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Poultry Fortune

Estd. 1991

• Production • Nutrition • Management • Marketing

June 2021

Annual Subscription: Rs 800 Foreign $ 100

Inside...

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DECONTAMINATION PROGRAM WITH BIOXY & ENHANCE

PROBLEMATIC

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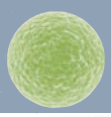

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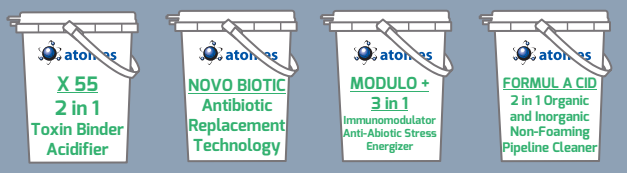

US Army Published Article For Ebola Control
US Army Published Article for Decontaminating Bio-warfare Diseases
US Army Study & Approval Against COVID-19

Approved By Health Canada
Approved By Canadian Food Inspection Agency CFIA

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TS Govt gives power tariff subsidy of Rs 2 per unit to poultry farms

NECC should give priority to bring coordination among all zones in India for smooth movement of eggs and to fix proper price. Today, the industry has grown and whatever 28 zones we have for NECC is not sufficient. We need more zones with proper offices and infrastructure facilities.

Dear Readers,

The June 2021 issue of ***Poultry Fortune*** is in your hands.

In the News section, you may find news about – **It was a golden day** for poultry industry in Telangana state with the Chief Minister Mr K. Chandrasekhar Rao giving momentous decisions like giving power tariff subsidy of Rs. 2 per unit to poultry and diary units in the State from the FY 2021-22. Thousands of poultry farmers in Telangana state will be benefited with the decision of the Government. For Telangana state, rural economy Poultry is very important. He would hear directly and solve any issue for the survival and growth of poultry in Telangana. Dr G. Ranjith Reddy, Member of Parliament and the President of Poultry Breeders Association, Telangana is playing a crucial role in getting benefits to poultry from the Government. He wants Telangana to be the No 1 in India for poultry development.

Mr Suresh Chitturi, Chairman, International Egg Commission (IEC) and Managing Director, Srinivasa Farms Pvt Ltd said that sycophancy had destroyed a great movement like National Egg Co-ordination Committee (NECC) and it is unable to take effective action and steps to fulfill its objectives.

In 1980s and 1990s lot of efforts were put by prominent stakeholders to bring co-ordination among different zones in India, but today NECC is lacking such dedicated people to establish and strengthen this movement. Those days, there was only STD facility which used to take many hours to communicate with people whereas today communication is very easy, but it is not used properly. Though Covid-19 pandemic is creating havoc in poultry industry, NECC had not conducted its executive committee meetings time to time and minutes of the meetings were not distributed if meetings were conducted. For the past one year the industry is passing through tough time and NECC top management should have conducted virtual meetings on egg production, farm gate prices issues, promotional activities etc.

NECC should give highest priority to bring coordination among all the zones in India for smooth movement of eggs from production areas to consumption areas and to fix proper price for the eggs. Today the industry has grown and whatever 28 zones we have for NECC is not sufficient. We need more zones with proper offices and infrastructure facilities headed by the Executives.

IEC Chairman stated that new zonal offices are required in Kerela, Guwahati etc in India which were long pending. B. V. Rao had done this with the support and co-operation of those important stakeholders, but the present management team of NECC has no recognition for them. According to him there is a need of interacting with the dietitians, health professionals etc and promote egg consumption in the country. If sincere efforts are put it is not difficult to promote egg consumption in the country under the present circumstances. Covid made the people to realize the nutrition value of eggs and people are eating eggs and chicken.

Novus celebrates 30 years anniversary on June 6 and is supporting animal protein producers globally who are working to feed the world. CSR initiative of Novus Animal Nutrition (India) Pvt Ltd makes schools more sustainable by uplifting their basic infrastructure and turning them into a better place for educational progression for poor children. For its community enrichment initiatives, Novus South Central Asia team collaborated with Bhumi, which is one of India's largest independent and youth volunteer non-profit organizations. Novus India team is very excited to share that they were able to positively impact the educational experience of 300 children by uplifting the infrastructure of 3 schools during the year 2021.

Mr Amit Saraogi, CMD, Anmol Feeds Pvt Ltd comments India's poultry sector, valued at nearly ₱90,000 crore is going through a rough ride yet

Contd on next page

NRS GROUP

Poultry Fortune

Our Mission

Poultry Fortune will strive to be the reliable source of information to poultry industry in India.

PF will give its opinion and suggest the industry what is needed in the interest of the stakeholders of the industry.

PF will strive to be The Forum to the Stakeholders of the industry for development and self-regulation.

PF will recognize the efforts and contribution of individuals, institutions and organizations for the development of poultry industry in the country through annual Awards presentation.

PF will strive to maintain quality and standards at all times.

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again, the third time in a space of 14 months. The rising price of soya meal is impacting the price of the finished feed cost which has increased by 25% on overall for the past one year. The feed industry is unable to pass on this Soya price hike to the end consumer fearing loss of customer base and reduced feed demand which in turn is leading to loss for the feed manufacturers. The recommendation made by the Animal Husbandry and Fisheries department to import Soya meal duty free is a welcome and much needed move.

Broiler chickens have begun piling up in poultry farms due to poor off-take in view of the lockdown. KPFBA has expressed concern over not only the financial consequences arising out of feeding chicken for an extended period of time, but also threat to the health of the birds. The demand for chicken from retailers had come down in last few weeks.

The coronavirus pandemic has not only affected the consumer buying patterns but also made things unpredictable in the markets. Heavy consumer demand is driving up egg prices. The eggs are being quoted for Rs 7 per piece in retail market as compared to 15 days ago at Rs 5 per piece. Doctors and experts are also prescribing eggs in the daily diet to improve the immunity system. In Government medical hospitals boiled eggs are being given to COVID-19 positive patients on daily basis.

MoU signed to introduce 'Ayurveda' disciplines in Veterinary Science. It was an ardent dream and mission of late Dr Sushiel Agrawal, Chairman of Indian Herbs to get Ayurveda recognized as the veterinary discipline. He raised awareness about significance of herbal veterinary in veterinary curriculum, importance to educate poultry producers and dairy farmers and importance of cultivation of medicinal herbs. His dream has come true.

Srinivasa Hy-Line had hosted live Webinar - **Alternative Feed Ingredients & Formulation Techniques** on 11 May 2021 led by Mr Vitor Arantes, Global Nutritionist, Hy-Line International. Conventional feed ingredients are more expensive and are not readily available to all producers at all locations. Adverse climatic conditions coupled with high prices of Soymeal have stimulated the search for alternative feed ingredients for poultry. Vitor had shared many formulations which improve the nutritive value of alternative feed ingredients for poultry. The webinar received response with the participation of poultry farmers, veterinarians, nutritionists and the industry experts.

In the Articles section –

Article titled ***Alternative Feed Ingredients for Broiler Diets – An Overview*** by Dr Venkatesh, Aviagen India, explores alternative feed ingredients for Broiler Diets as poultry industry is facing with a new tsunami of high feed prices mainly due to the increased soybean meal price in the last one month period and whether using such alternative ingredients is both feasible and cost effective.

Readers are invited to send their views and comments on the news and articles published in the magazine which would be published under "Readers Column". Time to time, we shall try to update you on various aspects of poultry sector. Keep reading the magazine ***Poultry Fortune*** regularly and update yourself. Wish you all fruitful results in your efforts.

M.A.Nazeer
Editor & Publisher
Poultry Fortune

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We should Learn from our Mistakes and do Better

Suresh Chitturi's comments on NECC functioning

Hyderabad: Mr Suresh Chitturi, Managing Director, Srinivasa Farms Pvt Ltd and Chairman, International Egg Commission (IEC) said that sycophancy had destroyed a great movement like National Egg Co-ordination Committee.

Talking to Poultry Fortune, he said NECC has become an impotent organization and is unable to take effective action and steps to fulfill its objectives. When B. V. Rao was there, with the support of people like C. Jagapati Rao, V. N. Dubey, P. V. Somaraju, Mohan Reddy, Harihara Gopal, M. B. Desai, S. K. Mailanandan and others, B.V.Rao used to meet farmers and established NECC, but the present followers are not working to the expectations for NECC and unable to fulfill its objectives, he stated. There is no recognition for the people who worked for NECC sincerely. Without them, I don't think B. V. Rao uncle might have achieved whatever was NECC today.

Answering to a question, B. V. Rao had done this with the support and co-operation of these important stakeholders, but the present management team of NECC has no recognition for them, Suresh stated.

Suresh Chitturi, Chairman, IEC & MD, Srinivasa Farms Pvt Ltd

Those days in 1980s and 1990s my dad C. Jagapati Rao used to work a lot from 5 am itself bringing co-ordination among the different zones in India, but NECC is lacking such dedicated people to strengthen this movement. Those days there was only STD facility which used to take many hours to communicate with people whereas today communication is very easy, but it is not used properly, he told.

Though Covid-19 pandemic is creating havoc in poultry industry, NECC had not conducted its executive committee meetings time to time and minutes of the meetings were not distributed if meetings were conducted. For the past one year the industry is passing through tough time and NECC top management should have conducted virtual meetings on egg production, farm gate prices issues etc, Suresh Chitturi stated. NECC do not send production and consumption data, he added.

NECC should give highest priority to bring co-ordination among all the zones in India for smooth movement of eggs from production areas to consumption areas.

Today the industry has grown and whatever 28 zones we have for NECC is not sufficient. We need more zones with proper offices and infrastructure facilities headed by Executives.

New zonal offices are required in Kerela, Guwahati (Assam) etc. which were long pending.

I have not seen a senior executive like Mr Shaan who worked well for establishing NECC in the initial days of NECC. Such talents should be inculcated in the minds and working attitude of executives working in NECC all over the country today, and effectively co-ordinate with all zones under central committee. The senior executives should have access with chairperson and ensure effective functioning of NECC.

Cananda, USA and the world is willing to help Indian poultry industry with information but we don't have people to take it. Do NECC have the data of traders of all places in India and how many trucks with eggs lifted from different places in the country and where they are sent, he asked. Whatever I said about NECC, if anything wrong is there, I am ready to accept and learn. Similarly if NECC management is inaccurate they should correct the things, stated Suresh Chitturi.

According to him there is a need of interacting with the dietitians, health professionals etc and promote egg consumption in the country. If sincere efforts are put it is not difficult to promote egg consumption in the country under the present circumstances. Covid made the people to realize the nutrition value of eggs and people are eating eggs.

The Indian Livestock Feed & Poultry Industry seeks intervention with the rising prices of soya meal

The Animal Husbandry and Fisheries department has recommended duty free import of soya meal

Amit Saraogi, Chairman & Managing Director, Anmol Feeds Pvt Ltd

17 May 2021, Kolkata: The Indian livestock sector currently contributes 25.6% to the Agricultural GDP and 4.11% to the National GDP which is far below the potential it holds. The Poultry sector contributes INR 1.3lakh crore to the GDP. The poultry industry had run into losses of over INR 26,000 crores in just three months in 2020, owing to misinformation about COVID 19 spreading from the consumption of chicken and a nationwide supply chain and logistics logjam. This impacted not only the poultry industry but other auxiliary industries, such as the livestock feed manufacturers. In addition, the prices of raw materials, primarily soya meal, has gone up in the past few months. With the second wave of COVID hitting the country, the sector is facing new hurdles that is implicating the poultry farmers and the livestock feed manufacturers, gravely.

Soya meal one of the main components of livestock feed having 30% share in the feed composition has witnessed a sudden splurge in the price. The Indore market price of Soya meal 46% protein during March 2020 was Rs 30,000 Ex-plant. The price currently has gone up to Rs 54,500 per MT Basic. As compared to previous year, the Soya meal price has increased by a whopping hike of 82%. There is no particular reason or this type of abnormal price increase, as there are ample Soya stocks available in the market.

Taking note of the situation, the Animal Husbandry and Fisheries department, issued an office memorandum to the undersecretary of the Department of Commerce, recommending duty-free import of 12 lakh metric tonnes of soya meal to avoid further ramification of losses for the sector. This recommendation was in response to a request made by the industry, which had raised the issue early in April. The letter has also requested regulation of soyabean commodity trade on commodity exchanges, which would end speculation-driven surge in soyabean prices.

Amit Saraogi, Chairman & Managing Director, Anmol Feeds Pvt Ltd

Commenting on the recommendation made, Mr Amit Saraogi, Chairman, Managing Director, Anmol Feeds Pvt Ltd added, "The rising price of soya meal is impacting the price of the finished feed cost which has increased by 25% on overall for the past one year. The feed industry is unable to pass on this Soya price hike to the end consumer fearing loss of customer base and reduced feed demand which in turn is leading to loss for the feed manufacturers. The recommendation made by the Animal Husbandry and Fisheries department to import soya meal duty free is a welcome and much needed move. This will provide relief not only to the poultry farmers and poultry industry at large but also to other associated and auxiliary industries such as the feed manufacturers, and the end consumers. India's poultry sector, valued at nearly ₹90,000 crore, is going through a rough ride yet again, the third time in a space of 14 months. The duty free import of soya will bring down the price to nearly half of the current market rate. This will help our poultry farmers largely and they will be able to reap proper benefits. We, humbly, request the Government of India to act upon this recommendation and help us in these difficult times of the pandemic."

Poultry is one of the fastest growing segments of the agricultural sector in India today. As per the industry estimates, India produces 2.75 million tons of chicken meat and 65.48 million (2.86 million tons) of hen eggs/year. Furthermore, it employs 3 million people and contributes over Rs.45,416 crores to the Gross National Product. The Indian poultry market, consisting of broilers and eggs reached a value of INR 1,988 billion in 2020. Indian poultry market to grow at a CAGR of 15.2% during 2021-2026. The Indian livestock feed market size reached a value of almost INR 403.5 billion in the year 2020. The market is further expected to grow at a CAGR of 15% between 2021 and 2026 to reach a value of almost INR 933.3 billion by 2026.

Soya meal price increase as on 6-5-2021

December 2020: INR 44,100 base line

January 2021: INR 45,700 (6% increase)

February 2021: INR 49,300(20% increase)

March 2021: INR 55,500 (45% increase)

April 2021: INR 62,000 (59% increase)

May 2021: INR 78,000(76% increase)

*Rates shown are per MT

Egg prices hit Rs 6/piece in wholesale market

Most traders feel that the egg prices may go up to hit record high level of Rs 8 per piece by June end

24 May 2021: The coronavirus pandemic has not only affected the consumer buying patterns but also made things unpredictable in the markets. The egg prices are going through the roof at a time when it should be actually going down. Usually, both the demand and supply of eggs fall during the summer season. Going against this general trend, the demand for eggs has increased manifold and so are its prices.

"Heavy consumer demand is driving up egg prices. The eggs are being quoted for Rs 6 per piece as compared to 15 days ago at Rs 4.80 per piece in the Mahatme Phule Wholesale Market," said Moiz Burhani of Vidarbha Eggs while speaking to The Hitavada.

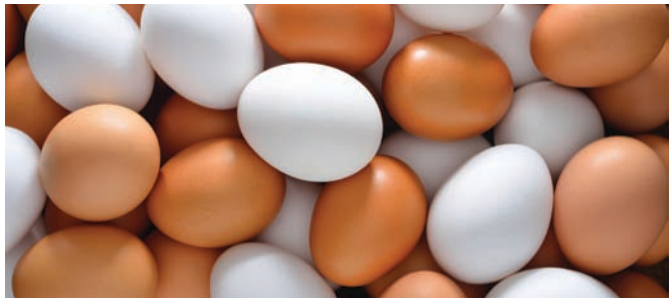
In retail the eggs are being sold between Rs 6.50 and Rs Rs 7 per piece, depending on the locality. The production of eggs stands at an average 25 crore eggs per day against 100 crore people consuming the eggs in the country. The production of eggs is constant more or less throughout the year, said sources in the market.

Most traders feel that the egg prices may go up to hit record high levels by June end. They are expecting the egg prices shoot up to Rs 8 per piece in the wholesale market. There has been sharp drop in supply from major egg producing states like Andhra Pradesh and Telangana.

"Currently, the demand for eggs is more than the supply. Because of the huge demand our stock of eggs get empty by evening," Burhani said. The average daily consumption of eggs is 12 lakh to 13 lakh in the Nagpur district. The wholesale egg market caters not only Nagpur district but also Chhindwara, Saoner and other towns, he informed. He said that the awareness levels about the benefits of eating eggs has grown multifold among the people. The egg prices are rising as more people are buying eggs to boost their immunity power in the backdrop of COVID-19 virus.

Doctors and experts are also prescribing eggs in the daily diet schedules of COVID-19 positive patients and people who are under quarantine to improve their immunity system. In Government medical hospitals boiled eggs are being given to COVID-19 positive patients on daily basis.

Increased demand for egg



Retail price reached Rs 7

New Delhi: Covid 2.0 has become beneficial for some sectors. Poultry industry is one among them. Demand for eggs has increased as doctors and experts are also prescribing eggs in the daily diet schedules to improve the immunity system. Two months back, the retail price of eggs was Rs 4.5 to 5, now it has risen to Rs 6 to 7. Branded eggs rate is Rs 10 / piece.

Consumption of an average of 7 eggs per week

It is estimated that each person in our country consumes an average of 7 eggs per week. Due to panic of bird flu this year in January to February, the egg price has fallen to Rs 4. As a precautionary measure farmers have reduced producing the number of new batches. As a result, egg production is down now compared to the same period last year. This is also having an impact on the price of eggs.

It is a loss to the farmer. Even after the retail price of eggs reached Rs 7-8, farmers do not get much benefit. At present it costs four rupees per egg production and farmers do not get more than 5 rupees. Industry sources say most of the rising prices are going to middlemen.

Rising soybean price

The price of soybean, the main raw material price has increased. Two months back the rate was between Rs 33,000 to 40,000. Now it has become Rs 72,000. It is said that despite the increase in the price of eggs, farmers have not been able to make much profit.

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Broiler chickens piling up in Karnataka poultry farms

Mysuru, 22 May 2021: Broiler chickens have begun piling up in poultry farms across the State due to poor off-take in view of the lockdown declared by the Government to prevent spread of COVID-19.

Though an estimated 15 lakh live chicken gets ready for sale every day in the State at 20,000 poultry farms, where they are reared, the demand had come down drastically due to closure of hotels and restaurants, besides cancellation of marriages and other community gatherings.

The retail chicken shops, where the meat is available for purchase by consumers, also have a limited window period for sale – between 6 am and 10 am.

With the off-take of chicken from the poultry farms coming down drastically, leading to a pile-up of live birds, the Karnataka Poultry Farmers and Breeders Association (KPFBA) has expressed concern over not only the financial consequences arising out of feeding the chicken for an extended period of time, but also the threat to the health of the birds.

KPFBA president Sushanth Rai, who has sought "urgent help" from the State Government to dispose off the "perishable" poultry products. He has urged the State Government, in a letter to the Commissioner to the Department of Animal Husbandry and Veterinary Sciences, to extend the window period for sale of chicken from 6 a.m. to 10 a.m. to at least till 2 pm every day.

The production expenses incurred by the farmers includes the daily feed comprising of maize, soya and other raw materials, which cost about ₹30 crore per day in the State, he said. The piling up of chicken even for one day affects the production cycle as well as the economy of the poultry farms.

"If the bird stays in farm beyond the stipulated number of days, it continues to feed, adding to the cost of production," said a source in KPFBA. Also, the price comes down with the age of the bird beyond a time.

Ramesh, wholesale chicken dealer from Mysuru, said he purchases birds that are 32 to 33 days old, weighing around 2.3 kgs. But, nowadays he was getting birds that were around 2.6 kgs to 2.8 kgs. Consumers prefer tender birds that are less than 2.3 kgs. Any increase in the weight of the bird will push the prices downward, he said.

He pointed out that the demand for chicken from the retailers had come down in the last few weeks. Apart from the short four-hour window period for sale of chicken, Mr Ramesh said he felt that the purchasing power of several people, particularly daily wagers, had taken a huge beating during the lockdown.

>>

Courtesy: *The Hindu*

Vinod Kapur's Wife Rani Kapur passes away

Gurgaon: So much more than my precious wife through 61 years and more. My steadfast friend, companion and confidant. And, when she so felt, my forthright dissenter. No less, so often the wind beneath my sail and when needed my harbour of safety in emotionally distraught times. Inspirational mother of our three children – Adita, Rahul and Anjali; and virtual mother of their spouses Sanjay, Kanan and Sunil. Nurturing Grandmother of Jahanavi, Vedika, Aditya, Ishaan, Devki, Adhiraaj and Anisha. Loving grandmother-in-law of Nicholas, Nitin and Tara and "Biji of great-grandchildren – Leela, Freyja and Niam."

Rani Kapur
4 July 1935 - 15 May 2021

The daughter that my Mother never had; her greatest confidant; her counsel and pillar of strength.

Matriarch of the Kapur family which she helped build, nurture and sustain through generations by bonds of commitment, compassion, generosity of spirit and heart. A totally dependable and caring friend and support to all the countless who came into her world.

And a passionately devoted support and friend of her elder sister - Raj Srivastava.

Thank you Lord for 85 years of her life and 61 years of our togetherness. They are not a few years. But my Lord they are not enough. Not enough for me. Not enough for her immediate family and the larger family that she so committedly helped build and sustain. And we tried – we tried our best - to hold her back. But then who can so succeed in face of Divine Will. So my Lord God even as Rani will always remain an intrinsic part of your blessing for each of us, she has returned to you - her Maker. We pray that You - Our Lord God, hold her to your bosom in care and give us the strength to be always inspired by the spirit of love and generosity and compassion that she seeded in us.

- Vinod Kapur, Adita and Sanjay Bhaskar, Rahul and Kanan Kapur, Anjali and Sunil Khosla, Promod Kapur, Ashok Kapur, Vijay Kapur, Shashi Kapur, Deepak Kapur & Family, Keggfarms Group.

Fulfilment of Dr Sushiel Agrawal's Dream

"MoU signed to introduce 'Ayurveda' disciplines in Veterinary Science"

Uttar Pradesh: MoU between Department of Animal Husbandry and Dairying (DAHD), Ministry of Fisheries, Animal Husbandry and Dairying and Ministry of AYUSH, signed on April 7, 2021.

The concept of ayurveda and its allied disciplines will soon be introduced in veterinary sciences.

This cooperation will definitely help in developing a regulatory mechanism for the use of ayurveda in the veterinary sector for the benefit of animal health, livestock owners' community and the society at large.

The initiative involves capacity building in related areas through training, exploring marketing possibilities for herbal veterinary medicines on a sustainable basis and providing for services including cultivation, preservation and conservation of medicinal plants.

The cooperation will help in developing herbal veterinary education programmes and creating awareness among dairy farmers and agro-farmers about utilization and importance of herbal veterinary medicine and cultivation of medicinal herbs.

Indian Herbs since 1951

Late Dr Sushiel Agrawal,

Dr Sushiel Agrawal (1949-2020)

M. Sc., Ph. D (H) FNAVS (H), (1949-2020) was the Chairman of Indian Herbs, who rendered significant contribution and legendary services to global animal health care industry for over five decades.

He took development of herbal animal health care products and Science of Veterinary Ayurveda as a mission of his life. Dr Sushiel Agrawal was a traditional, ayurvedic and complementary medicine researcher and authored 50+ research publications. With his vision, more than 200 ayurvedic feed supplements, formulations and a range of unique herbal complementary feeds to replace synthetic vitamins and amino acids were launched for sustainable animal production and securing feed to food chain. His innovative scientific contributions have received global recognition.

The Indian Society of Veterinary Medicine (ISVM), a professional national body of Veterinary Medicine Scientists of India conferred on Dr Sushiel Agrawal the Award of honour for his outstanding contribution to the profession of Veterinary Medicine and Animal Sciences. He was also conferred with Hony. Fellowship (FNAVS) for his pioneering and innovative work for developing Veterinary Ayurveda, as a science of animal health care., by NAVS (India). The Government of India (GOI) realizing the importance of Veterinary Ayurveda established Veterinary Ayurveda Research Institute (VARI) in Lucknow in the year 2009, where Dr Sushiel Agrawal was invited as an expert for advice on development of policies, infrastructural needs, focussed approach and strategies etc.

It was an ardent dream and mission of Late Dr Sushiel Agrawal to get Ayurveda recognized as the veterinary discipline. He raised awareness about significance of herbal veterinary in veterinary curriculum, importance to educate dairy farmers and poultry producers and importance of cultivation of medicinal herbs.

THE DREAM OF DR SUSHIEL AGRAWAL HAS COME TRUE.

Courtesy: *Indian Herbs Specialities Pvt Ltd*

ILDEX Vietnam postponed to 16-18 March 2022

Ho Chi Minh City – Bangkok, 24 May 2021: The management team of ILDEX has decided to postpone ILDEX Vietnam in Ho Chi Minh City until 16-18 March 2022.

The decision is made in view of the new COVID-19 clusters in Vietnam and with the deep concern for the health of the exhibitors and stakeholders. According to the latest statistics, local vaccination in Vietnam has yet to reach 1% of the total population. Social activities with over 30 participants are currently banned since May and local authorities may impose stricter measurements on social activities in the coming months. By postponing the event to Q1 2022, we anticipate widespread mass vaccination can be expected in Vietnam and cross-border travel will gradually be back to normal. The event is set at an ideal timing to meet the market demand after a year-long downturn.

Exhibitors who confirmed to exhibit physically in the previous exhibitor survey will be contacted by the ILDEX team or sales representative in their region shortly.

ILDEX Vietnam is thus re-scheduled to 16 – 18 March 2022 at Hall A1-A2, SECC, Ho Chi Minh City, Vietnam.

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AP ACHIEVERS from Aviagen

BEST ROSS® 308AP ACHIEVERS IN APRIL 2021

Coimbatore : Best ROSS® 308AP Achievers in April 2021.

Company : IB Group top performance. Branch: Madhya Pradesh

Farmer Name: Yashvant Bade

> *"I have been with IB Group for the past seven years. They provide me with excellent quality Ross 308 AP chicks, good feed and support whenever I need. - Yashvant Bade"*

April 2021	Top#1
Chicks Placed	8299
Mean Age	38
Avg Body Wt	2814
FCR	1.428
cFCR	1.247
Mortality	4.28%
Daily Gain	74.05
EPEF	496.4

V-Connect Vietnam Edition is Now Open for the Registration!

VNU Asia Pacific is delighted to confirm that the virtual form of the show "V-Connect Vietnam Edition" is still set to be online during 21-23 July 2021 as scheduled.

"V-Connect" platform is the digital platform developed by VIV and ILDEX team to enable in-person B2B networking. "V-Connect Vietnam Edition" provides a progressive web-based, smart phone-supported online ecosystem optimized for all attendees to meet, network and make deals for ASEAN's Feed to Food Industry. The registration portal of the platform is already opened since last week and will be opened for pre-event appointment from 21 June onwards. "V-Connect Vietnam Edition" is aimed to offer businesses a reliable, responsive and highly actionable platform through which to grow as we continue to adapt to and prosper during the current global climate.

VNU Asia Pacific, together with its global partners, will continue the support to all exhibitors and stakeholders on all issues associated with show preparation.

For more information, please visit the official websites: www.ildex-vietnam.com.

April Best of the Best

Best Weight for Age: 2.81 Kg @ 38 days

Best Daily Gain: 74.05 gm

Best FCR: 1.391

Best Livability: 98.58%

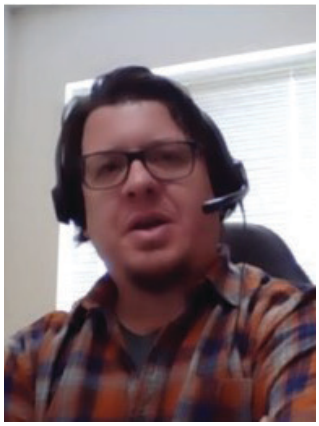
April Top Customer ACHIEVERS

Customer	Chicks Placed	Mean Age	BW	FCR	cFCR	Mor %	Day gain	EPEF
1	8299	38.0	2814.0	1.428	1.247	4.28%	74.1	496.4
2	25920	34.7	2185.5	1.391	1.349	2.77%	62.9	440.0
3	8158	37.8	2540.0	1.490	1.370	2.98%	67.1	437.1

April Top 10 Field Performance

Flock	Chicks Placed	Mean Age	BW	FCR	cFCR	Mor %	Day gain	EPEF
Flock 1	8299	38.0	2814.0	1.428	1.247	4.28%	74.1	496.4
Flock 2	8296	34.0	2313.0	1.405	1.335	2.75%	68.0	470.9
Flock 3	8229	35.0	2407.0	1.450	1.360	4.30%	68.8	453.9
Flock 4	14540	37.0	2523.0	1.493	1.377	3.58%	68.2	440.4
Flock 5	25920	34.7	2185.5	1.391	1.349	2.77%	62.9	440.0
Flock 6	6000	27.6	1482.4	1.192	1.307	2.87%	53.7	437.1
Flock 7	8158	37.8	2540.0	1.490	1.370	2.98%	67.1	437.1
Flock 8	1594	33.0	2159.0	1.420	1.385	5.27%	65.4	436.5
Flock 9	2795	37.0	2509.0	1.464	1.351	5.94%	67.8	435.7
Flock 10	8074	37.0	2511.0	1.518	1.404	4.87%	67.9	425.3

"How to overcome impact of high soya price in feed formulation using alternative feed ingredients and formulation techniques"



Vitor Arantes, Global Nutritionist, Hy-Line International

Hyderabad: Srinivasa Hy-Line had hosted the live Webinar on 11 May 2021. Alternative Feed Ingredients & Formulation Techniques Webinar held on 11 May led by Mr Vitor Arantes, Global Nutritionist, Hy-Line International. The webinar received a tremendous response with the participation of Poultry Farmers, Veterinarians, Poultry Consultants, and Nutritionists from Pan India. Mr Harsha Chitturi, GM - South India Operations, Srinivasa Farms had welcomed the participants with an introductory speech. The live webinar session began with knowledge sharing presentation from the domain expert of Hy-Line International, Global Nutritionist Mr Vitor Arantes on profitability, economic impact of nutritional profile in terms of alternative feed ingredients and various formulation techniques.

The poultry industry relies on a few major ingredients for feed formulation. Cereal grains are the principal sources of energy in poultry diets, whereas grain legumes and oilseed cakes are the main sources of protein. Wheat, rice and sorghum are the key cereal grains and soybean meal is an important protein source. The farmers have always been inclined to use the easily available ingredients to reduce the costs of the feed. As such ingredients do not always support optimum productivity, they are included in small amounts or efforts are made to improve their nutritive value. Despite these limitations, the use of alternative feed ingredients is increasing due to a variety of factors. Conventional feed ingredients are more expensive and are not readily available to all producers at all locations. Adverse climatic conditions coupled with high prices of soymeal have stimulated the search for alternative feed ingredients for poultry. Vitor Antares had shared many formulations which improve the nutritive value of alternative feed ingredients for poultry. He stressed that the genetic and environmental factors also affect not only the content of nutrients in grains but also the nutritive value, which takes into account the digestibility of nutrients contained in an ingredient in the birds.

Energy vs feed intake behavior: In general, chickens have a remarkable ability to control their energy intake when confronted with diets of varying energy concentration.

Alternative ingredients

	Ingredient	Maximum	A	A+B	A+B+C	A+B+C+D	A+B+C+D+E
A	Cotton	8.00%	8.00%	4.80%	4.00%	3.20%	3.20%
B	Rice DDGS	12.00%		7.20%	6.00%	4.80%	4.80%
C	SunFlower	15.00%			7.50%	6.00%	6.00%
D	DORB	12.00%				4.80%	4.80%
E	Mz Gluten 60	10.00%					4.00%
			8.00%	12.00%	17.50%	18.80%	22.80%

SN	Ingredient	Layer Formulation		Broiler Formulation	
		Pellet	Mash	Pellet	Mash
1	Poultry meal	5-6%	3-4%	5-6%	3-4%
2	DDGS (Rice/Corn/Bajra)	10%	6-7%	5-6%	3%
3	Fish meal/Whole Fish	4-5%	2-3%	4-5%	2-3%
4	Meat & Bone Meal	5-6%	3-4%	5-6%	3-4%
5	Ground nut Extract	7-8%	4-5%	4-5%	2-3%
6	Cotton seed cake	5-6%	4%	3%	1-2%
7	Gaur Korma	4-5%	3%	3-4%	2%
8	Rapeseed meal	5-6%	4-5%	3-4%	2-3%
9	Gingelly Cake	5%	4%	4%	2%
10	Maize Gluten Meal	4-5%	4-5%	4-5%	4-5%
11	SF Pellet	8%	5%	3%	2%
12	DORB	25%	25%	5-6%	3-4%
13	Rice Polish	10%	10%	7-8%	4-55
14	Bajra/Sorghum	30%	30%	20%	20%
15	Broken Rice	15-20%	15-20%	10-15%	8-10%
16	Tallow			3%	3%

Poultry Nutrition Bites Bengaluru 15th March 2021

Ingredient	Current Max	Relaxed Max	Potential Issues
Corn DDGS	5%	15%	Mycotoxins
Rice DDGS	8%	15%	Consistency?
DORB	8%	12%	Residual fat rancidity
Rice polish	10%	15%	Composition?
MBM	5%	10%	Ca, P, processing conditions
Canola meal	5%	15%	Low energy, color
Rapeseed / Mustard	2%	5%	Glucosinolates
Millet	5%	20%	Saponins and Tannins
Wheat	10%	30%	Enzyme activity
Sunflower meal	8%	20%	Dark color
Full fat SBM	10%	20%	Over / under processing

Steve Lesson, no reference

The webinar had a Q&A session, which gave an opportunity to the participants to learn and understand more about right nutrition profile and feed formulations from the expert with their interesting queries. The session marked an active and engaging participation from farmers, veterinarians and the Industry experts.

Telangana giving power tariff subsidy to Poultry and Diary Units at Rs 2 per unit

It was a golden day for poultry sector in Telangana state!

It was a golden day for poultry industry in Telangana state with our Hon'ble Chief Minister Sri K. Chandrasekhar Rao giving momentous decisions like:

1) For Telangana state, rural economy Poultry is very important.

2) He would hear directly and solve any issue for survival and growth of poultry in Telangana.

3) Our Dr Ranjith Reddy can /should come to him directly for help if any for the benefit of poultry farmers.

4) He wants Telangana to be the No 1 in India for poultry development. Thousands of poultry farmers in Telangana state will be benefited with the decision of Government giving power tariff subsidy of Rs. 2 per unit to all the Poultry and Diary units in the State from the FY 2021-22.

GOVERNMENT OF TELANGANA
ABSTRACT

Energy Department - Power Tariff subsidy of Rs.2/- per unit to the Poultry and Diary Units from the FY 2021-22- Sanctioned – Orders –Issued.

ENERGY (POWER.I) DEPARTMENT

G.O.Ms.No.08 **Dated.02 .06.2021**
Read the following

1) Note from the Chief Secretary, Govt. of Telangana, Memo. No.16/CSP/2021, Dated. 02.06.2021.
2) Note from the CMD, TSSPDCL, dated. 02.06.2021

&&&

O R D E R:

Keeping in view prevailing condition of Poultry and Diary units in the State and with a view to support the Poultry and dairy industry, Government hereby decides to extend a benefit of power subsidy to the Poultry and Diary Units.

2. Government after careful examination hereby sanction power tariff subsidy of Rs.2/- per unit to all the Poultry and Diary units in the State from the FY 2021-22.

3. The Secretary, Animal Husbandry, Dairy Development and Fisheries (AH,DD&F) shall work out the detailed modalities and issue an implementation guidelines immediately.

4. The Chairman & Managing Director, TSTRANSCO shall take further necessary action in the matter as per the guidelines issued.

5. This Order issues with the concurrence of Finance Department vide their U.O. No.1217/PFS/2021, Dated 02.06.2021.

(BY ORDER AND IN THE NAME OF THE GOVERNOR OF TELANGANA)

SANDEEP KUMAR SULTANIA
SECRETARY TO GOVERNMENT (FAC)

To
The Secretary to Government, Animal Husbandry, Diary Development & Fisheries Department, TS Secretariat, Hyderabad.
The Chairman & Managing Director, TSTRANSCO, Hyderabad
The Chairman & Managing Director, TSSPDCL, Hyderabad.
The Chairman & Managing Director, TSNPDCL, Warangal.
P.S. to Hon'ble C.M.
P.S. to Honble M(E)
P.S. to Chief Secretary to Govt.,
P.A. to Secretary (E)
The PR & RD Department
The MA&UD Department
File C.No.Energy-P1/Tarf/11/2021-P1
(comp.No.334748)
sf/scs

//FORWARDED BY ORDER//

SECTION OFFICER

I feel truly privileged that a person like Dr G. Ranjith Reddy is representing us and so well liked and appreciated by the Hon'ble Chief Minister. Dr Ranjith Reddy, as all of us know, is forever ready to take any issue for the welfare of poultry farmers whether at state or at Central level and does not rest till he gets a positive result . A true friend and a great leader working for the welfare of poultry farmers is a blessing and we must thank him from deep of our hearts and wish him great success in all his endeavours. In his success lies our welfare and happiness. Thanks Dr Ranjith Reddy.

- K. G. Anand

Innovatec Hatchery Automation announces new CEO

Netherlands: Innovatec is happy to announce, that Paul de Schouwer has accepted the new role as CEO of Innovatec BV. His appointment brings about a significant change within the management team.

Paul de Schouwer

Leadership Innovatec

Effective May 1, Paul will take over the leadership of the company. Philip van de Loo, the current CEO, will move into an advisory role for Innovatec and continue to serve as managing director for one of Innovatec's subsidiaries.

25 years experience in egg-industry

Paul de Schouwer brings more than 25 years of high-level commercial management experience to Innovatec. As Sales Director and member of the executive board of the Moba Group, a leading player in the global market for egg grading and egg processing equipment, he has played a key role in the strategic development of this business over the last two decades.

Ideal Innovatec leader

Philip van de Loo states: I'm delighted that Innovatec has been able to win Paul as CEO. With his exceptional commercial skills, his deep understanding of the egg and poultry-related automation business, and his excellent industry network, he is the ideal person to lead Innovatec into the future. I'm very happy to stay closely connected with Innovatec and to continue to support the company."

Committed to growing together

Paul de Schouwer states: "I'm very proud to become a part of the Innovatec family. Under Philip's leadership, Innovatec has developed into a global leader in the hatchery automation space with an outstanding product portfolio and a highly experienced team of dedicated people. I'm committed with the support of the Innovatec team to lead the company into a new phase of innovation and growth to the benefit of our global customer base."

Paul can be contacted by email: paul.deschouwer@innovatec.com.

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Feed Additive Combinations could be Solution for Wooden Breast

New research from Novus International is included in latest issue of Frontiers in Physiology.

SAINT CHARLES, MO, 6 May 2021: A concern for poultry producers globally, wooden breast is a degenerative condition affecting chicken breasts that ultimately impacts meat quality and can cost the industry millions each year. New research from Novus International, Inc. recently published in Frontiers in Physiology explains how combinations of feed additives can impact this financially damaging myopathy.

Strategies to reduce wooden breast do exist; these are broadly growth-rate-related and antioxidant-based approaches. The results from these methods vary and sometimes can impact performance such as growth rate, slaughter weight, and breast yield. However, an ideal solution is one that offers repeatable success in reducing incidence of wooden breast without sacrificing performance in broiler birds.

The study*, led by Novus Research Scientist Dr Vivek Kuttappan, evaluated the effect of various dietary interventions on the incidence of wooden breast, particularly when birds are exposed to oxidative stress.

"Although the exact reason is unclear, it's well-known that incidence of wooden breast is associated with oxidative stress in broiler birds," Kuttappan said.

Dr Vivek Kuttappan, Research Scientist - Physiology, Novus International, Inc.

"So, we wanted to see if combinations of feed additives such as highly bioavailable sources of trace minerals and dietary antioxidants that address tissue oxidative stress could make an impact."

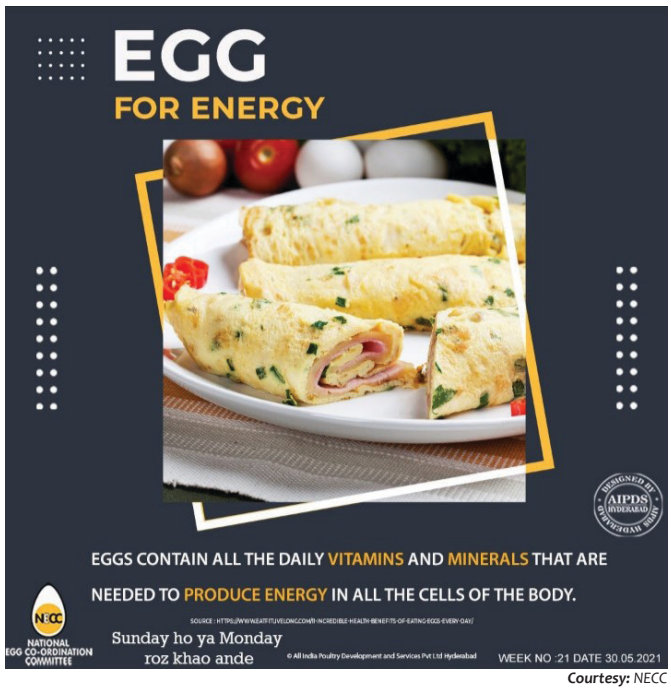
Poor quality fat or heat stress can instigate oxidative stress in animals, potentially leading to conditions such as wooden breast. Knowing that, Novus researchers took birds experiencing oxidative stress associated with feeding oxidized fat and heat stress and evaluated how Novus's MINTREX® trace minerals (zinc, copper and manganese), which are marketed for their bioavailability, along with or without a dietary antioxidant and organic selenium impacted the meat quality.

In the study*, birds fed a diet with oxidized fat, a combination of MINTREX® Zn, MINTREX® Cu, and MINTREX® Mn, along with a dietary antioxidant showed reduced oxidative stress in muscle tissue and significantly increased normal/wooden-breast-free fillets by 22% (33% vs 11% when compared to control birds). Where heat stress was concerned, adding MINTREX® trace minerals alone to the diet showed significant increases (13%) in the incidence of normal fillets (21% vs 8% when compared to control birds), and reduced other poultry carcass quality defects such as tibial head lesions, skin scratches, and breast blisters. Researchers observed a higher magnitude of increase in normal fillets (38% vs. 8% compared to control birds), when MINTREX® was combined with the antioxidant and organic selenium.

"The combination of MINTREX® trace minerals, organic selenium, and dietary antioxidants resulted in the effective reduction of wooden breast severity, plausibly through the reduction of oxidative stress in tissue," Kuttappan said. "This may be due to the activation of various endogenous antioxidant enzymes and reducing dietary sources of oxidative stress."

*Frontiers in Physiology is a peer-reviewed Journal that examines the physiology of living systems and its interaction with the environment. The Novus study titled, "Nutritional Intervention Strategies Using Dietary Antioxidants and Organic Trace Minerals to Reduce the Incidence of Wooden Breast and Other Carcass Quality Defects in Broiler Birds,"is included in the April 2021 journal in the Avian Physiology section and is viewable here: https://www.frontiersin.org/articles/10.3389/fphys.2021.663409/full

For more information about MINTREX® trace minerals or Novus, visit www.novusint.com.



Courtesy: NECC

A Surgical Strike on Bacteria

eXolution Bacterphage F

For millions of years, bacteriophages have been hunting down and killing bacteria. **eXolution Bacterphage F** uses a cocktail of these ancient killers to purge disease-causing bacteria in a formulation created specifically for use in poultry.

Each bacteriophage is a virus that has evolved to target and eliminate only a specific bacteria; leaving other beneficial bacteria completely unharmed.

This natural surgical strike on disease-causing bacteria is the safest, non-toxic, and **effective prophylactic alternative to antibiotic growth promoters.**

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Stable:
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E. Coli
F4 (K88), F5 (K99) , F6 (987P), F18, F41

Clostridium Perfringens
Type A, C, B, D, E

Staphylococcus Aureus

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Novus Animal Nutrition CSR initiative:

"Making schools more sustainable by uplifting their basic infrastructure and turning them into a better place for educational progression for poor children"

Corporate Social Responsibility (CSR) is the continuous commitment by business to contribute to economic development while improving the quality of life of the workforce and their families, as well as of the community and society at large.

For its community enrichment initiatives, Novus South Central Asia team collaborated with **Bhumi,** which is one of India's largest independent and youth volunteer non-profit organizations. They contribute for causes like education, environment, animals, and community welfare that Novus team also sees to be the major areas of community development and sustainability of nation.

Adhering to its core principle of sustainability, Novus South Central Asia team decided uplifting the basic infrastructure of schools as a part of their community enrichment activity and turning schools into a better place for educational progression for poor children.

Novus India team is very excited to share that we were able to positively impact the educational experience of 300 children by uplifting the infrastructure of 3 schools during the year 2021. A brief of these projects is as below:

Project details:

1. Building a cafeteria shed for Corporation Elementary School, Vaniyambadi, Vellore District, Tamil Nadu. **(Picture1 & 2)**
2. Installing roofing sheets and floor tiles for Suyam Charitable Trust in Chennai, Tamil Nadu. **(Picture 3 & 4)**; and
3. Building a lavatory for the Ganeshpura Primary School in Chickmagalore (Dist.), Karnataka. **(Picture 5)**

Novus International, Inc. is a leader in scientifically developing, manufacturing and commercializing animal health and nutrition solutions for the agriculture industry. Novus's portfolio includes ALIMET® and MHA® feed supplements, MINTREX® chelated trace minerals, CIBENZA® enzyme feed additives, NEXT ENHANCE® feed additive, ACTIVATE® nutritional feed acid, and other specialty ingredients. Novus is privately owned by Mitsui & Co., Ltd. and Nippon Soda Co., Ltd. Headquartered in Saint Charles, Missouri, U.S.A., Novus serves customers around the world. For more information, visit www.novusint.com.

Novus celebrates 30th anniversary this month, planning for a long future

What three decades in agriculture means for the feed additive company

SAINT CHARLES, MO, 1 June 2021: On June 6, Novus celebrates 30 years of supporting animal protein producers globally who are working to feed the world.

In 1991, Novus International, Inc. was founded with a mission "to make a clear difference in sustainability meeting the growing global need for nutrition and health." The outcome of Novus's mission statement is clear – the availability of healthy and affordable animal protein can positively impact populations, particularly when produced with regard for environmental impacts, feed costs and animal performance. Looking back at the last three decades, Novus President and CEO Dan Meagher said the company has always endeavored to offer solutions for the industry's biggest challenges.

"Achieving performance and profit goals while optimizing animal health are challenges for every producer regardless of operation size," he said. "There are many purposes for feed additives. For us, the purpose is to ensure the nutrients in raw feed are available to the animal, support the animal's gut health to optimize the nutrition it receives from the feed, and to provide the animal with what it can't get from raw feed materials to better prepare it for the health challenges it may encounter during its life. Regardless of the products we've offered over the years, focus on these objectives is how Novus helps its customers globally."

Novus's foundation began with methionine. In a joint partnership established in 1991, Mitsui & Co., Ltd., and Nippon Soda Co., Ltd., acquired the rights to ALIMET® feed supplement and SANTOQUIN® feed preservative*, creating the company with a source of methionine as its flagship product. From there, methionine solutions MHA® feed supplement and MFP® feed supplement were added to the portfolio. Novus's next innovation was the MINTREX® trace minerals line, which includes organic sources of zinc, copper and manganese bonded to the HMTBa (hydroxy methionine analogue) molecule allowing for better absorption and mineral availability. ACIDOMATRIX™ feed additive and ACTIVATE® nutritional feed acid, both offering combinations of organic acids and HMTBa, were created for the eubiotics portfolio. Other organic acids, essential oils and the CIBENZA® enzyme platform were added, as were pigment and feed quality products before being sold to EW Nutrition earlier this year. The sale was part of a re-focusing currently underway for the company: its Project Destiny strategic business transformation, which includes the goal of becoming the industry's go-to source for gut health nutrition solutions.

"Food production is changing with a strong focus on sustainability, animal welfare/health, efficiency, and other drivers directly related to gut health," said David Dowell, executive vice president and chief operating officer. "Health through nutrition has been a long-time principle in human health and Novus wants to expand our solutions in the key area of growth for our industry."

As part of the renewed focus on innovation, Novus announced its partnership with biotechnology company Agrivida Inc. to develop an innovation pipeline of products using INTERIUS™ Technology; the first in-grain-based feed additive platform commercially available to animal nutritionists and feed formulators. Novus is also working to commercialize the flagship product GRAINZYME® PHOS phytase which uses the technology to produce the enzyme inside corn kernels, thus eliminating processes and costs in feed production.

"As a part of this industry, it's important that we're aware of the resources we use. Expressing feed additives directly inside grain is an exciting way to do more with less," said Chief Innovation Officer Al Zimmerman.

Doing more with less also applies to the company's commemoration of its anniversary. Since the pandemic is prohibiting Novus from celebrating in-person, it is taking the message to the web. During the upcoming months Novus social media followers will see video and images on what 30 years means for those closest to the company – its employees.

"There's nothing I would like more than to take a world tour to celebrate this anniversary with every employee but that's just not feasible," Meagher said. "We're having a toned-down, socially-distant anniversary instead, which is really unfortunate since the employees are the reason for Novus's success. We have hard-working, dedicated, intelligent people at every level of our company, and they each deserve a standing ovation."

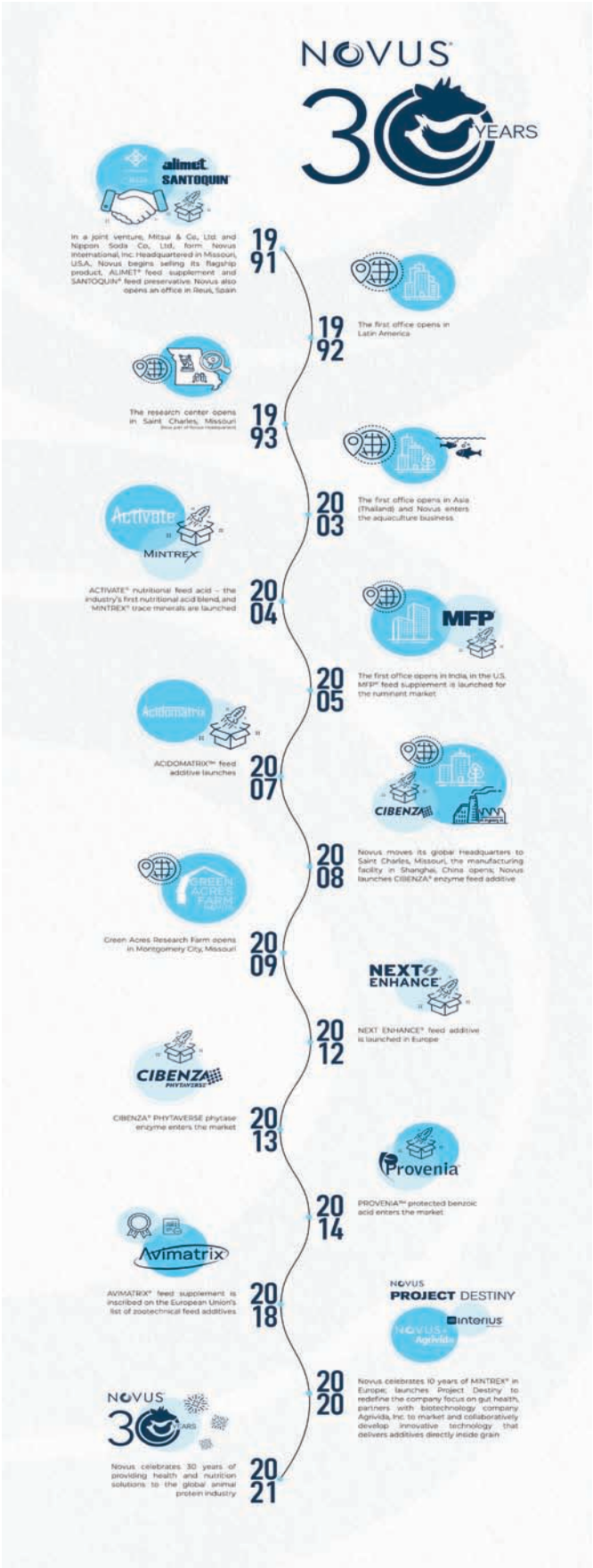
Vice President and Chief Human Resources Officer Maria Burt echoed Meagher's statement on the need to celebrate all that employees have achieved, particularly during the pandemic.

"Our colleagues have gone above and beyond in so many ways throughout the pandemic. All of those challenges, coupled with big changes in our company, would have been daunting for anyone, but they have shown their commitment, ingenuity and grit through it all. They are a truly excellent group," she said.

What will the next 30 years look like? Meagher said Project Destiny is paving the way for a Novus known more for its partnerships with customers than its product line.

"There's no question that our solutions – methionine, minerals, enzymes, organic acids, essential oils – can help our customers with their operations but we want to be more than that. Our goal is for customers to look at Novus as a trusted advisor that is going to help make their business more sustainable financially and environmentally."

The new goals and



Timeline: This month Novus International, Inc., celebrates 30 years of providing solutions, service and sustainability to the animal agriculture industry. This abridged timeline shows key product launches and company growth during the last three decades.

direction of the company are wholly supported and commended by Novus's Board of Directors. In a statement, Tetsu Watanabe, Novus chairman of the board and senior vice president of Mitsui & Co. (U.S.A.), Inc., congratulated Novus employees on the 30th anniversary and said the Board is eager to see what comes next.

"Since its formation, Novus has been an integral part of our strategy and we have worked hand-in-hand with Novus to help 'Feed the World'," he said. "As always, we fully support the transformation and growth of Novus as it endeavors to be the provider of viable solutions for the industry. We are pleased to see that the organization is going down the right path."

Learn more about Novus at www.novusint.com.

**Now owned by EW Nutrition.*

Royal Pas Reform welcomes new CFO to the board

Netherlands, 6 May 2021: Royal Pas Reform has appointed Marcel Dost as its new Chief Financial Officer. He will lead the company's global financial activities including accounting and controllership, financial planning and analysis, tax, investor relations and internal audit.

Marcel (57) will be based at Royal Pas Reform's headquarters in Zeddam, The Netherlands. He brings more than 30 years' experience in business finance to the role. Prior to joining Royal Pas Reform, he spent almost four years at MDo Management & Consultancy in Enschede – in a variety of financial leadership positions, most recently as Interim CFO at Stork Plastics Machinery BV in Hengelo.

Previous to that, Marcel worked as Global Finance Director at Pentair Water Process Technology Holding BV and as Financial Director and Site Director at Nijhuis Pompen BV. Dost holds a master's in business administration and a post graduate degree as chartered accountant.

Royal Pas Reform welcomes Marcel Dost as new CFO

"I am very pleased to welcome Marcel to our team", says Paul Smits, CEO of Royal Pas Reform. "His broad financial background and strong track-record in leading the financial operations of industrial businesses will make an immediate impact."

Marcel Dost says: "I am excited to join Royal Pas Reform. The company is a leading player in the global poultry industry and boasts a proud heritage – based on over a century of delivering quality and innovation. I am very much looking forward to leading its finance organization and contributing to Royal Pas Reform's future success."

OBITUARY – S. Balasubramanian, President IEIA

New Delhi, 11 May 2021: The Indian Exhibition Industry Association regrets to inform the sad and untimely departure of our President. Mr S. Balasubramanian (Bala) due to COVID19 on 10 May 2021.

Bala became the President of the Indian Exhibition Industry Association in 2019 and successfully led the Association during the most critical COVID19 times.

In his professional capacity, Bala was the Executive Director & Chief Operating Officer of the Indian Machine Tool Manufacturers' Association (IMTMA) and Bangalore International Exhibition Centre (BIEC).

Bala spent over two decades in the Indian Exhibition Industry and was associated with IMTMA / BIEC since 2007, heading the trade fairs division which organizes IMTEX and regional machine tool shows across various cities in the country and operating BIEC - India's leading green exhibition facility. Prior to joining IMTMA, he was associated with Informa Group, Intech Trade Fairs & Wisitex Foundation.

S. Balasubramanian, President IEIA, 1962-2021

Bala is survived by his wife and two sons.

A gentleman to the core and with an affable ever smiling face, it is not possible to fill in the vacuum created by his untimely departure. He will be missed by his family, colleagues and the exhibition fraternity in India and abroad.

The entire Indian exhibitions industry stands together with Bala's family in their hour of tragedy. We pray for the eternal salvation of the departed soul.

Indian Exhibition Industry Association elects Sonia Prashar as its new President

New Delhi: The Executive Committee of Indian Exhibition Industry Association (IEIA) is pleased to announce Sonia Prashar as the new President of the association. Sonia was unanimously elected for this position at the 80th Executive Committee meeting held on 29 May 2021.

Assuming charge as the first woman President of IEIA, Sonia comes with more than 25 years of senior management experience, including a decade of strategic development.

Currently, she holds the position of Deputy Director General at the Indo-German Chamber of Commerce (the largest bi-national Chamber in the world) and is also the Chairperson & Managing Director at NürnbergMesse India Pvt. Ltd. (100% subsidiary of NürnbergMesse GmbH). Ms Prashar is also the Chairperson, Advisory Committee, Women's Leadership Forum, formed by IEIA in association with IAEE.

"I am humbled to be taking on this role. IEIA has been progressively working for the betterment of the Indian Exhibition industry through its various initiatives since the last 15 years. As the industry evolves through restructuring and technology upgradation, I believe IEIA with its strong EC is in a position to assist the Indian exhibition industry and guide through this tumultuous period. I am hoping to carry forward the legacy established by my dear friend, colleague and predecessor Mr S. Balasubramanian and realise his vision. His commitment and efforts to advocate the interests of our sector will always be remembered. I also like to thank the EC Members for electing me as President and look forward to serving the interests of IEIA membership with the best of my abilities," said Sonia Prashar.

Sonia Prashar, IEIA new President

The Key to fully Unlocking Feed Potential

rajeshwari.g.nair@iff.com

Dr Ceinwen Evans

Senior Global Technical Services Manager, Danisco Animal Nutrition (now part of IFF).

Highlight Points

Research conducted to date illustrates the enhanced benefits resulting from the complementary modes-of-action when probiotics and enzymes are combined. As the pressure intensifies on poultry producers to reduce production costs without compromising bird performance or gut health, the enzyme and probiotic combination appears to offer excellent opportunities to fully unlock the potential of feed.

Over the past decade we have seen the world's population grow 12% to over seven billion people. Global income has grown even faster at 32% and the combination of a larger and a wealthier population (especially in the emerging markets) has driven increased global demand for animal protein, which has risen 17% over the same period. As we look to feed a growing world population, increasing the efficiency by which animals convert feed into protein is becoming increasingly important. Globally, poultry remains the meat most in demand, with a 32% increase in consumption over the last decade (compared to +15% for pork but only +2% for beef). As these trends are expected to continue at the same rate over the next decade, producers' ability to run commercially sustainable operations is clearly the lynchpin for both current and future food security. As the population has grown, so has the level of unpredictable challenges faced by animal producers. For example, with rising and more volatile feed raw material costs, they are pressurized to produce more protein faster, while maintaining acceptable margins over feed costs and this in itself creates a whole new set of production challenges. The population explosion has also coincided with new legislation controlling or banning the use of antibiotics as growth promoters (AGPs) in animal feed in some parts of the world. As many producers relied on AGPs to control the impact of non-beneficial bacteria in the production environment to achieve optimum performance, their removal has proved a challenge in areas like the EU where a ban was imposed in 2006, and in Korea which has more recently followed suit in 2011. In countries like the US where, according to estimates from the FDA for 2013, 80% of antibiotics bought are used for animal, not human consumption, the impact of any further restrictive legislation will have a significant effect on producers. It has never been more important for animal producers to find an alternative means of improving live performance and profitability without dependence on antibiotics.

The importance of achieving a balanced gut microbiota in addressing the need to produce more high quality protein, more quickly and without dependence on AGPs has gained increasing recognition, and numerous scientists have emphasized the impact that improved nutrition can have on healthy animal development. There is plenty of evidence to show that long before signs of disease show, a microbial imbalance can have a significant negative impact on feed conversion. This article looks at two feed additives in feed - enzyme and probiotics - and examines the benefits of combining their use to help maintain gut microbiota balance and thereby improve nutrient utilisation.

The role of enzymes

The poultry industry is the largest user of feed enzymes for animal production. Its highly integrated structure has meant that it has been quick to embrace new enzyme developments over the years, starting with phytase use in the late 1980s, increasing use of xylanase and beta-glucanase in the 1990s and, more recently, the introduction of other carbohydrase and protease combinations. Enzyme performance benefits include enhanced digestion and absorption of nutrients and improvements in growth uniformity within flocks (Barletta, 2010). The use of feed enzymes has also

Figure 1 - Undigested nutrient fractions in corn/soy or more complex corn/soy-based diets containing sunflower meal, canola and poultry meal.

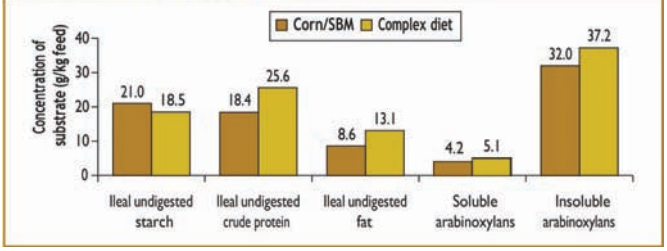
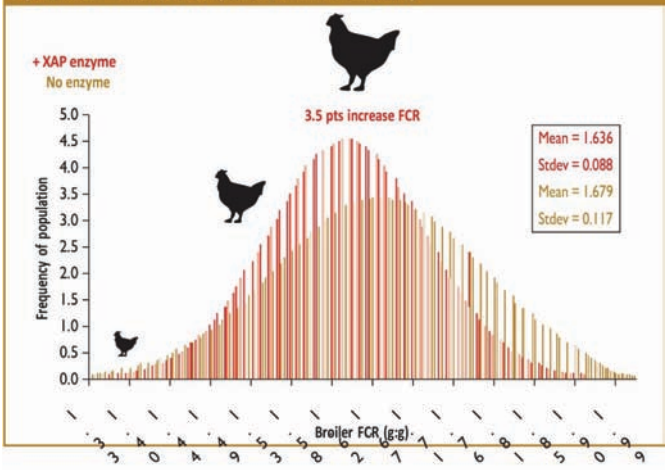


Figure 2 - Enzyme addition to 56 different corn samples included in broiler diets reduced the variation in performance measured as FCR. (Danisco, Animal Nutrition, 2011).



been shown to help producers reduce the impact of volatility in raw material prices by giving them more flexibility to use cheaper ingredients in feed formulation, without having any detrimental impact on bird performance.

In recent years multi-enzyme combinations such as xylanase, amylase and protease have been increasingly recognised for their ability to not only improve nutrient digestibility, leading to improved growth and feed conversion (Romero et al 2013), but also to support gut health. Although many factors cumulatively affect the composition of the microflora in the intestine and the number of non-beneficial bacteria, the single biggest contributor has been shown to be the type, amount and availability of undigested nutrient substrate present in various segments in the GIT (Snel et al. 2002 and Romero et al 2011, Figure 1). Multi-enzyme combinations can improve feed utilisation through their effects on nutrient availability (Figure 2) and can also help reduce the negative impact of substrate variability on the gut microbiota as follows:

- Exogenous xylanase breaks down the non-starch polysaccharides (NSPs), including soluble and insoluble arabinoxylans, in the fibre fraction of plant cell walls (Barletta, 2010), reducing digesta viscosity and improving digestibility, nutrient release and feed passage rates (Choct, 2006; Mirzaie et al., 2012). Some of the breakdown products from the action of xylanase on NSPs (e.g. short chain oligosaccharides) have also been shown to encourage the growth of beneficial bacteria in the lower gut – effectively a potential prebiotic benefit from xylanase addition (Bedford 2000)
- Amylase increases the hydrolysis of starch improving its digestibility, complementing the secretion of endogenous amylases by the bird and resulting in more energy being released to fuel growth (Gracia et al., 2003; Barletta, 2010). Increasing starch digestibility also reduces potential substrate for non beneficial bacteria. (Anguita M., Gasa S.M., Martin-Orue S.S.M., Perez J.F. (2006).
- Exogenous protease increases protein digestibility by hydrolysis of storage and structural proteins, and disrupts interactions of proteins with starch and fibre in the diet. Additionally, it targets other anti-nutritional factors in the diet e.g. residual trypsin inhibitors and lectins in soybean meal and some other vegetable proteins thereby improving nutrient digestibility (Yu et al., 2007; Cowieson and Adeola, 2005)

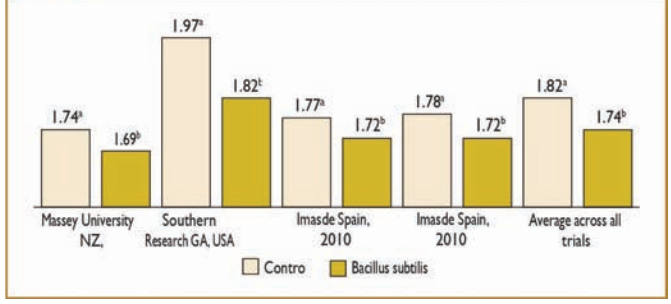
In addition, the fact that feed enzymes can positively impact gut microbiota balance through changes in the available substrates for the gut microbiota has been noted in prominent research. Fernandez et al.(2000) found that xylanases showed benefits in wheat-based diets for poultry in a *campylobacter jejuni* challenge model, Shojadoost et al. (2012) noted that indigestible NSPs and trypsin inhibitors (TIs) both appeared to induce *necrotic enteritis* (NE) linked to *Clostridium perfringens* proliferation in chickens. Both NSPs and TIs are wellknown substrates for xylanase/beta-glucanase and protease enzymes respectively and Peek et al. (2009) showed that protease improved performance of chickens challenged with *Eimeria spp.* and Eimeria is one of the pre-disposing factors in *necrotic enteritis*.

Probiotics and gut health

We have seen that enzymes can improve nutrient utilisation and gut microbial balance by substrate reduction. Probiotics can also support healthy performance although, unlike enzymes, their mode of action is to establish and maintain a beneficial microbial population in the gut of the bird. This makes the gut environment less conducive to colonisation by micro-organisms that may have a negative impact on animal performance (Lee et al 2010).

Although the concept of probiotics positively influencing human health dates back to the Thracian civilisation around 480BC, the idea that they could be a viable means of positively influencing gut health in animal production has risen to prominence as producers seek viable alternatives to AGPs. Spore forming Bacillus strains – *B.amyloquifaciens, B.licheniformis, B. pumilis and B.subtilis* – are particularly favoured for inclusion in animal feed because of their proven stability in feed production and through the digestive process. Their resistance to enzymatic digestion and acidity, added to their ability to be adherent, helps them survive and colonise in the lower gastrointestinal tract. (Alexpoulos et al., Duc et al., Jorgensen and Kurti, all 2004; Jadamus et al. 2002, Hoa et al. 2001, Adami and Cavazzoni 1998). These strains resist heat and high pressure helping them to sur-

Figure 3 - Improvement in broiler bodyweight corrected FCR (FCRc) after addition of three strain Bacillus to the diet.



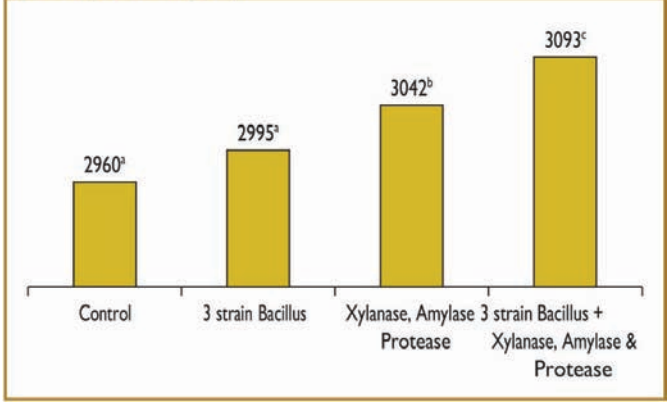
vive the hostile steam conditioning and pelleting process routinely used in the feed industry, while their long shelf life is also beneficial to feed producers. Bacillus benefits include supporting optimum gut microbiota in young animals, protecting birds throughout the production cycle from colonisation by coliforms and promoting villi development in the gut lining, enhancing the animal's ability to absorb nutrients. This is important, as gut metabolism in chickens accounts for 20-36% of the energy expenditure (Cant et al 1996). Several recent research studies testing a three strain Bacillus combination probiotic have shown significant feed conversion ratio (FCR) improvements (Figure 3 ; also see Amerah et al. 2013) and improvements in body weight gain (Romero and Ravindran, 2011).

In a study with Eimeria vaccine challenge in broilers, Lee et al (2010) also showed that feeding a three strain Bacillus combination probiotic restored the gut barrier structure, with treated birds showing significantly higher villus height compared to the control group.

Enzymes and probiotics – a winning combination?

Given the different but potentially complementary modes-of-action of exogenous feed enzymes and probiotics, it would seem logical that the two products could deliver additional benefits when used in combination. Recent research studies have examined this concept under both 'non-challenged' and 'challenged' conditions.

Figure 4 - Changes in AMEn with additions of 3 strain Bacillus, an enzyme combination (xylanase, amylase and protease) and a combination of both (Massey University, NZ).



In trials with non-challenged broilers fed a corn-soy diet containing some fibrous cereal by-products, Romero et al. (2013) observed significant incremental increases in nitrogen corrected apparent metabolisable energy (AMEn) with additions of a three strain Bacillus probiotic and xylanase, amylase and protease enzymes (Figure 4). These increases appeared to be linked to improvements in protein, fat and starch digestibility and a reduction in ileal insoluble NSP flow, the latter indicating enhanced fibre digestion when the Bacillus probiotic and xylanase, amylase and protease enzymes were used in combination.

The next step was to check whether the benefits could extend to a specific necrotic enteritis (NE) challenge model. NE is a major problem for poultry producers; caused by Clostridium perfringens in commercial broiler production, it impacts up to 40% of flocks and costing about five cents per broiler in terms of performance losses. (McDevitt et al. 2006).

Table 1 - Bodyweight gain and FCR in unchallenged birds compared with birds challenged with *Clostridium perfringens* on days 20-22 -/+ 3 strain Bacillus probiotic and a xylanase/amylase/protease enzyme combination. Two experiments at Southern Poultry Research, Georgia, USA.

	Unchallenged control	Challenged control (CC)	CC + 3 strain *Bacillus*	CC + Xylanase, Amylase, Protease	CC + 3 strain *Bacillus* + Xylanase, Amylase, Protease
Body weight gain (g. 1-42 days)	1988^{ab}	1790^{d}	1935^{bc}	1903^{c}	2016^{a}
FCR (1-42 days)	1.75^{c}	1.97^{a}	1.82^{c}	1.87^{b}	1.76^{c}

	Unchallenged control	Challenged control (CC)	CC + 3 strain *Bacillus* + Xylanase, Amylase, Protease
Body weight gain (g. 1-42 days)	2095^{ab}	1984^{b}	2136^{a}
FCR (1-42 days)	1.93^{b}	2.13^{a}	1.87^{b}

^{ab} Values without a common superscript are significantly different (P<0.05)

In two experiments using an NE challenge model with *Clostridium perfringens* the combination of xylanase, amylase and protease and three strain Bacillus product delivered strong performance levels giving equivalent growth rate and FCR to the unchallenged control (Tables 1). The incremental improvements in bodyweight gain and FCR when using a combination solution (Mathis et al. 2013) suggested that the distinct modes of action of each product – the multi-enzyme and the three strain Bacillus – were resulting in a complementary and additive effects in the bird. The improvements in bodyweight corrected FCR in both experiments with the combination product gave net benefits of 14% in relative cost per kg live weight gain versus the challenged control at current feed prices, illustrating the strong economic value of this concept under experimental NE challenge conditions. AAF

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SUMMER MANAGEMENT TECHNIQUES FOR BROILER FARMING

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– Suguna Foods

Highlight Points

In this article, Suguna Foods shares an advisory on poultry farming techniques during summer. The article also highlights the importance of correct feed management, medications and bird temperature checks for a healthy bird. It will give you a small insight on best ways to enhance poultry farming.

Summer brings pleasant and refreshing mornings, but its heat hits us hardly. Birds do not have sweat gland so have their own heat managing mechanisms. In general, chickens can withstand in thermoneutral zone of 18 to 28°C, high temperatures above 29°C leads to heat stress. Body temperature for a domestic fowl is between 40°C and 41.7°C. Since the bird's metabolism is so strong, it must be able to lose heat, which it does by radiation, conduction, and water evaporation. But, as the bird grows in size, this ratio shifts, and radiation of heat through the skin may not be enough to hold the temperature down for the hefty 3kg broiler. Hot weather will have a severe impact on poultry performance and heat stress is a major concern during summer.

What is heat stress?

Birds are 'heat stressed' if they have difficulty achieving a balance between body heat production and body heat loss. This can occur at all ages and in all types of poultry.

In the 'thermoneutral zone', birds can lose heat at a controlled rate using normal behaviour. There is no heat stress and body temperature is held constant. When conditions mean the 'upper critical temperature' is exceeded, birds must lose heat actively by panting. Panting is a normal response to heat and is not initially considered welfare.

But as temperatures increases, the rate of panting increases. If heat production becomes greater than 'maximum heat loss' either in intensity (acute heat stress) or over long periods (chronic heat stress), birds may die. The body temperature of the broiler must remain very close to 410C (1060F). If body temperature rises more than 400C above this, the bird will die.

Birds need proper care as excessive heat may lead to deaths

Steps to be taken in keeping Chickens and its feed in moderate temperature:

1. ARRANGEMENT OF ROOF & SIDE MESH:

- Spread the Grass / Agro waste / Thatches / asbestos of about 3 inches thickness on roof to lower the temperature from 5°F to 9°F inside the shed.
- White wash the tiles to reduce the temperature to 9°F with 25 litre of water + 10 kg limestone + 2 kg cement

2. FOGGER & SPRINKLER:

- Use sprinkler often. Separate 200 litre tank / 10000 litre for single use Fogger.
- M4 model for every 5 feet (1 line of sprinkler for 20 feet width shed) or could use fogger.

3. CEILING FAN AND CURTAIN MANAGEMENT:

- Ceiling fans are placed at the top of the roof within the shed to reduce the temperature up to 9°F (Every 150 sq. ft / fan, Height 6 feet from floor)
- Fix the curtains with gap of 1 to 1.5 feet from the top mesh for good and free air circulation in brooding time and maintain a temperature of 90°F.

4. FREE LAND GROWING:

- A part of the birds (1/3rd of the birds) are allowed into the free land growing area.

5. FEED MANAGEMENT:

- Give fresh feed from 22nd to 28th day. Feed Control: from12 pm to 4 pm.
- From 29th day onwards Feed Control: from 9 am to 5 pm.
- For weak birds, mix the liver tonic, vitamins, and growth promoters with the feed during cool hours.

6. WATER MANAGEMENT AND MOTIVATOR:

- Cover the main water tank with thatched roof, whitewash, clean it and monitor periodically. The water in the drinker must be maintained at 2/3rd level and pH of 5.5 to 6.5.
- Giver amla, lemon juice, buttermilk, green gram, vetiver with nanari and electrol for the first 3 days, monitor their heat after attaining 1 kg weight.

Water Tank

7. MEDICATION AND OTHER MEASURES DURING SUMMER:

- Based on body weight the antibiotics like paracetamol can be given to reduce temperature.
- Growing trees on both the sides of the shed would reduce temperature. Spray acetic acid @1-2ml / lit of water.

With the above - mentioned methods, we can enrich our chicks to be fresh and healthy.

Alternative Feed Ingredients for Broiler Diets – An Overview

With Feed Prices skyrocketing Dr Venkatesh explores alternative feed ingredients for Broiler Diets and whether using such alternative ingredients is both feasible and cost effective…

Dr Venkatesh,
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Poultry Industry is facing with a new tsunami of high feed prices mainly due to the increased soybean meal price in last one month period. Customers are looking for alternative ingredients options to reduce the feed cost, but unfortunately most of the other protein source price also got increased due to the price increase of soya. To manage this situation we don't have choices other than using alternative ingredients, but the challenge will be sourcing of quality ingredients at acceptable price.

In India we have a range of alternative ingredients and their feeding value has been well researched here locally. The commercial use of these ingredients, however, has been limited due to constraints imposed by nutritional, technical and socio-economic factors. But, knowing the limitations of different alternative ingredients and also its inclusion level in feed, poultry producers are left with only few options to try.

Table 1 gives an overview on the suggested maximum inclusion level of various alternative ingredients in broiler diet when common ingredients become scarce or during volatile market situation or when there is increased pressure to reduce feed cost.

Ingredient	Broiler – Starter Phase	Broiler – Finisher Phase
DDGS	6%	15%
Corn Gluten Meal	5%	10%
Rapeseed Meal	5%	5%
Cottonseed Meal *(low gossypol)*	5%	10%
Sunflower Meal	5%	10%
Palm Kernel Meal (+ Enzymes)	*Not Recommended*	10%
Copra Meal (+ Enzymes)	*Not Recommended*	10%

Table 1: Recommended maximum inclusion levels of alternative ingredients in broiler diet

The above recommendation is based on Aviagen internal references, although there is an extensive list of raw materials of plant or animal origin that can be used in broiler feed, we suggest to go with your own practical experiences using those alternative ingredients.

Further, while selecting the alternative ingredients the nutrient matrix values are equally important. So the focus should be on nutritional composition (complete proximate values), digestible amino acid values, metabolizable energy and anti-nutritional factors.

To know whether using such alterative ingredients is cost effective or having any economic advantage, we can estimate the Relative Value of those ingredients.

Relative Value (Table 2) is an indicator by which we can determine the nutrient value of ingredients for Crude Protein, metabolizable energy and digestible amino acids in comparison with the commonly used Energy & Protein source ingredients like Maize and Soyabean Meal. By doing this analysis we can able to find out the cost parity i.e cost per unit of nutrient. But this value does not consider the inclusion levels of alternative ingredients.

From the above table, the green colour dots indicate a cost effective alternative raw material to include. For Ex, If Broken Rice is available at Rs 15.50 per kg, based on the unit cost value for 100 K.Cal of Energy, it is cost effective to use as an alternative or partial replacement for Maize (At Rs 17/kg). Similarly, in case of Soya bean meal, based on the unit cost value for protein level, the raw materials like Rapeseed Meal, Sunflower Meal, Maize Gluten Meal and animal protein sources like MBM and Fish Meal found to be cost effective and can be tried as an alternative protein option for Soya (Again it's not based on volume, but only on unit cost to protein value). Similarly, the digestible Amino Acids relative value can also be compared.

Another consequence of increased feed ingredient prices is that it makes feed additives and micro-ingredients more attractive for diet optimization (see from above analysis in Table 2). For example an increase in the use of synthetic amino acids and enzymes has occurred due to the differences in amino acid digestibility of alternative ingredients in order to meet the bird requirement and hence performance can be maintained or even improved.

Courtesy: Aviagen India Nutrition Notes

Source	Ingredients	Relative Value (₹ / Nutrient Unit)						
		If Rate (₹/Kg)	₹ / 100 K.Cal	₹ / %CP	₹ / % d.Lys	₹ / % d.Met	₹ / % d.Thr	₹ / % d.Val
Energy	Maize	18.00	0.54	2.25	82.02	112.24	69.56	50.51
	Broken Rice	15.50	0.48	1.72	61.54	75.95	59.62	34.35
	Wheat	18.00	0.58	1.38	61.01	94.96	57.57	52.08
	Bajra	16.00	0.53	1.68	70.73	79.05	57.14	37.21
Protein	Soyabean Meal, 46%	72.00	3.19	1.57	28.81	131.23	49.99	37.99
	Soyabean Hi-Pro, 50%	76.00	3.20	1.52	28.04	129.57	48.23	36.72
	Sunflower Meal, 28%	36.00	2.00	1.29	41.64	61.96	42.21	29.70
	Rapeseed Meal, 38%	30.00	1.43	0.79	19.78	48.27	26.30	20.78
	Cotton Seed Meal, 45%	32.00	2.06	0.73	31.16	74.07	37.35	24.57
	Maize Gluten, 60%	70.00	1.92	1.17	82.93	52.08	42.82	5.22
	Rice DDGS, 46%	40.00	1.34	0.87	42.64	61.03	40.02	23.07
	Poultry by-product meal, 52%	46.00	1.08	0.88	35.99	123.94	35.21	20.45
	Fish Meal, 45%	55.00	2.17	1.22	25.63	60.98	42.64	32.71
	MBM, 45%	52.00	2.08	1.16	33.33	118.51	57.79	44.71
Amino Acids	DL-Methionine	350				3.57		
	L-Lysine HCL	205			2.63			
	L-Threonine	225					2.31	
	L-Valine	450						4.71

Table 2: Relative Value calculation analysis by nutrient sources – An Example

Colibacillosis in Layers: An Overview

Technical Team, Hy-Line International
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Introduction

Colibacillosis, a syndrome caused by Escherichia coli, is one of the most common infectious bacterial diseases of the layer industry. E. coli are always found in the gastrointestinal tract of birds and disseminated widely in feces; therefore, birds are continuously exposed through contaminated feces, water, dust and the environment (Charlton, 2006). Colibacillosis causes elevated morbidity and mortality leading to economic losses on a farm especially around the peak of egg production and throughout the late lay period. Colibacillosis often occurs concurrently with other diseases making it difficult to both diagnose and manage. In most field cases, colibacillosis tends to manifest after a bird has experienced an infectious, physical, toxic, and/or nutritional challenge or trauma.

This condition is characterized by the presence of exudations in the peritoneal (abdominal) cavity including serum, fibrin, and inflammatory cells (pus). Fibrin, a white to yellow material, is the product of the inflammatory response in the chicken and can be seen covering the surfaces of multiple organs including the oviduct, ovary, intestine, air sacs, heart, lungs, and liver. Colibacillosis is a common cause of sporadic death in both layers and breeders, but can cause sudden increased mortality levels in a flock. Inflammation of the oviduct (salpingitis) caused by E. coli infection results in decreased egg production and sporadic mortality, and it is one of the most common causes of mortality in commercial layer and breeder chickens (Nolan et al., 2013). Colibacillosis in neonatal chicks can also be a consequence of poor chick quality and sanitation in the hatchery, leading to early chick mortality.

Localized or systemic infections and syndromes caused by avian pathogenic *E. coli* (Nolan et al., 2013)	
Localized Infections	Coliform omphalitis/yolk sac infection Coliform cellulitis (inflammatory process, IP) Swollen head syndrome Diarrheal disease Venereal colibacillosis (acute vaginitis)/salpingitis Coliform salpingitis/peritonitis Coliform orchitis/epididymitis
Systemic Infections	Colisepticemia Hemorrhagic septicemia Coligranuloma (Hjarre's disease)
Colisepticemia Sequelae	Meningitis Encephalitis Panophthalmitis Osteomyelitis Synovitis

Etiology

The etiology of colibacillosis can be either due to primary infection with avian pathogenic Escherichia coli (APEC) or secondary (opportunistic) infection after a primary insult has occurred. E. coli are gram-negative, rodshaped bacteria considered normal inhabitants of the avian digestive tract. While most strains are considered to be non-pathogenic, certain strains have the ability to cause clinical disease. Pathogenic strains are commonly of the O1, O2, and O78 serotypes (Kahn, 2010). There are many different serotypes of E. coli with 10-15% of the serotypes considered pathogenic for birds. Other bacterial agents (e.g. Pasteurella multocida, Streptococcus sp., Klebsiella sp., etc.) and noninfectious factors usually predispose a bird to infection or contribute to disease severity. If the incidence is high, culture should be done to differentiate E. coli from other bacterial pathogens (Kahn, 2010).

Since E. coli is a common inhabitant of the intestine, it is widely disseminated in fecal material and litter. Additionally, contaminated feed, feed ingredients, drinking water, and rodent droppings can all be a source of E. coli infection for a flock. Due to continuous bacterial exposure in the environment, colibacillosis can affect birds at any time throughout the grow and lay periods. Although all ages of birds are susceptible to colibacillosis, younger birds (those grow period) are more commonly affected with greater disease severity than older birds. Colibacillosis is a common cause of sporadic death in layers, but in some flocks it may become the major cause of death prior to or after reaching peak egg production (Kahn, 2010). In general, colibacillosis results from "respiratory origin" during the peak egg production period and from a "vent origin" in the late lay period.

Predisposing factors during peaking period:

- Multi-age complexes
- Exposure to endemic mycoplasmas (M. gallisepticum or M. synoviae) and/or infectious bronchitis virus (IBV)
- Poor ventilation with high levels of dust and/or ammonia
- Stress of production in a young developing bird
- High levels of circulating endogenous hormones (especially estrogen)

Predisposing factors during late lay period:

- Vent trauma, non-lethal vent cannibalism, and/or partial prolapsed
- Too much light intensity
- Small-framed birds
- Excessively large egg size

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- Excessive fat pad

Routes of Transmission

E. coli can enter the body by various routes, all of which can lead to colibacillosis:

1. Respiratory Tract: Inhalation of contaminated dust is the most likely source of E. coli infection (colibacillosis) for poultry. Additionally, damage to the respiratory tract from an infection (e.g. Newcastle disease virus, infectious bronchitis virus, M. gallisepticum, P. multocida, infectious laryngotracheitis, etc.) or irritation from dust or ammonia can lead to a secondary bacterial respiratory infection. Adverse reactions from routine vaccinations can also cause damage to the respiratory tract. Furthermore, any breakdown of the mucosal lining in the trachea has the potential to allow pathogenic bacteria to enter the blood stream which can lead to septicemia.

Bacteria can persist for long periods of time under dry conditions; therefore, it is important to monitor and regulate the amount of dust in a poultry house. Ventilation systems may not be effective in removing dust from houses in most modern layer complexes, especially evident during winter with restricted ventilation leading to increased accumulation of dust and ammonia. Increased ammonia levels at 25-100 parts per million (ppm) can paralyze the cilia (small, hairlike structures) lining the trachea reducing a bird's ability to clear harmful dust and bacteria from the respiratory tract. Additionally, it is not recommended to clean manure pits when birds are still present in a house as the process can release large amounts of ammonia into the environment.

2. Gastrointestinal Tract: Coccidiosis, general enteritis, mycotoxins, antibiotics, poor water quality, and abrupt feed changes all have the ability to disrupt the normal bacterial flora of the intestine. Pathogenic E. coli can invade the gut. When the mucosal barrier is disturbed, pathogenic ingestion of contaminated water, feed, and litter can serve as sources of E. coli. Water should be routinely tested for coliforms, and the water lines should be treated with an approved product if high numbers of E. coli and other coliforms are found. Feed treatments (e.g. exposure to heat and formaldehyde) and organic acid products may reduce coliform bacteria levels in the feed.

3. Skin: Wounds and other breaks in the skin from scratches (due to overcrowding or old cages), rough handling by crews, ectoparasites, or unhealed navels in chicks provide opportunity for pathogenic bacteria to enter the body.

4. Reproductive Tract: Ascending infections traveling up the oviduct lead directly into the hen's body cavity. Vent pecking and prolapse can lead to peritonitis. Oviduct infection, respiratory disease, and handling birds during late transfer (after the onset of egg production) can all result in yolks (or ova) laid outside the oviduct with the potentially developing into egg yolk peritonitis. Additionally, high estrogen levels are seen as hens enter and sustain peak production which increases the susceptibility of these birds to bacterial infection through suppression of the immune system.

5. Immune System: Healthy birds with functioning immune systems are remarkably resistant to naturally occurring E. coli exposure in the environment. Immunosuppression caused by early disease challenges (e.g. IBD, Reovirus, CAV, Marek's disease, adenovirus, etc.) can increase flock susceptibility to secondary bacterial infection.

6. Omphalitis (Yolk Sac Infection, Navel Ill, "Mushy Chick" Disease): Omphalitis, or inflammation of the navel (umbilicus), is one of the most common causes of mortality in chicks during the first week. Both E. coli and Enterococcus faecalis have been identified as the most common bacterial pathogens associated with first week mortality (Olsen et al., 2012). Fecal contamination of eggs is considered to be the most important source of infection; however, bacteria can translocate from the chick's gut or from the blood stream. Infection with E. coli follows contamination of an unhealed navel and may also involve the yolk sac. Clinical signs of omphalitis include swelling, edema, redness, and scabbing of the navel area and/or yolk sac; and in severe cases, the body wall and skin undergo lysis, causing the chicks to appear wet and dirty (i.e. "mushy chicks"). The incidence of omphalitis increases after hatching and declines after about six days (Nolan et al., 2013). There is no specific treatment available for omphalitis in chicks. The disease is prevented by careful control of temperature, humidity and sanitation during incubation, processing, and/or during chick transport (Kahn, 2010). Additionally, the hatcher should be thoroughly cleaned and disinfected between hatches.

Incubation Period

The time between infection and onset of clinical signs (the incubation period) usually varies between 1 to 3 days depending on the specific type of disease produced by the E. coli bacteria.

Clinical Signs

Clinical signs of colibacillosis can vary depending on the type of disease (local vs. systemic). Localized infections typically result in fewer and more mild clinical signs compared to systemic disease. Affected birds are usually undersized, unthrifty, and found along the edges of the house along walls or under feeders and waterers. Severely affected birds such as those with colisepticemia are often dull, lethargic, and unresponsive when approached. Fecal material is often green with containing white-yellow urates due to anorexia and dehydration. Dehydrated birds typically have dark dry skin which is more noticeable on shanks and feet. Additionally, chicks and younger birds with omphalitis (navel/yolk sac infection) may have distended abdomens affecting mobility.

Post-Mortem Lesions

Colibacillosis is diagonsed at necropsy; the gross lesions can include generalized polyserositis with various combinations of pericarditis, perihepatitis, air sacculitis and peritonitis (Bradburg, 2008). Common post-mortem findings in cases of colibacillosis include fibrin, yolk debris, or milky fluid in the peritoneal cavity, in and around joints, and on the surfaces of multiple organs. In cases of peritonitis, there

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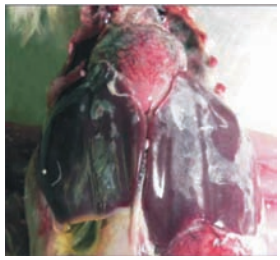
are accumulations of caseous (cheese-like) exudate in the body cavity resembling coagulated yolk material; this is commonly referred to as egg yolk peritonitis (Nolan et al., 2013). See pictures of post-mortem colibacillosis lesions.

Peritonitis

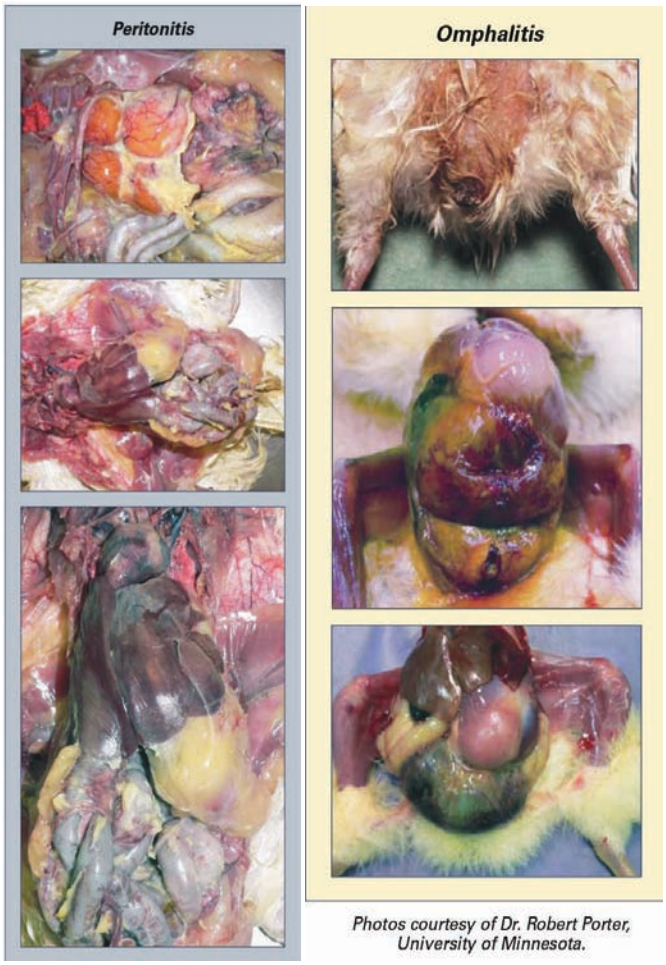


Pericarditis and perihepatitis

Salpingitis

Diagnosis

Diagnosis of colibacillosis is based on isolation and identification of E. coli from lesions. Further testing can be performed to distinguish avian pathogenic E. coli (APEC) from commensal E. coli isolates using molecular diagnostics such as PCR (Nolan et al., 2013).



Photos courtesy of Dr. Robert Porter, University of Minnesota.

INTERVENTION STRATEGIES

Management Procedures

Effective control and prevention of colibacillosis depends on identifying and eliminating predisposing causes of the disease. Maintaining flock biosecurity is critical in the control and prevention. The goal is to reduce the level of E. coli exposure by improving biosecurity, sanitation, ventilation, nutrition, and flock immunity.

Biosecurity

- Reduce exposure to E. coli and prevent introduction of other infectious agents
- Improve sanitation of environment (e.g. hatchery, house)
- Clean chick source
- Reduce fecal contamination of eggs, clean nest boxes and reduce number of floor eggs
- Treatment of feed with products to lower bacterial levels (e.g. pelleting, formaldehyde, organic acids)
- Collect dead birds more frequently

Nutrition

- Feed additives that support healthy immune systems and improve survivability
- Proper protein ratios
- Increase selenium
- Increase vitamins A and E
- Probiotics to promote competitive exclusion

Ventilation

- Improve air quality and ventilation to reduce dust and ammonia levels
- Minimize use of leaf blowers and mowers to reduce environmental spread

Immune System

- Protect immune systems by preventing introduction of immunosuppressive diseases (e.g. IBD/ Gumboro) and other bacterial and viral infections (e.g. IB, M. gallisepticum, etc.)
- Effective vaccination program matching vaccines to field strains
- Manage any respiratory vaccine reactions
- Maintain healthy gut flora (e.g. coccidiosis control)
- Routine serological surveillance
- Reduce stress (e.g. proper stocking density, no temperature extremes, etc.)

Surveillance

- Monitor prevalence by routine posting of birds every few months
- Early diagnosis and treatment

Treatment

Historically, antimicrobial drugs have been used to treat and control colibacillosis; however, the availability of effective antimicrobials has decreased due to threat of antimicrobial resistance and lack of new drug development in the poultry sector. It is important to determine susceptibility of the bacterial isolate involved when selecting an antimicrobial

therapy in order to avoid ineffective treatment and propagation of resistance profiles. The following is a list of currently approved feed additive antimicrobial drugs available for treatment of colibacillosis in both pullets and layers. If there is high mortality due to E. coli infection, the live E. coli vaccine can be used as a treatment and is efficacious in 50% of cases. **Consult a poultry veterinarian before commencing any treatment plan. Availability of drugs and local regulations may vary.**

Drug	Route	Pullets	Breeders/ Layers	Indications	Warning
Chlortetracycline Aureomycin	Feed	200-400 g/ton continuously for 7-14 days	200-400 g/ton continuously for 7-14 days	Control of chronic respiratory disease (CRD) and air sac infection caused by *E.coli*	No restrictions for use in laying hens
		500 g/ton continuously for 5 days	500 g/ton continuously for 5 days	Reduction of mortality due to *E.coli* infections	
Chlortetracycline Pennchlor	Feed	200-400 g/ton continuously for 7-14 days	200-400 g/ton continuously for 7-14 days	Control of chronic respiratory disease (CRD) and air sac infection caused by *E.coli*	**Do not feed to chickens producing eggs for human consumption**
		500 g/ton continuously for 5 days	500 g/ton continuously for 5 days	Reduction of mortality due to *E.coli* infections	
Erythromycin Gallimycin PFC	Water	½ g/gal of drinking water continuously for 5 days in pullets up to 16 weeks of age	½ g/gal of drinking water continuously for 5 days	To aid in control of CRD associated with MG	**Do not feed to chickens producing eggs for human consumption**
Neomycin/ Oxytetracycline NEO-OXY Neo-Terramycin Terramycin Pennox	Feed	400 g/ton continuously for 7-14 days	**Do Not Use**	Control of CRD & air sac infection caused by *E.coli*	**Do not feed to chickens producing eggs for human consumption**
		500 g/ton continuously for 5 days		Reduction of mortality due to air sacculitis caused by *E. coli*	
Tylosin Tylan Tylovet	Feed	1,000 g/ton, administer to chickens 0-5 days of age; follow with a second administration in feed for 24-48 hours at 3-5 weeks of age	20-50 g/ton, feed continuously for 4-8 weeks	To aid in control of CRD associated with MG	No restrictions for use in laying hens

Source: *Feed Additive Compendium 2015*

Type of Vaccine	Description	Results
Autogenous inactivated (killed)	• Provides protection against homologous *E. coli* strains • No cross protection • Breast injection	• Reduced morbidity and mortality due to *E. coli* infection
Commercial modified-live	• Poulvac *E. coli* O78 (by Zoetis) • Cross protection against serotypes O1, O2 and O18 • Spray	• Reduced morbidity and mortality due to *E. coli* infection • Enhanced bird productivity

Vaccination

There are two main types of vaccines used in pullets and layers – inactivated and modified-live vaccines. Regardless of type of vaccine used, clinical disease attributable to E. coli infection tends to less severe in vaccinated compared to unvaccinated birds.

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Bradbury, Janet M, ed. Section 2 Bacterial Diseases: Enterobacteriaceae. Poultry Diseases. 6th edition. Saunders Elsevier, 2008. Print.

More References can be provided on request.

Saving feed cost by Reformulating Broiler Diets with the use of Nutrase BXP 200 TS

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Introduction

Nutrase BXP 200 TS is a blend of enzymes, containing endo-xylanase, β-glucanase, α-amylase and 6-phytase activities. This multi-enzyme complex is developed for production animals to guarantee an optimal digestibility of feed and supply of nutrients to the intestinal microbiota to improve gut health.

Endo-xylanase and β-glucanase. Arabinoxylans (AX) and β-glucans are important anti-nutritional factors in raw feed ingredients. Their most well know anti-nutritional effect is the increase of viscosity in the intestinal content, making digestion and absorption of nutrients extremely difficult. Also, unfavorable hindgut fermentation is stimulated. The presence of endo-xylanase and β-glucanase in Nutrase BXP 200 TS reduces these anti-nutritional effects of feed ingredients.

α-amylase. Starch is the main energy source in cereals for production animals. During starch digestion, α-amylase and gluco-amylase are produced by the animal and secreted into the small intestines. However, in young animals and during transition periods the endogenous production might be insufficient. In this case, the presence of α-amylase in Nutrase BXP 200 TS will support the animal to digest starch.

6-phytase. Phosphorous (P) is a key element in all known forms of life. In cereal grains, P is mainly stored in the form of phytic acid or phytate. Monogastric animals are unable to utilize P from phytic acid or phytate, as they lack endogenous phytase. Nutrase BXP 200 TS contains a bacterial 6-phytase that releases phosphate from phytic acid or phytate and increases the availability of a whole range of nutrients (e.g. P, Ca, Zn, Fe, Cu).

The aim of this trial is to investigate the effect of Nutrase BXP 200 TS to a corn-based diet with reduced energy, P and Ca matrix values on broiler performance.

Materials and Methods

A pen trial was conducted in which Cobb 430Y male broilers were reared in a poultry house (AgriVet, India) for 42 days. A three phase dietary program (starter d0-14, grower d15-28 and finisher d29-42) was used in which all diets were fed ad libitum. A total of 180 broilers were randomly allocated to 3 treatments (Table 1) with 6 replicates per treatment (11 birds/pen at the start of trial). The composition of the dietary diets is listed in Table 2. Body weight and feed intake were recorded at weekly intervals. Feed conversion was calculated from the measured weight gain and feed intake. Pen mortality was recorded to correct feed intake.

Results

At the end of the trial period (day 42), the birds fed the negative control diet presented the worst results for body weight and feed conversion. The nutrient and energy reductions of the negative control diet effectively reduce broiler growth performance. The supplementation of Nutrase BXP 200 TS resulted in a higher body weight (+

TABLE 1: DESCRIPTION OF DIETARY TREATMENTS

TREATMENT	DESCRIPTION
Positive control (PC)	Corn-soy-based broiler diet. The diet was formulated according to the nutrition specification of Cobb 430Y without enzyme supplementation
Negative control (NC)	The positive control diet was reformulated to contain approximately 100kcal/kg, 0.14% and 0.12% less apparent metabolizable energy (AME), phosphorous (P) and Calcium (Ca), respectively, without enzyme supplementation
Negative control + Nutrase BXP 200 TS	Negative control diet supplemented with 200 g/ton of feed Nutrase BXP 200 TS

TABLE 2: NUTRIENT COMPOSITION OF THE EXPERIMENTAL DIETS

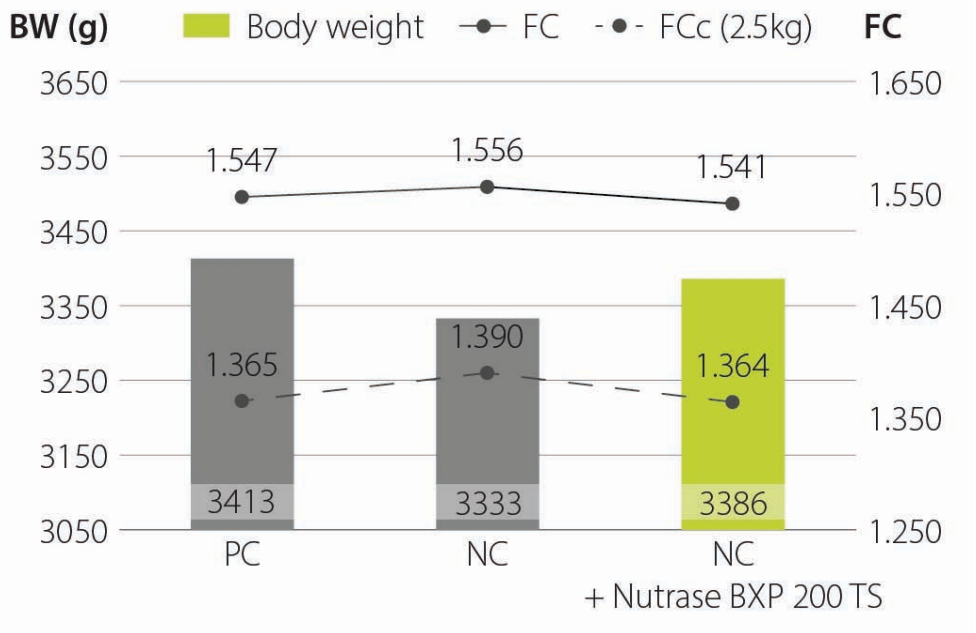
	STARTER D0-14		GROWER D15-28		FINISHER D29-42	
	PC	NC	PC	NC	PC	NC
Ingredients (g/kg)						
Corn	541.3	566.6	568.5	595.2	583.8	622.9
Soybean meal	301.5	296.6	249.6	228.8	225.4	220.4
Full fat soybean	60.0	36.6	80.0	80.0	80.0	80.0
Meat-bone meal	25.0	25.0	25.0	25.0	25.0	25.0
Rape seed meal	-	25.0	-	24.5	-	-
Rice bran	20.0	20.0	25.0	20.0	25.0	20.0
Soybean oil	15.2	-	18.8	-	30.9	8.2
Dicalcium phosphate	18.4	8.8	16.7	7.3	13.7	4.3
Nutrients (%)						
Crude protein	23.00	23.00	21.00	21.00	20.00	20.00
Calcium	0.90	0.78	0.84	0.72	0.76	0.64
Available P	0.48	0.34	0.45	0.31	0.40	0.26
Lysine	1.28	1.28	1.15	1.15	1.08	1.08
Methionine	0.47	0.62	0.56	0.56	0.54	0.54
AME (kcal/kg)	2900	2800	3000	2900	3100	3000

53g) and improved feed conversion (by 2.6 points) compared with the negative control group. Moreover, the feed conversion of the Nutrase BXP 200 TS group equaled the FC in birds fed the positive control diet.

Conclusions

The supplementation of Nutrase BXP 200 TS improved the performance of broilers fed diets with reduced nutrient and energy levels. Based on these trial results, Nutrase BXP 200 TS can be supplemented to a corn-based diet with matrix values of 100 kcal AME, 0.14% P and 0.12% Ca without any probable detrimental effect on broiler performance.

PERFORMANCE DAY 1-42



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