

Egg Industry

News for the Egg Industry Worldwide

WATT

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Nutrition of pullet chicks during brooding

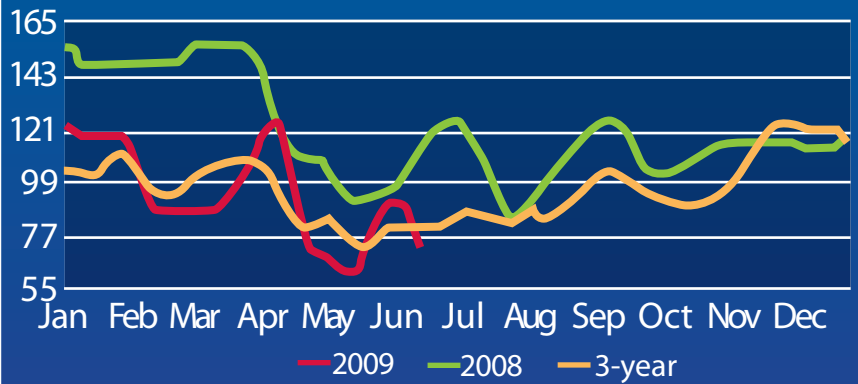
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Nutrient modulation can improve intestinal development, maturation and maintenance during early growth.

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Combined Regional Large Egg Prices Weekly Average Prices (cents per dozen)



Source: USDA AMS Poultry Market News and Analysis

Three-year average for combined large egg prices were the same as December 2008 prices while June 2009 saw another substantial dip.



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Debeaking can be conducted in several ways, some with advantages over others.

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Summer, poison ivy and eye appeal



Simon Shane

As our attention turns to summer pleasures including beach vacations, cookouts and “the nation’s pastime,” we are ever conscious of the depressed economy. We can endure UB prices ranging from the mid 80s to the 90s.

Given current feed costs, all but the least efficient are operating above breakeven. It is said that low prices are the ultimate cure for low prices. Restraint in expansion and judicious management of flock sizes suggest a 10 cent/dozen increase to triple digits in the last quarter of this year. Let us hope that the “green shoots” the economists are talking about are not just poison ivy.

This edition is the first bearing the new cover and layout. The production staff of Egg Industry has achieved an improvement in eye appeal which hopefully will lead to the approval of readers and our supporters.

Articles in this edition provide information on nutrition and beak treatment of pullet chicks. A perspective on colony cages in the EU is topical especially in relation to pressure by groups opposed to confinement housing of egg-producing flocks.

The views of Dave Rettig of Rembrandt are of interest to all producers since the volume diverted into institutional use and for exports stabilizes the shell segment of our industry.

News items with editorial comments are included in this edition. Your responses and comments, whether in agreement or opposed are all ways welcome.

Simon

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Nutrition of pullet chicks during brooding

An examination of the digestive system of chicks, its workings and required nutrients.

Adriana Barri, DVM, PhD

The digestive system of the chick at hatch is anatomically complete although size and functional capacity reflect immaturity. Feed efficiency in the chick only reaches optimum by the 10th day post hatch. Intestinal development is dependent on increased size of villi and microvilli, the density of enterocytes per villus area and the number of functional enterocytes along the villi. During the early post-hatch period, digestive enzymes secreted from the pancreas and small intestines are a limiting factor for nutrient digestion and utilization. It is only when the enterocyte has migrated up the villus and matured that it will secrete and activate enzyme precursors needed for digestion.

All the morphological and physiological changes in the intestine that take place during the early post-hatch period are directed toward enlargement of the absorptive surface and differentiation and maturation of the epithelial cells and initiating function of enzymes, nutrient transport systems and activity of various immunological components.

Nutrient transporters are regulated by the ingredient composition of diets fed. Amino acid transport is influenced by dietary protein level, composition and quality. This reality provides nutritionists with the option to feed adequate nutrients to the chick during the post-hatch period and through the successive growing and production stages. Enzyme supplements which promote digestion of specific carbohydrates and proteins are now commercially available.

Lipid digestion, absorption

Digestion and absorption of lipids are reduced during the first week of age due to the relative absence of endogenous lipase and bile acids. These two are required to emulsify and digest lipids. There are some products that help in the emulsification and digestion of dietary fats by creating much smaller micelles resulting in enhanced absorption of both fats and fat soluble vitamins. Nutrient modulation can be used as an approach to improve intestinal development, maturation and maintenance during early growth. This results in a more healthy bird capable of efficient absorption of nutrients over the entire productive life of the hen.

Successive stages within the production cycle are associated with different nutrient demands for energy and protein. During growth, egg production, and molting, feed additives may have a positive influence by maintaining intestinal integrity and enhancing immuno-



competence.

This is accomplished by improving resistance to enteric viral, parasitic and bacterial infections.

Host-microbial interactions are crucial determinants of intestinal health and nutrient availability. The small intestine and the ceca contain villi which are associated with extensive microbial activity which may influence absorption of nutrients. The intestinal microbiota influence the efficiency of digestion negatively by competing for nutrients, inhibiting digestion and absorption, deconjugating bile acids, and stimulating an immune response which diverts nutrients from growth to tissue response and antibody production. Positive interactions between microbiota and the host may include increasing absorption of nutrients from the diet and suppression of undesirable flora by competitive inhibition.

Site of immune responses

Enterocytes are protected by a layer of mucin overlying the epithelium separating the localized cells of the immune system from the external environment. The epithelium also contains specialized lymphoid cells and tissues all of which make up the gastrointestinal lymphoid tissue known collectively as GALT. This is a major site for generation and



Adriana Barri, DVM, PhD

induction of immune responses in the chick, since chickens do not possess lymph nodes. It takes at least 14 days for the immune system to completely differentiate and develop into a fully competent system. The capacity of a chick to defend against disease during the first week is dependent on maternal antibody released from the yolk sac directly into the intestinal lumen of the chick. Good management during this critical time is essential. Starvation or delay in access to feed negatively affects the development and functionality of the immune status of the newly hatched chick for up to two weeks of age. During this stage as well as during production, the initiation and maintenance of a beneficial microbiota in the intestinal tract of the pullet is of great importance.

Direct-fed microbials (DFM) or probiotics allow the establishment of a desired microbiota, a reduction in pathogens and improved intestinal health. Direct-fed microbials act in diverse ways. Some DFM compete for nutrients or attachment sites on the mucosal layer of the intestine, inhibiting pathogenic bacteria. Others stimulate morphological changes in the small intestine. Some DFM will actu-

ally produce proteins to suppress the level of pathogenic bacteria in the intestinal tract. The organisms associated with undesirable effects include *Clostridium spp.*, *Salmonella spp.*, and *Escherichia coli*. Variability among DFM may have a direct effect on the economics of raising pullets and improving subsequent production. Since some DFM do not colonize, constant feeding of these commercial products may be necessary, especially on farms with a history of infections attributable to *Clostridium spp.*

Collective effort needed

Producers, managers, nutritionists, and veterinarians should cooperate to build and implement effective programs for pathogen reduction and nutrition during the entire production cycle. These programs may incorporate mold inhibitors, antioxidants, and organic acids in feed and water to establish and maintain intestinal health and integrity. Flocks with good intestinal health will be able to assimilate nutrients efficiently and deposit them in higher concentrations in the egg. This is especially important for specialty and premium eggs which contain increased levels

of omega-3 fatty acids, folic acid, lutein, and vitamins E and D.

Consumers are showing increased concern over food safety, healthy eating, and flock welfare. There is a significant purchasing segment willing to pay the price for what they perceive as products with enhanced attributes. A clear understanding of the physiology and development of the digestive system of pullets and hens will contribute to positive decisions relating to appropriate use of feed additives, programs to reduce pathogens and management of feeding systems. Production of quality eggs depends on:

✓Optimal management during incubation, processing, transportation, and brooding.

✓Pathogen reduction programs involving administration of organic acids, mold inhibitors, and antioxidants.

✓Use of specific enzyme and surfactants as feed additives to promote nutrient digestion and utilization. **E**

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Welfare evaluation of hens in New Zealand



A science-based assessment of the welfare of laying hens has been recently completed in New Zealand. This survey involved 60 farms including large and small-capacity caged, free-range and non-confined systems.

Flocks were evaluated at peak production and before depletion. The study included assessment of behavior, production parameters and measurements of fecal corticosterone as a measure of stress.

The results demonstrated that laying hens are adapted to their housing and showed similar levels of stress irrespective of system.

This study was conducted to determine

whether differences occurred from the previous 2004 study which was conducted to draft a NZ Code of Welfare.

The conclusion was that the reviewers were “unable to recommend replacement of current cage systems with alternatives until such time that it could be shown that, in comparison to current cage systems, alternative systems, in the context of supplying New Zealand’s on-

▶ ***Consumers can be given a choice among eggs ... but they must pay accordingly.***

going egg consumption needs, would consistently provide better welfare outcomes for bird and be economically viable.”

This study incorporated a number of considerations which are critical to rational decisions on developing a policy to house egg-production flocks. It was based on a statistical evaluation of objective measurements including corticosterone assay.

Subjective evaluation based on anthropomorphic and emotional approaches, as favored by the opponents of intensive poultry production were rejected.

The second consideration related to considering economic viability in establishing national policy.

In the context of the U.S. providing that farming systems are regarded as acceptable in term of welfare standards based on objective data, individual consumers can be given the choice among eggs produced from different housing systems but they must pay accordingly. **EI**



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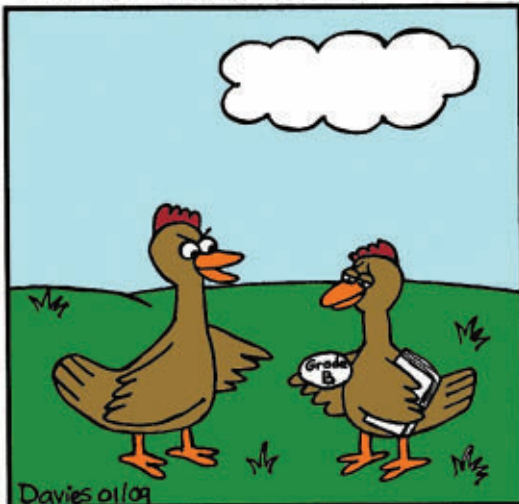
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The lighter side

If They Could Talk By Sheri Davies

CartoonistDavies@aol.com



"I just don't understand why you can't get A's just like your sister."

Egg Industry presents a series of industry-related cartoons drawn by Sheri Davies. Sheri is a graduate chemical engineer with a flair for art and we hope that her contributions will lighten your day.



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Growing with Dave Rettig:

Views on the future for Rembrandt Enterprises and industry

Dave Rettig has deep roots in the egg industry, going back to a family business distributing eggs established by his grandfather in 1937. Born in Maquoketa, Iowa, Dave was reared in a farming community.

After graduating from Harvard with a degree in government and economics he gained life experience as a political consultant before returning to his home state.

In 1999 he developed a business plan and created a partnership to establish an in-line complex in Rembrandt, Iowa. The enterprise was progressively expanded to 5 million hens comprising a central in-line unit with breaking and eggs supplied by six contractors.

In April of this year, Rembrandt Enterprises successfully negotiated purchase of the assets of Golden Oval Eggs, propelling the company into the ranks of the top ten with close to 12 million hens.

Egg Industry: How do you view the immediate prospects for producers in the U.S.?

Dave Rettig: We are facing an unsettled picture. The industry has had a few good years but this run may be coming to an end. The cyclic nature of our industry will continue but the peaks and troughs may not be as pronounced.

EI: We have seen a marked decline in UB price since Easter. Do you view this with concern?

DR: Egg prices reflect the balance between supply and demand. Our economy

is in recession and demand will be constrained at least through the remainder of 2009. Fortunately food purchases for home consumption have not been markedly affected and if hen numbers remain



Dave Rettig

static, the industry should weather the traditional summer downturn at prices above break-even. The industry has, however, benefited from a reduction in ingredient costs from unprecedented levels in 2008.

EI: Rembrandt is committed to breaking; do you consider that this segment will be less affected than shell eggs?

DR: Further processing has a number of challenges. Buyers are extremely aggressive and egg products represent a competitive market. For companies to engage in the egg products market, they need to be in a position to offer a wide variety of products, and this requires sophisticated plants and large complexes.

EI: Which areas of production are being most affected by the current downturn in the economy?

DR: The food service segment has clearly been impacted by consumers moving from restaurant meals to home cooking. Convenience foods are however still in demand and companies which can adapt to changes in market demand by modifying product offerings will obviously benefit.

EI: Your purchase of Golden Oval as a going concern represents a departure

for Rembrandt from previous expansion by internal growth.

DR: There are advantages and disadvantages to purchasing existing operations and establishing or expanding company facilities through internal growth. By building new units, it is possible to obtain the most modern and often most efficient technology. It is possible to design and locate facilities to complement existing company units. These advantages do, however, come at a cost. By acquiring companies it is sometimes possible to more rapidly increase production capacity. The Golden Oval acquisition represented a strategic opportunity for Rembrandt and we anticipate synergy from the transaction.

EI: What challenges do you envisage in our industry?

DR: Obviously welfare is an important determinant of both cost and our image. Environmental considerations are continually being addressed including disposal of manure using acceptable technology and mitigation of odor and emissions. Rembrandt has selected battery systems using on-belt manure drying which generate revenue from relatively dry or composted product. Sustainability is emerging as an issue and a number of our larger customers have requested details on our carbon footprint and the measures we have taken to conserve energy and adopt "green strategies."

EI: How do you view the longer term prospects for the U.S. egg industry?

DR: It is my belief that agriculture will have to be redefined given the challenges of a regulatory environment, the advent

of biofuels and escalation in the cost of ingredients, power and labor. Our long term vision is to provide value to our customers. This requires production at a competitive cost. We are buying grain directly from farmers although we have to compete with ethanol producers. Prospects for exports continue to improve especially if we can resolve logistic limitations. Both frozen and dried product can be produced and shipped to existing importers in greater quantities. We must offer domestic markets greater functionality in products and continually improve the supply chain. Service is critical to maintaining goodwill.

EI: How has Rembrandt approached the increase in ingredient costs?

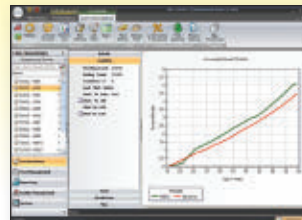
DR: We have concentrated on direct purchase from farmers, offering incentives for forward procurement. In some respects, we have an advantage over ethanol plants which have limited grain storage capacity. We believe that it would be possible to partner with our grain suppliers to cultivate corn varieties which are beneficial in terms of yield and possess the nutrient levels which are appropriate to our diets. Naturally we are using enzymes to enhance nutritional value of corn and soymeal.

EI: Despite the obvious problems which exist you demonstrate a high level of confidence in the future.

DR: We have every intention of continuing our growth through product development, service and efficiency. **EI**

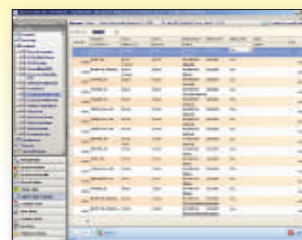
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Comparison of infrared and hot-blade beak treatment

Debeaking can be conducted in several ways, some with advantages over others.

An article in *Poultry Science** authored by scientists at the USDA-ARS unit at West Lafayette, Indiana, in collaboration with colleagues at Purdue University, documents a comparison of infrared and hot-blade beak treatment of pullets. Mischaracterized by opponents of intensive animal production as “debeaking,” the universal application of beak treatment is a significant welfare consideration with profound implications for efficiency of production.

Beak morphology evaluated

The study involved a longitudinal comparison of the performance characteristics of pullets subjected to infrared beak treatment at the hatchery. This was done by using Nova-Tech equipment, hot-blade beak trimming and precision templates at 7 to 10 days of age. Beak morphology was evaluated using computer analysis of photographic images.

Feather cover was scored subjectively using a 0 to 5 scale. Stress was measured in the caged hens applying heterophil-lymphocyte ratios and ethograms depicted behaviors including aggression, eating, drinking and walking. Corticosterone assays, which can indicate stress, were not determined.

No details were provided concerning the light intensity or temperatures in the test facility which housed five hens in each cage on a commercial egg farm at a stocking density of 64 in²/hen.

Six significant findings

The significant findings obtained from the study included the following:

»Beak length was significantly shorter in hens that were subjected to hot beak trimming compared to infrared treatment.

**Also addressing beak treatment, read:
Management of floor-housed flocks at
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»Beak stumps (neuromas) only occurred in the hens subjected to hot beak treatments (5 hens vs. 0 hens).

»Hens subjected to hot-blade treatment demonstrated

higher levels of aggression than hens processed using infrared treatment.

»Feather scores from the head, neck and back of hens in the hot-blade treatment were inferior to hens subjected



Appearance of chick after infra-red beak treatment at the hatchery.

to infrared beak treatment. Feather scores on other areas of hens including the tail, wings, and breast were unaffected by beak treatment.

»There were no differences in heterophil to lymphocyte ratios, egg production, egg mass or conformational symmetry as measured by shank length and body width.

»Differences were noted with regard to aggressive behaviors between hens in either the top or bottom tiers of the cage installation. This could indicate an interaction between beak treatment and environmental factors such as light intensity or temperature.

This study was conducted on a specific white feathered strain which represent a minority of the caged hen population. It is possible that strain effects could influence the behavior, feathering and aggression displayed by hens sub-

jected to either of the methods of beak treatment. The value or the trial could have been enhanced by including a light intensity and temperature should be imposed and inclusion of a non-treated control of the strain evaluated

▶ ***There were no differences in heterophil to lymphocyte ratios, egg production, egg mass or conformational symmetry...***

non-treated group as our industry is under pressure to abandon beak trimming which would result in deleterious effects on welfare, livability and productivity of flocks.

No deleterious effects

Within the limitations of the experimental design, it can be concluded that infrared beak treatment does not produce any deleterious effect on livability or production on hens and may offer advantages with respect to feather cover and beak morphology.

This research should be repeated using the major white feathered strain. Appropriate control of

should be considered. Fecal corticosterone assay and determining the causes of mortality would be beneficial and would supplement information from the ethograms. **EI**

**Dennis, R.L., Fahey, A. G. and Cheng, H.W. (2009) Infrared Beak Treatment Method Compared with Conventional Hot-Blade Trimming in Laying Hens, Poultry Science 88 : 38-43*

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Adoption of enriched colony caged systems in the EU

TABLE 1. COMPARISON OF GERMAN & UK HOUSING SYSTEMS

Housing Systems	Germany	UK
Total Hens	40 million	30 million
Caged	57%	54%
Aviary	34%	37%
Enriched Colony	9%	9%

Table 1 shows that Germany and the UK retain cages for over half of their flocks. Table 2 displays how the larger nations generally have a lower proportion of hens in colony cages.

TABLE 2. RANGE IN EU ADOPTION OF ENRICHED COLONY CAGES

Nation	2009 Hen Population	Proportion (%) in enriched colony cages	No. hens (million) in enriched colony cages
France	47.0 m	10%	4.7
Germany	38.8m	9%	3.5
Netherlands	33.3 m	3%	1.0
Sweden	5.1 m	39%	2.0
Norway	3.8 m	29%	1.1

In a recent industry presentation, Terry Pollard, vice president of North American sales for Big Dutchman Inc., provided data on the level of current adoption of enriched colony caged systems in the EU. Trends in housing and management in the EU have relevance to the U.S. since welfare activists in this country follow current research and legislative initiatives which they attempt to impose on our industry. Enriched colony cages were

devised in the EU as a method of housing flocks in other than conventional cages without resulting in barn, aviary or free range systems.

At the present time, 18 egg-producing nations in the EU with 272 million hens house 13% of their flocks in enriched colony systems.

The approach to alternative housing differs among the major nations with Germany and the UK retaining cages for

over half of their flocks as indicated in Table 1. Less than 10% of confined hens are housed in enriched colony cages.

There is considerable variation in the adoption of enriched colony cages among the top nine egg producers as shown in Table 2. The larger nations generally have a lower proportion of their hens in colony cages in comparison to the Nordic countries that have numerous small flocks in these systems.

The projection of hen populations in various countries of the EU could potentially indicate trends in future exports from Brazil and the U.S. Germany is expected to increase by only 5% in hen population between 2009 and 2012 when the cage-ban is scheduled to take effect. The comparative value for the UK indicated a 20% reduction in hen numbers to 23.5 million with an anticipated ratio of 62% colony or aviary systems to 38% enriched colony housing.

Informal and non-quantitative evaluation of future trends in the U.S. suggests minimal interest in enriched colony cages based on cost relative to floor systems. There is a presumption that enriched colony cages are regarded by opponents of intensive egg production simply as “cages” and this system will be discriminated against despite the apparent ability of hens to stand, turn around and stretch their wings, which appears to be a “standard” applied in voter initiatives. **EI**

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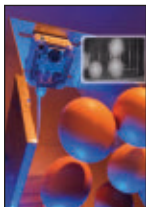
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▶ PRODUCTNEWS

Egg counting technology

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DSM Inc.
www.unlimitednutrition-na.dsm.com

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Avian Technology
www.aviantech.com

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www.gillisag.com

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INDUSTRY NEWS

China poultry workers show antibody to AI strains

A serologic survey of poultry farmers, workers in broiler and pig processing plants and live bird markets in the Guangzho metropolitan area in Guangdong Province of Southern China was conducted recently.

Results showed that less than 1% of poultry retailers in food markets and wholesalers in live bird markets showed antibodies to H5. In

contrast 16% of the retailers in markets and 7% of the wholesalers showed antibodies to H9 avian influenza as did 6% of workers in commercial farms. All three groups were regarded as significantly different on statistical analysis from the general population which served as a control, according to the *New England Journal of Medicine* who conducted the survey.

Eggland's Best, official egg

ESPN Deportes Radio of Los Ange-

les has designated Eggland's Best as the "official egg" of the station. The promotion will include more than 40 appearances at major grocery stores in Los Angeles.

It is accepted that the Hispanic community consumes a higher number of eggs than the general U.S. population. **EI**



MARKETPLACE

Ad sizes start at one column by one inch and can be any size up to six column inches. Logos and photographs are acceptable. Add color for an additional \$30 per color per insertion. The rate for EGG INDUSTRY is \$120 per inch per insertion (1-time rate), \$110 per inch per insertion (6-time rate), and \$100 per inch per insertion (12-time rate). The production charge is included except for ads with excessive make-up demands.

For more information on how to place your ad, contact:

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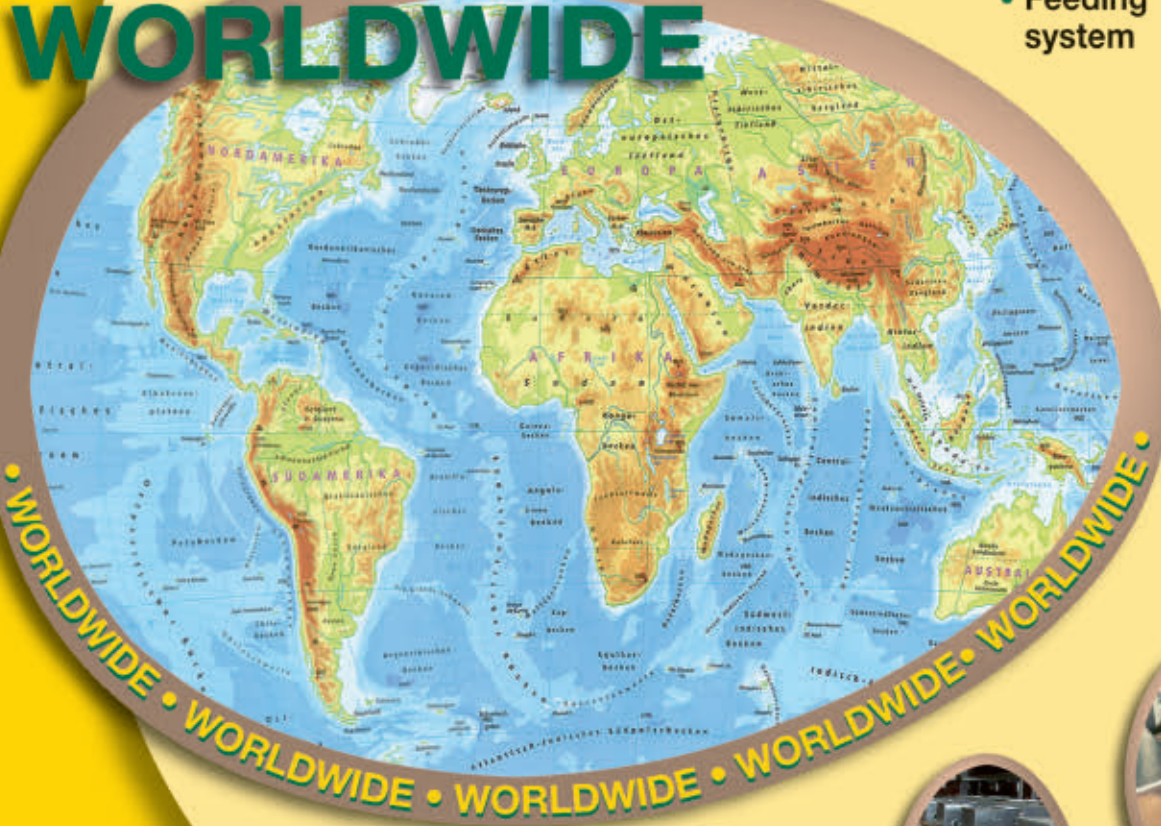
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