



## California Poultry Companies on Alert for Exotic Newcastle Disease

**S**outhern California poultry producers were put on alert in October for Exotic Newcastle disease that had killed about 200 birds at five sites in Los Angeles County and one in west San Bernardino County. Efforts have been under way to eradicate the disease through depopulation at the sites, none of which involve commercial poultry operations. Because the disease has not infected commercial birds, the efforts have been focused on back yard-style chicken coops with small numbers of birds.

The Newcastle disease outbreak, discovered on September 27 in a backyard flock of chickens in Compton, California, has spread through Los Angeles, San Bernardino and Riverside counties, according to the California Department of Food and Agriculture. About 63 locations in the counties have been quarantined and more than 6,500 backyard birds have been destroyed to stop the spread of the disease. Although the disease hasn't infected commercial flocks, producers and state agriculture officials are worried it could spread to egg farms.

## Rembrandt Finishing First Phase

Rembrandt Enterprises is in the process of completing the first phase of a new egg-processing complex. It consists of eight production buildings plus a feed mill located near Rembrandt in Buena Vista county, Iowa. It will feature an in-line breaking facility that will handle 15. million eggs per day from an estimated flock of 2 million birds.

## Golden Egg Winner

**D**r. John Glisson, University of Georgia, has been selected to receive the Georgia Egg Commission's Golden Egg Award. Shown front row, left to right, are Dr. John Glisson, David Lathem, Vince Booker and Gijs Schimmel. In the back row are Stephen Gleason, Jim Brock and Jerry Straughan.



## Sparboe Expansion Clears Hurdle

**A**ccording to the *Belmond Independent* (IA), the Wright County Board of Supervisors in October gave up its right to appeal an expansion of a Sparboe Egg facility near Eagle Grove with virtually no notice to the general public.

Sparboe representatives supported by members of the Wright County Economic Development met with the supervisors requesting they waive their rights to appeal building permits issued by the Iowa Department of Natural Resources. The supervisors agreed not to contest the DNR permits, waived the usual additional days allowed to appeal a decision, and waived any further appeal of the permit.

The proposed Sparboe Eagle site is an enlargement of an existing facility. The expansion will add 16 high rise layer confinement buildings, four high rise pullet buildings, dry manure loading pads for the buildings, and runoff control pits for the pads. Each of the layer buildings will be 75 by 692 and each of the pullet buildings will be 62 by 532.

## CTB Establishes New Company

CTB International Corp. announced in October it had signed a definitive agreement to acquire certain assets of Jay-Dee Industries, Inc., of Dassel, Minnesota, and that it has, jointly with Jay-Dee, formed a new company, Firelake Mfg., LLC.

The new company consists of all remaining assets of Jay-Dee as well as certain assets that CTB acquired last month from Shenandoah Manufacturing Co., Inc. Jay-

See *CTB Establishes* on page 3

# IEC Celebrates 40th Anniversary

Terry Evans, International Editor

**The IEC met in Seville, Spain for its Annual Meeting. In the first of a two-part report, Egg Industry focuses on the issues making the headlines. The December issue will provide country reports given at the meeting.**

**W**elcoming delegates to the annual conference IEC Chairman Clive Frampton said how delighted the organization was to hold the meeting in Seville on the occasion of the 40th anniversary of the International Egg Commission.



Clive Frampton, IEC's Chairman opened the conference

He told the 320 delegates from 28 countries that over the past 40 years the IEC had played an important role in the egg industry worldwide and in international trade.

"We are the global association that represents the world's egg producers and egg processors. As such we have a responsibility to show leadership in key areas and thus we were delighted to host the Poultry Welfare Symposium last Friday and Saturday which updated us all on the latest scientific knowledge.

"The symposium was a great success and, as a result, we will now update the IEC statement on poultry welfare," he said.

## Spain wants to keep conventional cages

Spanish egg producers will only switch from conventional cages to the so-called enriched cages if they have to, Maria del Mar Fernandez Poza of INPROVO told her audience. Throughout the European Union some 10.5% of the flock are housed in alternative systems to cages but these systems are seldom seen in Spain.

Spain is the fourth largest egg producing country in the European Union. With a flock of 42 million layers last year, Spain accounted for 14% of all EU eggs. Eggs represented 2.5% of total agricultural sales but 6% of livestock output.

There are five layer-breeding companies but only some 1000 layer farms with an average flock of 40,000. Backyard flocks represent about 10% of the total. Eggs are graded at some 700 packing centers, which are owned by the producers. There are some 25 egg products companies, almost all of which are Spanish.

Production was widely spread throughout the country.

Almost all layers (99%) are kept in battery cages, the volume of alternative eggs amounting to less than 1% of total supplies.



An overview of Spain's egg industry was given by Maria del Mar Fernandez Poza

Production is running at around 9600 million eggs a year. Some 20 years ago nearly all eggs were white but today 90% are brown as consumers now want larger eggs and consider brown-shelled to be healthier. The annual surplus ranges between 5-10% and are exported, mainly to fellow EU countries. This has grown rapidly from less than 20,000t in 1996 to peak at 50,000 metric tons in 2000, slipping a little to just over 40,000t in 2001.

Some 85% of eggs are sold in shell, the products sector taking around 15%. Of the shell eggs, some 77% are purchased by householders, 21% go to caterers such as hotels, restaurants, cafes and bars and about 2% are sold to the institutional sector.

There is sanitary legislation that ensures the compulsory use of egg products in dishes for public consumption if fresh eggs cannot be cooked at below 75 degrees centigrade.

While eggs represented 6.8% of household food purchases back in 1958, by 2001 this share had contracted sharply to 1.4%

Since 1987 the number of eggs eaten/person has slumped from 300 to a low of 190 in 1995, although uptake has since recovered to around the 220 mark. An analysis of sources of household purchases reveals that grocery stores account for 30%, supermarkets 38%, hypermarkets 10%, while producers ate some 10%.

There are wide regional variations in consumption with more eggs being eaten by people in rural areas than in towns, although this figure is influenced by the level of self-consumption from backyard flocks. More eggs/person are eaten where there are no children and in single households. Average uptake is lower where the housewife is young and where she goes out to work.

The research also shows that as incomes rise, less is spent on eggs.

Some 35% of the food and drink industries use eggs as an ingredient, particularly for bakery products such as cakes and pastries and also in wine production. About 73% of these operations buy their egg requirements in shell.

Among the main reasons for using eggs in this sector are: they added nutritional value; give better consistency texture, color and taste; and are considered essential.

Few food companies consider eggs to be an inconvenience with more than 90% saying that they have a good opinion on the eggs or egg products. The price of eggs is not an important factor for food industry buyers. Almost 70% of these companies consider that they will not replace eggs with another ingredient although almost 17% feel that there will be substitutes in the future.

At housewife level, the INPROVO survey 2000 revealed that they have a good view of the freshness, safety, and nutritive value of eggs, though they do relate the nutritive value of the product to the feed the hens ate.

Nearly 330 delegates from some 30 countries attended the IEC's Annual Production and Marketing Conference in Seville, Spain.



While more than 90% do not buy any particular brand (label) of eggs they said that they want to be informed about the day of lay, what the hens are fed and any sanitary controls or certificates of quality.

While she considers that the Spanish egg sector is highly competitive and has great potential, a major disadvantage is that there are many small companies and the industry is not well co-ordinated or organized.

Producers are uncertain about the future and in particular the welfare regulations, safety and sanitary restrictions in feeds, birds and products and environmental conditions.

Hence, there is a need for more industry concentration to cut costs and to strengthen the producers' negotiating position.

As eggs are non-differentiated, more money needs to be invested in improving their image and consumption; however, good results are being achieved through promotional and educational programs.

### Challenge to educate consumers about the good egg news

Dr. Donald McNamara, of America's Egg Nutrition Center, brought good news (and even better news) about eggs to the conference.

The American Heart Association has "had a change of heart" and is no longer putting a limit on the number of eggs that can be eaten.

Indeed, "Research now indicates that people who don't eat eggs have the highest rate of heart disease. And where egg consumption is highest, heart disease is lowest" he added.

The most recent cholesterol research revealed that although total cholesterol increases with egg consumption the ratio of the LDL-C (bad cholesterol) to the amount of HDL-C (good cholesterol) remains unchanged at 2.6:1. Hence, the risk of heart disease does not change as the result of eating eggs. Indeed, the latest research points to eggs being a major contributor to a healthy diet and possibly to directly preventing certain diseases!

"Not only are eggs highly nutritious but they are an excellent source of high-quality protein and provide significant amounts of several vitamins and minerals. Egg eaters are more likely than non-egg eaters to have diets that provide adequate amounts of essential nutrients," he said. He continued, "Furthermore, eggs contain certain components that may have health benefits that go beyond basic nutrition. Research on these 'functional' components is in its early stages."

There is now no doubt that an egg a day is okay. The AHA's website now states that "There is no longer a specific recommendation on the number of egg yolks a person may consume in a week."

"Science did not justify the recommendations which the American Heart Association had made for so long," he added.

The challenge now is to educate the consumer.

"It is vital that we should go out and accentuate the positives," he said. Among these are:

- Nutrient density – high quality

- Affordability
- Convenience
- Natural with no artificial ingredients
- Nature's original functional food

There has been a paradigm shift away from "removing negative ingredients such as cholesterol, fat and salt to eggs being 'enhanced' with positive ingredients such as antioxidants, vitamins and calcium."

Among the "forgotten positives" are:

- High quality protein
- Vitamins and minerals
- Carotenoids (lutein)
- Choline
- Satiety/glycemic index

In elderly women a high vegetable-protein diet results in less protein synthesis than a high animal-protein diet.

Low maternal intakes of dairy and meat protein in late pregnancy are associated with lower birth weights.

High quality protein reduces the risk of muscle deterioration.

N-3 fatty acid-enriched eggs may provide a means of increasing dietary DHA during the second six months of life. Egg yolks might also be a useful source of iron during the weaning period and could be safely included in the weaning diet with no perturbations in plasma cholesterol.

He went on to explain how choline is important in nerve cell transmission and plays an important role in brain development, memory and Alzheimer's disease.

A large egg contains 215mg of choline, which is concentrated in the yolk.

The recommended intakes of choline are 550mg/day for males and 425mg/day for females. This can be almost met by two eggs a day.

During pregnancy large amounts of choline are delivered to the fetus while during lactation there is a high choline content in the breast milk.

Studies with rodents suggest that dietary intake of choline early in life can diminish the severity of memory defects in aged animals. Embryo formation and post-natal development are critical periods for choline enhancement of the memory.

"Hence, eggs are an important source of choline for pregnant women and nursing mothers," he added.

Turning to eggs and carotenoids, Dr. McNamara said that studies indicate dietary lutein and zeaxanthin help preserve the health of the aging eye against macular degeneration and cataracts. "The addition of 1.3 egg yolks /day to the diets of middle-aged subjects increased plasma lutein by 38% and plasma zeaxanthin by 128%."

A Beaver Dam Eye Study indicated that egg consumption is inversely associated with cataract risk. "The relative risk of cataracts was 60% lower for those with the highest egg consumption compared with those with the lowest egg intake," he added.

He went on to underline how lutein consumption reduces the risk of heart disease.

Yet another benefit derived from eating eggs is the role they played in a weight loss diet as they increase the feeling of satiety.

Another great "plus" is that biotechnology applications allow genes to be inserted into hens for the production of medically important proteins in the eggs. "So, eggs can be used as a source of disease fighting-proteins and antibodies," he added.



*The latest good news about eggs and nutrition was presented by Dr. Donald McNamara.*

## Quality control in the Netherlands

Achieving and maintaining egg quality in the Netherlands is a good mix between regulations and voluntary controls, according to Ben Dellaert of the Dutch Product Boards for Livestock Meat and Eggs.

The Integrated Quality Control (IKB) system in the Netherlands started in 1995 with the emphasis on food safety and quality.

The scheme, although voluntary, is now embraced by about 90% of the Dutch industry, while some German and Belgium farms have also taken it on board.

Risk control is exercised through product safety (obligatory hygiene rules) and by a tracking and tracing system.

The scheme also covers certain aspects of animal welfare and included regulations that apply to veterinarians, feed companies and service companies.

Criteria are laid down for each part of the production chain - breeding, hatchery, laying farm, packing station and feed manufacturing, with all aspects independently audited.

Failure to meet the standards invoke a sanctions procedure. Initially the producer receives a warning.

The operation of the IKB involves continuous discussions with companies, the government and organizations representing consumers, animal welfare and the environment.

Under Masterplan 2000, which is a gentleman's agreement with Dutch supermarkets, more stringent quality rules are incorporated in the scheme (including salmonella controls and food safety aspects), tracking and tracing and the introduction of logos on egg boxes. In return for this the supermarkets agree to sell only IKB-certified eggs.

Back in 1999 there were 342 Dutch farms on the scheme, but by August 2002, this number had risen to 831 representing 90% of the Dutch industry.

Referring specifically to salmonella control he said that the government set the goals and the industry have established compulsory PPE regulations to achieve these targets.

The PPE regulations to control salmonella were based on five principles namely:

- Hygiene measures (including feed).
- Cleaning and disinfection.
- Entrance and exit control (monitoring).
- Exchange of monitoring results.
- Measures to be taken after infection.

If any Se or St positives are discovered, additional hygiene measure are imposed and all the eggs from the infected flock are sent for processing, while the next flock housed must be vaccinated against Se.

As regards communication, the introduction of the logo on the packs has been explained to consumers and earlier this year a business-to-business campaign was targeted at supermarkets.

The IKB scheme has been extended to free-range flocks this year. This requires obligatory vaccination against Se. In the case of Se or St positives the next flock must be housed indoors and intensively monitored. Also, any other stock kept within a minimum distance from the poultry house are tested for salmonella.

Regarding tracking and tracing, the scheme determines that all eggs have to be marked with a code indicating the



*Ben Dellaert described egg quality control in the Netherlands.*

type of production system, the country in which the eggs are produced and an individual farm number. However, as a result of changes in European Union legislation the code has had to be revised such that only three types of production are now recognized (free range, deep litter and cages); the country is now indicated by letters rather than a number (e.g. NL for the Netherlands), while the farm number continues as before.

## Factors influencing feed prices

Feed manufacturers are continually looking for the best-cost mix to meet nutritional specifications. These vary around the world according to the egg market, ambient temperatures and the availability of raw materials and their price, said Tony Bell, Raw Materials Director of BOCM PAULS.

Differences in the number of eggs required, their size, color and the price of eggs are key factors in certain markets.

Regarding climatic differences, he pointed out that temperatures in China could range from minus 20 degrees centigrade to plus 30 degrees.

Once the specifications have been set the materials used depend on the availability of the raw materials and their prices.

For most countries corn forms a major part of the diet, generally accounting for between 20-60%. Nevertheless, while corn is the major component in New Zealand's North Island, in South Island wheat occupies this position. In the UK, the cereal part of ration is based around barley while in Belgium, it is wheat and sorghum respectively.

Just over 50% of diets are grain based, comprising different mixes of barley, wheat, sorghum and corn. Of the remainder, 40% was mainly proteins from soybean meal, or full fat soya, oilseed, and even copra in China, while the last 10% comprised minerals, limestone and premixes.

He went on to show how the formulation of layer diets varies greatly around the world.

Although the major components are derived from corn, wheat and soya, formulations need to be constantly updated.

Corn production worldwide has declined from 607 million metric tons in 1999-2000 to an estimated 587mt in 2002-2003. The corresponding figures for the USA show a similar trend with output falling from 240mt to 225mt in the same period. "As a result, there has been a dramatic fall in carry-over stocks from 43mt to 19.5mt, which was the lowest level in 30 years," he added. Consequently, prices have increased sharply. Chicago futures corn prices have escalated from around \$70 a metric ton in August 2000 to over \$110 in September 2002.

While total EU corn output this year showed little change on last year at 39.7mt, output had declined in Spain but risen in Italy. Prices have been firm but have also been affected by political influences and buyers holding supplies off the market.

Wheat production in the main exporting countries has also fallen from around 230mt to a little under 200mt. However, there is a large differential in prices depending on quality. In the EU, production increased this year but the harvesting conditions affected quality. Both Hungary and Russia pro-



*Tony Bell discussed the major factors driving layer feed raw material prices.*

duced more. Thus, currently there are two markets for wheat - the one in the USA with firm prices contrasting with low prices in Europe and particularly in the UK where there is a surplus of feed wheat. This has resulted in UK wheat being shipped to the USA.

There is a growing world demand for oilseed meals. This has risen by 50% in Asia in about five years and now China is now the second largest consumer behind the USA.

Sunflower and rapeseed production have fallen, as the industry has become more dependent upon soybean production. Soybean production has expanded rapidly in Brazil and Argentina such that, for the first time, output in South America exceeds that of North America. Some 90% of the Argentinean crop is now from GMO seed.

However, US production is likely to fall as a reduced yield has been forecasted.

"We are consuming more soya than we are producing. With demand greater than the supply there has been a sharp increase in prices and carryover stocks have shrunk," he added. He continued, "High prices will deflate demand but give production a boost."

"Thus, we are seeing increased volatility in market prices this year and we are learning to live with lower stocks," he added.

While the balance between supply and demand is the major factor in determining prices of feed raw materials, the end cost of the ration is also influenced by political influences (duties, quotas, restrictions). However in the short-term, market sentiment often has a great influence.

### Global Food Safety Initiative

"Food safety is on top of consumers' minds," said Erwin Roetert-Steenbruggen, Director of European Food Safety. He reminded everyone that cholesterol has been perceived as a health issue and that we could all learn from the way that America has changed this perception.

In April 2000, a group of international retailer Chief Executive Officers identified the need to enhance food safety, ensure consumer protection, strengthen consumer confidence, to set requirements for food safety schemes and to improve cost efficiency throughout the food supply chain. As a result the Global Food Safety Initiative (GFSI) was launched in May 2000. The global food safety initiative was facilitated by CIES - the food business forum in co-operation with the Food Marketing Institute (FMI). "It is based on the principle that food safety is a non-competitive issue, as any potential problems arising may cause repercussions in the whole sector," he added.

The key priorities of the initiative were:

- To implement a scheme to benchmark food safety standards worldwide.
- To build and implement an international early warning system.
- To encourage co-operation between the world-wide food sector and national and pan-national governments and authorities.
- To communicate the initiative to all concerned parties and promote consumer education.

An international task force was formed soon after the



*Erwin Roetert-Steenbruggen talked about a global food safety initiative.*

launch of the initiative and now comprises 50 retailer quality managers whose companies represent 90% of food retail revenue worldwide.

A set of "Key Elements" was compiled to serve as the requirements against which existing food safety standards would be benchmarked.

The Task Force defined these as: Food safety management systems, good practices for agriculture, manufacturing and distribution and Hazard Analysis and Critical Control Points (HACCP).

"Compliance with all components of the 'Key Elements' will lead to the endorsement of a submitted standards through the initiative framework and subsequent acceptance by retailers," he explained.

He continued, "The food safety standards that are endorsed can then be applied by food suppliers throughout the whole supply chain."

The application of the endorsed standards to particular products will be at the discretion of retailers and suppliers, the process varying in different parts of the world depending on company policies, general regulatory requirements and product liability and due diligence regulations.

A logo has been devised which will not be used on products but on business-to-business communications on official documentation to prove that the supplier is in compliance with an endorsed food safety standard.

Such a certificate is a preventative measure to minimize risk. "This process will begin to provide the food chain with guaranteed food safety," he said. "Food safety should be considered as a total food chain responsibility within a legal framework and a fully committed and responsible effort will be required from all stakeholders in the chain."

Co-operation within the worldwide food sector and with national and pan-national governments and other relevant authorities is essential and will be actively encouraged, promoted and developed.

When food safety issues arose, it was essential that information be made available and distributed quickly, accurately and clearly to all parties concerned. "To address this need, an early warning system is being developed for the food industry, in close co-operation with suppliers," he added.

The objective is to provide a mechanism for the exchange of both general and crisis-related information, in harmonization with existing legal and governmental frame works.

This will be into operation before the end of 2002.

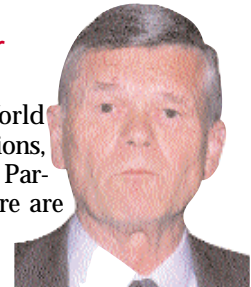
He went on to say that a consumer food safety awareness campaign would be developed at a later stage. Further, this might be based on America's successful 'FightBac' campaign on educating consumers about food safety.

The Guidance Document can be downloaded from the CIES website, [www.ciesnet.com](http://www.ciesnet.com).

### Shift to support producers rather than production

Presenting an update on the World Trade Organization (WTO) discussions, Niels Busk, Member of the European Parliament for Denmark said that there are five main topics: stabilized markets, decoupling, cross compliance, dynamic modulation and rural development.

A new and important aspect under the decoupling heading is a



*Niels Busk gave a mid-term update on developments in the World Trade Organisation discussions.*

major shift of support from production to the producer with a maximum limit to the subsidy which the producer could receive of Euros 300,000 a year. Another aim is improved market orientation with farmers benefiting from market opportunities. All these measures fall into what is called the Green box.

Regarding cross-compliance all income payments will be conditional on the respect of statutory standards. These will cover food safety, environmental protection, animal health and welfare as well as occupational safety.

Regarding market stabilization key areas are a 5% reduction in the intervention price for wheat, corn and barley; the abolition of intervention applied to the rye sector; but in the dairy sector there will be no changes before 2008.

Regarding dynamic modulation there is a move from direct payments to strengthening rural development. Yearly direct payments will be cut by 20% over a period of seven years starting in 2004.

Producers currently receiving less than Euros 5000 in direct payments will be excluded from the gradual reduction. This will apply to about three-quarters of producers in the European Union.

The evaluation of the mid-term review shows that the agricultural sector will receive subsidies equal to Euros 40 billion/year, which equates with 40% of the EU budget.

It is estimated that the budget will be cut by Euros 200 million by 2006. The agriculture sector accounts for just 2% of the EU's GNP.

He went on to explain that there are two categories of domestic support. Where the support has no or 'minimal' distortive effect on trade is referred to as the Green box and Blue box. But, trade-distorting support is referred to as the Amber box.

Support that falls within the Blue box category includes:

- Direct payments under production limiting programs.
- Payments that are not directly linked to the current quantity of that production.

"Blue box subsidies are, however, subject to criticism within the WTO negotiations and are likely to be phased out," he added.

Aid falling into the Green box includes:

- Direct payments to producers that are not linked to production decisions (decoupling).
- Measures of assistance designed to encourage agricultural and rural development.

Support measures falling within the Amber box category include:

- Market price support i.e. governments buying in at a guaranteed price.
- Direct payments that are linked to production decisions.

He commented that under the USA's Farm Bill 2002 the agrarian sector will receive subsidies equal to \$180 billion a year. This Bill introduced what is called the 'Countercyclical' program that falls within the Amber box. "According to WTO agreements the USA could not pay agrarian subsidies exceeding \$19.1 billion within the Amber box," he added.



Antonio Afoito (President) and Amandio Santos (General Manager) hear that their company DEROVO from Portugal, has been named "Egg Products Company of the Year" from Ton van Dijk, Chairman of Egg Processors International.

Mehdi Masoumi Esfahani and Dr Behnam Bastani of Telavang Company Ltd, the winner of the Crystal Egg Award for the company with the most outstanding egg marketing program.



Spain, represented by Inprovo, won the Golden Egg Award for the best generic egg marketing campaign. From left to right, Maria del Mar Fernandez Poza, Amparo Lobato, Clive Frampton (IEC's Chairman), Jorge Abad and Joanne Ivy (Chair of the awards committee).

## IEC Awards

Spain was awarded the IEC's Golden Egg Award for the country with the most successful generic promotion for eggs, while the Crystal Egg Trophy for the best branded egg marketing campaign was given to the Iranian company, Telavang Co Ltd. The Crystal Egg Award was awarded to an egg company that has not only greatly increased sales for their product but took on the challenge of improving consumer awareness for the egg's nutritious quality and safety in their country in a country presenting a difficult market. It invested in TV and radio advertising, educational programs and an aggressive publicity campaign resulting in over 400 articles in newspapers and magazines. Additionally they have developed one of the most comprehensive libraries of scientific articles on egg nutrition, a health hotline to answer consumer questions, an educational website, and a lot more.

In winning the Golden Egg Award, Spain has developed a well thought out strategy to run around the decrease in egg demand due to cholesterol. The industry established an institute to conduct nutrition research and disseminate technical and scientific information. They have developed a strong public relations campaign targeting health and medical professionals to get out the positive nutrition message backed by the credibility of scientific advisors.

In addition this country has developed a comprehensive marketing program which includes egg safety, consumer education, recipes, cookbooks and national advertising. They also co-ordinated an extremely successful World Egg Day Event featuring a gigantic omelette which received extraordinary media coverage.

Winner of the Denis Wellstead memorial trophy for the International Egg Person of the year was Peter Kemp from the United Kingdom.

An innovation this year was an award for the Egg Products Company of the Year. Ton Van Dijk, Chair of Egg Processors International, presented the award to Portugal's DEROVO.

The IEC Spring Meeting will be held at One Whitehall Place, London, from 30 March to 1 April 2003.

The next Annual meeting will be held in Santiago, Chile, from 28 September to 3 October 2003.

# Record Crowds and Heated Discussions at UEP

By John Todd

The Animal Welfare issue again took center stage at the United Egg Producers Annual Meeting at the Westin Resort Hotel in Savannah, Ga. This issue created a record turnout for the meeting starting 7 am, Wednesday, October 9.

UEP staff started the meeting early to be sure all topics were covered during the 3-day meeting. Bob Krouse opened the animal welfare committee meeting to a standing room only crowd by announcing that 163 companies, representing over 200 million layers have signed up for the UEP Certification Program. He also said that the program has been accepted by the major grocery and food service industries. Krouse emphasized that the boat is merely in the water and that there are many difficult issues to be addressed at this meeting and in the future.

Gene Gregory took the floor at the committee meeting to bring the attendees up to speed on the major items still up for discussion on the animal welfare issue, and the certification program. Creating a great amount of discussion in the committee meeting and also the main meeting was the question of whether 100% of producer/packer facilities of a certified company must be subject to the rules of the certification program. In some cases, producers whose eggs go only to the egg products market do not feel these eggs need to come from certified egg production facilities. The argument here is that egg product users do not need to use, nor require, certified eggs, therefore keeping the cost down. Bob Krouse again expressed concern as to how the increased costs will be met with the certified eggs. Gene Gregory outlined some concerns with a dual situation such as the audit program and the public relations ramifications should a certification program not be 100%. There was much discussion on this topic with most of the speakers on the subject for a 100% program. Producers that were not for a 100% program were generally those that produce eggs solely for the breaker market or those that have a combination shell egg/egg products market. A motion was passed to recommend to the Board that 100% participation by the industry be adopted.

When the above subject went to the Board of Directors meeting there was again much discussion and additional questions came up. Jennifer McGuire from the new PR firm of Sawyer, Riley Comptom emphasized the need for strict compliance to the certification program

once it is firmly in place. If eggs are co-mingled, certified and non-certified, major problems will arise. Gregory strongly advised the producers to check with UEP or the PR firm before answering any media questions concerning this issue.

## Kurt Kreher named Egg Producer of the year.

The annual UEP banquet honored Kurt Kreher, Kreher Poultry Farm, Clarence, N.Y. as the 2002 Egg Producer of the Year. After graduation from Cornell University, in addition to working with managing a successful egg production operation, Kurt has a long history of serving with industry associations both in New York and nationally. Carl Lofgren, the 2001 recipient of the award made the presentation.

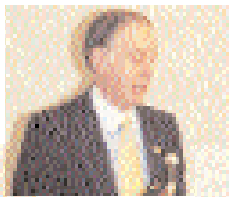
The concept of the new logo for certified eggs was brought up. The logo cannot be used if certified eggs are co-mingled with non-certified eggs. This prompted discussion about the audit. UEP has contacted USDA and ARPAS (American Registry of Professional Animal Scientists) to meet and draft an auditing manual. It was decided that the program should start

ASAP with a date of April 15, 2003 for completion. For processors buying eggs from certified producers, the producers' logo would be used. Other questions regarding these issues surfaced during the discussion period at the Board meeting. There will be a monthly compliance report from certified producers to UEP which will be strictly adhered to. There will be no tolerance on bird numbers in cages and houses. Certain legal ramifications were discussed by Irving Isaacson, UEP attorney, as to what determines the naming of a certified operation. Gene Gregory emphasized the fact they are not certifying eggs, they are certifying egg production methods. Following the discussion of these and other topics brought by the members of UEP, a final motion was voted on. It was passed 19 to 1 that when producers certify to the UEP guidelines it will be 100% of their production under their management control.

Several other items were discussed in the animal welfare committee meeting. Gene Gregory said that it was not possible to come up with the exact costs of the audit program yet. They will be working with ARPAS and USDA with other auditing firms expressing interest in working with UEP on this project. There has been some communications from FMI (Food Manufacturer's Institute) and NCCR (National Council of Chain Store Restaurants) regarding the audit procedure and the responsibility of it. These organizations are favorably impressed with the work done by UEP and endorse the certification program. UEP staff will continue to work with them to clarify the auditing procedures that will be implemented and that will satisfy all parties concerned. It was emphasized that UEP needs to keep control of the auditing program.

Regarding the Monthly Compliance Report, the form

Speaker Tim Hammonds, FMI President addresses the attendees. FMI is a good friend of UEP.



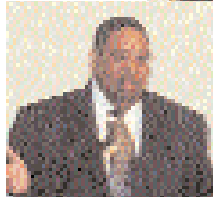
UEP Chairman Mike Bynum opens the meeting.



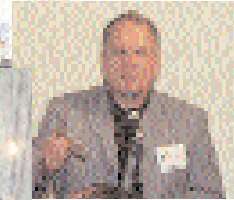
Clive Frampton, President of the IEC discusses the situation in Europe and the U.K.



Mayor Floyd Adams thanks UEP attendees for coming to Savannah.



Canadian Egg Marketer Harold Froese tells how it is in the Canadian egg industry.



Howard Magwire from the USDA speaking on the issues currently being handled at that branch of government.



Kurt Kreher accepts the Egg Producer of the Year award from last year's winner, Carl Lofgren.



Chad Gregory, UEP presents the membership report. 85 % of the layers are represented.



UEP Attorney Irving Isaacson clarifies a legal point at the UEP meeting. Irving is the recent author of "Memoirs of a Amateur Spy".



Animal Welfare Committee Chairman Bob Krouse presents his committee's report to the UEP Board of Directors.



submitted at the meeting was rejected and the committee will work on revising the wording on it. Rounding out the animal welfare committee meeting, Al Pope reported on the recent International Egg Commission meeting held recently in Madrid, Spain. European scientists validated the UEP work on the welfare issues including the cage space requirements. Although pushing the "enriched cage", it appears that the welfare of the bird and consumer is worse under the new European regulations.

### Marketing Committee Meeting

Dolph Baker, Chairman called on California producer Arnie Riebli to say a few words. Arnie, as only Arnie can, proceeded to speak forcefully for several producers about why the egg prices remain in their depressed status. He indicated he and his fellow producers have never been more frustrated with the situation. There has been no compliance with bird number guidelines as outlined in previous meetings. UEP reports the overproduction problems regularly. No one is living up to agreements previously made, according to Riebli. There are many older hens out there that "should have gone to heaven." There is a 5-6 million oversupply.

Ken Looper presented the statistics on bird numbers and pricing. Bottom line is that the future will not be any better than today if current trends continue. The egg industry must reduce the flock or the price of the product will remain at the depressed levels.

Gene Gregory indicated that he is frustrated by pro-

ducers' calls asking what is being done to alleviate the situation. Plans of action have not worked and Gene is at loss of what to say. To add to the frustration, Greg Pearce, a Canadian producer, updated the committee on the Canadian situation. Controls of production assures a profitable product.

Gene Gregory brought up the topic of separate quotes for certified and non-certified eggs. There were various opinions, pro and con, on this subject. After some lively discussion, Rick Brown of Urner Barry commented. "A quote for certified eggs must evolve based on demand. The industry is not there yet." Brown indicated that he feels 50% of the market must demand these eggs in order to formulate a viable quote.

### UEP Board of Director's Meeting

Chairman Mike Bynum called the meeting to order. New officers for 2003 are Mike Bynum, Chairman, Roger Deffler, 1st Vice Chairman, Dolph Baker, 2nd Vice Chairman, Bob Krouse, Treasurer, Garry West, Secretary. Chad Gregory reported there are 216 members of UEP, representing 235 million laying hens. This is a record number at about 85% of the nation's flock.

Other committee reports included finance by Roger Deffner. The 2003 budget will be available by November 15. Al Pope spoke regarding future budgets. Additions will be required and a new plan must be developed. Dues have been the same for 5 years and with consolidation a new situation has developed.

Ken Klippen, UEP Washington representative, report-

ed on the many items they work on in the nation's capitol. Total federal funding and support obtained by UEP's Government Relations program to proactively support the interests of the egg industry amounts to \$1.480 billion. Chad Gregory and Randy Green reported that they are organizing a meeting regarding spent hens and possible new uses for them. Don McNamara, head of the Egg

Nutrition Center discussed the ongoing research projects relating to egg nutrition. Work continues with dietitians to educate the public about the benefit of eggs. New projects include how eggs can contribute to weight loss. Don commented on the recent "eggstravaganza" and that the American Medical Association is now saying there is no restriction on the consumption of eggs.

## Broad Meeting Combines Information with Business

A series of speakers from government and industry addressed the membership at the United Egg Producer Meeting.

Floyd Adams, Mayor of Savannah, welcomed the attendees to his thriving city and provided an example of Southern hospitality. He was followed by Tim Hammonds, President and CEO of the Food Marketing Institute (FMI). This 2300-member organization represents over 26,000 retail stores in the US accounting for over three quarters of the all grocery sales in the nation. Dr. Hammonds comes from a farm background in upstate NY. He orphaned, "If you are going to lobby in Washington, it helps to spend the first 20 years of your life on the wrong end of a cow". Dr. Hammonds briefed the group about the situation in Europe with the animal rights activists and how industry has been affected. One major problem in Europe is that they had no organization such as UEP to guide them. Commenting further on the US situation, Hammonds said the egg industry here is ahead of other commodity groups in its approach to the animal welfare assault. FMI is working hard with all commodity groups such as pork and beef, experience with the egg industry is helping. It will take some time yet for the consumer to recognize the efforts as other commodity groups catch up. There are still questions with some commodity groups that have opted not to comply with guidelines. In these cases buyers will be forced to buy from those in compliance with guidelines. All of this will take awhile to sort out. Dr. Hammonds also suggested that FMI will put an "arms length" audit in place. They do not want association members to audit egg producers.

Regarding price, Hammonds related to the European situation. He said free range eggs will be double in price and will not be as sanitary as with present practices. If the trend continues as it is now, there should be an opportunity for U.S. producers to export eggs to Europe. He complimented UEP for taking the scientific approach and thanked Al Pope and Gene Gregory and their team for the courage it has taken for this approach.

Howard Magwire, Deputy Administrator, USDA/AMS Poultry Division reviewed the various issues handled by his group. He discussed the fowl purchase and egg product programs and the amounts they have purchased this year. Magwire stated that they find it hard to justify the bonus buy programs when the industry is increasing their numbers. He is asked from time to time, what is the industry doing to help themselves. He also commented on the animal welfare issue and that the USDA was feeling pressure also. They want to start audits after the first of the year. USDA appreciates the

relationship with the UEP staff.

Clive Frampton, President of the International Egg Commission, spoke on the situation in the U.K. and the rest of Europe in the egg industry. He said the situation there is not based on science, as in the U.S., but on effective lobbying by the animal welfare activists. The industry is headed for "enriched cages" by 2012 with a review in 2005. These cages are 85 square inches per bird with nest area, litter scratching area, claw sharpening and perching facilities. In Germany, all cages will be banned by 2007. Frampton commented that Spain and Italy will lead in the pressure to make changes in the 2005 review. He explained the UK Lion Quality Assurance program, created as a response to the salmonella outbreak in the late 1980's. The bad press that resulted and subsequent lowered egg consumption and price was catastrophic for the industry. The "Lion Code of Practice" was developed which included registration of flocks, salmonella vaccination, hygiene practice improvement and many other controls. This procedure also involves audits. Eighty percent of egg production facilities are now approved and operating under this program. The result of the Lion Program has reduced salmonella and increased consumption. Most all supermarkets and food service accounts buy Lion eggs and egg products. Another positive, according to Clive Frampton, is the program has decreased competition. Marks and Spencer, a leading marketer of eggs, has adopted a practice of selling free range eggs only. As part of the marketing plan they are using eggs to present a "feel good", caring attitude for the company. Non-cage eggs are now about 6% of the total in the U.K. In summary, Mr. Frampton feels European and British costs are going up because of animal welfare pressure and a continuation of quality schemes will be a necessary market requirement in the future.

Harold Froese from the Canadian Egg Marketing Agency gave statistics on Canadian production. In Canada the industry is highly controlled although many of the same factors apply as here in the States. Numbers of producer/graders are going down with consolidation. As in the U.S. animal welfare continues to be a big issue and the activists are working hard. The Canadian industry is working with American efforts to combat the problem.

John Thorne, President of Capitolink, spoke on the environmental issues facing the industry. He presented a review of the Watt Publishing Summit on Environmental Issues to the UEP attendees. The Watt Summit was held on the two days prior to the UEP meeting.

# An International Look at Welfare

By Terry Evans, *International Editor*

**P**rior to its Annual Production and Marketing Conference, the International Egg Commission held a Layer Welfare Symposium in Seville, Spain. Six speakers from around the world gave presentations. Here, we present brief abstracts from each paper except that of Gene Gregory from the United Egg producers who provided an update on the new certification program which *Egg Industry* magazine has been covering in its most recent issues. The full papers can be downloaded from the IEC's website: [www.internationalegg.com](http://www.internationalegg.com)

## Welfare Research in Australia



John L. Barnett

John L. Barnett of the Victorian Institute of Animal Sciences, Victoria, Australia, told delegates that hen numbers in Australia fluctuate between 10-14 million and are currently about 11 million. About 10 % of the national flock are estimated to be in backyard production. Cages have been the predominant production system since the 1950s. There are four commercial egg production systems in Australia: traditional cages, controlled-environment cages, barn and free range.

## Welfare assessment

It is generally accepted that there are three broad approaches used by scientists in studying animal welfare: the "feelings-based", the "nature of the species" and the "functioning-based" approaches. A more descriptive title for the third approach, which will be used here, is the "homeostasis" approach. There is also a fourth approach, the "animal preferences" approach, which is sometimes included in the feelings approach but does not necessarily provide direct information on feelings or emotions.

Barnett favors the definition of Broom that the welfare of an individual is its state as regards its attempts to cope. This refers to both how much has to be done by the animal to cope with the environment and the extent to which the animal's coping attempts are succeeding. Attempts to cope include the functioning of body repair systems, immunological defences, physiological stress responses and behavioral responses. The "extent to which coping attempts are succeeding" refers to the lack of biological costs to the animal, reflected in fitness variables such as deterioration in growth efficiency, reproduction and health and freedom from injury.

Therefore, using such a definition, the risks to the welfare of an animal from a challenge can be assessed at two levels, the magnitude of the behavioral and physiological responses and the biological cost of these responses. The rationale underpinning this approach to welfare assessment is that difficult or inadequate adaptation generates problems with welfare.

The above definition of welfare has been broadened to incorporate animal emotions. There would appear to be no reason not to incorporate animal emotions into the homeostatic approach to welfare assessment, as they would have evolved on the basis of their survival values and contribution to biological fitness. Indeed, emotions such as fear are potent stressors for animals with consequent effects on behavior, physiology and fitness.

## Welfare research on layers

Using the homeostasis approach, the literature on the welfare implications of items of furniture that are used in furnished cages has been reviewed. There is evidence for improved welfare from increasing space in cages based on reduced aggression, corticosterone concentrations and mortalities, and increased production, and for incorporating perches, based on the reduction in injuries at depopulation. However, similar evidence for the inclusion of dust baths and nest boxes is lacking. The data on abrasive strips are ambiguous with recommendations from overseas for their inclusion, while some local data indicate an increase in mortality. Similarly, the data on non-cage systems are capable of different interpretations.

The data on bone strength suggest improved fitness in non-cage systems, while the data on stress suggest fitness may be better, similar or worse in non-cage systems, and the limited statistics on immunology suggest fitness may be worse in non-cage systems than in conventional cages.

He went on to review the research in laying hen welfare over the past 10 years which largely fell into three areas, husbandry, housing and the human-animal relationship.

It is now the currently accepted scientific view that beak-trimming correctly at day-old, relative to other ages, allows birds to return to apparently normal feeding and pecking behaviors.

In Australia, an experiment with abrasive strips in layer cages has indicated that abrasive strips were effective in reducing claw length. Abrasive paint was found to be more effective as a claw shortener than abrasive strips, based on length of claws and sharpness. However, hen mortality from prolapse and cannibalism combined was significantly higher in cages fitted with abrasives in one of two experiments. It was speculated that when birds are frightened or competing for a position at the

feeder, they might abrade their vent region on the paint or strip and this may encourage vent pecking.

Housing research has, until recently, focused on cage modifications in naturally-ventilated sheds. If perches were present, the strength of the femur was increased, feed intake was reduced with a concomitant reduction in egg production, egg weight and shell thickness, while the incidences of dirty and cracked eggs increased. Solid sides resulted in improved feather condition, reduced stress and increased mortality, particularly in hot weather.

Thus, modification of laying cages in a naturally ventilated house has both welfare and production advantages and disadvantages. The problem of higher mortality was overcome by the presence of both solid sides and a perch, presumably so that birds have greater control over their microenvironment. Improved cooling and ventilation systems need to be fitted in conventional laying sheds before the use of solid sides in cages could be considered in Australia.

Research in a number of animal industries has shown that interactions between stock people and their animals can limit the welfare of the animals. The frequent use of some routine behavior by stock people can result in farm animals becoming highly fearful of humans. High fear levels, through stress, appear to limit animal welfare and productivity. One of the antecedents of stock person behavior is the attitude of the stock person towards interacting with his or her animals.

Recent research has shown that the role and impact of the stock person on the animal should not be underestimated. To do so will seriously risk the welfare (and productivity) of the livestock. It is likely that in the near future both the livestock industries and the general community will place an increasing emphasis on ensuring the competency of those that manage livestock.

### Scientific Assessment in the UK



A. W. Walker

Current research provides further evidence that birds housed in enriched cages make full use of the additional facilities provided within the cages, such as the nest boxes and perches while giving high levels of production. However, further investigation is required before firm conclusions can be reached on behavioral differences observed in furnished cages.

“The research at Gleadthorpe has so far not concerned itself with the provision of scratching and foraging areas and so we cannot draw any conclusions about this aspect of enriched cage design,” said A. W. Walker of the ADAS Gleadthorpe Poultry Research Centre.

The Department for Environment, Food and Rural Affairs (DEFRA) is funding a collaborative study being conducted by ADAS and other researchers. This paper addresses primarily the main objectives of the first phase of this DEFRA funded study, which were:

1. To evaluate the effect of different stocking densities

and colony sizes on bird behavior, welfare and performance in furnished cages.

2. To evaluate the effect of cage height on bird behavior, welfare and performance in furnished cages.

Two experimental flocks of laying hens are being housed in furnished cages at ADAS Gleadthorpe and one flock at a large laying farm in Nottinghamshire. The cages are described as furnished rather than enriched as this study did not require the investigation of scratching and foraging facilities; hence the enrichment is incomplete. There was no significant effect of breed of bird, or cage height on the rate of lay. Stocking density had a significant effect on rate of lay and there was a significant breed times stocking density interaction. There were no confounding effects of colony size and stocking density.

Stocking density had a profound effect on feed intake, with the birds at a more generous space allowance consuming more feed than those kept at a higher stocking density. However, the birds in the seven-bird colony at 609 sq cm/bird consumed significantly more feed than those in the 10 bird colony also at 609 sq cm bird. There may, however, have been an effect of feed trough length per hen, since this was an unavoidable extra variable.

### Behavioral Studies

Hens spent most of their time (60%) standing and 25% feeding, with drinking occupying 2.5% and preening 3.4%. About 80% of observed hens used the perch at some point during the observation period. Comfort activities such as leg or wing stretching were rare.

### Fear & Distress

There was no evidence of effects of breed, cage height, stocking density or tier on the probability of inducing tonic immobility (TI). Neither were there any detectable interactions.

### Physiological studies

There was no evidence of effects of breed, cage height, stocking density or tier on heterophil/lymphocyte ratios. Neither were there any detectable interactions.

In practical terms, the design of the furnished cages used worked very well. The majority of eggs were laid in the nest boxes (96% over the period 68 – 71 weeks and 84% over the whole laying cycle of 18 – 71 weeks). The nest pads and eggs laid in the nest boxes were clean (mean of 3% dirties). Mean cracked eggs amounted to 0.6%.

Foot and feather condition started to deteriorate over the latter half of lay (weeks 48 – 72), but there appeared to be little difference between the breeds, at any stocking density or at either cage height.

In a recent ADAS Gleadthorpe flock, the peak rate of lay was 96%, egg weight at 72 weeks of age was 66g, while feed intake varied according to stocking density but was generally lower in furnished cages than conventional ones (about 2g lower at 116 g/hen day). The latter finding was probably due to reduced night-time activity because the majority of hens (over 90%) were on the perches. Others have shown that at comparable stocking rates, conventional cages will yield higher production and hence a better rate of return than furnished cages.

The difference in gross margin over feed and pullet costs was between 10p and 23p (0.16 and 0.36 Euro) per bird over a 52-week production cycle. Birds in conventional cages produced marginally heavier eggs; hence the average egg price was slightly higher, and they produced fewer downgraded eggs, hence total egg income was higher. These benefits outweighed the saving in feed costs mentioned above.

Furnished cages require (by law) a more generous stocking rate than conventional cages and this usually means greater feed trough length per bird. Feeding systems will need to be carefully managed, to ensure that the birds do not waste feed, rather than converting the additional intake into egg output.

The production data show that birds housed in furnished cages are capable of a high level of performance, which would be considered comparable with that of birds in conventional barren cages. Despite the significant differences due to stocking density, egg production was good in all treatments at between 300 and 315 eggs per hen in 52 weeks. The maximum difference found between 7 and 10 hens per cage was about 8 eggs per hen and was compensated for by feed intake differences (savings with higher stocking density) of about 7g per bird day. As feed accounts for around 70% of the cost of producing eggs, in economic terms, the feed savings could well outweigh the loss of egg output with higher stocking densities.

Studies taking place in a commercial installation have provided additional information about the practical problems that egg producers may face in everyday operation. Producers may have to give greater attention to egg collection procedures to reduce the risk of shell damage.

### Dutch Experiences with Different Enriched Cages



Thea Fiks-van Niekerk

Thea Fiks-van Niekerk of the Research Institute for Animal Husbandry, Lelystad, told her audience that in 1993 the Centre for Applied Poultry Research "Het Spelderholt" started research on alternative cages. Since this was prior to the new EU-Directive, not all models that were tested met the new legislation for enriched cages.

A variety of cages were tested ranging from traditional battery cages with claw shortening devices or perches to more complex models with perches and nest boxes and in some cases litter supply. The amount of space per hen ranged from 500 to 800 cm<sup>2</sup>. The latest trials were conducted with five different models of enriched cages that all meet the new EU-Directive. The aim of the studies was to find a cage system for laying hens that:

1. Met their need to perform specific behaviors (nesting, perching, dust bathing, moving);
2. Guaranteed the producer optimal production, a good egg quality and low labour requirement.

### Design of several enriched cages

Within the regulations of the EU-Directive, there is quite some freedom to work on the design of the cage system. One of the most pronounced differences is the group size. In our latest completed trial this varied from 8 to 50 hens per group. Larger group sizes obviously result in larger cages. With the same space per bird, the larger cages provide more freedom of movement than smaller ones due to less unusable space (e.g. dead corners) and the possibility for hens to utilise each other's space.

The larger units have the advantage that their appearance is different from that of traditional cages, which probably makes them more acceptable to animal welfare organizations than the small group models. A disadvantage of the larger group sizes may be slightly more difficult management (depopulating the system, removing dead hens, control, and feed management). This however, depends greatly on the design as some of the smaller enriched cage models produced management problems. With regard to the rest of the cage design, the height should be at least 45 cm. For larger group cages, the depth was often more than 1 meter, giving a better view through the system. In tall cages the perches can be positioned high, but this often results in hens being soiled with manure.

### Production

Production in enriched cages can achieve the same level as in traditional cages. It was not possible to gather direct comparisons on feed conversion and it should be mentioned that differences in feed conversion ratio are not only caused by differences in feed intake, but also by egg production levels. Hens that were not beak-trimmed often performed more feather pecking. The amount of feather pecking/cannibalism shows a large variation, not only between trials, but also within trials between cages. Feather pecking affected egg production negatively, probably because the hens experienced more stress. Our latest trial shows that good production results are possible in enriched cages, where the feed conversion ratio was lower than our average for traditional cages.

### Egg quality

So far, the Dutch research has indicated that it is difficult but not impossible to obtain the same level of egg quality in enriched cages as in battery cages. Most systems, however, still produce too many cracked or dirty eggs.

That a high percentage of eggs are laid in the nests is no guarantee of good egg quality. The major problem was dirty eggs and there doesn't seem to be a correlation with group size or with nest space per hen.

### Health and mortality

Red mites cause problems in all housing systems, and they also posed some problems in enriched cages. The extra elements in enriched cages will make it more difficult to keep them free from red mites. Another aspect is the presence of litter, which can cause problems with worms and coccidiosis. Research in aviary systems has revealed that these hens are frequently infected with worms. In none of the trials were worm infections found in enriched cages and the researchers don't expect this to

be a problem in this system, because the litter is renewed frequently. Stated Fiks-van Niekerk, "So far, we haven't had problems with coccidiosis in enriched cages."

Mortality in enriched cages is extremely variable. Non beak-trimmed hens had higher mortality due to cannibalism. Also, there seems to be more problems with cannibalism in the larger groups. However, this is not pronounced.

Strangely, the researchers have seen toe injuries in several trials with white, non beak-trimmed hen but at six weeks of age they had no problems with toe injuries.

### Litter

Hardly any eggs are laid in the litter boxes when they are only open during the last 3 - 5 hours of the day (light period). An automatic litter supply system is almost unavoidable to provide hens with litter every day. Fiks-van Niekerk made a comparison between different litter types and found that all materials were used well. Oyster shells and limestone didn't disappear as fast as the other materials. Based on the cost per hen sawdust and sand were the best. Sawdust also has advantages when using an automatic supply system; however, to prevent undesirable residuals, the origin of the sawdust should be checked.

### Type of hen

Most of the trials were conducted with white hens (LSL), because egg quality seems to be the largest problem of enriched cages and this aspect can best be monitored on white eggs. Bird behavior of brown hens differs from that of white hens particularly with regard to feather pecking/cannibalism. Hence, getting good production results and good egg quality may require a different cage layout and management for different types of hens.

### Conclusions

Research on enriched cages is still going on and a lot is still unknown. However, the Dutch researchers concluded that large group cages allow hens more freedom of movement than in the smaller cages. Production and feed conversion ratio in enriched cages can be as good as in battery cages, provided that no cannibalism occurs. So far, their research has indicated that it is often difficult to obtain the same level of egg quality in enriched cages as in battery cages. The health of the hens can be as good as in traditional cages. Non beak-trimmed hens showed more mortality due to cannibalism and this seemed to be more pronounced in the large group cages. It also appears that the type of hen may influence the results in specific cage models.

### The Swedish Experience with Cages

There were about 750,000 birds on 50 farms in furnished cages in Sweden in July 2002, which corresponds to about 15% of the national layer flock said Ragnar Tauson of the Swedish University of Agricultural Sciences. The rest of the layers are housed in some kind of floor systems and a large proportion

still, on individual time limit exemptions, in conventional cages until the end of 2003. The change over from conventional cages to any alternative system will be far earlier than decided in the recent CEC directive, which states 2012.

In Sweden there is legislation on a compulsory evaluation of so called "new techniques for animal production" regarding their effects on animal protection and welfare. The evaluation procedure initially comprises an experimental part on a small scale, which is followed by a field test in commercial production provided the former study has shown promising results. The procedure in the field test consists of scoring of bird's health at 35 and 55-65 weeks of age as well as monitoring production, mortality and behavior, normally in 10 commercial flocks per system (4 flocks in systems from May 2000). The data obtained are related to stipulated minimum requirements. In general, all values should pass the requirements but the Board has the possibility to disregard "single poor results". The system can also be modified according to findings during the test in order to collect information on better improvements in design. This should be considered when studying the results in this paper. Other conditions to be mentioned are that almost all birds were cage reared and housed at 16-18 weeks of age, 90% of birds are of SCWL genotypes, no beak trimming is used and age at slaughter normally varies between 70-80 weeks of age.

After about two and one half years in the commercial testing, the Trivselbur or "Comfort Cage" by Swedish manufacturer Brøderna Victorsson AB in 2000, and Big Dutchman's Aviplus in 2002 gained approval for selling their systems without limitations. The discussion at the symposium mainly focused on these two models due to the fact that the evaluation process is completed.

Although there has been variation in results, only one flock (except a Mareks infected flock) exceeded the maximum accepted level of mortality (9%) and all passed the levels of minimum production. It should also be mentioned that for the past 18 months there have been many cases of Leucosis in one of the most common hybrids in Sweden, which to varying degree has had a negative impact on such flocks regardless of housing systems.

### Health

In general, plumage condition has been acceptable although, brown birds have shown inferior conditions. Variation between flocks in this trait like pecking wounds on the comb may also have to do with initial problems with litter distribution in some herds. The number of pecking wounds on the comb (signs of aggression) has usually been well below the maximum limit (15%).



Ragnar Tauson

Pecking wounds around the cloacae and rear part of the body (limit 10 %) have been rare.

Bumble foot syndrome has appeared at too high levels (limit 5 %) when manufacturers have used improper designs/materials of perches.

### Behavior

The extra facilities that intend to enlarge and stimulate the birds to perform some of their most important natural behaviors are used at varying degrees but usually extensively. The birds greatly appreciate the nests since normally about 95% of the eggs are laid there. Few eggs are laid outside on the floor and the number of eggs laid in the litter box is negligible.

The use of the perch at night is between 75-85 %, and shows the preference of having access to this facility. The use of the perch depends also on the position within the cage and partly on genotype.

The use of the litter box, normally with sawdust or wood shavings, is variable. It may well be that need for use of litter not only for bathing but also pecking and scratching may be very important for some individuals but not for others. Since we deal with a considerably larger group size even in small group furnished cages, the risk for pecking/aggressive behavior is probably somewhat increased in comparison with conventional 4-hen cages. Hence, the satisfaction of performing a stimulating and occupational activity with litter can be important.

On average the number of aggressive pecking bouts expressed as number of series per hen observation hour is normally low with a few exceptions. However, they may vary between both hybrids and cage designs. The pecks seen are often performed by the same individual to one or two pen mates and most often at the feed trough and seldom in front of the extra facilities like nest or litter bath.

### Continued research important

The small group furnished cage system is new in commercial production and thus, there is need for parallel and continued applied scientific research, developmental work by the companies involved and we must not forget education of management.

Further developments in mechanical litter handling and location of litter boxes are continuously under way as well as research on group sizes. The latter is vitally important due to the fact that the larger cages provide more exercise for the birds but also may in the long run increase the risk for aggressive pecking/cannibalism. The prohibition of beak trimming would in this case probably be crucial. The introduction of a rear partition with pop holes for lower ranked birds to move away from others has been shown to be one realistic alternative in furnished cages with somewhat larger groups.

Although all the new cages provide the birds with facilities to exercise their natural behaviors, there is still considerable variability of results with different models. This relates to characteristics like egg quality, the possibility to inspect the birds, plumage condition and foot condition. The best models have been shown to be competitive with regard to production to conventional cages, and even better regarding several health traits compared to floor systems. While nests and perches are extensively used, the use of the litter box varies widely between individuals and genotypes.

## Eggs Production Systems and Egg Quality

R. Cepero Briz from the Department of Animal Production and Food Science, Zaragoza, Spain examined the available information on the influence of several egg production systems on the quality of eggs, and some new data from their own work.



R. Cepero Briz

### Egg quality in enriched cages

The research reports indicate that 85-95% of eggs are laid in the nests. Good use of nests improves the egg quality in enriched cages.

However, the nests are also a potential risk for the eggshell cleanliness, since in every current model of enriched cages there is a free entrance, and a certain percentage of hens (nearly 10%) can sleep inside them, soiling the nest mat over time.

### Sand bath

To prevent the hens lying in this "dirty area" it is necessary to restrict accessibility to 3-4 hours/day, at least during the first months. If the bath is managed properly, less than 1% of eggs will be laid in this area. The nest design is important. With an Astroturf floor less than 0.1% of eggs will be laid in the bath.

### Abrasive strips

These impact on the length of claw and are a positive factor to reduce the number of broken and dirty eggs.

### Perches

Hens use perches widely (averaging 25% in the daytime and 90% during the night). However, the introduction of perches usually produces an increase in the number of broken eggs. This problem is also affected by other features of the cage such as the presence of nests and the position and design of the perches. If there is no nest, many hens lay from the perches with the consequent risk of broken eggs.

The perch position is important. At 12-13 cm from the back of the cage there are no broken eggs behind the perch. However, in general there are a higher percentage of broken eggs than in traditional cages, probably because some hens use the perches as nests. In cages with perches there is often a reduction of 1.0-1.5g in egg weight, which has been attributed to the lower feed consumption recorded in these experiments.

### Space per hen and group size

These factors are important, especially group size. In cages with large groups, many dirty eggs are found. The number of downgraded eggs increased after reducing the space per hen (birds had the dirtier feet), in the largest groups.

### Egg quality

Although enriched cages are in a state of evolution, currently they yield 10-15% more downgraded eggs than

conventional cages. So, egg quality remains a problem that could increase as these cages pass from the experimental level into commercial practice

### The Spanish Experience

Research in Spain had revealed that during the first 60 laying weeks, the percentage of XL and L type eggs was better in the conventional cage (CC) (+ 4.6%) than in the enriched cage (EC). Between 67 and 83 weeks, the percentage of eggs weighing more than 63g increased from 75.3 to 88.6% in the CC., and but from 73.7 to 83.4% in the EC reduction of 4%. Other researchers have observed in EC a reduction of 1-1.5g in the average egg, attributed to a lower feed consumption.

In the EC the proportion of soiled eggs was 20% higher than in CC, due mainly the design of egg collection system.

Eggs from CC eggs showed a higher frequency of knitting fractures due to an impact than EC eggs, though the latter had more hairline cracks and translucent and porous shells.

Cage type had no influence on yolk colour or albumen height and Haugh units. Neither were there any statistically significant differences for the frequency of meat and blood spots. Thus, the cage type had no effect on the commercial egg quality, apart from an increase in soiled eggs. The EC hens did not produce higher quality eggs due to their supposed improved welfare.

Eggs obtained in CC showed the best quality from a microbiological point of view. Coliforms and *E. coli* were

present on more than 15% of the shells of EC eggs, though the counts were acceptable.

Eggs produced by hens housed on deep litter or free-range systems do not show objective advantages for consumers, since their composition and physical properties do not vary, while their bacteriologic status is poorer.

The cleanliness of shell from eggs produced in battery cages is generally superior to that obtained in any other production systems.

Some researches show that hens housed on deep litter have stronger eggshells. In alternative systems there are usually fewer cracked eggs than in battery cages.

There are few data on this topic. In general, eggs produced in battery cages have a darker color, but it is recognized that the influence of genetics and hens' age are more important. However, where birds are not housed in cages, the eggshell may suffer an important deterioration due to the higher risk of bacterial infection in the oviduct.

Most research shows that egg weight is higher in battery systems but there are also figures that show the opposite.

Variations in the composition of eggs produced in different systems are small.

Many consumers believe that eggs from free-range hens have a better taste due to a more natural diet. The supposed differences in taste are also attributed to the housing system, but there is no evidence of this. Consumers attribute a better taste to free-range eggs if they know their origin, but if they don't know this then they usually cannot identify them.