

CATALOG

LIVESTOCK BREEDING. COMPLETE.
ENGLISH. V2.1

- ADVANCED BROAD SPECTRUM DETOXIFIER
- PREMIUM IMMUNE ACTIVATORS
- ANTI-MICROBIAL FEED ENHANCER
- MICROBIOLOGICAL SLURRY CONVERTER

Made in Germany

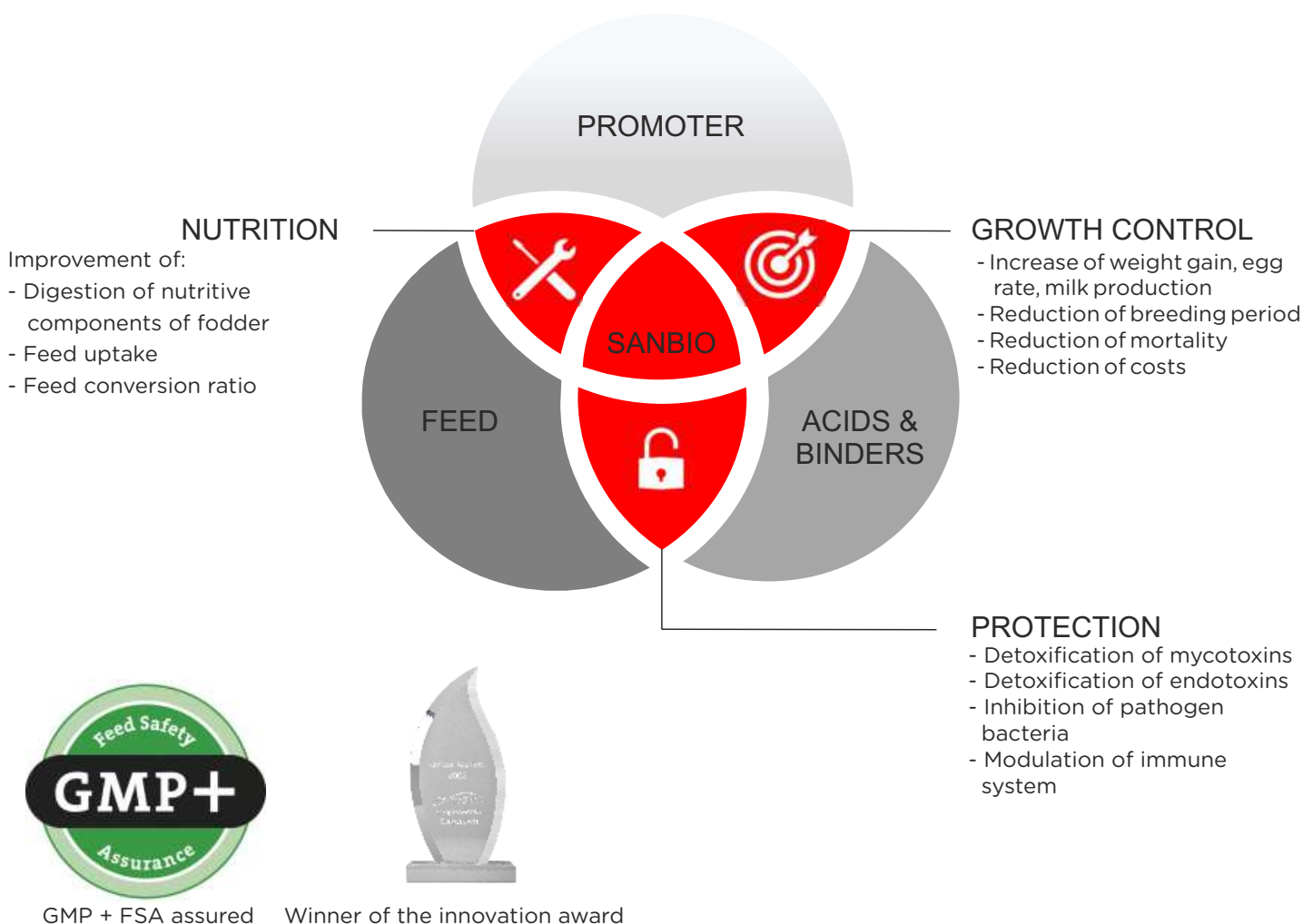


CONTENT	PAGE
Introduction	3
Portfolio	6
Sanbio SANA	7
Sanbio PURA	11
Sanbio VITA	15
Sanbio AQUA	19
Sanbio TERRA	23
Legal limitations and aspects	27
Contact	28

3-in-1. THE NEW APPROACH OF FARMING

SANBIO® is a line of new generation of additives for animal feed, water and hygiene, developed and manufactured by SANBOS GmbH, Made in Germany.

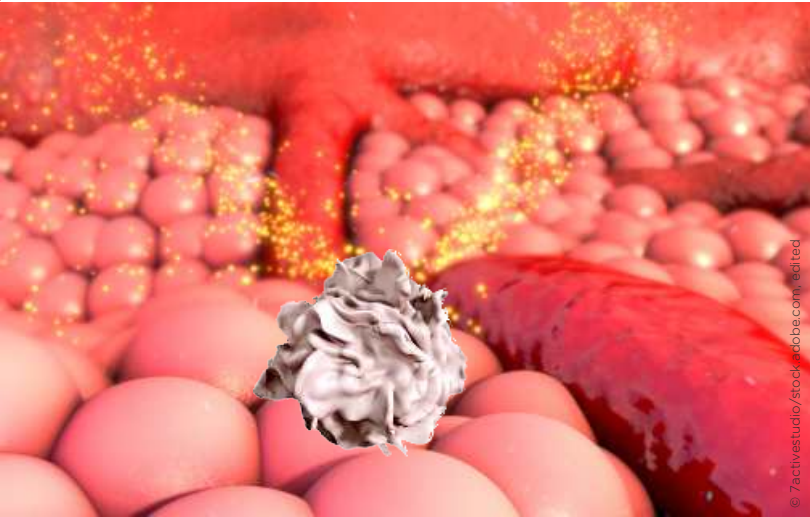
The advanced broad spectrum detoxifier, premium immune activators, anti-microbial feed enhancer and hygienic products are dedicated for bio-protection, stress control and increase of productivity on all animals in livestock farming. The products combine the core functions into one product: protection and performance.



**“ We help you to
make more profit
and to save money. “**

Jörg MEYER, Founder and CEO





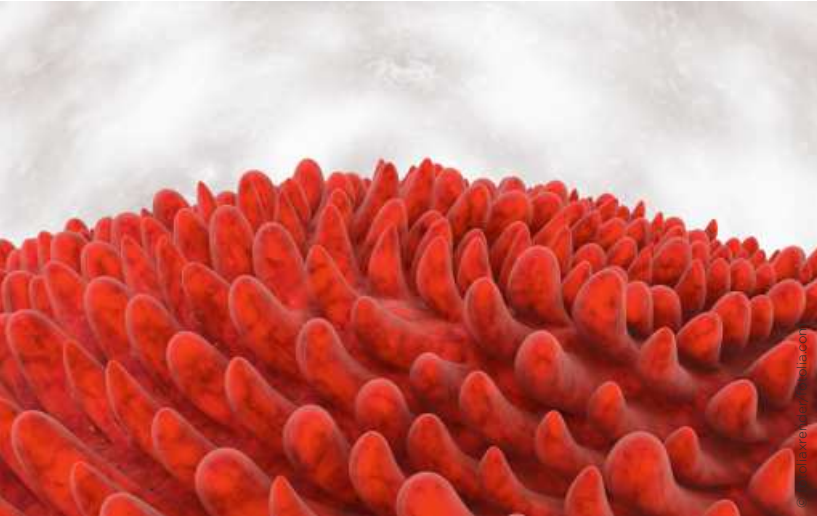
SMART AND UNIQUE TECHNOLOGY

The specific formulated material is activated in an electrical process of supercharging and polarization. The mechanism of electrical stimulation of cells makes the difference of SANBIO products versus conventional products acting on chemical mechanisms only.

Transported into digestive tract, the product acts on cellular level and triggering the defensive and vegetative processes. The electrical gut stimulation supports the modulation of promoting bacterial flora (e.g. Lactobacilli, Bifidobacteria).

FEED SAFETY AND ANIMAL HEALTH

Detoxification and inhibition of pathogenic bacteria in feed and water and along the animal gastro-intestinal tract have anti-inflammatory effects, promote the healing and growth of intestinal villi and ensure hepato- and immune protection.



BIOPROTECTION AND ANIMAL PERFORMANCE

The electrical gut stimulation supports the modulation of promoting bacterial flora (e.g. Lactobacilli, Bifidobacteria).

The active secretion of digestive juices and enzymes as well as improved oxygen utilization in the blood lead to improved metabolism and better nutrient uptake.

GROWTH CONTROL

The enhanced performance is reflected in improved key indicators (weight gain, feed conversion ratio, mortality, quality) and lower costs (feed, vet).





WE HELP YOU

... to tackle your problems for the most profitable and sustainable way in livestock farming on top quality level.

Get technical information and advise on the right product, right application rate and right timing of application .

WHERE TO BUY SANBIO PRODUCTS?

Please contact us for more information about your nearest local distributor.



SATISFIED CUSTOMERS

"Thank you so much for the that excellent product. It did help me to stopping gut inflammation caused by toxins and pathogens in the feedstuffs. I took back the health control and achieved good breeding results. I appreciate so much that I have always received such good service from you." Ron

BECOME A PARTNER

... and participate at our extended program for distributors and profit from unique products and attractive pricing.



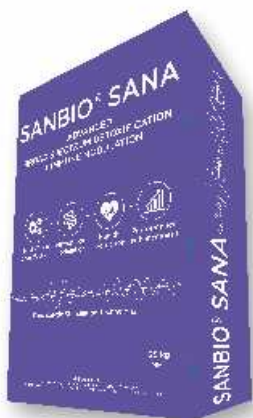
PORTFOLIO



		SANA	PURA	VITA	AQUA	TERRA
Species	Poultry	+	+	+	+	+
	Swine	+	-	+	+	+
	Ruminant	+	-	-	+	+
Category	Function	Broad spectrum detoxifier - Immunity modulator	Anti-microbial Feed enhancer - Immunity activator	Anti-microbial Feed enhancer - Immunity activator	Antimicrobial Feed enhancer - Immunity activator	Microbiological slurry converter - Hygienic product
		Key product	Complementary product	Complementary product	Complementary product	Added value product
Health	Inhibition of pathogens	-	+	+	+	-
	Detoxification of mycotoxins	+	-	-	-	-
	Detoxification of endotoxins	+	-	-	-	-
	Modulation of gut microbiota	+	+	+	+	-
	Biostimulation of digestion	+	+	+	+	-
	Modulation of immune system	+	+	+	+	(+)
	Protection respiratory system	(+)	-	-	-	+
Performance	Weight gain	+	+	+	+	(+)
	Feed conversion rate	+	+	+	+	(+)
	Survival rate	+	+	+	+	(+)
Hygiene	Manure treatment	(+)	-	-	-	+
	Ambient air treatment	(+)	-	-	-	+
Composition	Minerals	+	-	-	-	+
	Organic acids	-	+	+	+	-
	Microorganisms	-	-	-	-	+
Properties	Appearance	Micronized powder	Encapsulated powder	Encapsulated powder	Liquid	Micronized powder
	Application	Feed	Feed	Feed	Drinking water	Barns, Lagoons
	Available package	25 / 500 kg bag	25 kg bucket	25 kg bucket	25 L can	5 / 25 kg bucket
	Shelf time (months)	36	18	18	24	36
	Approved for organic farming	+	-	-	-	+

SANBIO® SANA

ADVANCED BROAD SPECTRUM DETOX AND IMMUNE MODULATION
FOR ALL ANIMAL SPECIES IN LIVESTOCK PRODUCTION



COMPLETE PROTECTION PERFORMANCE

The advantages of **SANA** are:

- Detoxification of feed and animal body
- Health protection
- Modulation of gut microbiota
- Stimulation of digestion
- Enhancement of breeding performance.

DESCRIPTION

SANA is a micronized natural product for advanced broad spectrum detoxification and immune modulation used for all animal species in livestock production. SANA provides a significant and rapid adsorption of a broad spectrum of mycotoxins in the feed and endotoxins in the gastrointestinal tract. SANA activates the digestion and enhances the productive performance.

COMPOSITION

Activated^o natural clay mineral Bentonite-Montmorillonite-Illite (1m558), supercharged micronized material (particle size: 97% ≤5micron)

^o processed by *SANBIO Biocatalytic Stimulation Technology*

MODE OF ACTION

SANA combines the core functions in one product: **1.ADSORPTION of toxic substances** **2.MODULATION of healthy microbiota** **3. STIMULATION of digestion.** The effectiveness of SANA is based on the synergistic combination of physical and chemical adsorption methods towards toxins and active stimulation of cells in the small intestine (SANBIO Biocatalytic Stimulation Technology). The mechanism of electrical stimulation of cells makes the difference of SANA versus conventional products acting on chemical mechanisms only.

RAPID ACTION. The unique composition and advanced processing of SANA ensure instant improvement of health situation.

ADVANCED PROCESSING. The minerals are utilized in a special milling and grinding process down to less than 5 micron size. As a result, the micronized very tiny particles have an extremely large reaction surface. Subsequently, the particles in the complex being charged and polarized in a special electrical process. Now, the refined physico-chemical complex has a huge capability to interact with polar and non-polar compounds and body cells.

DOUBLE-STAGE ADSORPTION. The combined physical and chemical adsorption method binds a wide spectrum of mycotoxins and endotoxins. The toxins being immobilized and discharged. It acts selectively and independently from pH value throughout the complete gastrointestinal tract.

SELECTIVE AND COMPATIBLE. SANA does not bind amino acids and fat-soluble vitamins. Water-soluble vitamins are only temporarily bound to a small extent and fast released again. SANA is compatible with the most antibiotics.

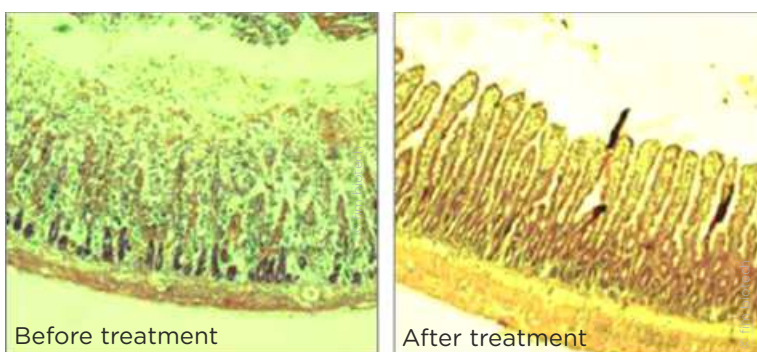
HEALTHY GUT MICROBIOTA. SANA acts as microhabitat to supply a large surface media for growth of useful microorganisms. The electrical gut stimulation supports the modulation of promoting bacterial flora (e.g. Lactobacilli, Bifidobacteria).

TOTAL BIOPROTECTION. SANA has anti-inflammatory effects, promotes the healing and growth of intestinal villi and ensures hepato- and immune protection.

ODOR CONTROL. SANA reduces the formation and release of smell, odor and toxic gases (ammoniac gas, hydrogen sulphide, nitrous oxide). Used in the barns it supports the protection of respiratory system by air cleaning effects. It can reduce the pest with flies and mosquitoes. Fresh air and clean environment in stables provide best breeding conditions. SANA supports the formation of dry dung and slurry.

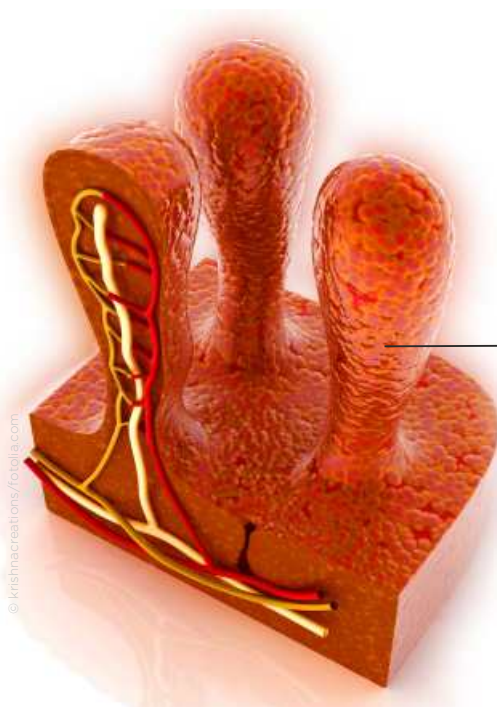
GROWTH CONTROL. The active secretion of digestive juices and enzymes lead to improved metabolism and better nutrient uptake.

FASTER. HEAVIER. BETTER. The enhanced performance is reflected in improved key indicators (weight gain, feed conversion ratio, mortality, quality) and lower costs (feed, vet).



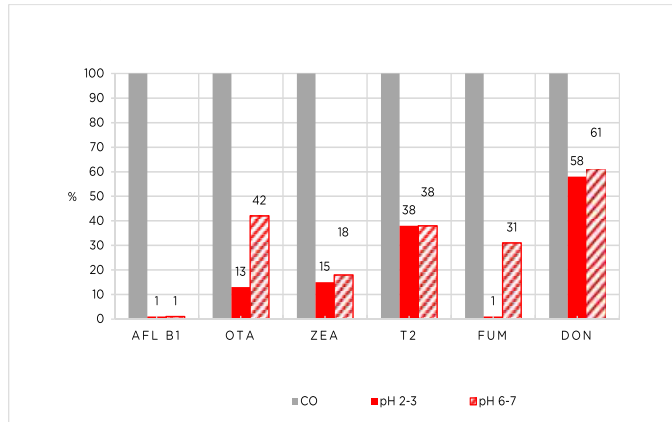
Representative histological section of a small intestine segments after staining, 50 micron

„Healthy and well developed villi maximise the surface area for nutrient absorption, resulting in increased weight gain.“



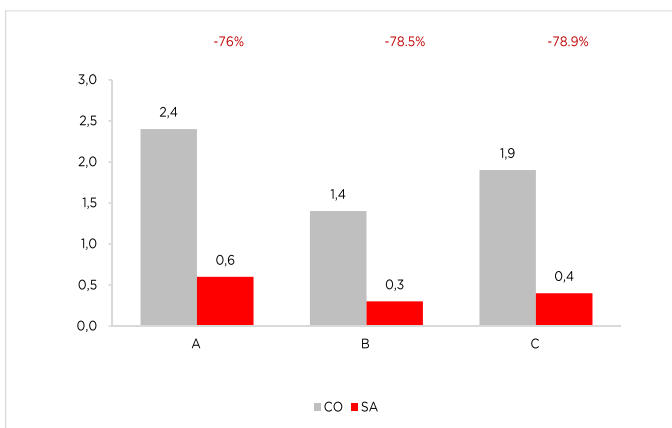
CASESTUDIES

ADSORPTION CAPABILITY of main relevant mycotoxins at different pH values



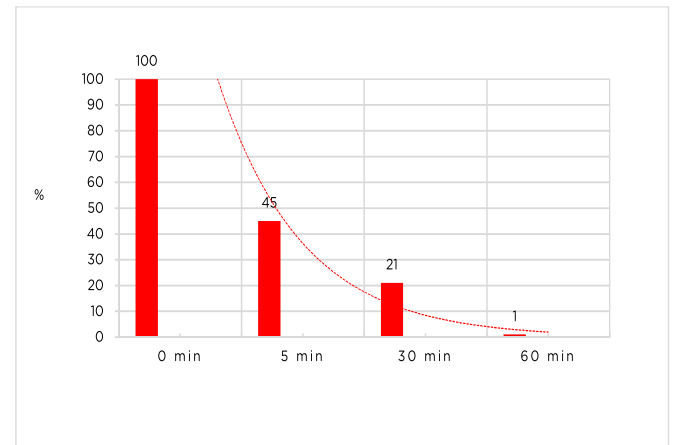
CO=Control, pH 2-3=with SANA, pH 6-7=with SANA, 0,2% SANA/tonne
AFL B1=Aflatoxin B1, c=0.5ppm
OTA=Ochratoxin, c=0.25ppm
ZEA=Zearalenon, c=0.5ppm
T2=T2 Toxin T2, c=0.25ppm
F=Fumonisin FUM, c=0.25ppm
DON=Deoxynivalenol, c=0.5ppm

Effects of SANA supplementation on HISTOLOGICAL INFLAMMATION SCORE *Mucosa apical*

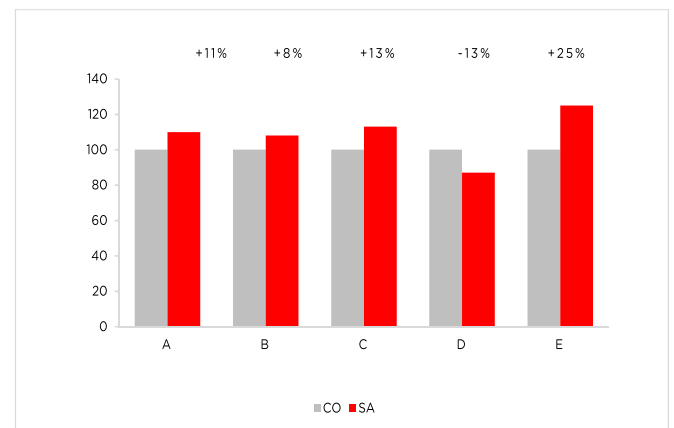


CO=Control
SA=SANA
A=Hyperemia
B=Hemorrhage
C=Necrosis

PROCESS SPEED at adsorption of mycotoxin Aflatoxin B1

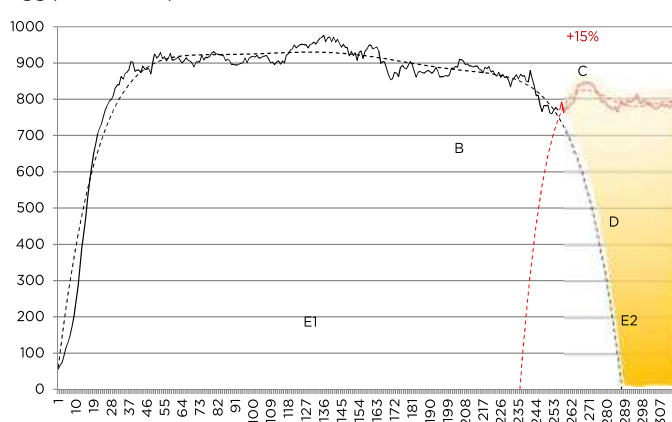


Effects of SANA on BROILER productivity



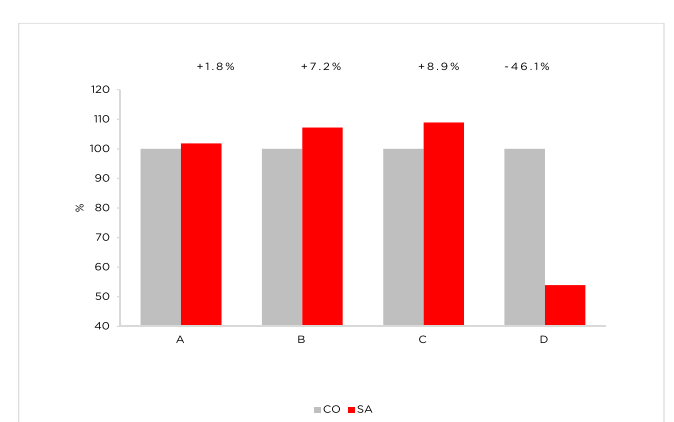
CO=Control group, SA=Treated group, dosage 0.5kg SANA /1t feed
A=Body weight gain B=Egg laying rate C=Survival rate
D=Feed conversion rate FCR E=European broiler index EBI
Breed Cobb500, 38days, University Belgorod, Russia, 2015
Breed Cobb500, 55days, Ain M'lila, Algeria, 2016
Breed Arbor Acres, 45days, University Sfax, Tunisia, 2018

Effects of SANA on RECOVERY OF STOCK and extension of egg production period



A=Standard life-cycle of flock, downward trend at the end
B=Normally slaughtering of flock at end of life-cycle-point
C=Recovery of egg production
D=Time period of extended egg production (15% more eggs)
E2=Reduced rate of cracked eggs (9.2% less)
breed Lohmann, Meister, Germany, 2017

Effects of SANA on production and quality of MILK



CO=Control group, untreated
SA=Treated group, dosage 0.5kg SANA /1000 kg feed, 60days
A=Milk production
B=TB (milk production x fat)
C=TP (milk production x protein)
D=Somatic cell count
Breed Holstein Friesian, SCEA Luga, France, 2017

DIRECTIONS OF USE

Species	Minimal dosage	Recommended dosage in case of increased toxin concentration	Maximal dosage	Unit
Broiler, egg-laying hens, duck, goose, turkey, rabbit	0.5	1	20	kg/t total feed
Goat, sheep	0.5	1-2		
Cow, cattle, horse, camel	1	3-4		
Fish, shrimp	2	5		

SANA may be used at any time during production, requires no withdrawal period. Ensure a homogeneous mixing of SANA with the feed to achieve best results. Regularly use is recommended, at least use for 14 days. SANA works systemically, preventively and curatively with associated natural mechanisms. SANA is suitable for use in feed pelletizing process (max. process temperature < 105°C).

INDICATIONS FOR USE

- Mycotoxin contaminated feed
- Abnormal bacterial flora
- Fever, gut inflammation, diarrheas, wet litter
- After antibiotica use and vaccination
- Incidence of endotoxins
- Stress and weak immune system
- Improvement of hatchability
- Slow feed intake
- Improvement of fertility and performance
- Prophylaxis.

RESTRICTIONS ON ALL FEEDSTUFFS: The simultaneous oral use with macrolides shall be avoided. The total amount of bentonite must not exceed the permitted maximum level in complete feeding stuff of 20kg/t of complete feeding stuff. For poultry: The simultaneous use with robenidine shall be avoided. The simultaneous use with coccidiostats other than robenidine is contraindicated with level of bentonite above 5 kg/t of complete feed.

APPROVALS: 100% natural. SANA is approved for organic farming and meets numerous international standards.

AVAILABLE PACKAGES: 25/500kg



SANBIO® PURA

ANTI-MICROBIAL FEED ENHANCER AND IMMUNITY ACTIVATOR
FOR POULTRY FEED



SAFE FEED BETTER HEALTH

The advantages of **PURA** are:

- Preservation of feed
- Health protection
- Modulation of gut microbiota
- Stimulation of digestion
- Enhancement of breeding performance.

DESCRIPTION

PURA is a concentrated solid encapsulated acidifying formulation and immune activator for conservation of poultry feed (breeders, broilers, layers, ducks, geese, turkey). PURA provides a significant and rapid inhibition of pathogenic bacteria in the feed and gastrointestinal tract. PURA activates the digestion and enhances the productive performance.

COMPOSITION

Activated^{*)} premixture of preservatives containing: Formic acid (E236), Sodium formate (E237), Silicon dioxide (E551a), Citric acid (E330).

^{*)} processed by *SANBIO Biocatalytic Stimulation Technology*

MODE OF ACTION

PURA combines the core functions in one product: **1. Inhibition of pathogenic bacteria** **2. Modulation of healthy microbiota** **3. Stimulation of digestion.** The effectiveness of PURA is based on the synergistic combination of organic acids and active stimulation of cells in the small intestine (*SANBIO Biocatalytic Stimulation Technology*). The mechanism of **electrical stimulation of cells** makes the difference of PURA versus conventional products acting on chemical mechanisms only.

RAPID ACTION. The powerful composition of PURA ensures instant improvement of hygienic situation.

STRONG ANTI-MICROBIAL EFFECT. PURA contains selected beneficial organic acids which are highly bacteriostatic and bactericidal. The acidification of the complete gastrointestinal tract limits the proliferation of pathogenic bacteria and inhibiting the development of diseases (colibacillosis, coccidiosis, salmonellosis, gas gangrene).

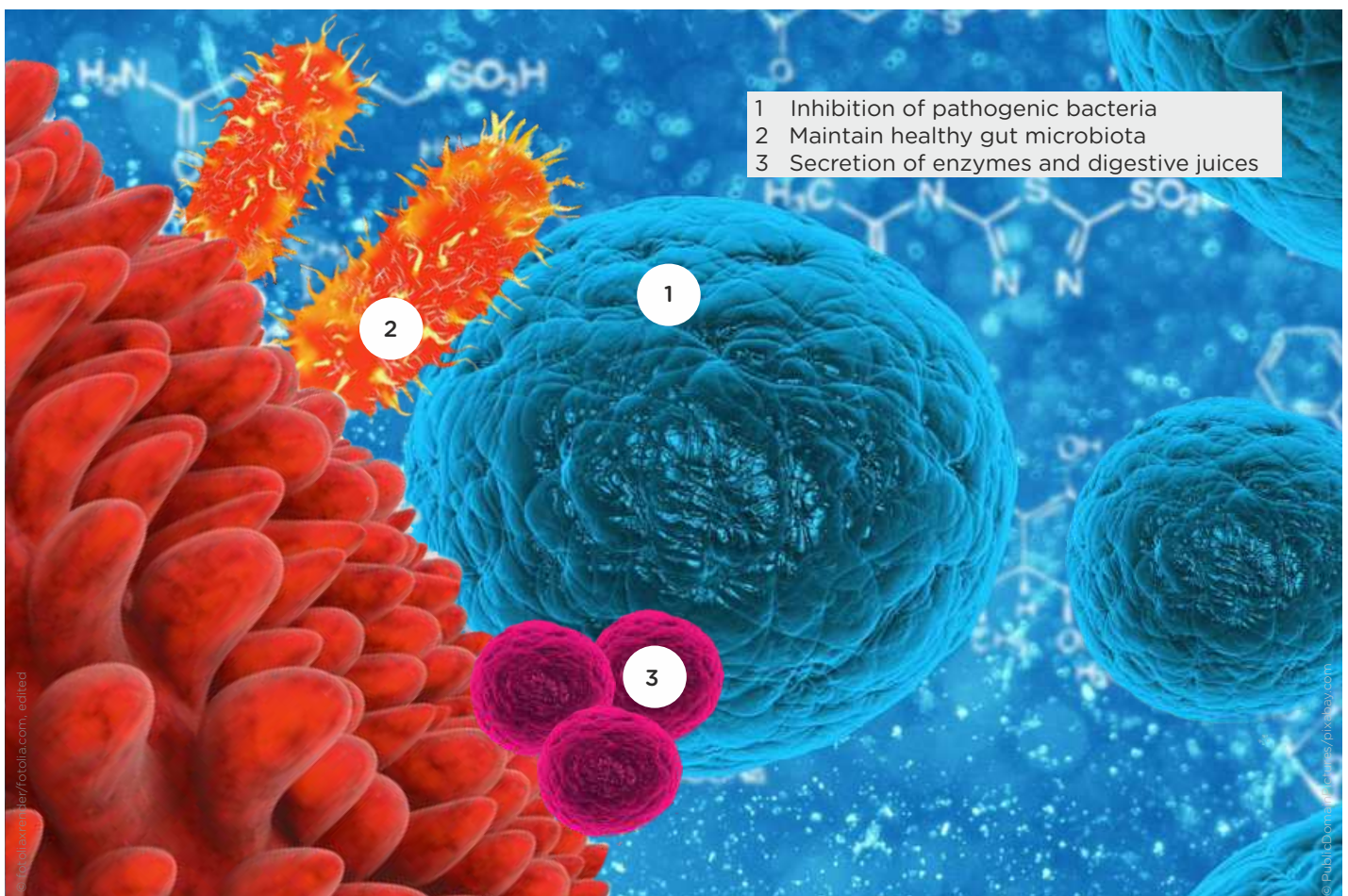
TOTAL PROTECTION. PURA acts throughout the total length of intestine offering total protection.

HEALTHY GUT MICROBIOTA. PURA balances the pH value of the gastrointestinal tract and maintains the modulation of healthy bacterial flora (e.g. Lactobacilli, Bifidobacteria).

GROWTH CONTROL. The active secretion of digestive juices and enzymes as well as improved oxygen utilization in the blood lead to improved metabolism and better nutrient uptake.

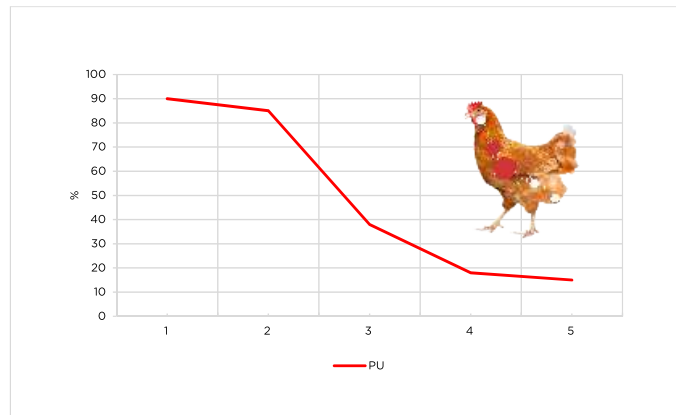
STRONG AND VITAL. Citric acid stimulates liver, kidney and pancreas function, and in regular use, also has a toning, antispasmodic and analgesic effect.

FASTER. HEAVIER. BETTER. The enhanced performance is reflected in improved key indicators (weight gain, feed conversion ratio, mortality, quality) and lower costs (feed, vet).



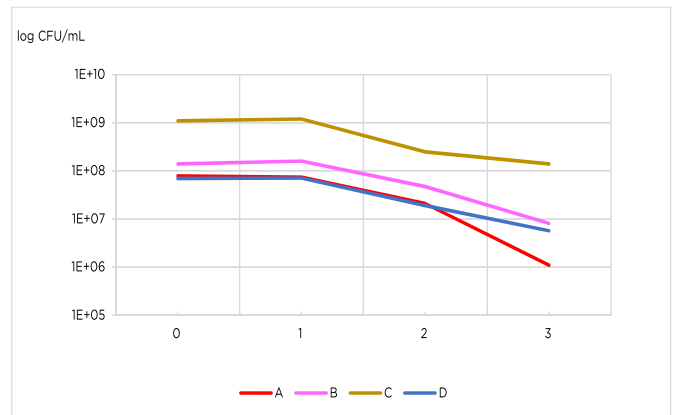
CASESTUDIES

OPERATING RANGE and recovery of PURA along the digestive tract



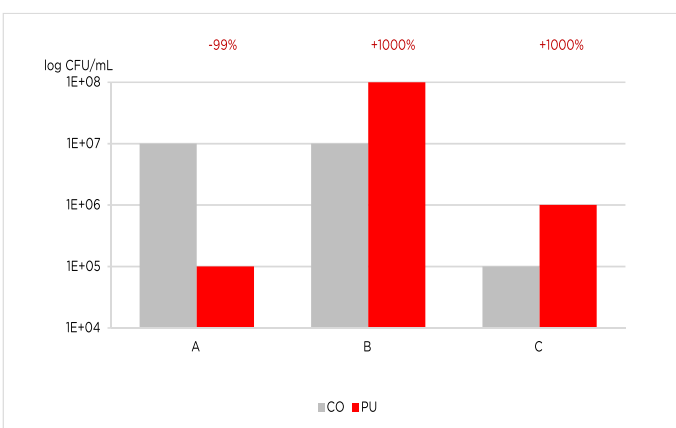
1=Stomach 2=Duodenum 3=Jejunum 4=Jejunum 5=Jejunum
Dosage 3kg PURA/1000kg feed

Significant REDUCTION OF PATHOGEN intestinal bacteria on laying hens



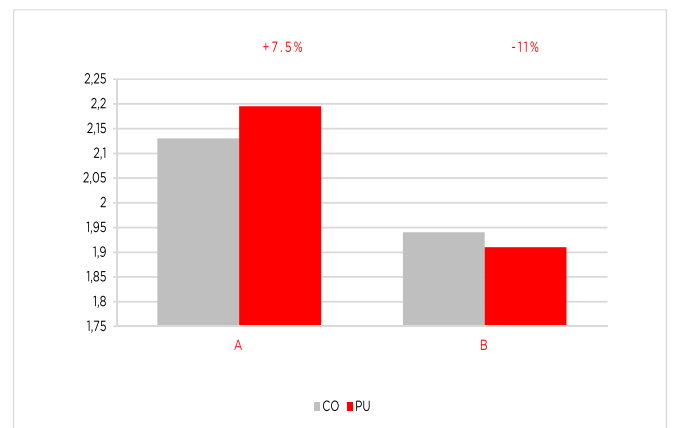
A=E.Coli
B=Enterobacteria
C=Aerobic mesophilic
D=Coliform total
Week 0=untreated
Week 1/2/3=treated with dosage 1kg PURA/1000kg feed
Breed „Lohmann“, Meister, Germany, 2018

Effects of PURA on healthy **INTESTINAL FLORA** of chicken birds



CO=Control group, untreated
PU=Treated group, dosage 3kg PURA/1000kg feed
A=Enterobacteria 1) B=Lactobacilli 2) C=Bifidobacteria 2)
1) unwanted bacteria 2) wanted bacteria

Effects of PURA on **BROILER** productivity



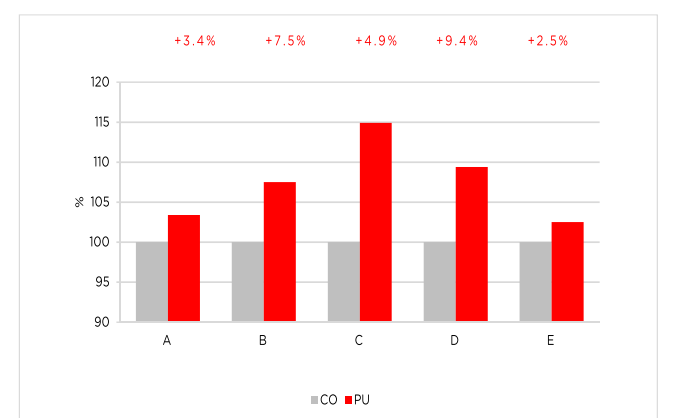
CO=Control group, untreated
PU=Treated group, Dosage 3kg PURA/1000kg feed, day 19...38
A=Final weight
B=Feed conversion rate FCR
Breed „Cobb500“, Russia, 2016

Effects of PURA on **TURKEY** productivity



C=Control group, untreated
PU=Treated group, Dosage 3kg PURA/1000kg feed
A=Final weight, x10kg
B=Feed conversion rate FCR
Weidhass, Germany, 2018

Effects of PURA on quality of **EGGS**



CO=Control group, untreated
PU=Treated group, dosage 3kg PURA /1000 kg feed
A=Egg weight
B=Color code egg yolk
C=Eggshell weight
D=Eggshell thickness
E=Yolk weight
Breed „Lohmann“, Meister, Germany, 2018

DIRECTIONS OF USE

Application	Single rate
Mix with feed breeders, broilers, layers, ducks, geese, turkey	1 – 5 kg per 1000 kg complete feed

PURA may be used at any time during production, requires no withdrawal period. Ensure a homogeneous mixing of PURA with the feed to achieve best results. Regularly use is recommended, at least use for several days. PURA works systemically, preventively and curatively with associated natural mechanisms.

Remark: The use of anti-microbial products for inhibition of bacterial pathogens can lead to an increased level of endotoxins in the animal body due to normal biological processes. For binding and detoxification of the endotoxins we recommend to apply our complementary product Sanbio SANA to ensure maximal health protection.

INDICATIONS FOR USE

- Abnormal bacterial flora
- Diarrheas and wet litter
- After antibiotica use and vaccination
- Stress
- Improvement of hatchability
- Slow feed intake
- Improvement of fertility and performance
- Prophylaxis.

AVAILABLE PACKAGES: 25 kg





SANBIO[®] VITA

ANTI-MICROBIAL FEED ENHANCER AND IMMUNITY ACTIVATOR
FOR SWINE FEED



SAFE FEED BETTER HEALTH

The advantages of **VITA** are:

- Preservation of feed
- Health protection
- Modulation of gut microbiota
- Stimulation of digestion
- Enhancement of breeding performance.

DESCRIPTION

VITA is a concentrated solid encapsulated acidifying formulation and immune activator for conservation of swine feed. VITA provides a significant and rapid inhibition of pathogenic bacteria in the feed and gastrointestinal tract. VITA activates the digestion and enhances the productive performance.

COMPOSITION

Activated^γ premixture with zootechnical feed additives containing: Silicone dioxide (E551a), Potassium diformate (970.000 mg/kg), Citric acid (E330).

^γ processed by *SANBIO Biocatalytic Stimulation Technology*

MODE OF ACTION

VITA combines the core functions in one product: **1. Inhibition of pathogenic bacteria** **2. Modulation of healthy microbiota** **3. Stimulation of digestion**. The effectiveness of VITA is based on the synergistic combination of organic acids and active stimulation of cells in the small intestine (*SANBIO Biocatalytical Stimulation Technology*). The mechanism of **electrical stimulation of cells** makes the difference of VITA versus conventional products acting on chemical mechanisms only.

RAPID ACTION. The powerful composition of VITA ensures instant improvement of hygienic situation.

STRONG ANTI-MICROBIAL EFFECT. VITA contains selected beneficial organic acids which are highly bacteriostatic and bactericidal. The acidification of the complete gastrointestinal tract limits the proliferation of pathogenic bacteria and inhibiting the development of diseases (colibacillosis, coccidiosis, salmonellosis, gas gangrene).

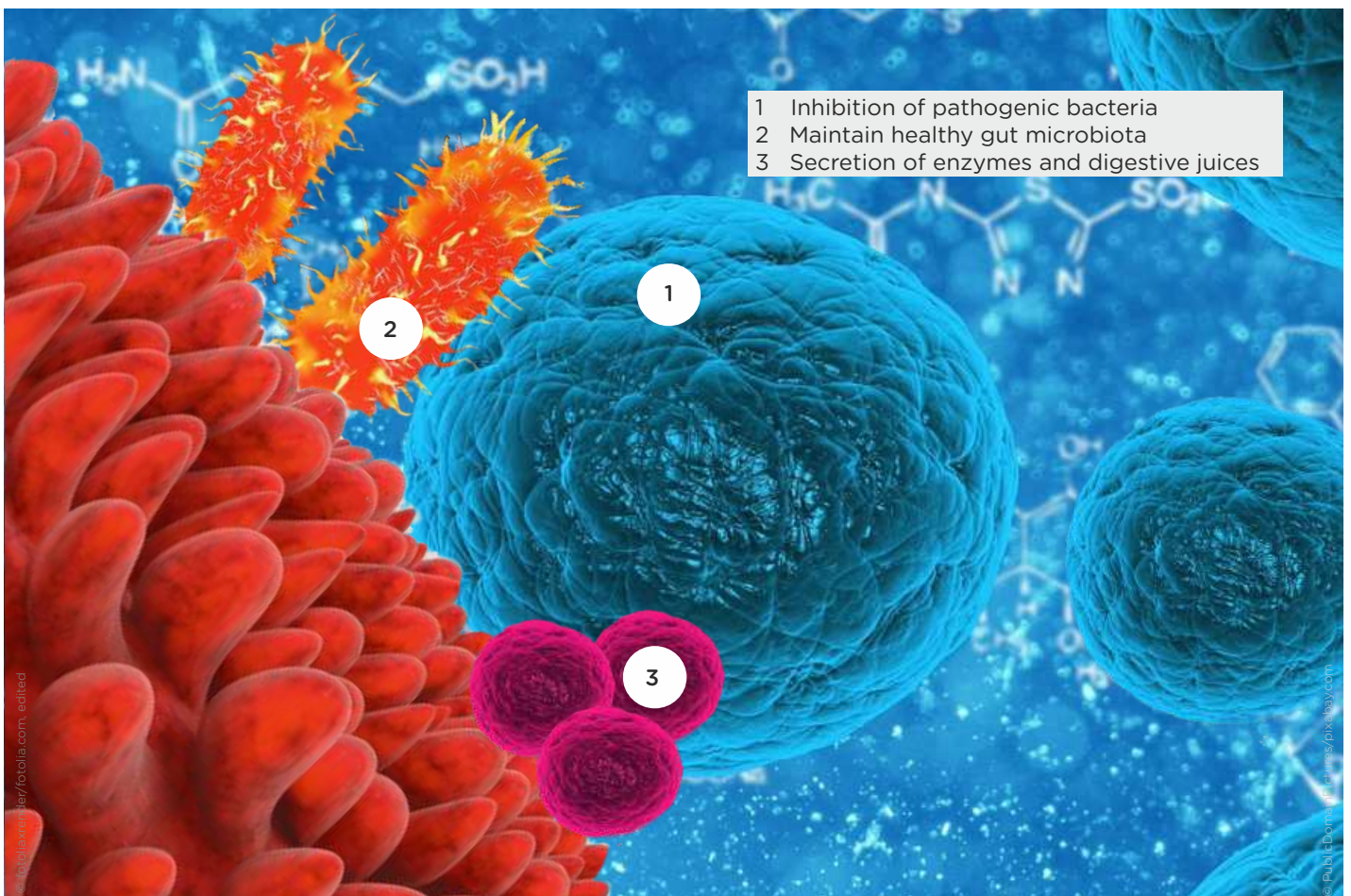
TOTAL PROTECTION. VITA acts throughout the total length of intestine offering total protection.

HEALTHY GUT MICROBIOTA. VITA balances the pH value of the gastrointestinal tract and maintains the modulation of healthy bacterial flora (e.g. Lactobacilli, Bifidobacteria).

GROWTH CONTROL. The active secretion of digestive juices and enzymes as well as improved oxygen utilization in the blood lead to improved metabolism and better nutrient uptake.

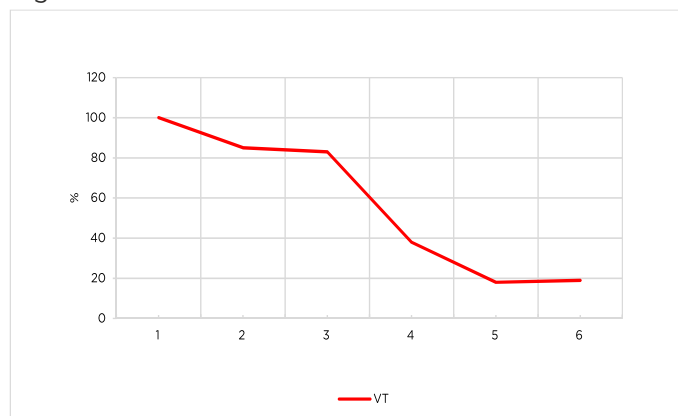
STRONG AND VITAL. Citric acid stimulates liver, kidney and pancreas function, and in regular use, also has a toning, antispasmodic and analgesic effect.

FASTER. HEAVIER. BETTER. The enhanced performance is reflected in improved key indicators (weight gain, feed conversion ratio, mortality, quality) and lower costs (feed, vet).



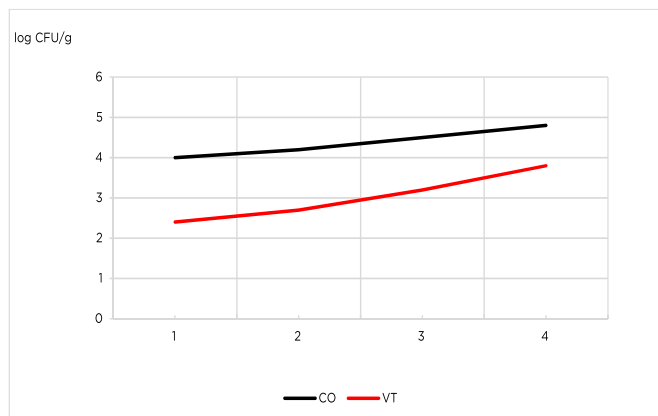
CASESTUDIES

OPERATING RANGE and recovery of VITA along the digestive tract



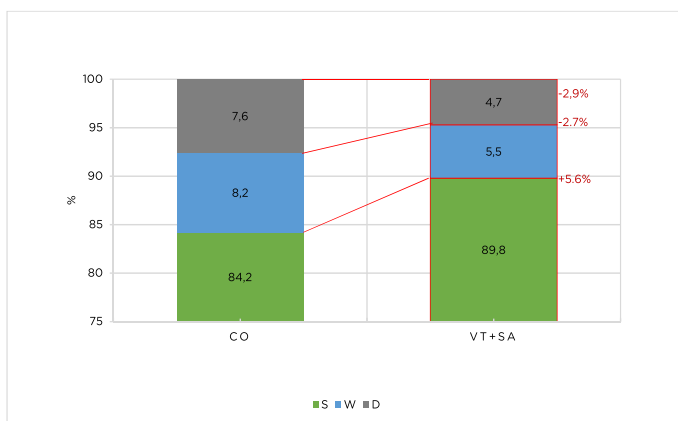
1= Mouth 2=Stomach 3=Duodenum
4=Jejunum 1-2 5=Jejunum 3-5 6=Jejunum 6-10
Dosage 6kg VITA/1000kg feed
SANBOS, 2015

Significant **REDUCTION OF E.COLI** along the intestinal tract on swine



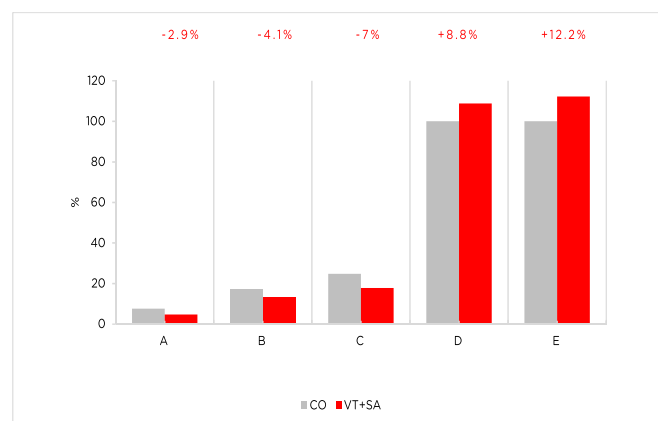
CO=control, untreated
VT=treated with VITA 0.6%
1=Duodenum
2=Jejunum5
3=Rectum
SANBOS, 2015

Significant effects of VITA+SANA on increase of live born **PIGLETS** with good **HEALTH** and reduction of **LOSS**



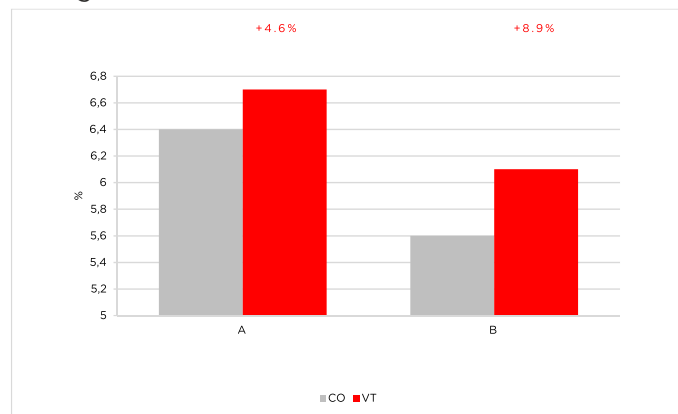
CO=Control group, untreated
VT=Treated group, dosage to feed 0.6% VITA + 0.2% SANA
D=Dead born S=Strong live born W=weak live born
Belgorod State Agricultural University, Russia, 2015

Effects of VITA on performance of **PIGLETS**



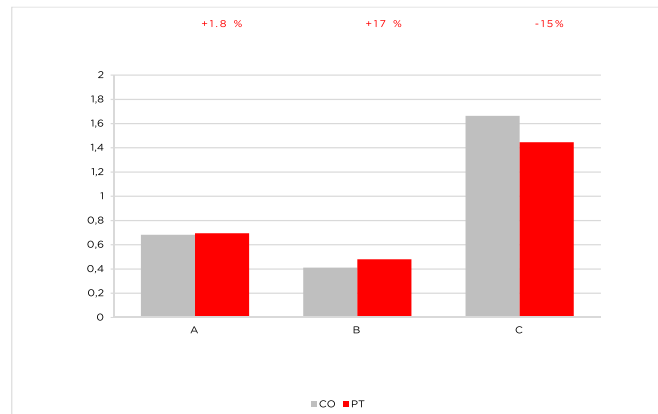
CO=Control group, untreated
VT=Treated group, dosage to feed 0.6% VITA + 0.2% SANA
A=Loss rate at birth B=Loss rate at day 28
C=Loss rate total D=Live weight at birth
E=Live weight at day 28
Belgorod State Agricultural University, Russia, 2015

Effects of VITA on **MILK FAT CONTENT** of **SOWS** during lactation



CO=Control group, untreated
VT=treated with VITA, 6kg/1000kg feed
Sanbos, 2016

Effects of VITA on breeding performance of **GROWING PIGS**



CO=Control group, untreated
VT=Treated group, dosage 6kg VITA/1000kg feed
A=Weight gain WG kg/d
B=Feed consumption kg/d
C=Feed conversion rate FCR, N=120
Sanbos, 2016

DIRECTIONS OF USE

Application	Single rate
Sows	8 - 10 kg per 1000 kg complete feed
Piglets	4 - 16 kg per 1000 kg complete feed
Fattener	4 - 10 kg per 1000 kg complete feed

VITA may be used at any time during production, requires no withdrawal period. Ensure a homogeneous mixing of VITA with the feed to achieve best results. Regularly use is recommended, at least use for several days. VITA works systemically, preventively and curatively with associated natural mechanisms.

Remark: The use of anti-microbial products for inhibition of bacterial pathogens can lead to an increased level of endotoxins in the animal body due to normal biological processes. For binding and detoxification of the endotoxins we recommend to apply our complementary product Sanbio SANA to ensure maximal health protection.

INDICATIONS FOR USE

- Abnormal bacterial flora
- Diarrheas and wet litter
- After antibiotics use and vaccination
- Stress
- Improvement of hatchability
- Slow feed intake
- Improvement of fertility and performance
- Prophylaxis.

AVAILABLE PACKAGES: 25 kg

PROTECT YOUR ANIMALS FROM DISEASE AND INFECTION! NOW!





SANBIO® AQUA

ANTI-MICROBIAL ACIDIFIER AND IMMUNITY ACTIVATOR
FOR DRINKING WATER FOR ALL SPECIES



LESS BACTERIA BETTER HEALTH

The advantages of **AQUA** are:

- Preservation of feed and drinking water
- Health protection
- Modulation of gut microbiota
- Stimulation of digestion
- Enhancement of breeding performance.

DESCRIPTION

AQUA is a concentrated liquid acidifying formulation and immune activator for drinking water for all species. AQUA provides a significant and rapid inhibition of pathogenic bacteria in the drinking water, feed and gastrointestinal tract. AQUA activates the digestion and enhance the productive performance. AQUA is also recommended for cleaning and disinfection of watering systems.

COMPOSITION

Activated^{*)} premixture of preservatives containing: Formic acid (E236), Sodium formate (E237), Citric acid (E330), Water

^{*)} processed by *SANBIO Biocatalytic Stimulation Technology*

MODE OF ACTION

AQUA combines the core functions in one product: **1. Inhibition of pathogenic bacteria** **2. Modulation of healthy microbiota** **3. Stimulation of digestion**. The effectiveness of AQUA is based on the synergistic combination of organic acids and active stimulation of cells in the small intestine (*SANBIO Biocatalytic Stimulation Technology*). The mechanism of **electrical stimulation of cells** makes the difference of AQUA versus conventional products acting on chemical mechanisms only.

RAPID ACTION. The powerful composition of AQUA ensures instant improvement of hygienic situation.

STRONG ANTI-MICROBIAL EFFECT. AQUA contains selected beneficial organic acids which are highly bacteriostatic and bactericidal. The acidification of the complete gastrointestinal tract limits the proliferation of pathogenic bacteria and inhibiting the development of diseases (colibacillosis, coccidiosis, salmonellosis, gas gangrene).

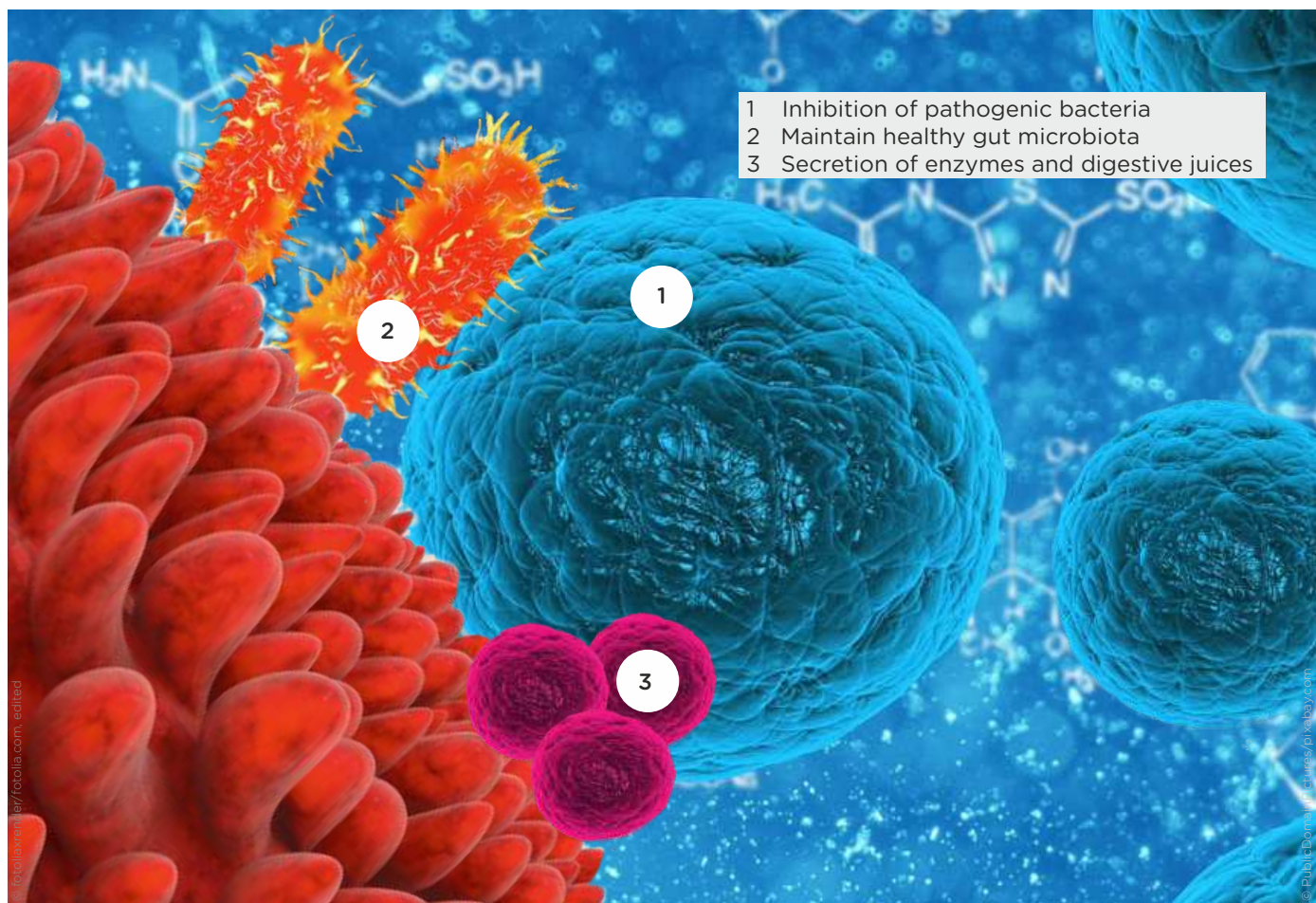
CLEAN TANKS AND PIPES. Used in water supply systems AQUA leads to reduction of biofilm adhesion.

HEALTHY GUT MICROBIOTA. AQUA balances the pH value of the gastrointestinal tract and maintains the modulation of healthy bacterial flora (e.g. Lactobacilli, Bifidobacteria).

GROWTH CONTROL. The active secretion of digestive juices and enzymes as well as improved oxygen utilization in the blood lead to improved metabolism and better nutrient uptake.

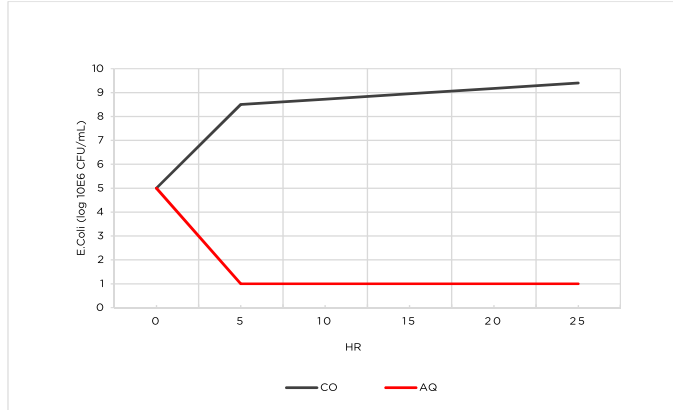
STRONG AND VITAL. Citric acid stimulates liver, kidney and pancreas function, and in regular use, also has a toning, antispasmodic and analgesic effect.

FASTER. HEAVIER. BETTER. The enhanced performance is reflected in improved key indicators (weight gain, feed conversion ratio, mortality, quality) and lower costs (feed, vet).



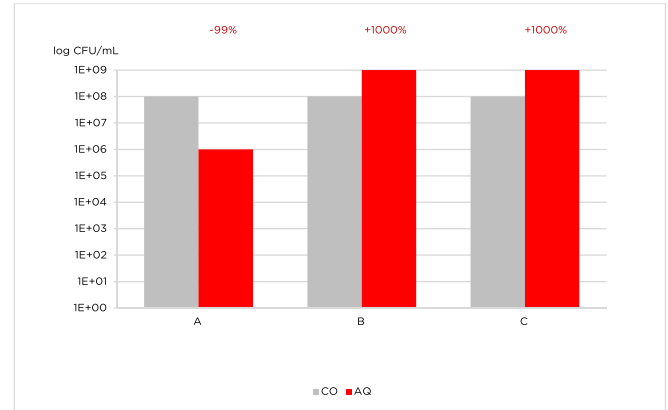
CASESTUDIES

Effects of AQUA on microbial activity and growth of **E.COLI** within 25 hours after incubation



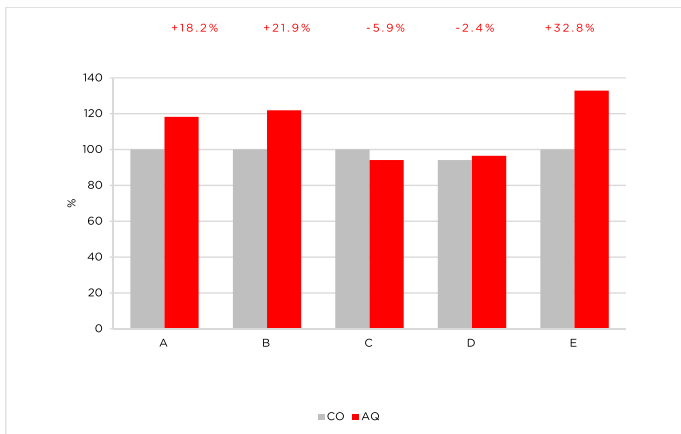
CO=Control group, untreated
AQ=Treated group, dosage 1L AQUA/1000L water

Effects of AQUA on **HEALTHY INTESTINAL FLORA** in the intestine of chicken



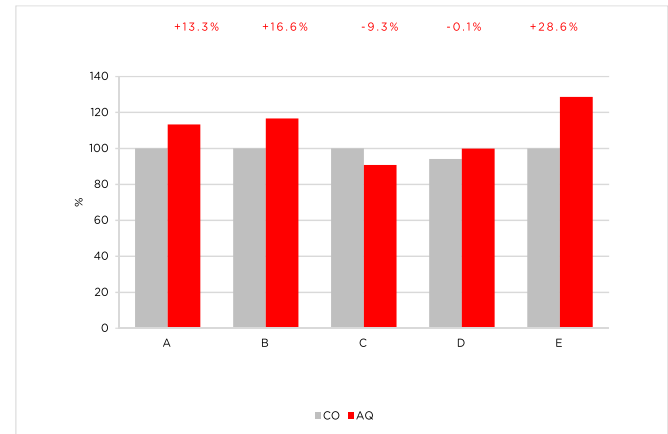
CO=Control group, untreated
AQ=Treated group, dosage 1L AQUA/1000L Water
A=Enterobacteria B=Lactobacilli C=Bifidobacteria

Effects of AQUA on **BROILER** productivity



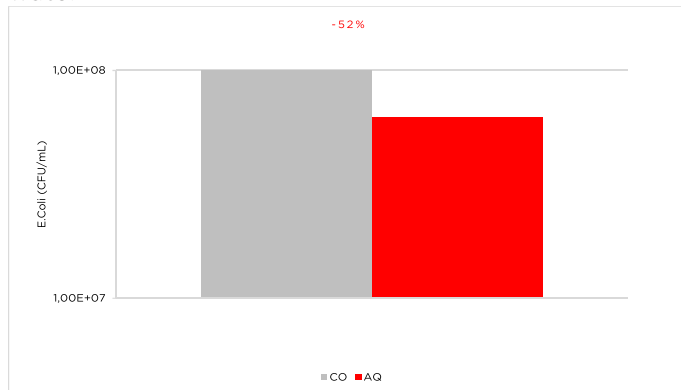
CO=Control group, untreated
AQ=Treated group, dosage 1L AQUA/1000L water
A=Final weight B=Daily gain ADG
C=Feed conversion rate FCR D=Overlive rate
E=European Broiler Index EBI
Total breeding period=32d Use of AQUA=7d...32d
2700 birds per group, Cobb5000, 2016, Germany

Effects of AQUA on **BROILER** productivity



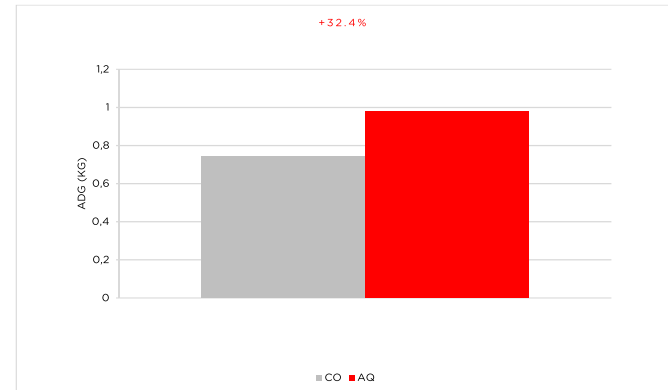
CO=Control group, untreated
AQ=Treated group, Dosage 1L AQUA/1000L water
A=Final weight B=Daily gain ADG
C=Feed conversion rate FCR D=Overlive rate
E= European Broiler Index EBI
Total breeding period=42d Use of AQUA=19d...42d
5000 birds per group, Cobb5000, 2016, Germany

Change in the **E.COLI COUNTS** in **FAECAL** samples of **CALVES** 4 days after supplementation of AQUA to water



CO=Control group, untreated
AQ=Treated group, dosage 1L AQUA/1000L water
Calvs age 35d

Effects of AQUA on average daily **WEIGHT GAIN** on **CALVS**



CO=Control group, untreated
AQ=Treated group, dosage 1L AQUA/1000L water
Calvs age 35d

DIRECTIONS OF USE

Application	Single rate
Dissolve in drinking water	0.5 - 1 L per 1000 L of water 0.5 - 1 mL per 1 L of water
Mix with feed	1.5 - 3 L per 1000 kg of complete feed
Cleaning and disinfection of watering system	0.25 - 0.5 L per 1000 L of water

AQUA may be used at any time during production, requires no withdrawal period.

Ensure a homogeneous mixing of AQUA with the water or feed to achieve best results.

Regularly use is recommended, at least use for several days.

Stop dosing AQUA 12 hours before vaccination via drinking water.

AQUA works systemically, preventively and curatively with associated natural mechanisms.

Remark: The use of anti-microbial products for inhibition of bacterial pathogens can lead to an increased level of endotoxins in the animal body due to normal biological processes. For binding and detoxification of the endotoxins we recommend to apply our complementary product Sanbio SANA to ensure maximal health protection.

INDICATIONS FOR USE

- Abnormal bacterial flora
- Diarrheas and wet litter
- After antibiotica use and vaccination
- Stress
- Improvement of hatchability
- Slow feed intake
- Improvement of fertility and performance
- Prophylaxis.

AVAILABLE PACKAGES: 25 L



**PROTECT
YOUR ANIMALS
FROM DISEASE
AND INFECTION!
NOW!**



SANBIO® TERRA

MICROBIOLOGICAL CONVERTER FOR RAPID REFINEMENT
OF MANURE, SLURRY AND DUNG

RAPID REFINEMENT PERFORMANCE



The advantages of **TERRA** are:

- Refinement of waste into rich organic fertilizer
- No formation of smell, odor and toxic gases
- Hygienic aid for clean barns and ambient air
- Health protection of respiratory system
- Suitable for organic farming.

DESCRIPTION

TERRA is a natural microbiological converter for rapid refinement of manure, slurry and dung in barns, tanks and lagoons in livestock farming. TERRA also can be used for treatment of human waste in household toilets.

COMPOSITION

Activated*) biopreparation containing: Calcium carbonate, Bentonite-Montmorillonite-Illite (1m558), micronized to particle size of ≤ 100 micron, consortium of high concentrated living microorganisms isolated from natural environment, species"): Mycorrhiza (*M. spp*, *M. Glomus intraradices*), Bacillus (*B. subtilis*, *B. licheniformis*, *B. megaterium*, *B. amyloliquefaciens*), Pseudomonas (*P. trivialis*), Trichoderma (*T. harzianum* T58); concentration 2.3 Billion CFU/g, starter food source (nutrients, trace elements, amino acids, vitamins)

*) processed by **SANBIO Biocatalytic Stimulation Technology** see legal statement

MODE OF ACTION

TERRA combines the core functions in one product: **1. Control of FERMENTATION process** **2. Control of ODOR and TOXIC GASES** **3. BIO-TRANSFORMATION of waste into fertilizer.**

The effectiveness of the converter TERRA in powder form is based on the synergistic combination of mineral mix and microbial biopreparation and their activation by the **SANBIO Biocatalytic Stimulation Technology**. The mechanism of **electrical stimulation** makes the difference of TERRA versus conventional products acting on chemical mechanisms only.

RAPID ACTION. The unique composition and advanced processing of TERRA ensure instant impact on manure.

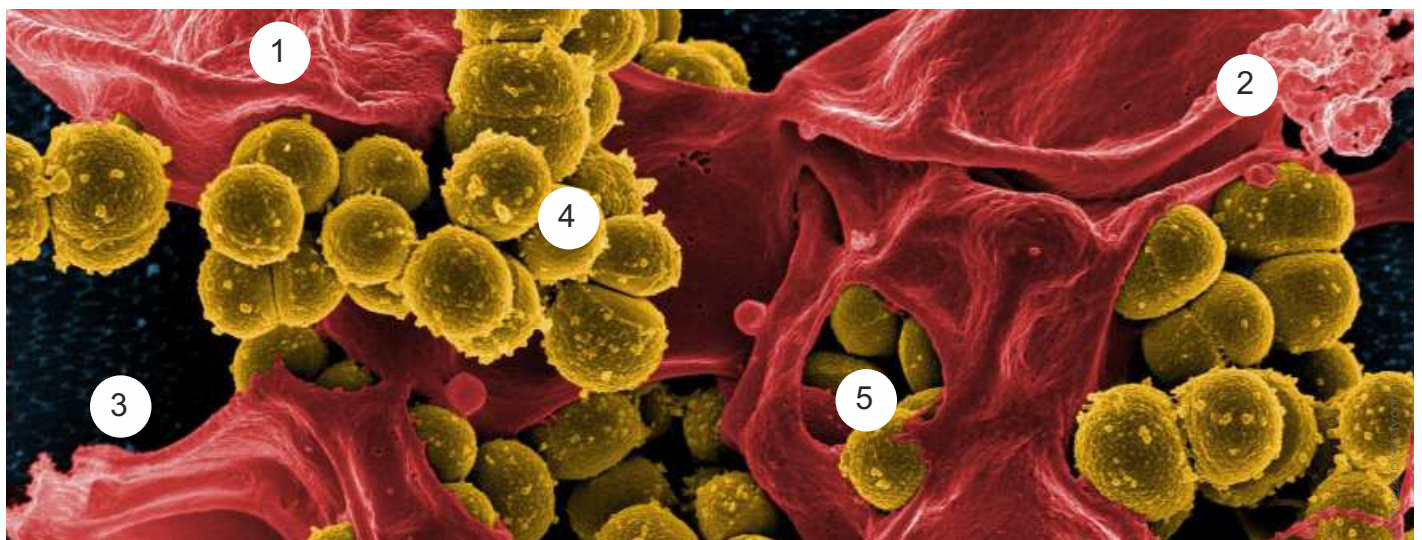
ADVANCED PROCESSING. The minerals are utilized in a special milling and grinding process down to less than 100 micron size. As a result, the micronized very tiny particles have an extremely large reaction surface (host matrix). Subsequently, the particles and microorganisms being charged and polarized in a special electrical process. Now, the refined physico-chemico complex has a huge capability to interact with compounds, and the microorganisms have a higher activity and metabolism.

EFFECTIVE MICROBIOTA. The mineral complex provides the microhabitat (host matrix) for colonialization of microorganisms and carbonates for both, oxygenation and balance the pH value in the manure. TERRA contains mesophilic and thermophilic bacterial cultures and fungi which work under both, aerobic and facultative anoxic condition. This guarantees the best process performance under all conditions. The optimized conditions promote the fast reproduction and growth of aerobic microbes. The accelerated metabolism and generated enzymes lead to rapid transformation process shortly after initial inoculation.

DYNAMIC BIO-TRANSFORMATION. TERRA is specialized in effective transformation, decomposition and liquification of organic matters, cellulosic fibers, proteins, fats, residual carbohydrates in animal waste. As a result the floating / sinking layers and blockages in channels, tanks and lagoons are dissolved. The manure turns into homogen liquid.

ODOR CONTROL. TERRA reduces the formation and release of smell, odor and toxic gases (ammoniac gas, hydrogen sulphide, nitrous oxide) significantly. Used in the barns it supports the protection of respiratory system by air cleaning effects. It can reduce the pest with flies and mosquitoes. Fresh air and clean environment in stables provide best breeding conditions.

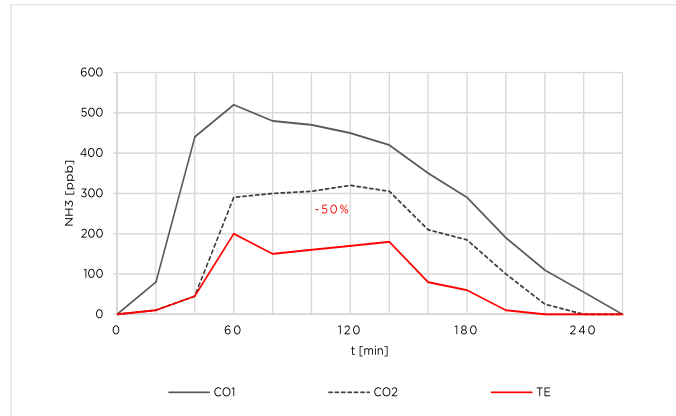
N-P-RICH ORGANIC FERTILIZER. TERRA increases the nitrogen level of the treated manure and transforms it into a valuable organic fertilizer. TERRA uses two methods to prevent nitrogen gas volatilization (loss): 1. The mineral complex adsorbs and fixes the ammonia gas in their matrix. 2. The enclosed microorganisms prevent nitrogen gas volatilization by fixation, recovery and conversion into plant available form. The emerged organic fertilizer is an inexpensive alternative to chemical fertilizers.



- 1 Micronized particles provide an extreme large reaction surface
- 2 Huge reactivity towards compounds due to charged and polarized physico-chemico complex
- 3 Fast reproduction and growth of aerobic microbes due to on-board oxygenation and starter food source
- 4 Fast colonialization of microorganisms at host matrix used as microhabitate
- 5 Rapid decomposition of organics due to effective high concentrated bacteria and fungi

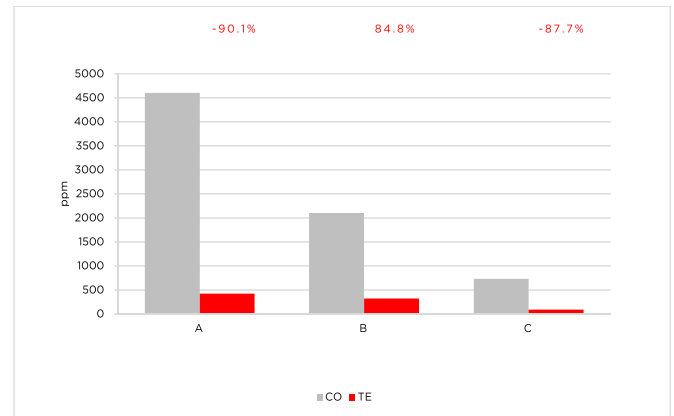
CASESTUDIES

Effect of TERRA on **AMMONIAC GAS EMISSION** (NH₃) from manure



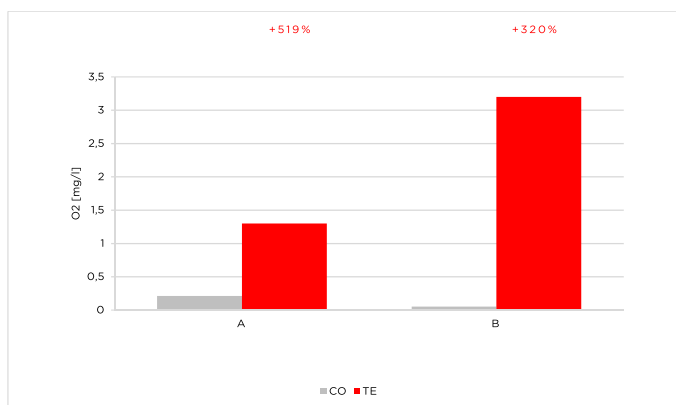
CO1= Urea
CO2=Untreated manure
TE=Treated manure, dosage: 15 g TERRA/cbm
SANBOS/ifn, Germany, 2016

Impact of TERRA on volatile fatty acids (VFA's), respectively **UNPLEASANT ODORS** in manure



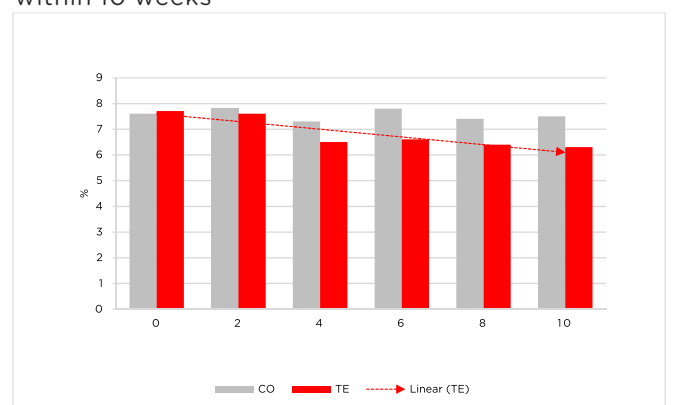
A=Acetic acid
B=Propionic acid
C=Butanoic acid
SANBOS/ifn, Germany, 2016

Impact of TERRA on the **OXYGEN CONTENT** of manure within 120 day period after supplementation



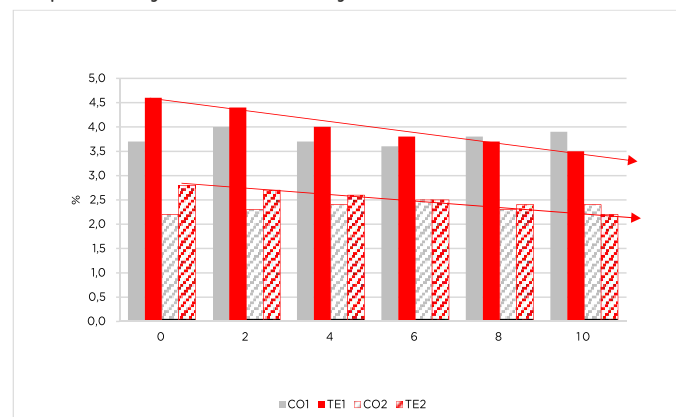
CO=untreated manure
TE=manure treated with TERRA, dosage: 15g/m³ at day0 + days100
A=day70 B=day120
SANBOS/ifn, Germany, 2016

Impact of TERRA on **DRY MATTER SUBSTANCE** (DMS), respectively the flowability of manure within 10 weeks



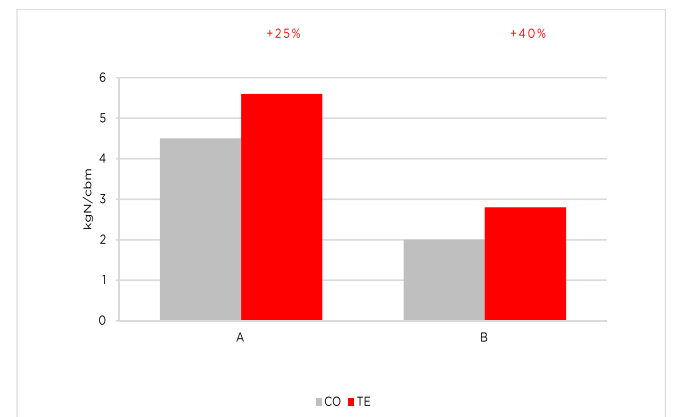
CO=untreated manure
TE=manure treated with TERRA, dosage: 15g/m³
SANBOS/ifn, Germany, 2016

Effects of TERRA on **FIBRE CONTENT** (NDF, ADF), respectively the flowability of manure



CO1=NDF fibre content in untreated manure, control
TE1=NDF fibre content in manure treated with TERRA, dosage=15g/m³, 1 treatment
CO2=ADF fibre content in untreated manure, control
TE2=ADF fibre content in manure treated with TERRA, dosage=15g/m³, 1 treatment
NDF=neutral detergent fibre is a measure of the content of cell wall scaffolds cellulose, hemicellulose, lignin and lignin-N compounds.

Effects of TERRA on ammonia content in cow/cattle manure, respectively **FERTILIZER VALUE**



A=Nitrogen total (Ntot)
B=Ammonia nitrogen (NH₃)
CO=untreated cow/cattle manure
TE=Cow/cattle manure treated with TERRA 15g/m³
SANBOS/ifn, Germany, 2016

DIRECTIONS OF USE

Application	Single rate
Solid manure heap of manure, slurry, dung indoor and outdoor	Dissolve 10-15g TERRA in 2L water for solution suitable for 1 m3 of solid manure , slurry, dung. Apply as working solution on entire area. Use watering can with shower or sprayer. Apply weekly or on demand.
Liquid manure pit, tank, cesspool, lagoon	Dissolve 10-15g TERRA in 10L water for solution suitable for 1 m3 of liquid manure . Inject the solution into the lower third part of the tank. In case of floating layers inject the solution at several points under the floating layer. Ensure well agitation of storage after inoculation. 1 application is sufficient in most cases. Repeat on demand.
Indoor bedding shed, pen, stable, barn	Dissolve 3-5g TERRA in 1L water for solution suitable for 1 m2 of littered ground . Alternative dosage calculation: 0.05-0.1g TERRA per small-size animal (poultry, rabbit) per week 2-3g TERRA per medium-size animal (sheep, goat) per week 4-5g TERRA per large-size animal (cow, cattle, bull, horse, camel) per week After clearing away the dung apply as working solution on entire area. Use watering can with shower (use 50g TERRA per 10L watering can) or sprayer. Apply weekly or on demand.

OPTIMAL WORKING SOLUTION: Use lukewarm water. Add TERRA. Agitate well. Wait 15min for maturing. The working solution should be applied promptly. Maintain agitation throughout the fertigation process.
Microorganisms in TERRA preparation are in spore form. Therefore, the product retains its beneficial properties over a period of at least 3 years.

APPROVAL: 100% natural. TERRA is approved for organic farming and meets numerous international standards.

AVAILABLE PACKAGES: 5/25 kg



LEGAL LIMITATIONS AND ASPECTS

Certain statements may not be applicable in all geographical regions.

Product associated claims may differ based on government requirements.

Product composition and availability may vary by country.

Please contact SANBOS for further information.

SANBOS® and SANBIO® are registered brands of SANBOS GmbH.

GET IN TOUCH WITH US

Add SANBOS GmbH
Geraer Strasse 14
06712 Gutenborn-Drossdorf
Germany

Tel +49 3441 53987-3
Fax +49 3441 53987-4
Email info@sanbio.eu

Internet www.sanbio.eu
Youtube sanbio sanbos
Facebook sanbio

SANBIO. The novel approach of farming.
Nutrition. Stimulation. Protection.