



Modern Farm Operation
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ACADEMIC SUPPORT ARTICLE

LINQTEC WEBINAR

Technical Product and
Marketing Division

LinQ Technology Corporation

On Nov 11, 2021 LinQ Technology Corporation, known as LinQtec conducted a special online webinar "New Challenges in the Future Livestock Industry" for customers and interested audiences. The event was led by expert specialists who have decades of experience in the livestock industry,

Mr. Seksom Attamangkune Ph.D. (Animal Nutrition), Emeritus professor of Kasetsart University Thailand and Mr. Taveedaj Prajakesakul, Technical Director of Top Feed Mill Thailand.

The main topics of the event updated the current challenges faced by Thailand's livestock industry and how they may be minimized and possibly optimized instead. Global and national trends of feedstuff raw materials were also shared, and the final topic envisioned the ideal model of livestock farming. The details of these topics have been recorded and uploaded as on demand videos on www.LinQtec.com website for easy access. The QR code to access the recording is also available at end of this article.

In the following pages, we review all key topics of interest from the webinar, and present this academic support article as a digestible summary, as well as a situational analysis.

NEW CHALLENGES IN THE FUTURE LIVESTOCK INDUSTRY

LinQ Technology Corporation, feed additives manufacturer, conducted a national academic forum as an online webinar, providing trends on livestock industry.

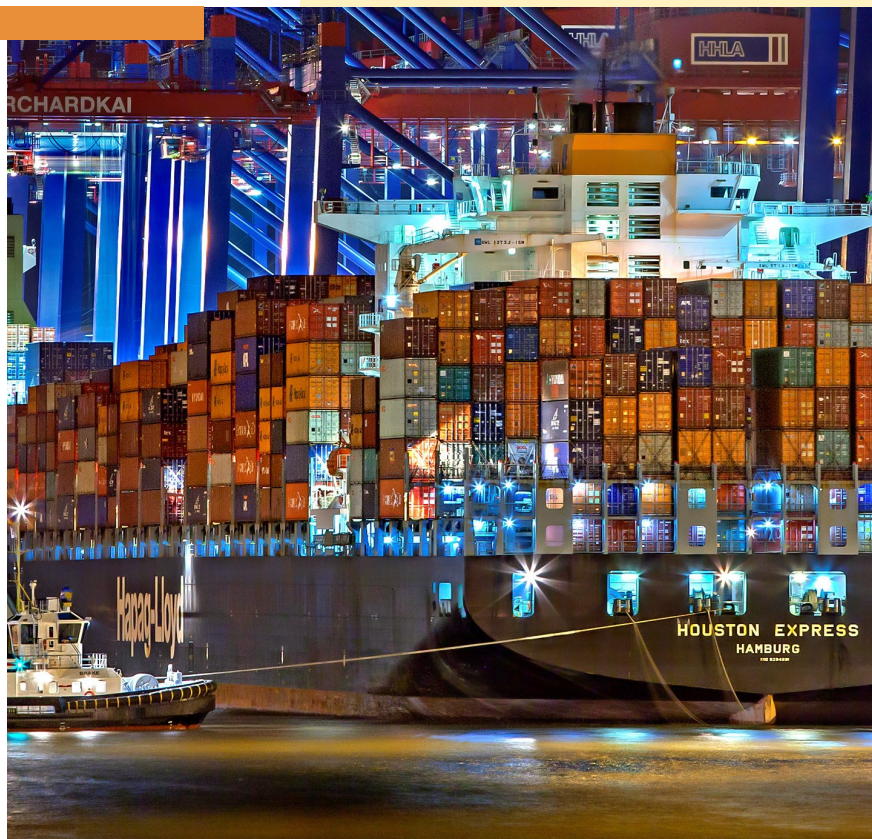
A look forward at major trends that are expected (or still) to impact the feed and livestock industry nationally and worldwide according to experts in the sector from commercial business.

Numerous factors that affect livestock production and productivity are divided into controllable and uncontrollable factors that we need to focus on. Animal genetics, nutrient specification, health and farm management are considered as controllable factors. On the other hand, livestock production seems increasingly affected by external factors considered as uncontrollable and these include the global economic crisis, livestock regulatory limits, disease epidemics in animals and humans, climate-change, other crises such as shipping crisis,

dual control of energy consumption in China, and higher volume demands from customers etc. These factors have impacted change in various aspects, thus giving rise to the era of Volatility, Uncertainty, Complexity, and Ambiguity (VUCA). This is a phenomenon where the world situation changes very quickly and tends to be unpredictable. Therefore, a resilient, creative, and innovative human resource is needed to embrace this era.

Livestock production in Thailand plays an important role both in supplying meat, milk, eggs for domestic consumption and for export. Like other nations in the World, the ongoing COVID-19 pandemic and other challenging situations have impacted Thailand's agri-food business such as rising feed costs, animal disease epidemics shaping export and protein markets, political conflict and global market volatility (supply chain wars). However, one glimmer of hope is seen in the sustainable livestock solutions cluster.

The poultry industry is one of Thailand's most promising agri-food segments. The COVID-19 pandemic has led to a decrease in domestic chicken and eggs consumption. Thailand's chicken meat importing countries also had decreasingly weak result in the first half of 2021 from Thai baht short term weakness. An increase in the prices of feed ingredients such as soy bean meal, corn, amino acid, and phosphate product etc. resulted in high production costs for broiler and layer hen farmers. It has been forecasted that chicken meat production in 2022 will increase approximately 3% from 2021, in line with a gradual recovery in domestic consumption and exports of chicken meat (Poultry World, 2021).



White Water Boat (Julius Silver 2015).
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Meanwhile, USDA has forecasted global chicken meat production to be 2% higher in 2022 to a record 100.9 million tonnes as global exports are forecasted to be 3% higher in 2022 to a record 13.3 million tonnes. Modest growth in most significant markets enables major exporters to make gains. The world's leading exporter Brazil will account for over one-third of the growth as it is well-positioned to gain from growing EU and UK demand. Brazil will also be able to capture rising East Asia and Middle East imports. Rising Asian demand, particularly Japan and China, underpins Thailand's expansion. China's demand will remain firm, increasing slightly despite rising production (Jim Wyckoff, 2021).

In Thailand, pig production intensified significantly during the last few years, with many economic, epidemiological and environmental implications. Thailand's pork industry exports fell 6% in 2020 amid the COVID-19 pandemic, exports of live pigs rose 339% in value as Thailand is one of the few Asian countries that has not reported an outbreak of African swine fever (ASF). Shipments of chilled, frozen and processed pork were up 69% (Randy Thanthong-Knight, 2021).

According to a Genesus Global Market Report, the driving force behind price is a mass culling of sows and commercial pigs to prevent the spread of ASF. In an earlier estimation, Genesus calculated for a 30% loss, but they have since recalculated that estimate, raising it to 50% or more, reported Paul Anderson, General Manager for SE Asia at Genesus.

Hygiene will be an important factor to consider in a successful herd rebuild, as stalls will need to be properly cleaned and disinfected before restocking. Genesus has said it is difficult to find healthy gilts in Thailand, as most breeders have been impacted by ASF as well. Even when they are available, attaining the proper permits to move them is difficult, as the movement of pigs is carefully controlled to avoid the spread of ASF.

The solution, said Genesus, will be to restock farms with high health, high genetic merit breeding stock as quickly as possible. The rebuild could still take a couple of years, though. Shortages will be inevitable (The Pig Site, Global Ag Media, 2021).

Animal feed is critical for all animals in the food supply chain. Animal feed shall be nutritious and safe for the animal and, therefore, safe for human food because of a rapidly growing population, income growth, and increasing urbanization.



Top: Broiler breed of chicken (Ligora Getty Images).
Bottom: Pig farm (Industrial Photograph, 2017). Canva Pro photo license

Thailand's animal feed industry includes more than 1,000 manufacturers of which around 200 are ranked medium to large sized businesses (All about feed, 2009). The largest animal feed factories are integrated poultry and pork businesses. Some of these large businesses, e.g. CPF, Betagro, TFG, Saha Farm and Cargill produce 400K to 1M live birds per day (Prachachat.net). Thailand is a major producer of carbohydrates such as rice and cassava and, these industries are more focused on the export market than the domestic market. The domestic feed raw material supplies are heavily biased towards energy rather than protein.

Thailand is a large market for imported feed raw material, which includes both prepared animal feeds and feed ingredients and its inputs. The country also imports large quantities of corn, mainly for the production of feed. In 2021 DIT-Thailand reported 51% of corn was imported for this specific purpose. Very large quantities of soybeans were imported (64%) into Thailand for crushing purposes in 2021 as well, which provides the Thai feed industry adequate soybean meal.

Therefore, quality control of raw materials that come from various sources need to carefully address physical, chemical, and biological properties. Organic acids have demonstrated the capability of controlling bacterial and fungal growth in feedstuffs, in order to hygienically preserve its quality; as well as prevent and control infections by *Salmonella* spp. and *E. coli*.

Animal protein supply chains — coming off two turbulent years with COVID-19, geopolitics and volatility impacting every industry worldwide — face cost inflation pressures in animal feed, labor, energy and freight. Around the world, countries are grappling with transportation and logistical issues rooted in a pandemic-fueled spike in ecommerce, facility shutdowns and the bevy of variables fueling the inability to find skilled labor. Port congestion and high freight rates, i.e. the price of a container has more than tripled since last year, caused delays and lost profits (Jackie Roembke, 2021).

A complex weather phenomenon known as La Niña, which occurs every few years is impacting growing conditions in the southern hemisphere. Global crop supplies are facing a grim future because of climate change. New research from NASA shows that by the end of the century, the availability of corn, wheat, soybeans and rice are projected to look drastically different — and that the world will start feeling the implications as early as 2030 (Li Cohen, 2021).

According to the known factors that are affecting the livestock industry, current and future trends for improvements in livestock nutrition and feed resources are represented in guiding tools for these challenges as: Right nutrient specification for current animal genetics; Good management of strategic raw materials; Incorporating more alternative raw materials such as by-products from food industry; Use of precision nutrition concept such as dAA, dCa, dP; Use of feed enzymes with the right substrate and the right matrix in feed; and Antibiotic- or drug-free diets.

Livestock production and efficiency has improved dramatically due to improvements in nutrition, animal health, and breeding and genetics.

Genetic improvement of livestock has and continues to play a crucial role in the advancement of livestock agriculture by increasing the efficiency and sustainability of production for all livestock species. Genetic selection programmes over the past 60 years have led to rapid growth rates and increased meat yield in broilers (meat chickens), dramatically decreasing slaughter age and the amount of feed and energy required to raise these birds to market weight (Hartcher, 2019). Selection programmes with a narrow focus and selection for a small number of traits risk negative consequences for traits that are not selected, and there have been widespread concerns about the welfare of broilers for decades (Julian 1998).

The production and consumption of livestock products are under scrutiny on environmental, human health and animal welfare grounds.



Asian Woman Wearing Medical Mask and Praying (Doidam10, 2020).
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DNA (deoxyribonucleic acid) strand (Science Photo Library).
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Industrial livestock farms top view (Getty Images).
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However, a wealth of evidence suggests that the livestock sector has complex interactions with the UN Sustainable Development Goals, with both the problem and solution spaces for livestock interventions varying depending on the context. **LinQtec's webinar highlighted that the new normal management of livestock must take into account farm biosecurity, animal flow management, technology and real-time database management, besides having skilled workers.**



LinQ Technology Corporation, Feed Additives Manufacturer located at A. Muang, Chachoengsao, THAILAND.



LinQtec product groups.



LinQtec online webinar event on Nov 11, 2021. Tananya (Left), Taveedaj (Middle), Seksom (Right).

Disclosure statement

No potential conflict of interest was reported by the authors or cited literatures. Cited literatures and references available upon request.

Notes on contributors

Guest speakers of LinQtec online webinar event:

- Mr. Seksom Attamangkune Ph.D. (Animal Nutrition), Emeritus Professor of Kasetsart University, Thailand.
- Mr. Taveedaj Prajakesakul, Technical Director of Top Feed Mill Thailand.

Moderator of LinQtec online webinar event:

- Ms. Tananya Luangchantavong (Pharm.D.), Product Manager of LinQ Technology Corporation.

Literature review and summary of LinQtec webinar article:

- Mr. Anuchit Noochangsing, Technical Product Executive of LinQ Technology Corporation., at time of writing this review.

On demand webinar video & materials have been recorded and uploaded on LinQ Technology Corporation website. Please visit:



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