	KZ II 2nd Period Choline
Calcium	%	9	6	6
Phosphorus	%	9	4	3,2
Sodium	%	6	4,8	4
Magnesium	%	9	10	8
Vitamin A	j.m.	1 000 000	1 000 000	800 000
Vitamin D_3	j.m.	120 000	120 000	96 000
Vitamin E	mg	4 000	5 000	4 000
Vitamin B_1	mg	150	150	120
Vitamin B_2	mg	100	100	80
Vitamin B_6	mg	50	50	40
Vitamin B_{12}	mcg	550	550	440
Vitamin C	mg	-	-	-
Niacin	mg	2 500	2 500	2 000
Folic acid	mg	30	30	24
Ca pantothenate	mg	300	300	240
Zinc	mg	9 500	9 500	7 600
Manganese	mg	4 000	4 000	3 200
Copper	mg	1 150	1 150	920
Selenium	mg	45	45	36
Iodine	mg	90	90	70
Anionic Salts	mEq	-	-4 300	-4 100
Cobalt	mg	25	25	20
Protected Choline	mg	-	-	50 000
Beta-carotene	mg	-	-	-
Dosage	g/per animal/ per day	100-200	100-200	100-200

Line for heifers and calves

VITAMIX J (heifers)

Mineral and vitamin blend for heifers older than one year.

It is a blend of minerals and vitamins suitable for breeding heifers older than one year. Contains two sources of calcium, a large amount of vitamin D_3 and phosphorus affecting on bone and muscle development. It contains a full set of vitamins, macro - and micronutrients that stimulate immunity. The addition of vitamin E in the amount of 3000 mg significantly affects the artificial insemination and improves the breeding parameters. High content of zinc - 9 500 mg prevents claws disorders. High levels of B vitamins for good metabolism and energy contributes to the development of heifers' digestive system.

- Proper growth and development of heifers in the second year of life
- Improving the effectiveness of artificial insemination (age 13-15 months)
- Stimulates the development of rumen.

VITAMIX C (Calves)

Mineral and vitamin blend for calves.

Young animals' demand for vitamins and minerals is higher than their availability in roughage. In the first period of their life this demand is fully covered by a milk replacer. Red Line, Orange Line, Blue Line and Brown Line of milk replacers offer 2 to 3 times higher mineral and vitamin levels than naturally present in cow's milk. Provides two sources of calcium, a large amount of vitamin D_3 and phosphorus supporting bone and muscle development. Levels of vitamins (vitamin C 1000 mg, E - 1500 mg) and macro - and micronutrients stimulate immunity. The high content of zinc - 9500 mg prevents claw and skin diseases. B vitamins provide good metabolism and energy and influence the development of the digestive system of the young animal.

Once feeding with a milk replacer comes to an end, providing optimal vitamin and minerals level for the calf is essential. It is recommended:

- Administer Vitamix C Calves in the amount of 50-150 g per animal (It can be mixed with the fodder or given separately)
- Feed with Primopasza prestarter, which is similarly to milk replacers, provides vitamins and minerals. In this case adding VITAMIX C Calves is not required. (Once feeding with Primopasza is over, then adding VITAMIX C Calves to the fodder should be started)
- Stimulates strength and vitality
- Optimal daily gains
- Proper rumen development

Vitamix for fattening and Mineral Blends

VITAMIX O (fattening)

Mineral and vitamin blend designed for fattening young cattle

This blend specifically designed for shortfalls occurring in typical diets when fattening animals. This Vitamix is designed to cover deficiencies in typical fed doses designed for fattening young cattle. Increased amount of Ca supplements basic fodder for fattening animals, maize silage, which is poor in this macro-element. Amounts and ratios of other elements and vitamins protect the health status of young cattle and help to maintain high rate of weight gain.

- better convertion of the fodder's protein
- better gains in muscle mass
- optimal breeding parameters.

VITAMIX MINERAL BLEND (MM)

Mineral blend designed for all farm animals.

This blend provides all the necessary macro-and micronutrients for balancing the feed doses on the farm.

- improves the palatability of feed
- supplements the deficiencies of Ca and P in the diet

Calves and Heifers					
Ingredient	Unit	J Heifer	C Calves	O Fattening	MM MIneral Blend
Calcium	%	20	20	20	25
Phosphorus	%	5	5	4	2
Sodium	%	3	3	4	10
Magnesium	%	5	5	6	2
Vitamin A	j.m.	750 000	750 000	500 000	-
Vitamin D_3	j.m.	180 000	180 000	120 000	-
Vitamin E	mg	3 000	1 500	1 000	-
Vitamin B_1	mg	300	300	200	-
Vitamin B_2	mg	30	30	30	-
Vitamin B_6	mg	30	30	30	-
Vitamin B_{12}	mcg	600	600	500	-
Vitamin C	mg	-	1000	-	-
Niacin	mg	260	260	35	-
Folic acid	mg	10	10	-	-
Ca pantothenate	mg	100	100	-	-
Zinc	mg	9 500	9 500	9 500	570
Manganese	mg	4 000	4 000	2 500	240
Copper	mg	1 150	1 150	1 000	75
Selenium	mg	45	45	45	2,5
Iodine	mg	90	90	60	5,5
Anionic Salts	mEq	-	-	-	-
Cobalt	mg	25		25	-
Protected Choline	mg	-	-	-	-
Beta-carotene	mg	-	-	-	-
Dosage	g/per animal/ per day	100-150	50 - 150	100-150	50-150

Professional Line

Herds with an average yield during lactation averaging in 6000 kg of milk (about 20 kg per day), require a modern approach regarding their nutrition. Increased milk yield in HF cows is associated with high nutrient demand during the lactation period. The relationship between the covering the nutritional demand and the level of milk yield of dairy cows is clearly visible and can be measured every day. Often due to inadequate nutrition genetic potential of cows is untapped. Best method is an appropriate and efficient ensiling of forage feeding system, based on a balanced ration. Possibilities to increase milk yield using POLMASS SA feed additives are significant.

Feed concentrates that best balance the ration in terms of:

- energy
- protein
- minerals and vitamins

PROFESSIONAL Vitamix

OBJECTIVE: to balance fodder consisting of corn silage

It is a mixture of minerals and vitamins designed for cows that receive significant amounts of maize silage (grain and whole plants) and small amounts of hay silage (often poor quality). Included in the Professional Vitamix non-protein nitrogen „Optigen" improves nitrogen balance in the rumen, which will result in improved dry matter intake, as well as better use of nutrients.

Professional Vitamix combines an optimal level of macro-, microelements and vitamins and nitrogen all of the ingredients provide inevitable source of nitrogen for the bacteria in the rumen. Nitrogen content in the Professional Vitamix is slowly released in the rumen, at a rate similar to the release of energy in the process of fermentation, which is safe for the cow and fully uses the capabilities of microorganisms to synthesize the protein.

The suggested use of 250 g / cow / day

Vitamix YEAST

YEAST - KEEPING PROPER PH LEVEL IN THE RUMEN

One of the elements of high- intensive feeding of dairy cows which is essential for their health, productivity and longevity (number of lactation) is to stabilize the rumen environment. A new generation of feed additives that actively influence the maintenance of favorable conditions in the rumen are alive, stabilized yeast cultures. They work by, among others on improving anaerobic conditions and the inhibition of growth of lactic acid bacteria (*Streptococcus bovis*), and stimulation of lactic acid -degrading bacteria (*Megasphaera elsdenii, Veillonella alcalescens, Prevotella ruminicola*).

POLMASS SA is offering a blend of minerals and vitamins - Vitamix Yeast, which contains all the macro - and microelements and vitamins in levels and proportions to appropriately ensure milk yield at the level of circa 7,000 liters of milk per lactation. This Vitamix is recommended especially during feeding maize silage, as it features a high content of Calcium together with natural supplements designed for diets based on this type of silage. Another advantage of the blend is increased participation of vitamin B_{12}, which affects the growth of bacteria and the presence of masticatory composed of live freeze-dried cultures of yeast strain *Saccharomyces cerevisiae* at $2,5 \times 10^{10}$ CFU.

ADVANTAGES

Due to the presence of these microorganisms, the systematic administration of 200 g / day / each Vitamix Yeast can provide:

- an increase in the number of bacteria using lactic acid,
- increase the number and activity of cellulolytic bacteria,
- Increase the intake of the dry matter,
- appropriate pH in the rumen.

There's a significant increase in the milk production.

NOTE! The use of live yeast cultures is particularly justified for a transitional period that includes the last 2-3 weeks of the dry and the first three months of lactation period. POLMASS SA individually approaches each client and, depending on the physiological needs of the cow produces additives with live yeast cultures for both the dry period and full lactation period.

Vitamix Detox

MYCOTOXINS VERSUS THE ANIMAL'S HEALTH

Contamination of feed with Mycotoxin has become a huge problem. It is estimated that as many as 25 to 80 percent feed is infected. World's grain production depends on the weather - causing contamination with fungi that during cow's metabolism in the stomach produces harmful compounds - secondary metabolites called mycotoxins. These are very toxic : in small doses can impair health - causing immunosuppression, increasing the number of somatic cells in milk, impairing reproductive factors - and frequent miscarriages as well as low milk production.

SOLUTIONS IN VITAMIX DETOX

What is important mycotoxins are extremely difficult to inactivate. In fact, the only effective treatment is the addition of adsorbents - compound with the ability to bind polar mycotoxins on its surface. VITAMIX Detox - features finely ground silicates that adsorb fungal toxins on their surface, preventing their absorption in intestinal tract, which allows their removal along with feces.

HOW DOES IT WORK?

Aluminosilicates present in Vitamix Detox:

- permanently adsorb mycotoxins present in feed,
- reduce the toxicity of mycotoxins in the gastrointestinal tract and block their absorption,
- help to remove harmful toxins from the animal's body.

CONCLUSION

Using Vitamix Detox reduces the risk of mycotoxins in feed providing a real protection against the pernicious influence of the animal's body!

HERBAL Vitamix

HERBS IN THE CATTLE'S FEED

Herbal Vitamix due to its optimal content of macro-and micronutrients and vitamins it is ideal for balancing daily rations. Due to the presence of herbs it works well in maintaining healthy animals. Here, herbs also contain phytoncides - natural, biological active substances, which exhibit strong bactericidal and bacteriostatic characteristics.

ADVANTAGES

The Herbal Vitamix significantly:

- modifies the qualitative and quantitative composition of the gut microflora, by reducing the number of pathogenic Gram + and Gram - bacteria
- works at the same level or even higher when compared with antibiotic growth promoters
- prevents animals from gastric problems
- has antidiarrheal, anti-inflammatory, antipyretic and anti-parasitic properties
- binds mycotoxins and slows down the formation of ammonia in the rumen
- stimulates the diastolic processes, bile production and stimulates blood circulation
- promotes the secretion of digestive juices, increases peristalsis and improves digestion and absorption of nutrients,
- improves the feed flavor quality, increases the intake of fodder thus improves productivity (milk yield).

Professional Line of Vitamix					
Ingredient	Unit	Professional	Yeast	Detox	Herbal
Calcium	%	9,4	18	17	17
Phosphorus	%	4,5	4,5	4,5	4,5
Sodium	%	3	4	4	4
Magnesium	%	4	7	7	7
Vitamin A	j.m.	750 000	750 000	750 000	750 000
Vitamin D_3	j.m.	120 000	120 000	120 000	120 000
Vitamin E	mg	1 500	1 500	2 500	3 000
Vitamin B_1	mg	55	55	55	55
Vitamin B_2	mg	40	40	40	40
Vitamin B_6	mg	10	10	10	10
Vitamin B_{12}	mcg	220	220	220	220
Niacin	mg	950	950	950	950
Folic acid	mg	12	12	12	12
Ca pantothenate	mg	115	115	115	115
Zinc	mg	5 000	5 000	5 000	5 000
Zinc Chelate	mg	-	-	-	2 000
Manganese	mg	2 800	2 800	2 800	2 800
Manganese Chelate	mg	-	-	-	1 400
Copper	mg	800	800	800	800
Copper Chelate	mg	-	-	-	900
Selenium	mg	45	45	45	45
Iodine	mg	65	65	65	65
Cobalt	mg	35	35	35	35
Yeast	CFU	-	5×10^{10}	-	-
Absorbents	-/+	-	-	+	-
Herbs	-/+	-	-	-	+
Non-protein Nitrogen	g	164	-	-	-
Dosage	g/ per animal/per day	250	200	250	200

Right nutrition during the pre-calving period

Animal Husbandry nutritional advisor – Andrzej Majewski, M.Sc.

Undoubtedly from the point of view of the future lactation the most important period is proper execution the of the dry period in dairy cows by controlling their BCS conditions. Rumen acidosis, abomasum displacement, ketosis, postpartum retention - these and other diseases may be the result of wrong nutrition of dairy cows in the periparturient period. This is a very sensitive time during which savings gained on the fodder are not recommended, on the contrary those savings can bring more harm than profit.

GOAL OF THE PRE-CALVING PERIOD (PERINATAL PERIOD)

The bottom line is the to realize what is the sole purpose of the pre-calving period.:

- recuperation of the lactic gland
- regeneration of the gastrointestinal tract (rumen)
- correction of the (BCS) condition
- rumen adaptation for the intense nutrition during the lactation period,
- prophylaxis against metabolic diseases.

THREE IMPORTANT „SUB-PERIODS"

Perinatal (pre-calving) period is divided into three phases:

- proper dry period (8 - 5 weeks before calving),
- transition period (3 weeks prior to delivery)
- the initial milking period (up to 4 - 6 weeks after calving)

THE PROPER DRY PERIOD

Please be sure to dry the dairy cows with the use of proper antibiotic – healthy udder (TOK examination) – selecting the antibiotic based on the actual microbial sensitivity test.

During this period, the feeding relies solely on of the structural types of feed rich in fiber such as: hay, silage with high dry matter content, straw. Such feed naturally rubs against the rumen papilla and stimulates their regeneration, which significantly improves the absorption of volatile fatty acids coming from the fermentation of dietary ingredients used in the production of milk. It is also crucial time to perform health checks, and if necessary, we can influence the improvement of the animal's health during this time.

During this time one should eliminate:

- corn (maize) silage
- grain slurry
- forage.

Given the fact that the dry period lasts for the two last months of the cow's pregnancy, where intensive fetal weight gain occurs as well as DDGS feeding, you should remember about the mineral - vitamin nutrition suplementation: Vitamix KZ I 200-250g/per cow/per day.

THE TRANSITION PERIOD

It's the crucial time of preparing cows for the period of lactation:

- rumen needs to adapt to the fodders rich in valuable supplements,
- the use of volatile fatty acids for the milk production,
- prevention against metabolic diseases (ketosis, acidosis, abomasum displacement, withholding of the placenta).

During the period of the three weeks before the calving dairy cows should get prepared to the amount of ration that will be administered after the calving. It is the time to generate the appropriate „pools" of bacterial flora (mainly amylolytic) in the rumen to digest the rations rich in high levels of forage. This should be a preventive dose, which is intended to act against:

- so called „lazy cow syndrome": it is advised to administer energy concentrates during this time such as: Ketomix E-18, Liquid Ketomix and protected fats in order to prevent excessive body weight loss after calving,
- withholding of the placenta: vitamin and mineral blend should be used, which has the appropriate Ca: P ratio, for example, KZ I (1st stage of the dry-off period) administered 200 - 300 g / per cow /per day,
- progressive acidosis occurring as a result of feeding fodder rich in starch (corn silage and forage rich in starch and protein).

EARLY LACTATION PERIOD

It is the period from the day of calving lasting up to 4-6 weeks. It is perceived as the transition period's continuation and ration should contain high levels of energy concentrates. It is recommended to use: Ketomix, Ketomix E18, protected fats as well as mineral-vitamin blends rich in w ß - carotene, niacin, Vitamin E – dosage of 200 g / per cow / per day of KZ I.

Ration of this kind, self-prepared fodder (15%of protected fat, 10% vitamin and mineral blend, 15% of corn slurry, 15% of rape slurry or 30% of the protein concentrate/containing 38% of crude protein/ and 100% of grain slurry and 2.5% of the buffering agent) – administered 4-5 kg/per cow/per day. Ration of the purchased ready-to-use fodder in the amount of 1-2kg/per cow/per day.

In order to prevent the abomasum displacement correct after-calving mineral and vitamin blend should be administered – Turbo Drink in the dose of 1 kg/per cow/per day. It should be given right after calving and if the health condition of the cow is poor Turbo Drink can be given for a few more days until visible improvement is present.

Energetic concentrates

Fodder additives of POLMASS SA to balance the energy deficiencies.

During the postnatal period, and in last few days before calving, highly-productive cows are not able to uptake an amount of energy from feed to cover their energy demand required for milk production. It affects 80% of cows, particularly these of high productivity potential. Some cows' fodder intake can be even 30% less than in the middle of lactation period. This leads to disproportions between the body's nutritional demand and the availability of nutrients delivered from the feed. As a result negative energy balance causes weight loss and weakens cow's condition and can lead to ovulation problems as well as impair fertility. So-called "silent oestruses" occurs making efficient insemination difficult and prolongs the calving interval. Energy deficiency leads to metabolic diseases, including ketosis and fatty liver.

Leaving energy deficiency untreated leads to significant economic losses. The daily milk yield and cow's profitability throughout the lactation period decreases. If at the lactation's peak (50 – 60 days after calving) milk production is approximately lower by 1 kg, efficiency for whole lactation falls by 200 to 225 kg. Polmass variety of options for increasing energy concentration in a food dose.

Ketomix E18

Granulated energy concentrate for highly-productive dairy cows which prevents ketosis.

CONTENT:

- Metabolic energy: 18.3 MJ/kg
- Net lactation energy: 14.08 MJ/kg
- Total protein: 13.0%
- Digestible protein: 11.1%
- Raw fiber: 7.0%.

OVERVIEW:

Ketomix E-18 is a source of easily accessible energy used in the intestines. Energy concentration in Ketomix E-18 is 18.3 MJ per 1 kg. This is the highest energy concentration per 1 kg amongst all energy formulae available on the market. KETOMIX is called the "energy bomb" and is used in the best breeding centres throughout the country, for the best cows in Poland.

ADVANTAGES:

KETOMIX E-18 prevents and treats ketosis, protects the liver through supplying additional components, which are used in biochemical processes in the liver. KETOMIX E-18 supplements energy deficiencies, facilitates better use of protein in feed and enables higher milk production. Adequate composition of this mix facilitates a shift of metabolism of highly-productive cows from a dry-off state to intensive milk production. Addition of protected fats, which is digested in the intestines, helps to avoid problems with fermentation balance in the rumen, frequently occurring during the lactation period.

DOSE INSTRUCTIONS:

1. It is recommended to use Ketomix E-18 in the perinatal period (pre-calving period) for 6 weeks with a balanced food dose as an "Extra" additive. Feeding should start 2 weeks before calving and continue during the 4 weeks after calving. Ketomix administration in the perinatal period: 0.8 kg – 1.0 kg/ per cow/ per day.
2. Ketomix E-18 can be used to balance protein roughage and balance fodder during the grazing period.

Dosing throughout the year: Depending on other fodders fed, a dose is related to balance the components in a food dose.

Ketomix

Liquid energy concentrate, preventing and treating ketosis in a clinical and subclinical conditions.

CONTENT:

- Propylene glycol,
- molasses, sugar alcohols,
- Sodium propionate.
- Metabolic energy: 13.3 MJ/kg
- Net lactation energy: 10.5 MJ/kg

Depending on a type of roughage, administering technique, size of the herd, the energy concentrate can be administered as a bulk or liquid concentrate.

Liquid form is particularly recommended for clinical and subclinical ketosis. Ketomix is a source of energy components of high quality, the most important of which are propylene glycol and molasses. Known in Poland for over 15 years, it is widely used and recognised by the best breeders.

However, it also is a very good solution for many smaller farms due to its efficiency in ketosis prophylactic and treatment. KETOMIX is easy to use and administer. Poured over the fodder or mixed with KETOMIX is eagerly eaten by animals; the fodder's taste and intake clearly increase.

In order to provide proper recuperation of the cow after calving high quality Turbo Drink should be fed, in order "to get the cow back on its feet".

Turbo Drink

Supplement for calved dairy cows to stimulate energy balance.

TURBO Drink is a unique energy supplement for calved cows to strengthen their health and vitality. Turbo Drink promotes sound post-calving recovery, supplies cow's organism with energy, calcium and a wide variety of vitamins. What's more, the cow downer syndrome as well as the risk of metabolic diseases. It also prevents from placenta's retention and stimulates the reproductive system's activity as well.

ACTIVE SUBSTANCES:

This product contains highly assimilated nutritional ingredients in order to diminish the occurrence of energetic and mineral losses present after calving:

- propylene glycol and dextrose compensate for the cow's lack of energy
- energy enriched monocalcium phosphate targets the postpartum complications
- acid sodium carbonate and sodium propionate improve cow`s appetite after calving
- yeast cultures and linseed stimulating the rumen.

OVERVIEW:

- lower risk of postpartum complications
- lower risk of abomasum displacement
- supplements the mineral and vitamin levels after calving
- boosts cow`s appetite after calving
- replenishes and promotes metabolic system
- quickly recuperates the dairy cow after calving.

DOSE INSTRUCTIONS:

This product should be used right after calving. One packet (1000g) should be dissolved in 10-20 liters of warm water (temperature around 38°C) and fed at once after calving. It can be administered via a probe, when the cow is unwilling to drink the solution. For dairy cow's with poorer health condition it can be fed for another 2-3 days.

Mirobiological silage additives designated for ensiling a variety different fodder - a perfect way to prepare a tasty and nutritious silage

Animal husbandry nutritional advisor – Waldemar Budziński, M.Sc.

What is silage?

3. Silage is feed created as a result of ensiling whole or partially cut plants (alfalfa, grass, corn) and other raw materials of vegetable origin.
4. The plant matter is harvested, effectively wilted, picked up from the field, compacted and as the final stage the air access is cut off which results in so called lactic fermentation.
5. Ensiling is possible thanks to the lactic acid.
6. This acid is produced during the fermentation process by the lactic acid bacteria located on the plants and also supplied when adding the inoculants.
7. Lactic acid inhibits the growth of microorganisms that cause unwanted loss of sugars, protein breakdown or producing harmful substances endangering the animal's well-being.

SUCCESSFUL SILAGE MANUAL – THE KEY TO PRODUCING WELL-PRESERVED SILAGE

1. Harvest the crop at the right stage of maturity for optimum quality and yield.
2. Avoid harvesting during rainy weather – monitor weather forecasts.
3. Mow and wilt the crop to the appropriate amount of dry matter content of the parent forage designated for ensiling 30 - 45%.
4. Shorter chop length increases rate of release of fermentation substrates and improves compaction.
5. Make sure that soil doesn't get into the forage (ashes should be below 10% DM).
6. Use the correct application rate in accordance with manufacturer's instructions, minimizing application losses. Ensuring thorough mixing of the additive throughout the forage.
7. Compact well and seal effectively to create an anaerobic (air-free) environment. This will minimize losses during storage.
8. Ensure the forage is effectively sealed – the seal is airtight.

THE MOST IMPORTANT THING IS COMPACTING WELL AND FILLING THE SILO AS QUICK AS POSSIBLE

The basic principle is the speed the silage is prepared and closing the silo as closing the tank as soon as possible. The silo should be covered and filled up in the shortest period possible – preferably within one or two days. Particularly important is precise compacting of the forage in order to remove all the remaining air, which inhibits the growth of aerobic micro-organisms. In addition, tight covering of the silo is crucial in order to prevent the carbon dioxide emission and discourage the development of mold and yeast, which have a large ability to draw water from the environment and rapidly evolve in the upper layers causing mass loss of nutrients in the dry matter and the danger of mycotoxins formation. 1m^3 of well compacted and chopped alfalfa silage and grass should weigh about 600-650 kg whilst 1m^3 maize weighs about 800 pounds.

ENSILING PROCESS STEP BY STEP

Oxygen is entrapped within the fresh forage delivered to the silage structure and this oxygen maintains the respiration of plants and microorganisms. During this phase, heat, water and CO_2 are produced and lost. Oxygen has been depleted, but pH is still relatively high allowing spoilage microorganisms to grow. As lactic acid bacteria proliferate and consume plant carbohydrates to produce lactic acid (strong acid), the forage mass pH decreases below the critical point inhibiting or killing spoilage microorganisms. During the fermentation phase we observe effluents, silage gas production and shrinkage of the forage mass. A rapid decline in pH will minimize dry matter (DM) losses. Adding biostimulators to the dry matter, that contain lactic acid bacteria which have the ability of rapid multiplication, and can use the soluble sugars several times faster than that of epiphytic bacteria and produce larger amounts of lactic acid. Acidic environment reduces the activity and efficacy of enzymes decaying of protein.

OPTIMAL COMPOSITION OF SILAGE ADDITIVES

Once the oxygen has been depleted the anaerobic fermentation phase begins. During this phase different populations of anaerobic bacteria ferment the sugars. The sugars are converted primarily into lactic acid, but also acetic acid, ethanol, carbon dioxide, and a few other minor products. The production of acid lowers the pH of the ensiled crop which inhibits the growth of other microbes. The principal bacteria for ensiling are the lactic acid bacteria (LAB). LAB are divided into two broad categories. The homofermentative LAB produce acetic acid and carbon dioxide as well as lactic acid. Homofermenters are more desirable than heterofermenters because their fermentation is more efficient, resulting less loss of dry matter and energy. The fermentation process should be controlled by appropriately selected compositions of bacteria, which will include the bacteria producing lactic acid the fastest during occurring changes in the environment throughout the ensiling process of the fodder. Fermentation takes place in two main phases and involves diverse and carefully selected groups of lactic acid bacteria.

The first stage of fermentation – rapid production of lactic acid. *Enterococcus faecium* is a technological additive intended to improve the ensiling process – it's the best bacteria to start the process with. Only a few among lactic acid bacteria strains have the ability to very quickly and effectively colonize forage. Those include *Enterococcus faecium*, which needs only 18 minutes to double its own quantity in your freshly ensiled fodder. The speed at which *Enterococcus faecium* populates the environment reduces to a minimum the chances of the prevalence of pathogenic microorganisms in the silage: clostridii, enterobacteria, yeast or mold. ***Enterococcus faecium* is an ideal bacterium for the „Start phase" for each breeder, which can be chosen from the variety of the silage additives suggested by Polmass SA.**

The second stage of fermentation - during this time the pH decreases due to increasing population of lactic bacteria in which *Lactobacillus plantarum* - bacterium selected for the second phase of ensiling process is the best choice. *Enterococcus faecium* is a so called „sprinter", which prepares the optimal conditions for the next phase of ensiling. Bacteria of the „starter phase" intensively lower the pH level in the ensiled forage. New conditions and lower pH in the silage environment activates another strain of lactic acid bacteria, i.e. *Lactobacillus plantarum*. The strain of *Lactobacillus plantarumis* a typical „long-distance runner." The effect of this action is to further decrease the pH level of ensiled fodder down to the level of pH 4.0 - 4.5. At this stage the lactic acid bacteria population increases to the level between 109 -1011 CFU (colony forming units) per 1 g of silage. ***Lactobacillus plantarum* is an ideal bacterium for the „finish phase" for each breeder, which can be chosen from the variety of the silage additives suggested by Polmass SA.**

Bacteria of the "start phase" and the "finish phase" properties are the essential basis for the silage additives offered by Polmass SA. Compositions of silage additives are complemented by two further strains of bacteria, mentioned below:

Pediococcus acidilactici – bacteria of this strain support the ensiling process, through improving the organoleptic qualities of the silage and by reducing gas emission and consequently limit the loss of nutrients in the dry matter. Also reduces the amount of clostridia and listeria.

Lactobacillus buchneri – bacteria that stabilize the ensiling process and work well as a „team-player". Heterofermentative bacteria *Lactobacillus buchneri* are not predominantly present in the initial phases of the fermentation process because those multiply significantly slower in the fresh fodder, than other strains of lactic acid bacteria. This bacteria also produces acetic acid, propionic acid and propylene glycol in the final stage of fermentation process, which closes and consolidates ensiling process and prevents the secondary fermentation. Production of propylene glycol takes place after about 60 days of fermentation. Lactobacillus buchneri reduces further the occurence of the yeast and mold in the silage, and also prevents silage from overheating. *Lactobacillus buchneri* is an ideal bacterium to stabilize the silage. This bacteria activatesduring the „finish phase" of the ensiling process and prevents the secondary fermentation process.

USE OF SILAGE ADDITIVES IN ENSILING – NECESSITY OR A TREND?

Number of bacteria producing lactic acid, which should be present in a good quality silage is 100 000 CFU per 1 g of ensiled forage. Numerous analyzes and feeding tests made by our company and the results received from the preformed research through the laboratory analyses conducted by universities and scientific research institutes clearly state the following:

Using silage additives, which have the right composition and concentration level, when ensiling fodder benefits in the following ways:

- have a wider range of the volatile fatty acids and are less susceptible to secondary fermentation process and over-heating.
- are more durable after removing from the silo and preserve their quality longer on the feeding table, are not contaminated with molds and yeast, and what's most important are eagerly eaten by the animals.

As a result, rations may contain less fodder. It is also crucial, as the rumen acidosis is a constant threat to the breeder and the herd.

YOU CAN HAVE A SIGNIFICANT IMPACT ON THE ENSILING PROCESS

Only when the whole ensiling process is conducted properly than both the biological and chemical additives for silage can be effective. Their role is to facilitate the fermentation process not replacing the process itself. Animal husbandry nutritional advisors of Polmass SA repeatedly propagate the same principle: ***„if one did not keep the technological regime during the ensiling process the silage additives will be of no help. However, if you have kept all the requirements one can not miss the opportunity to ensure the highest quality of forage by not adding the silage additive"***.

SILAGE HAS NO SECRETS FOR POLMASS!

Silage analyses are performed on-site at the farm. Polmass SA specialists have been advising on silage preparation for over three decades. We already did tens of millions of tons of roughage in cooperation with breeders who have been putting their trust into our company for many years. Therefore, silage does not have any secrets for Polmass. The effectiveness of the consultations also relies on the use of specialized equipment used for analyses performed on the ensiled forage on the farms - our advisors use a portable labolatory equipment the AGRI NIR. NIRS technology uses the principle of near infrared spectrometry. It is a convenient and fast way of fodder's analyzing, allowing to measure the chemical composition of silage and its parameters such as protein, starch, ADF (acid detergent fiber) and NDF (neutral detergent fiber) fiber, dry matter, crude ash right on the spot. Received analyses allow quick and accurate indication of nutritional value of silage. Polmass consultants give the breeders and farmers the opportunity to optimize the rations and are able to estimate necessary changes in order to achieve optimal nutritional value of the rations fed to the animals. Polmass advisors also check the temperature of the silage in the silos, pH level and the density of the ensiled fodder.

FEATURES OF THE SILAGE ADDITIVES

- carefully selected strains of bacteria supplementing one another's efficacy,
- high level of concentration of lactic acid bacteria,
- bacterial activity over a wide range of dry matter (28 45%),
- bacterial tolerance to low pH level (even below pH 4.0),
- Safe to use, non-corrosive to the farm's hardware and safe for use,
- natural products.

BENEFITS OF USING THE SILAGE ADDITIVES:

- healthier herd, less metabolic diseases appearing in the herd,
- cheaper protein and energy in the food rations,
- higher and cheaper milk yield from the dairy cows.

AgriNir - Portable laboratory used on site, on the farms.
It is used to analyze the nutritional value of silage and fodder.

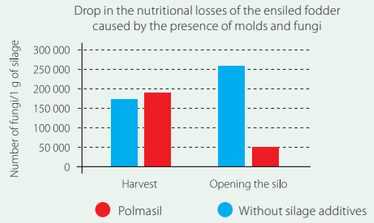
MICROBIOLOGICAL SILAGE ADDITIVES (INOCULANTS)

POLMASIL®

Polmasil is a microbiological silage additive designated for ensiling a whole variety of fodder plants such as: grass, legumes, maize, GPS (whole plants) and their blends.

Polmasil contains three strains of lactic acid bacteria *Enterococcus faecium*, *Lactobacillus plantarum*, *Pediococcus acidilactici*. Polmasil adhibits 100 000-125 000 CFU of lactic acid bacteria for 1 gram of the ensiled dry matter.

CONCENTRATION: 1,25 x 10^{11} CFU /1 g.
PACKAGE: 25g, 100g.
DOSING: 25 grams/25-30 tons of dry matter;
100 grams / 100-125 tons of dry matter.

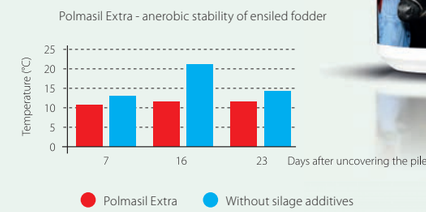


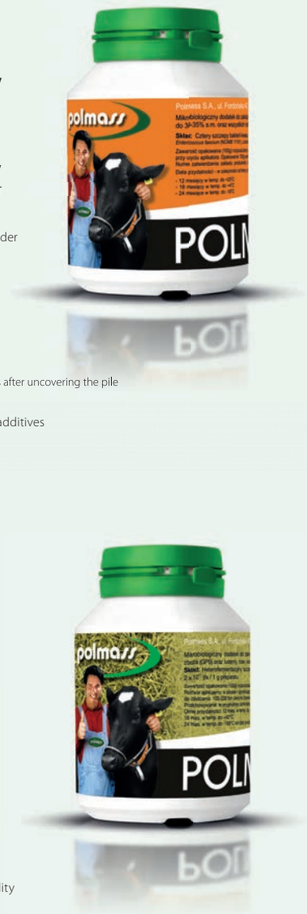
POLMASIL EXTRA®

Polmasil Extra is a microbiological silage additive, designed for ensiling fodder where the secondary fermentation risk is significantly high. Meant for ensiling grass, legumes, maize and their blends.

Polmasil Extra contains four strains of lactic acid bacteria: *Enterococcus faecium*, *Lactobacillus plantarum*, *Pediococcus acidilactici*, *Lactobacillus buchneri*. Polmasil Extra adhibits 150 000 CFU of lactic acid bacteria for 1 gram of the ensiled dry matter.

CONCENTRATION: 1,5 x 10^{11} CFU / 1g.
PACKAGE: 100g.
DOSING: 100 gram / 100 tons of dry matter.



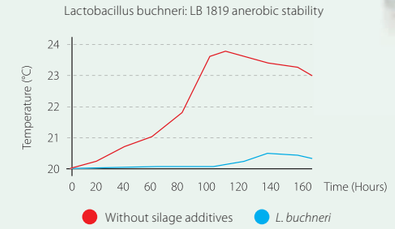


POLMASIL Buchneri®

Polmasil Extra is a microbiological silage additive, designed for ensiling fodder where the secondary fermentation risk is significantly higher. *Lactobacillus buchneri* strains used in Polmasil Buchneri considerably increases the stability of the silage in the anaerobic conditions. Designated for ensiling maize, alfalfa, grass and clover.

Lactobacillus buchneri has the ability to prevent secondary fermentation, because this bacteria in the latter phases in anaerobic conditions ferments the lactic acid into the acetic acid, ethanol and 1.2 propanediol (propylene glycol) which exhibits antifungal activity. Polmasil Buchneri allows to maintain the anaerobic stability of silage in an efficient and cost-effective way. Polmasil Buchneri adhibits 100 000 - 200 000 CFU of lactic acid bacteria for 1 gram of the ensiled dry matter.

CONCENTRATION: 2,0 x 10^{11} CFU / 1 g.
PACKAGE: 100 g.
DOSAGE: 100 g / 100-200 tons of dry matter.

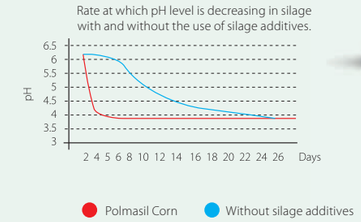


POLMASIL CORN®

Polmasil Corn is a microbilogical silage additive designed for ensiling corn (whole plants, CCM, crackled moist kernels).

Polmasil Cornis strongly recommended for corn silage opened and fed in the summer season. Polmasil Corn contains two strains of lactic acid bacteria: *Enterococcus faecium*, *Lactobacillus plantarum*. Polmasil Corn adhibits 100 000 CFU of lactic acid bacteria for 1 gram of the ensiled dry matter.

CONCENTRATION: 1,0 x 10^{11} CFU /1 g.
PACKAGE: 100g.
DOSAGE: 100 gram/100 tons of dry matter.



The Know-How of: Polmasil, Polmasil Corn, Polmasil Buchneri, Polmasil Extra

Preparing the solution: Package Content (100 g or 25 g) should be carefully dissolved in 5 liters of water. Then poured over into 95 liters of water and stirred throughly (20 liters of water for the 25 g package). Dispensed via an applicator at the rate of 1 liter / ton of fodder (depending on the type of applicator and nozzles used, the amount of solution can vary. The solution can be sprayed directly in the silo or during the harvest on the wilting fodder laying on the field.

Applying the solution on the heap of fodder (or in the silo): the solution should be poured on successively onto the compacted layers of forage. Also a clean manual sprayer can be used for this purpose.

Applying the solution on the field: administering the solution during the harvest is possible with the use of applicator installed on the harvester (chaff-cutter, press, harvesting trailer). The amount of the solution depends on the performance of the applicator's nozzle. A package of 100g of silage additive should be dissolved in the amount of water corresponding with harvesting 100 tons of sprayed fodder. The basic principle of this method of administration is to maintain the proportion of 100 grams of the silage additive corresponding to 100 tons of dry matter.

SILAGE ADDITIVES WITH MICROBIOLOGICAL AND ENZYMATIC PROPERTIES

POLMAZYM PREMIUM®

Polmazym Premium is a microbiological and enzymatic silage additive designed for ensiling fodders rich in protein such as: alfalfa, clover, grass. Enzymes by increasing the availability of sugars for lactic acid bacteria in the wet and poorly ensiling fodders play a crucial role in the Polmazym Premium.

The efficacy of Polmazym Premium in the ensiled fodder enables the decomposition of the plant fiber cells into simple sugars. Lactic acid bacteria participating in the fermentation process, both those derived from ensiled plants as well as those introduced by Polmazym obtain the optimal environment for development. Silage is of higher quality and has a better nutritive value.

Polmazym Premium contains two strains of lactic acid bacteria: *Enterococcus faecium, Lactobacillus plantarum*. Valuable additive is xylanase enzyme which has 30000 U/g CFU.

Polmazym Premium adhibits enzyme of 72U (enzymatic activity) as well as 250 000 CFU of lactic acid bacteria for 1 gram of the ensiled dry matter.

CONCENTRATION: 1,05 x 10^{10} CFU / 1g.
PACKAGE: 300 g.
DOSAGE: 300 g/125 tons of dry matter.

THE KNOW-HOW OF POLMAZYM PREMIUM

Preparing the solution and spraying on the field: The content of the package (300 g) should be dissolved in 5 liters of water. This mixture should be poured over into the container of 120 liters of water. Sprayed with the use of applicator, in the amount of 1 liter of solution per 1 ton of forage. (the amount of solution may vary depending on the applicator and nozzle used).

SILAGE ADDITIVES WITH MICROBIOLOGICAL AND CHEMICAL PROPERTIES

POLMASIL Stabil®

POLMASIL Stabil is a microbiological silage additive which contains sodium benzoate, that facilitates the ensiling of fodder plants (grass, alfalfa, corn, corn kernels – even very wet ones) in the sunfilm silage wraps and in the silo it also has fungicidal properties.

Polmasil Stabil contains three strains of lactic acid bacteria: *Lactobacillus plantarum, Pediococcus acidifactici, Lactococcus factis*. Valuable additive is in the amount of 400 g per 1 ton of ensiled dry matter.

CONCENTRATION: 7,5 x 10^{10} CFU / 1 g.
PACKAGE: 80g lactic acid bacteria + 10 kg sodium benzoate /25-75 tons of dry matter.
DOSAGE: (table No 1) depending on the kind of forage and its humidity.

Dosage of the silage additive depends on the kinds of forage and is shown in the following table.

Solution	Dosage in liters/per ton	Quantity of ensiled fodder	Silage CFU/1 g	Sodium benzoate Grams/Ton	Fodder
150 l	7	21,5	287 500	460	Wet corn kernels
150 l	6	25	250 000	400	Finely crackled corn kernels, cereals
150 l	5	30	200 000	320	Alfalfa, finely cut and chopped up cereals
150 l	4	37,5	125 000	200	Legumes
150 l	2,5	75	100 000	160	Whole corn plants

THE KNOW-HOW OF POLMASIL STABIL?

Preparing the solution: the content of the package (80g) should be dissolved in 20 liters of water. In the separate container dissolve sodium benzoate (10kg) in 130 liters of water. Mls both solutions and stir well. The solution (150 liters) should be dispensed with the use of the applicator.

One Euro invested in the purchase of Polmasil or Polmazym pays back in substantial-fold!

POLMASS SA

ul. Fordońska 40
85-719 Bydgoszcz

tel.: +48 502 66 44 88
fax: +48 52 375 04 16
mob. +48 502 66 44 88

e-mail: polmass@polmass.pl

Production Plant

ul. Grunwaldzka 287
85-438 Bydgoszcz

tel.: +48 52 375 04 17 . 19
tel. / fax: +48 52 375 04 21
mob. +48 502 18 89 88

e-mail: produkcja@polmass.pl

www.polmass.pl

Export Department

Lidia Mazur
Sales and Marketing Director
Proxy
Tel. +48 52 375 04 10
lidia.mazur@polmass.pl
English, Russian

Wojciech Wasilewski
Eastern Markets Representative
Mobile +48 515 118 569
Tel. +48 375 04 11
export@polmass.pl
Russian, English

Milena Jones
Export Manager
Mobile +48 515 118 574
Tel. +48 375 04 14
milena.jones@polmass.pl
English, German

Karol Mieczkowski
Product Manager
Mobile +48 797 030 980
karol.mieczkowski@polmass.pl
English, Russian, Ukrainian

INNOWACYJNA GOSPODARKA
NARODOWA STRATEGIA SPÓJNOŚCI

UNIA EUROPEJSKA
EUROPEJSKI FUNDUSZ
ROZWOJU REGIONALNEGO

PRZEDSIĘBIORSTWO FAIR PLAY

HACCP ISO 22000:2006

Gazele Biznesu