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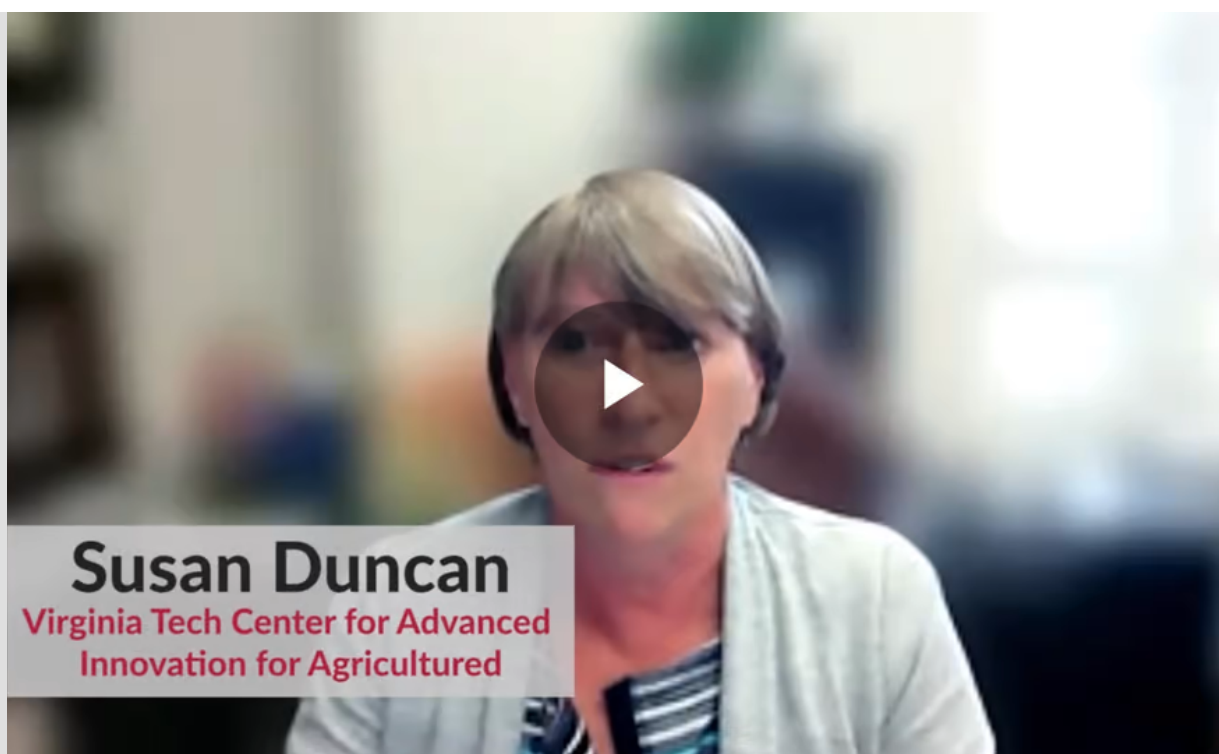
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Cyberbiosecurity and steps meat processors can take to protect their data – We speak with Susan Duncan, associate director of the Virginia Agricultural Experiment Station, director of the Virginia Tech Center for Advanced Innovation in Agriculture, and professor of food science and technology.

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OPEN SESAME

THE ALLERGEN LIST CONTINUES TO GROW

BY SHAWN K. STIVINS
FOOD INDUSTRY COUNSEL LLC

Over the last two decades, undeclared allergens have accounted for nearly 45% of all food product recalls. And the numbers are really astonishing. Of the nearly 10,000 food product recalls since the year 2000, over 4,000 were caused by companies failing to disclose the presence of allergens present in their products. Congress has long been concerned about protecting consumers with allergies and have taken recent steps to add further protections and create additional duties for the industry.


Congress has recently passed, and President Biden has recently signed, the Food Allergy Safety, Treatment, Education and Research (“FASTER”) Act. Because Congress was equally concerned about consumers with sesame seed allergies as those susceptible to the current list of “Big 8” allergens. The FASTER Act will soon officially add sesame seed to milk, soy, wheat, peanuts, tree nuts, egg, fish and shellfish, as the ninth allergen that must be identified in “Contains Statement” on food product labeling.

While the new law goes into effect on January 1, 2022, many companies are already working to revise their systems to comply with the new requirements now. We similarly recommend taking action in the short-term to begin developing a compliance strategy. Depending upon the ingredients food companies use and the finished products they supply, they could be significantly impacted. Those companies that are taking action should also begin working with their supply chain partners to ensure that their suppliers are not only aware of, but will also be following, the new requirements.

If even a single supplier drags their feet and does not work toward compliance until on or about the deadline, a processor might inadvertently ship ingredients carrying the allergen. If that were to occur and the problem were discovered, then recalls could ensue.

We do predict will see at least a slight spike in recalls for the undeclared presence of sesame seed following January 1, 2022, whether caused by an inadvertent deviation or from the regulators actively inspecting facilities with an eye towards ensuring that they are appropriately declaring those ingredients.

If the “Big 8” was difficult enough to manage, the “Big 9” will be even more. Work hard now to begin developing and refining your programs and requirements to get ahead of this change. If you do, you’ll be well prepared when the regulators loudly proclaim “Open Sesame” to address the new allergen coming out.



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UNITED NATIONS CONSIDERING LIVESTOCK'S ROLE IN A SUSTAINABLE FOOD SYSTEM

BY EMILY SOLIS, COMMUNICATIONS SPECIALIST, ANIMAL AGRICULTURE ALLIANCE

The topic of responsible and sustainable animal agriculture has received a lot of attention in recent years, but these concepts are nothing new to the American farmer. For generations, farmers and ranchers across the country have raised animals not only in an ethical manner but also in an environmentally sound and sustainable manner. Because of this due diligence, farmers and ranchers have a great story to tell when it comes to sustainability conversations.

The sustainability of our food system has been especially highlighted this year as the world prepares for the United Nations Food Systems Summit (FSS) this month. If you haven't heard of or aren't sure what the FSS is, the official website describes it as "a global initiative led by United Nations Secretary-General Antonio Guterres to help inspire a decade of action to achieve the 2030 Sustainable Development Goals." These goals include Zero Hunger, Good Health and Well-Being, Responsible Consumption and Production, and Climate Action to name a few.

The U.S. animal agriculture community has been actively following and engaged in this dialogue since last year, ensuring the voice of American farmers and ranchers who are leading sustainability initiatives were heard. The Alliance took the chance to contribute to the FSS in April by convening an independent dialogue event titled "U.S. Animal Agriculture as a Solution to Food Systems Challenges." This dialogue brought together stakeholders from across the U.S. animal agriculture community to consider animal agriculture's role in achieving the Sustainable Development Goals and its ability to deliver progress across all five action tracks of the FSS. Key themes of the conversations included:

- Sustainability must not be viewed as a single, exclusive destination, but rather as a diverse, continuous and inclusive journey.
- The U.S. animal agriculture community (from farm to fork and beyond) is among the most sustainable in the world (based on life cycle assessments, increases in productivity, reductions in GHG and other data-based measurements of sustainability).
- All stakeholders, across many areas of expertise, production systems and sizes must find commonalities and work productively together.
- Optimizing animal agriculture's environmental impact is an ambitious but attainable goal that can only be achieved with sustained, long-term active participation of all stakeholders with a goal of constant innovation and improvement.
- Food systems must become more sustainable while also ensuring continued sufficient nutrient-dense food supplies that are safe, accessible, affordable and appropriate to diverse consumer needs.

The Alliance team and some of our partnering organizations were able to sit in on many of the FSS Pre-Summit sessions, held July 26-28, to learn more about the direction the main event is expected to take and to see how the U.S. animal agriculture community's input was being incorporated – if at all. According to the official FSS website, the Pre-Summit aimed to "deliver the latest evidence-based and scientific approaches to food systems transformation from around the world, launch a set of new commitments through coalitions of action and mobilize new financing and partnerships" in preparation for the full event. Here are some takeaways:

- FSS organizers are really pushing the "true cost of food" concept, stating that if we account for negative externalities (environmental impacts, unhealthy diet), food costs us three times more than we currently pay for it.
- There was a good amount of support for innovation and adoption of new technology from member states.
- Positive content was shared around farmers being solutions, not problems, and needing to include them in this process.
- Negativity about animal protein consumption continued, along with negativity toward modern and "industrial" agriculture.
- The European Union's Farm to Fork Strategy was pushed several times as a model.
- There was a major focus on hunger and food security from many, particularly member states, including noting how COVID-19 has exacerbated this issue

There are concerns with some of the themes that were repeatedly touched on during the pre-summit, but there are several opportunities as well. We will continue to monitor the issue and look for ways for members to engage in the process. If the pre-summit has shown us anything, it's that now is the time to ramp up engagement efforts from the animal agriculture and meat community to ensure our voices are being heard. As an easy step, you can join the conversation online and share your sustainability story using #FoodSystems and #UNFSS2021.

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COOKING UP DISRUPTION

Kay Cornelius, general manager, Panorama Organic, grills up Panorama products at her family's ranch in Colorado.

KAY CORNELIUS AND THE PANORAMA ORGANIC TEAM ARE ON THE CUSP OF CARVING OUT A PROMINENT PLACE IN THE BEEF INDUSTRY BY BRINGING ITS MESSAGE AND ITS GRASS-FINISHED ORGANIC BEEF TO A WIDER NATIONAL AUDIENCE.

BY ANDY HANACEK, EDITOR-IN-CHIEF

The great restart, the post-pandemic adjustment — or whatever one might call it — has begun. Companies that managed to stay the course as best as they could during the COVID-19 pandemic now appear ready to pounce on serious opportunities, and Panorama Organic Grass-Fed Meats (owned by Perdue Premium Meat Co., or PPMC) has taken its place in that line.

By August 2020, the pandemic was well-entrenched as a part of day-to-day business, and many in the industry knew by then that they could not rest on their laurels and simply ride out the storm. Adjustments had been made, and “business as usual” transformed into “the new normal” — even if what was new was constant change.

For its part, PPMC, owner of the Niman Ranch, Coleman Natural Foods and the aforementioned Panorama Organic (among other divisions and brands), worked its way through the pandemic without having to abandon its core strategies. However, the tinkering and strategizing within the confines of Panorama Organic seems to have produced a division and brand ready to make serious waves in the grass-fed organic marketplace.

In September 2020, PPMC made a strategic leadership move in naming Kay Cornelius the new general manager of Panorama Organic, the first step toward opening new markets and distribution avenues for the traditionally regional grass-finished organic beef brand.

“With organic and grass-fed beef, there’s a high demand for case-ready product,” Cornelius explains. “So, one of the things we worked on immediately was getting our case-ready product in the Midwest markets, and we opened up a Midwest distribution plant in March [2021].”

Expanding from what had been a California-centric distribution model quickly paid dividends, Cornelius adds, with Panorama Organic now available in 21 different retailers (at presstime). The eastbound growth has been made easier under the PPMC umbrella.

“One of the beauties of being part of Perdue Premium Meat Co. is that our brother and sister companies don’t have organic, so we can be that organic solution for them,” she says. “We can tell customers in Ohio or Maine out east, ‘You should consider organic, and we can make it easy for you to get because your Panorama Organic product will ride on the same trucks as your Niman Ranch or Coleman product,’ which gives us a leg up.”



“THERE’S TREMENDOUS DEMAND FOR ORGANIC AND GRASS-FED BEEF, AND WE’RE FILLING A VACUUM BECAUSE THERE’S VERY LITTLE ORGANIC, GRASS-FED U.S. BEEF [SUPPLY] EXCEPT FOR PANORAMA ORGANIC.”

Panorama Organic also has been expanding its ranch network in the direction of the Atlantic; Cornelius points out that the brand now has ranches in eight states outside California. All this growth will keep retailers happy, but it will also help Panorama Organic capitalize on opportunities as the foodservice industry finds its way back to normalcy in the post-pandemic world.

“We can help chefs tell a great story around the organic, grass-fed beef and the conservation ranching initiative with the National Audubon Society, all with cuts that are really well-suited to chefs who want something truly unique to drive consumers through their doors,” Cornelius explains. “There’s tremendous demand for organic and grass-fed beef, and we’re filling a vacuum because there’s very little organic, grass-fed U.S. beef [supply] except for Panorama Organic.”

Within the last year, Panorama Organic has also entered the e-commerce supply chain with its frozen product — and answered consumer product demand by launching Panorama Organic-branded hot dogs, sausages and meatballs — all convenience items that aren’t abundant offerings on the grass-fed product shelves in sizable quantities.

“There’s demand and a need for those products in the marketplace,” Cornelius says. “Our best-selling item is ground beef, but the consumer may not have time to form, season and cook it before serving it to their family, so we believe these convenience items are right on trend.”

She adds that Panorama Organic has more convenience items in the product development pipeline today and expects to have those launching within the next year. Those include two seasoned, case-ready steak items scheduled to hit store shelves and e-commerce in the coming months.

“We’re doing those in case-ready, so you just open the package and put the steak in the pan or on the grill, and it’s pretty easy,” Cornelius says. “We’re making one flavor a more classic, traditional variety, and the other is kind of adventurous for consumers who really want to try something different.”



Additionally, Panorama Organic is exploring its place in the blended proteins marketplace for a customer interested in blending its high-quality protein with vegetables to produce an item with a smaller environmental footprint.

Looking at the bigger picture, Panorama Organic will continue to work to satisfy consumers who crave grass-fed organic beef that is born and raised in the U.S., as well as expand and support its network of ranchers, the primary caretakers of the approximately 1 million acres of grassland Panorama Organic has under organic certification.

“Our goal is to double that acreage in 10 years and also tell the story about our organic land practices, soil regeneration and the National Audubon Society’s Conservation Ranching initiative we’ve begun,” Cornelius says. “We’ll do everything we can within the four pillars we stand by, which we set last year: nourishing people, humane animal handling, organic land stewardship, and creating thriving ranching communities.”

Meanwhile, building on 20 years’ experience working for Niman Ranch, Coleman and Panorama Organic, as well as being a rancher herself, Cornelius believes she and her team have a formula that works, so long as the company stays true to its core principles.

“We’ll continue to work to give ranchers a path for success, and to give our environment a healthier chance, particularly against climate change,” Cornelius says. “We’ll continue to build grass-fed, knowing the demand will be there as long as we are true to our pillars and values, which are things we will never compromise.”

With the wider distribution reach and the number of ranchers in new regions interested in the Panorama Organic perspective on ranching, Panorama Meats appears poised to cook up some serious disruption as it carves out its space in the beef landscape.

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BACON!

A PANDEMIC POWERHOUSE

BACON REMAINS POPULAR AS A VERSATILE BUT FAMILIAR COMFORT FOOD.

BY MEGAN PELLEGRINI

Bacon remains one of the most versatile ingredients in dishes — able to grace a hearty burger or pair with chocolate. As consumers navigate pandemic dining, look for bacon to continue its growth at retail.

“The state of bacon has been relatively consistent over the past few years — some 53 percent of operators have bacon on their menu, compared to 54.7 percent five years ago, so relatively flat change,” says Lizzy Freier, managing editor at Technomic, a Chicago-based Winsight Company.

Despite the plant-based/plant-forward movement, bacon’s use as an ingredient has not waned.

“Though bacon is ubiquitous, there are so many things that can be done with it regarding flavor, processing and application that it is infinitely versatile and continues to be a new experience despite how familiar and ubiquitous it is,” says Maeve Webster, president of Menu Matters, in Arlington, Vt.

Options exist across all price points, which allows operators to continue to work with it in the face of ingredient price increases.

“As far as I’ve heard, there has yet to be a significant shortage of it, so it’s been easier to source than other items,” Webster says. “Additionally, bacon works well to go and can be applied to virtually any commonly ordered, off-premise occasions items, which is critical given how prevalent off-premise ordering continues to be.”

ON THE MENU

Because of the COVID-19 pandemic, bacon declined on menus last year but at a much smaller rate than many other ingredients, Webster says.

“In the face of the past and current situation, I wouldn’t say it’s menued in more dishes, but it has maintained its relative share and isn’t being removed for the reasons I’ve noted above,” says Webster.

Although bacon is inherently a breakfast protein, it has appeared frequently on lunch and dinner menus, most notably on sandwiches and burgers but also incorporated into appetizers, sides and as a complement in entrees, says Webster.

“The top ingredients paired with bacon are classics you’d find in either sandwiches or breakfast items — cheese, tomatoes, lettuce, eggs, then onion as the top five,” Freier says. “The fastest-growing ingredients paired with bacon show a different story — waxy (up 28.6 percent year over year), chocolate chip (up 18 percent) and raspberry dressing (up 15.8 percent). Mentions of bacon are also up in breakfast quesadilla entrees (up 30.4 percent year over year), whereas the top dishes with bacon are much more expected — club sandwich, bacon cheeseburger, then chicken sandwich.”



Photo by Sam Tensah-Denisikin, courtesy of Coleman Natural Foods.

ALTHOUGH BACON IS INHERENTLY A BREAKFAST PROTEIN, IT HAS APPEARED FREQUENTLY ON LUNCH AND DINNER MENUS, MOST NOTABLY ON SANDWICHES AND BURGERS BUT ALSO INCORPORATED INTO APPETIZERS, SIDES AND AS A COMPLEMENT IN ENTREES.

GROWING DEMAND FOR PROTEIN

Consumers, particularly younger consumers, are increasingly following vegetarian, vegan or flexitarian diets that omit or limit meat.

“While it is a low share of the population now, this is a trend that will continue to grow and impact the demand for pork-based bacon,” says Anne Mills, director at Technomic.

But there is still high demand for meat, including bacon, Mills says. For example, 70 percent of consumers who eat burgers are likely to choose bacon as a burger topping, making it the leading protein topping for burgers (2021 Technomic Burger Consumer Trend Report).

Bacon is consumers’ most preferred cut of pork, with 65 percent of consumers who often eat pork saying they’d be likely to order it at a restaurant at least occasionally (2021 Technomic Beef and Pork Consumer Trend Report).

Craft bacons and the flavors associated with them are still popular. “Consumers are generally more interested in process, sourcing and other details, so often bacon providers are noting breed, processing information, etc.,” Webster says.

Bacon can frequently be offered in various flavors, from smoked to glazed and everything in between, although standard bacon or commonly smoked options (applewood, etc.) remain the most broadly available and consumed, says Webster.



STEADY AT RETAIL

At retail, bacon is a pandemic powerhouse but was already an area of growth before.

“In 2019, bacon generated more than \$5 billion in sales, which was an increase of 2.9 percent versus 2018 with a small volume increase as well, at 0.3 percent,” says Anne-Marie Roerink, principal and founder at 210 Analytics, based in San Antonio, Texas. “Starting in March, bacon played a role in many more breakfasts, lunches and dinners and increased by double digits every quarter, led by the second quarter of 2020 with an increase of nearly 38 percent versus the second quarter of 2019.”

Even into 2021, bacon has performed well. “While it couldn’t quite match those enormous spikes of 2020 in the second quarter, sales are still well ahead of the 2019 pre-pandemic normal,” says Roerink.

Retailers are keeping the number of bacon SKUs stable as a mature and solidly performing category. “Much like the vast majority of meat and other products around the store, bacon sales have benefited from some inflation,” Roerink says. “Over the first half of 2021, sales averaged \$5.77, which was up 6.8 percent from the first half of 2020.”

OFFERING CONVENIENCE AND FLAVOR

Bacon is a staple in many meal occasions, and the fact that so many consumers spent more time at home meant great demand for bacon.

“We saw breakfast sandwiches do very well, and bacon is often a staple in those items,” says Roerink. “Not to mention the classic bacon and eggs for breakfast. Then we see many more lunches and dinners at home.”

For consumers who can’t choose between bacon and sausage, why not try both?

“Our new bacon breakfast sausage, just debuted this year, has been a big hit with consumers embracing the delicious bacon flavors from Niman Ranch when they love, but now in a sausage link,” says Drew Calvert, vice president of processed pork at Niman Ranch, in Westminster, Colo.

Bacon is certainly a popular ingredient to add to sandwiches and salads, and bacon meat snacks like jerky are being launched in the snack category.

“We are also finding consumers are increasingly reaching for bacon for eating occasions outside of breakfast and using it as an ingredient, not just enjoying by the slice,” says Calvert. “The smoky and sweet flavor bacon imparts on a dish are perfect for classic, comforting meals like stews, stir fry, casseroles, quiches and more.”

Much like in the rest of processed meat, we see many new developments in the bacon category, from packaging and brands to flavors and thick cut or chopped. “For instance, there are some innovations that move beyond the strip of bacon to chopped bacon in resealable pouches that can be used on salads or in other meals,” Roerink says. “Another area is claims. These may be things like low or no-sugar, natural or keto-friendly.”

Bacon by the numbers

Time	Product	Dollar Sales Current	Dollar Sales % Change vs. YA	Change vs 2YA	Volume Sales Current	Volume Sales vs. YA
Q1 2020	BACON	\$1,442,702,285	13.90%	17.00%	276,752,139	13.90%
Q2 2020	BACON	\$1,630,598,731	33.00%	37.90%	299,086,951	29.10%
Q3 2020	BACON	\$1,510,772,000	17.90%	21.50%	265,900,227	10.60%
Q4 2020	BACON	\$1,574,309,441	19.20%	21.90%	277,460,363	10.90%
Q1 2021	BACON	\$1,551,054,143	7.50%	22.50%	278,082,721	0.50%
Q2 2021	BACON	\$1,485,532,601	-8.90%	21.10%	253,692,176	-15.20%

Source: IRI, Integrated Fresh, MULO, 30 weeks ending 7/25/2021

PART OF A CLEANER DIET

Health has certainly been top of mind with consumers this year.

“With the pandemic continuing to be an ongoing presence and consumers being more keenly aware of their health and wellness, shoppers are more interested in where their food is coming from and will be looking for high-quality meat products raised and processed in the U.S. on farms that care about the humane treatment of their animals,” says Mel Coleman, Jr., vice president of Coleman Natural Foods, based in Westminster, Colo. “If consumers spend the extra dollar, they want to spend it for a reason.”

More processors today, including Coleman Natural Foods, are requiring farmers to raise their livestock 100% crate free in both gestation and farrowing, to result in a healthier, stronger animal.

“We believe a healthier animal means better meat quality and a great tasting product for our customers,” Coleman says. “Plus we never use artificial ingredients or preservatives so consumers can feel confident they are feeding their family better.”

Coleman recently transitioned their Uncured Applewood Smoked Bacon offering to be sugar-free.

“As consumers are looking to eat cleaner and adapting diets that advocate for reducing sugar, this product can meet those needs, without sacrificing the high-quality flavor we’re known for,” says Coleman.

So, in a world of change, bacon remains good for the belly with — a little — less guilt.





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One thing has become clear as businesses start to recover from the impacts of the COVID-19 pandemic: Our industries have missed attending in-person meetings and events and are eager to get back to business. Companies that supply products and services to our industries have taken advantage of the opportunity to develop market-ready innovations to address the needs brought forth by new and different challenges in delivering products to meet changing consumer demands for feeding their families. After more than 16 months of conferences and trade shows being canceled, postponed or moved to a virtual platform, face-to-face events are returning. The consensus is that we all have missed being with our customers, suppliers and colleagues.

The International Production & Processing Expo (IPPE) is the only annual Expo of its kind showcasing the latest technology, equipment, supplies and services used in the production and processing of poultry, meat, eggs and animal food. IPPE will be returning to Atlanta's Georgia World Congress Center from Jan. 25 through 27, 2022, with a focus on reconnecting you with buyers and sellers, trends, innovations, technologies, solutions, education, networking and more.

To provide for a safe return, IPPE is monitoring the changing protocols based on the Centers for Disease Control and Prevention (CDC) guidelines and will follow state and local government requirements regarding the COVID-19 pandemic. Additionally, the Georgia World Congress Center is the first convention center to achieve GBAC STAR accreditation for implementing an approved approach to cleaning, disinfecting and infection prevention in their facility. We will continue to provide everyone with more information about the event and our safety protocols as we get closer to the Expo. We encourage all IPPE participants to receive vaccinations to further reduce the potential for the spread of infection.

“THE INTERNATIONAL PRODUCTION & PROCESSING EXPO (IPPE) IS THE ONLY ANNUAL EXPO OF ITS KIND SHOWCASING THE LATEST TECHNOLOGY, EQUIPMENT, SUPPLIES AND SERVICES USED IN THE PRODUCTION AND PROCESSING OF POULTRY, MEAT, EGGS AND ANIMAL FOOD.”

The 2022 IPPE will feature the following:

- More than 1,000 exhibitors covering more than 500,000 square feet. Exhibitors will showcase products and services for meat and poultry processing and packaging in Building C and B/C. Animal feed ingredients and equipment, genetics, incubation, animal health, live production, and egg processing and production exhibits will be in Building B.
- TECHTalk theaters on the Expo floor in both Buildings B and C will be the stage for exhibitors to present technical talks on a variety of topics, from sustainability to process efficiencies to technology, that are sure to help your business.
- Innovation Station / New Product Showcase in the B/C Hall offers opportunities to learn about new products and services that suppliers have developed to provide solutions for your business.
- Fee-based and free education programs will include world-class thought leaders discussing industry trends, timely topics and industry updates. Look for an updated list of programs on the IPPE website.
- A welcome reception on the show floor at the end of the opening day of IPPE will offer an opportunity to network and rekindle business relationships with industry leaders from around the globe.

Visit www.ippexpo.org for more information and watch for updates and links directly to attendee registration and housing beginning Oct. 4. The organizing sponsors of IPPE – the U.S. Poultry & Egg Association, American Feed Industry Association and North American Meat Institute – look forward to seeing you in Atlanta and reconnecting you with the entire industry.

REDUCING PATHOGENIC BACTERIA FROM ANIMALS DURING THE HARVESTING PROCESS

BY ANTHONY W. KOTULA, PH.D., USDA RETIRED;
KATHRYN L. KOTULA, PH.D., INVESTIGATIVE FOOD
SCIENCES, AND H. RUSSELL CROSS, PH.D., TEXAS A&M



In 1987, the Meat Science Research Laboratory, Agricultural Research Service of the United States Department of Agriculture, prepared an Israel – United States Binational Industrial Research and Development (BIRD) Foundation funding request to reduce the presence of pathogenic bacteria such as *Salmonella* on poultry and to more readily remove feathers during processing. The U.S. Department of Agriculture (USDA) was to develop a procedure to reduce *Salmonella* and other pathogenic bacteria, and scientists from Israel were to improve feather removal. *Salmonella* bacteria are of concern not only on poultry but all slaughter animals. The proposal was not funded, but the problem remains today.

Dan Flynn, of *Food Safety News*, reported in 2014 that 19% of poultry and 12% of beef are implicated in foodborne disease outbreaks. Flynn listed 15 pathogens by the Economic Research Service of the USDA study with a mean figure for the problem they represent.

Salmonella (nontyphoidal) is listed as No. 1, representing an economic burden of \$3.7 billion. The second highest pathogen of economic impact listed is *Toxoplasma gondii*. It is a parasite that according to the U.S. Centers for Disease Control and Prevention (CDC) presently exists in 40 million people in the United States. We are also interested in addressing that problem by finding funding for the necessary research to eradicate *Toxoplasma gondii*, a topic for another day. When the other 13 pathogens are included, the economic burden increases to \$12.3 billion.

The first two authors of this article no longer have the laboratory facilities and funding to complete the original research to reduce *Salmonella* and other pathogenic bacteria from poultry, beef and other food animals. However, the authors believe the subject matter as described below is sufficiently important that funding sources exist, for example through USDA's National Institute of Food and Agriculture (NIFA) or Agriculture and Food Research Initiative (AFRI) grants to land grant universities and other entities equipped to conduct such research.

In this article we will outline a research procedure to reduce *Salmonella* and other pathogenic bacteria from poultry, beef and other slaughter animals thus providing the incentive for scientists to develop research procedures in their laboratories and ultimately within the meat and poultry industries. There will be no patents because this procedure will have been published in *The National Provisioner*. By publishing in *The National Provisioner*, we encourage industry and food scientists to determine the exact conditions for their situations of this potential method for controlling pathogenic bacteria on slaughter animals and poultry.

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PROCEDURE

The proposed method of reducing pathogenic bacteria from fecal material on carcasses is based on closing the rectal sphincter by causing a complete tetanus of those sphincter muscles. Our review of the literature found complete tetanus (and biofeedback) being utilized for humans with rectal incontinence after intersphincteric resection surgery and animals (dogs, cats, rats, etc.) used as models for human medicine. There was nothing found in the literature about tetanus of the rectal sphincter muscle in slaughter animals.

The important factor is that animals defecate upon death. Pathogenic microorganisms found in fecal material are distributed onto the carcass, into scald water for chickens and hogs and into the air sacs of poultry. When tetanus is applied to the sphincter muscles, fecal material that may contain organisms of concern are retained within the gastrointestinal tract for an adequate time to allow evisceration.

Because poultry and hogs are briefly scalded to improve the removal of feathers and hair, respectively, effective prevention of fecal escape through rectal sphincter closure would prevent contamination of the scald water except from any fecal material that was on the feathers or hide prior to submersion. Similarly, only fecal material on the hides and feet of other livestock would be available for contamination.

We claim this procedure can retain fecal material within the lower gastrointestinal tract of all slaughter animals and poultry thus reduce this source of potential microbial contamination.

ELECTRICAL STIMULATION AS AN EXAMPLE

When author A.W. Kotula was studying for his Ph.D., he was fascinated with “complete tetanus” of muscles in his Experimental Physiology course. He learned from the *The Textbook of Physiology*, by Tuttle and Schottelius (1961), that repeated stimuli of a muscle can cause the muscle to no longer react to the stimulus because the energy applied to the muscle has been dissipated and the muscle is in complete tetanus. Tuttle and Schottelius reported that when adequate stimuli are applied 1/30 to 1/50 per second, each will elicit a response. When the second stimulus happens within 0.003 seconds after the first, no response occurs because the energy from the previous stimuli has not been replaced.

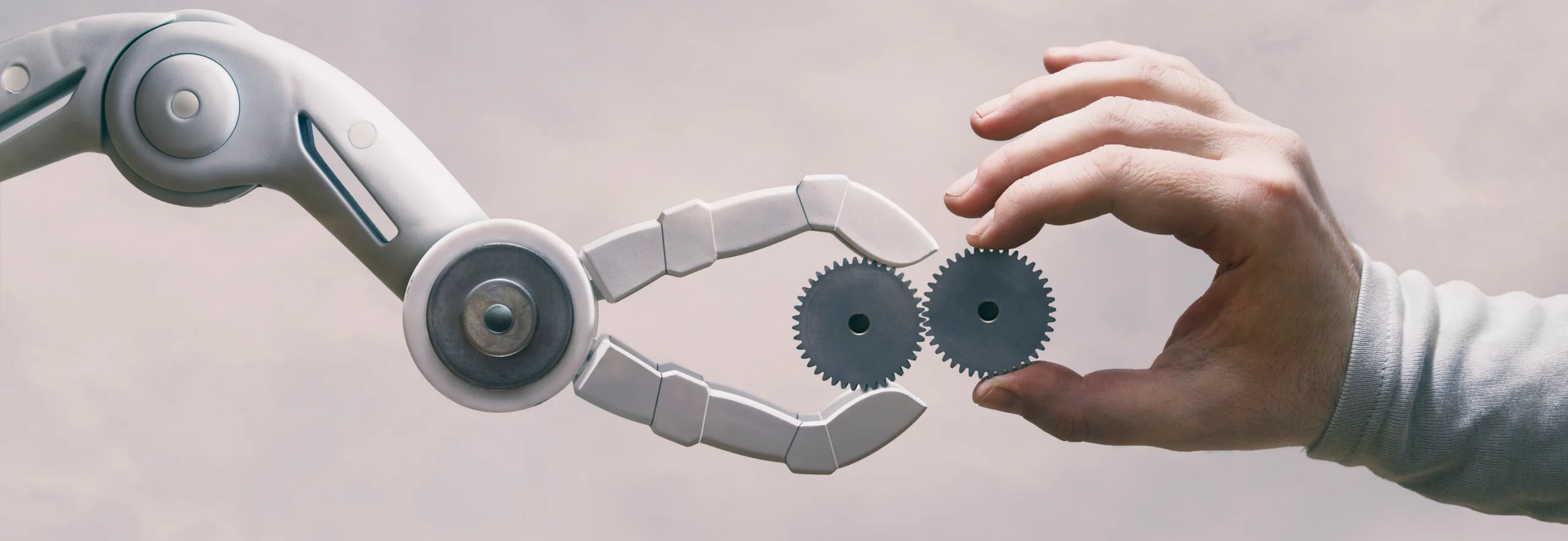
Out of curiosity, Kotula had technician Bud Rough stimulate the rectal sphincter muscle of each of five chickens in our abattoir at slaughter (USDA, Beltsville). Rough then excised the rectal sphincter muscle and adhering lower gastrointestinal tract. I then suspended the sphincter and lower GI tract and added water to about 8 inches. The sphincter remained closed and held the water about 20 or 30 minutes (yes, minutes), until I determined that was adequate time to allow for the evisceration of the chicken. This informal evaluation was adequate to use complete tetanus for a research project with potential funding from the bird projects with Israeli scientists.

Besides electricity, tetanus of the rectal sphincter muscle in slaughter animals could be potentially achieved by focused application of other means known to cause muscle contractions such as heat (heat shortening); cold (cold shortening); injecting the muscle with selected minerals or chemicals; by microwave, lasers or other forms of energy. Research is needed to determine the exact conditions of each treatment to cause rectal sphincter tetanus for each species.

We have demonstrated that muscles can be placed into complete tetanus by rapidly stimulating them within a short period of time without time for relaxation between successive contractions. Therefore, we maintain that the rectal sphincter muscles of animals can be closed to retain fecal material by creating a complete tetanus in that muscle. When fecal material may well contain pathogenic bacteria, the complete tetanus procedure reduces the dissemination of potential bacteria outside the carcass.

Because complete tetanus can be produced on the rectal sphincter muscle of other slaughter animals, this procedure should be effective for use on all slaughter animals.

The final result is that commercially implementing this process would be an extremely useful tool in improving food safety in the poultry and meat industries. This research needs to become a priority.



ARTIFICIAL INTELLIGENCE WILL NOT SOLVE YOUR SPARE PARTS PROBLEMS

BY PHILLIP SLATER

What do chat bots, self-driving cars and predictive maintenance have in common?

They each involve the application of artificial intelligence (AI). In recent years, the development of AI has become a hot topic. It seems that AI is being talked up at every conference, online event and even in industry magazines.

Vendors of equipment and software have also used the term to describe their offerings for some years now. Some might say perhaps a little too loosely.

And why wouldn't we be keen to adopt AI?

The simulation of human thinking and the mimicking of actions in machines that can produce seemingly far more accurate results in a fraction of the time, seems like an operational nirvana. There's also the fact that they operate 24/7 without sleep, holidays or pay.

But is it really everything that it is made out to be? Perhaps not yet.

AI is often not much more than just a fancy algorithm. Sure, with more computing power it can handle more data in a shorter period and solve problems that would take a person much, much longer. But it nonetheless relies on the thinking and intelligence of the people who designed it. And that may be an algorithm developed decades ago.

Does that mean it won't be useful? Of course not.

The connectivity created by the 'internet of things' (IoT) and Big Data enables a level of decision support analysis not imaginable early in my career.

But before we get all excited about the extension of this to AI, we do need to recognize three main problems.

First, how can we be sure about how to connect the dots?

The successful use of AI requires an understanding of cause and effect before an event happens. A self-driving car needs to be programmed how to respond, based on the data collected from its sensors, just as people need to learn how to drive and respond to what they see and hear when in control of a vehicle.

This means that what we call AI is limited by our existing understanding. It doesn't (yet) have a conscious ability to learn.

This might be fine for ensuring safety with the future application of self-driving cars. But with equipment maintenance, and by extension, spare parts decision-making, there are too many unknowns.

“
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Therefore, AI won't in the near term really improve the ability to predict parts failures. AI applications will be able to tell you to replace parts but won't really be predicting failure. As most parts failures are not because of wear or age, there is a complexity here that we don't yet understand. Without that understanding we cannot program the algorithm.

Second, with spare parts management, IoT, Big Data and AI are not enough to ensure good outcomes because those outcomes rely on much more than data. The key links here are people and process.

In practice, much spare parts decision-making can be described as emotional rather than rational. That is, people know they don't know all that they need to know. So they decide to stock items or stock more of an item 'just in case.' They over-stock on spare parts because they want to avoid being the person who let the team down and caused excessive downtime. This happens even if the probability of the additional parts being required is vanishingly small to non-existent.

Regarding process, the issue isn't just is it defined, but is it followed? A simple example of this is when people override the stock level suggestions from their software. In my experience this happens primarily because people don't trust the results.

Lastly, there is the old maxim of garbage in, garbage out.

This expression was coined in the 1950s but is still applicable. With the vast amount of data being collected through the IoT it is perhaps even more relevant.

In relation to spare parts management, consider the impact of the following: the direct procurement of parts that don't go through the data collection required for AI; the hoarding of parts in workshops; requisitioning more than required; being slow to return those parts to the storeroom; poorly programmed operational data collection; not knowing what data to collect; how to weigh the inputs; and even the opportunistic replacement of a still-functioning machine part during a maintenance shutdown created for other work. These factors, and I am sure many more, lead to poor or inaccurate data.

Ultimately, no matter how potentially useful a tool may be, the output can only be as accurate as the data entered into it.

Through engineering and design development, equipment reliability continues to improve. This in theory reduces the demand for spare parts. Simultaneously, data connectivity and automation continue to improve the efficiency of the procurement and logistics associated with spare parts management. However, as the volume of stock held, and consequently the value of working capital tied up in spare parts, continues to rely on factors that are unreliable, we cannot reasonably expect AI to solve our spare parts management problems in the near term.



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BRIGHT HOLIDAYS

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EVEN WITH REDUCED HOLIDAY GATHERINGS, CONSUMERS STILL ARE SPLURGING ON CENTER-OF-THE-PLATE PROTEINS

BY ELIZABETH FUHRMAN
CONTRIBUTING WRITER

In 2020, Americans made a strong shift toward non-traditional and smaller fall and winter holiday meals simply because of smaller group sizes and less traveling due to the pandemic. Chicago-based IRI reports more pork, seafood and other less traditional options were on the plate. In some cases, consumers even spent more money on these holiday meals even though they were smaller. For example, many consumers were plating cuts of prime beef.

“People splurged a little bit more and took a chance on cooking some of the finer cuts and had a great time doing it,” explains Chris DuBois, IRI’s senior vice president. “Cooking behaviors changed, and gatherings changed.”

Due to uncertainty caused by the pandemic, it is hard to predict how 2021 meat, poultry and seafood holiday sales will compare to 2019. What IRI’s latest data has shown is that about a quarter of people are still hesitant to go to restaurants and other public gatherings. While those numbers could oscillate slightly higher or lower during the next few months, DuBois says, it still suggests that holiday gatherings won’t be quite as big as pre-pandemic. He would expect holiday gatherings to be bigger than 2020, though.

That being said, last year saw large demand for smaller turkeys. While DuBois believes the industry will see a shift back to average sized turkeys, he doesn’t believe the demand for larger turkeys will return.

Last year, Heidi Diestel, fourth generation turkey farmer at Diestel Family Ranch in Sonora, Calif., also says demand was huge for smaller turkeys given the reduced gathering size and the fact that many people were hosting for the first time. “While I think smaller turkeys, like Diestel’s petite birds, will continue to be popular due to their more manageable size and appeal for first-time hosts, I definitely think we’ll see more larger turkey orders than we did last year as many people are ready to enjoy a more traditional Thanksgiving with extended family gathered together,” she explains.

While a traditional turkey will always have a place at the holiday table, Diestel has seen growing interest in convenient turkey options that have minimal prep. In turn, the company offers several products that meet this growing consumer need, including Diestel’s Holiday Cook-in-Bag Turkey Breast Roast, which comes pre-seasoned, lightly brined and ready to roast in its own bag for 1.5 hours. Additionally, it offers a lineup of oven roasted and smoked turkeys that are fully cooked.

On the less traditional side and still a smaller category, fresh seafood is performing really well with strong distribution, IRI reports.

“DUE TO UNCERTAINTY CAUSED BY THE PANDEMIC, IT IS HARD TO PREDICT HOW 2021 MEAT, POULTRY AND SEAFOOD HOLIDAY SALES WILL COMPARE TO 2019.”

“I would expect seafood to have a decent Thanksgiving oddly enough, and really have a great presence around Christmas and New Year’s,” DuBois says. “I would expect it to be better than 2020.”

Along with seafood, DuBois expects high-end prime beef cuts to do well, which was up more than 50 percent last year. While it makes up a small part of the market, retailers who had prime beef in their meat cases grew 10 percent faster than retailers who didn’t, DuBois says. Additionally, turkey should see a large return. “In other words, this should be a very big year Thanksgiving wise,” he says.

DuBois also expects to see more interest in exotic meats, like bison, and more experimentation around high-end seafood like lobster, tuna and swordfish.

“Last year, we found that 30 percent of consumers really expanded their cooking knowledge and experience,” DuBois said. “They bought a lot more cuts than the U.S. average, and a lot more than the year before. That 30 percent drove 97 percent of all the growth in the meat case last year. That’s almost \$20 billion of incremental growth.”

Diestel also expects specialty poultry products will be popular this year, as consumers seek something out-of-the-ordinary. Products like Diestel’s Organic Heirloom Turkey, for example, are a mix of rare Auburn, Black and American Bronze turkeys dating back to the 1920s.

IRI also expects this to be a pivotal holiday season for e-commerce, with fresh foods already growing faster than center store sales, IRI reports. IRI research has found that consumers are much more loyal to brands online vs. shopping in stores. IRI also finds that online basket sizes in many cases are twice as large as the average basket size in store or bigger.

“I think e-commerce will play a huge role this year in who wins the holiday,” DuBois says. “It’s no longer about what price is your turkey at. It’s more about how easy can you make the shopping experience.”

CONSUMERS WANT **SPEEDY** FOOD PREP

MICROWAVEABLE PACKAGING HELPS PUT MEALS ON THE TABLE QUICKLY

BY HALLIE FORCINIO
CONTRIBUTING WRITER

People may be cooking more in instant pots and air fryers, but the microwave remains the kitchen appliance most people use every day — probably multiple times each day. With the strong demand for convenience, consumers love microwaveable entrees and side dishes. In fact, the global market for microwaveable food is projected to expand at a compound annual growth rate of 4.8 percent through 2026 due to demand for ready-to-eat food, according to a report from EMR.

As a result, meat, poultry and seafood companies are constantly developing easy-prep products and looking for packaging that will perform in the microwave. The EMR report divides products into three categories: frozen, chilled and shelf-stable with chilled being the largest and shelf-stable the smallest.

In the shelf-stable category, StarKist presents its *StarKist Creations Microwavables* in a microwaveable pouch. The line of shelf-stable seasoned tuna with vegetables and grains can be eaten at room temperature or microwaved for 30 seconds. Flavors include Spicy Rice & Beans, Tomato Basil, Latin Citrus and Thai Green Curry.

“WITH BOTH CONSUMERS AND BRAND OWNERS LOOKING FOR MORE SUSTAINABLE PRODUCTS, A LOT OF EFFORT IS BEING PUT INTO DEVELOPING ALTERNATIVES TO PLASTIC.”

In the frozen category, Aqua Star launched two product lines in 2020. Designed as a quick meal solution, the *Aqua Star MicroSteam Seafood Bowls* are housed in a proprietary film package that locks in steam to cook food evenly with absolutely no fishy odor.

“We’ve created a product line that people can stock up on and have on hand when working from home with a house full of family,” says Dirk Leuenberger, president and CEO of Aqua Star. “At the same time, we wanted something that gave people a bit of joy and comfort, as well as a healthy meal.”

Combining premium ingredients, delicious flavors and wholesome recipes, *MicroSteam Seafood Bowls* go from the freezer to the microwave to the table in five minutes or less. Described as restaurant-quality, the 8-ounce meals combine sustainable shrimp, pollock or salmon certified by Best Aquaculture Practices or the Marine Stewardship Council combined with vegetables and spices and served over pasta, rice or grits. The six flavors include Shrimp Scampi, Shrimp Ramen, Shrimp Pad Thai, Shrimp & Grits, Salmon Teriyaki and Sesame Ginger Wild Alaskan Pollock.

Aqua Star’s other 2020 product introduction, *MicroSteam Seafood Meals*, features a microwaveable skin-packed vacuum film package that expands as the food heats, locking in steam so each frozen meal is ready to eat in six minutes. This product line also includes certified seafood plus ingredients such as mafalda pasta, sriracha, red quinoa and yellow carrots.



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Leuenberger says the meals “offer no-stress preparation, high-quality ingredients and take the guesswork out of figuring out what to eat—and [answer] the proverbial question, “how to cook seafood.”” Flavors include BBQ Sriracha Wild Salmon, Lemon Herb Wild Cod, Roasted Garlic Salmon, Cajun-Style Tilapia and White Wine Shrimp. The vacuum skin-pack features environmentally friendly trays that are recyclable and produced using less energy and material.

With both consumers and brand owners looking for more sustainable products, a lot of effort is being put into developing alternatives to plastic. As a result, renewable plant-based designs are finding an audience. One wood fiber-based material eliminates polyethylene terephthalate and contains such a small amount of polypropylene that it can be recycled in most existing carton packaging recycling streams. The lightweight paperboard lowers the carbon footprint of each tray. When a biodegradable coating is used instead of the PP, the trays are compostable in industrial composting operations.

Another fiber-based alternative to plastic trays features a removable liner, one-piece continuous sealing flange and high-quality printing. Hermetic sealing provides shelf life equivalent to conventional plastic trays. The dual-ovenable trays can be shipped formed or flat. When shipped flat, trays result in lower transportation emissions compared with formed plastic trays. After cooking, it’s easy to remove the liner and recycle the tray in the paper/corrugated waste stream.

WORKER PROTECTION CAN BE PROBLEMATIC

GETTING EMPLOYEES TO PROPERLY WEAR AND HANDLE PROTECTIVE GEAR IN MEAT AND POULTRY PROCESSING FACILITIES IS NO SIMPLE TASK.

BY RICHARD MITCHELL

The proper use of personal protective equipment (PPE) by meat and poultry processing plant workers is essential for safeguarding both the employees and products.

But getting people to follow usage procedures can be challenging. Factors such as discomfort, language barriers and a lack of understanding of the importance of equipment puts workers at risk, analysts say.

It is vital for processors to evaluate employees and their tasks in order to identify the appropriate gear, says Jen Allen, vice president of operations and engineering for Allen Safety, an Orlando, Fla.-based global safety and process improvement company.

“Thoughtful and detailed risk and PPE job task assessment are key for determining proper PPE for employees,” Allen says, noting that the use of different types of PPE is not always better. “There are jobs when more PPE or inappropriately selected PPE can actually lead to increased risk of injury,” Allen says. Too much, bulky or incorrectly sized PPE, for instance, can cause unnatural movements that put employees at risk for ergonomic stressors, particularly those performing repetitive motions, including working with knives during deboning or evisceration.

PPE options include aprons and gloves that are single use or made for frequent sanitizing; protective footwear with steel toes, non-slip soles and covers; full face guards; head-protection gear including hard hats and bump caps; and hairnets to cover head and facial hair, says Elaine Vanier, agriculture programs technical manager for NSF International, an Ann Arbor, Mich.-based food-safety auditing firm and standards developer.

It is extremely important, meanwhile, for operators to consider comfort and ergonomics when selecting PPE for workers in high-repetition jobs and areas with temperature extremes, Allen says.

Processors also should evaluate employee exposure to biological hazards such as blood and feces and diseases such as *Campylobacter* when performing job task risk analysis, she says. Processors also should pay attention to risks when workers change or adjust PPE throughout the day.

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Measures that can lower employee exposure to biological hazards include using proper wound coverings over broken skin; PPE that fits well, to eliminate continual adjustment; and eye, nose and mouth protection in splash or spray areas, Allen says.

Processors can better ensure that plant workers properly use PPE by including the employees in the decision-making process, says Matt Spencer, director of human resources and safety programs for the Tucker, Ga.-based U.S. Poultry & Egg Association. He notes, for instance, that people are most likely to use PPE properly when they can test and recommend the equipment that has the best fit and comfort.

Employees who feel PPE is uncomfortable may ignore standard operating procedures, Vanier says. “This can include workers adjusting PPE such as face masks and shields when working, which can both increase the risk of infection to the workers as well as the risk of contamination to the product from microorganisms that may have been transferred to their hands during adjustments,” she says.

In addition, PPE wearers must take care to not contaminate themselves in the removal, disposal or decontamination of the equipment, Vanier says. “Workers should also be trained in proper sequencing and handling of the apparel,” she says.

Ensuring PPE is personalized with proper sizing and a focus on comfort goes “a long way in increasing the likelihood that employees will wear the equipment as designed,” Allen says. She adds, however, “nothing takes the place of continuous employee coaching in real time in work areas to instill and maintain a culture where proper PPE use becomes second nature.”

PPE WEARERS MUST TAKE CARE TO NOT CONTAMINATE THEMSELVES IN THE REMOVAL, DISPOSAL OR DECONTAMINATION OF THE EQUIPMENT.

HOW TO OVERCOME THE LANGUAGE BARRIER

Effective instruction can be difficult if there are problems in communicating with immigrant workers in meat and poultry plants, analysts say. It is important for operators to educate employees in their native languages for greater understanding, Spencer says.

“Supervisors must monitor the comprehension of training and the constant communication with the workforce,” he says. “The development of non-language-based training focusing on crucial safety functions is helpful.”

Negligence by many processors in reviewing an employee’s full scope of responsibilities when analyzing PPE needs can further compromise worker safety, Allen says. “Current evaluations and assessments generally only evaluate one or two jobs that an employee does without considering less frequent jobs that may only be performed weekly or monthly,” she says, adding that operators also should consider the risks of each individual task when issuing PPE instead of just the job title.

Still, it can be difficult for operators to gauge the rate of compliance with PPE measures as some workers face physical limitations in using the PPE properly, Vanier says. Employees with certain health conditions, for instance, may be unable to wear face coverings as it can impede breathing, she says.

Because COVID-19 is still a threat to workers, it also is imperative for processors to distribute the pertinent PPE to better protect against the threat, analysts say.

“Single-use PPE, such as face masks and face shields, is one of the most effective types of PPE to reduce the risk of COVID-19 infection amongst workers,” Vanier says, adding that operators should ensure that enough PPE is always available, including replacements for used items.



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KEEPING IT TOGETHER

BINDERS AND EMULSIFIERS ARE ESSENTIAL FOR ENHANCING TASTE, APPEARANCE AND STABILITY IN MEAT PRODUCTS, BUT FINDING THE RIGHT COMBINATION CAN BE TRICKY.

BY RICHARD MITCHELL

Ensuring quality in the broad spectrum of meat and poultry products is no easy task.

The animal's genetic traits, how it was raised and what it was fed are all factors in finding the right binder/emulsifier recipe.

Get the ingredients wrong, and the end product can be substandard in terms of yields, texture, juiciness and cost, says Wesley Osburn, associate professor of animal science and meat processing in the Department of Animal Science at Texas A&M University, in College Station.

Binders thicken and improve the texture of proteins, while emulsifiers prevent separation of product components to ensure consistency. Problems occur when processors mistakenly think that all binders or emulsifiers function in the same manner, "when in fact they are manufactured to provide different properties based on the product and/or, the process," Osburn says.

Not using ingredients as directed by manufacturers also will impact product quality, he says, adding that the most appropriate binders or emulsifiers are dependent on the product's unique specifications. A large-diameter emulsion-type product, for instance, may require both a binder and emulsifier to ensure that the meat proteins can entrap fat and added water and then retain the elements during thermal processing and chilling, Osburn notes.

In determining the most appropriate binders for their selections, meat and poultry processors should consider such factors as whether the item is injected, tumbled or ground formed; if it is typically served hot or cold; and whether the product needs a firm bite or is softer and spongier, says Neshia Zalesny, technical consultant at IMR International, a San Diego-based market research and technical consulting firm and publisher of the Quarterly Review of Food Hydrocolloids.

AN INVESTMENT IN GOOD MIXING EQUIPMENT WILL HELP FOSTER HYDRATION BY ENSURING ALL PROTEINS HAVE THE NECESSARY INGREDIENTS, WHILE PROPER TRAINING OF OPERATORS WILL ENABLE PROCESSORS TO RECOGNIZE PROPERLY HYDRATED BRINE.

SO MANY POSSIBILITIES

Carrageenan, for example, is effective for binding injected or tumbled products, Zalesny says, noting that it is especially useful in cold cuts by increasing sliceability in deli meats and giving a firm bite to the finished product. A mixture of phosphate and starch is commonly injected into whole-muscle products, particularly in ready-to-eat rotisserie selections, she says. "These brine systems help the product retain moisture and deliver flavor."

Brine choices for softer bites in ground and formed products include phosphates, which can help retain flavor in reheated meat, and starches that support moisture retention, she says. Citrus and oat fiber are cleaner label alternative for moisture retention, Zalesny adds.

"These are especially useful in frozen meatballs or sausages where the product may be heated multiple times prior to consumption," she says, adding that fibers "can help keep that meatball from becoming rubbery." Most of the newer binding elements involve clean-label substances for texture, preservation and sodium reduction, she says.

Injecting the appropriate brine in the most effective manner, meanwhile, is perhaps the major binding challenge facing meat and poultry processors, Zalesny says. "Proper hydration is key," she notes. "An investment in good mixing equipment will help foster hydration by ensuring all proteins have the necessary ingredients, while proper training of operators will enable processors to recognize properly hydrated brine."

It is important, however, for processors to first ensure they are getting the most out of the raw material before determining whether a binder or emulsifier is necessary, Osburn says. "Meat proteins are very functional as they can bind water, fat and protein if activated by the addition of salt and, or, phosphates," he says. "If the product is not meeting standards with respect to functionality, then binders or emulsifiers should be considered. But binders and emulsifiers are an added expense so the benefits must outweigh the cost of using these additives."

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Operators also need to "overcome greediness" by not including excessive amounts of binders and emulsifiers in meat and poultry, says Norman Marriott, emeritus professor in the College of Agriculture and Life Sciences at Virginia Polytechnic Institute and State University (Virginia Tech), in Blacksburg. Replacing meat with unnecessary binders and emulsifiers can potentially cut processor costs by enabling operators to make products at a particular weight while reducing the amount of higher-priced meat in the formulation, he says.

"Binders can bind more water to the product, which is cheaper than the raw materials," Marriott says. "But you can end up with an inferior product." He offers examples: Too much phosphate can result in a salty taste or flavor degradation, while excessive soy protein can generate a soybean taste.

Not incorporating enough of the substances also may affect quality. Marriott says underutilizing binders can make meat more difficult to slice or cause it to crumble or break apart. A shortage of emulsifiers, meanwhile, can prevent the encapsulation of fat in frankfurters and other processed meats, "resulting in an inferior or unacceptable selection," he says.

Processors can pinpoint the most effective types and quantities of binders and emulsifiers to incorporate in specific products through trial and error and by consulting with substance suppliers, Marriott says. Running test batches of product prior to production also is critical for assessing the ability of a binder or emulsifier to provide the necessary functionality or attributes, Osburn says.

SUSTAINABLE CHANGES

COME TO PORTIONED FRESH MEAT AND POULTRY



BY ELIZABETH FUHRMAN
CONTRIBUTING WRITER

Research shows consumers are looking for environmentally friendly packaging. However, they also are used to seeing a specific type of packaging for their portioned fresh meat and poultry, says Eva Almenar, a professor in the School of Packaging at Michigan State University, in East Lansing.

For many years, the industry has been shifting away from polystyrene (PS) and polyvinyl chloride (PVC) trays wrapped in film, but with portioned fresh meat and poultry being an established category, packaging changes haven't been readily received by consumers. Instead, the fresh meat and poultry areas showing the most packaging innovation is for products aiming to reach niche consumers, such as those seeking organic and grass-fed proteins.

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In turn, new fresh meat and poultry portioned products aren't trending toward using trays, gases and film anymore, but instead using vacuum packaging and vacuum skin packaging. Processors still need to use plastic packaging to protect the product and extend shelf life, but are using paper wraps and paper cards as backing to communicate their product's story and information, Almenar says. These paper options often allow processors to communicate more than the previous printable areas on the plastic. For example, Farmer Focus Organic and Free Range Boneless Skinless Thin Sliced Chicken Breast from Shenandoah Valley Organic, Harrisonburg, Va., features the chicken in vacuum packaging with a paper wrap including product, company and farmer information around the wrap on both sides.

"This is like a new fashion for fresh meats that you can interact with the consumer a lot," Almenar says. "You can tell a lot. You can do that with printing, and you can see the product perfectly. It looks clean, it looks fresh, it looks good and it looks appealing."

Another example, Pre 100 percent Top Sirloin Steak — 100 percent Grass Fed and Finished Beef from Pre Brands, Chicago, features vacuum packaging attached to cardboard backing. The product's vacuum packaging lifts from the informational cardboard backing, allowing the consumer to see completely around the product. Additionally, the vacuum package tears from the cardboard making it easier to recycle the cardboard and the flexible vacuum package easier to store if the consumer desires. Paper wraps and backing also look more sustainable to consumers, Almenar says.

WHILE VACUUM PACKAGING AND VACUUM SKIN PACKAGING WITH PAPER CURRENTLY IS TYPICALLY FOUND ON MORE EXPENSIVE FRESH MEAT AND POULTRY CUTS, THE PACKAGING ISN'T ANY MORE EXPENSIVE THAN A TRADITIONAL TRAY AND USES LESS PLASTIC AND SAVES THE EXPENSE OF GASES.

While vacuum packaging and vacuum skin packaging with paper currently is typically found on more expensive fresh meat and poultry cuts, the packaging isn't any more expensive than a traditional tray and uses less plastic and saves the expense of gases. Vacuum packaging also is flexible, which takes away the space needed for air and for each package during transportation. Flexible packaging also brings advantages of speed during production and sustainability with the ratio of packaging volume to food volume being less and less air being transported during shipping of packaging materials (tray vs. film) prior to packaging the product, Almenar says.

Along with the category continuing to make sustainable changes to its packaging, Almenar also expects e-commerce will have an effect on packaging. With e-commerce, consumers have bought the product before they have seen the packaging unlike the necessity of packaging for selling products in store. "In that sense, we are saving a lot of packaging in e-commerce because the package is not going to sell the product," Almenar says. "The product has been sold already before when the consumer is clicking."

With the growth of e-commerce, Almenar expects to see more portion-controlled packaging that is more flexible, requires less plastic, offers extended shelf life and isn't easily damaged. Rigid plastic trays wrapped in film will not be necessary in e-commerce, nor will additional packaging materials needed to transport them, she says.

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COLLABORATION HOLDS THE KEY TO THE NEXT NEW THING IN FRESH PROTEIN PACKAGING

BY MEGAN FLETCHER AND BRIAN GUILLAUME, OSSID

Many food manufacturers and retailers are searching for the next new thing in fresh protein packaging – a quest that is often easier said than done. Any new design competes with the versatile tray overwrap style, which for decades has generally been regarded as the most cost-effective way to package a wide variety of meats. While we're all comfortable with the reliability of tray overwrap, it traditionally lacked some of the selling points of recyclability and environmental stewardship that many consumers are looking for in their brands today.

In response, the packaging industry is placing added emphasis on research, development and experimenting with new materials and films that together bring more green attributes to fresh protein packaging applications. These efforts are already yielding promising results, and leading to greater cooperation between OEM manufacturers and their customers to develop customized packaging solutions for specific meat-based applications.

CURRENT STATE OF AFFAIRS

This push on behalf of packaging OEMs to look for different protein packaging options has been growing for some time. The challenge we face as an industry is staying ahead of trends by producing packaging options that meet our customers' demands. Doing this successfully means constantly evaluating different materials and packaging styles, listening to retailers, and anticipating consumer buying trends – these factors and more all need to be considered in the development process.

Poultry and meat manufacturers and retailers face their own challenges when it comes to packaging alternatives, and that's balancing the desire for something new versus the cost to make that happen. Tray overwrap is regarded as the most cost-effective packaging option. But there's a drive from many to rid Styrofoam from protein packaging, yet do so while keeping costs stable. That can be tricky to do because when you start making packaging with more green materials, it's likely going to cost more green.

There's also a push from many OEMs to offer a much wider range of packaging options with materials that are recyclable, renewable and reusable as standard offerings by 2025. That may sound great, but will municipalities be set up by that time to accept the demand for handling these materials?

The bottom line is that there are numerous factors that come into play in determining the future of protein packaging. Of course, the industry as a whole wants to become more environmentally sound with their packaging. And we feel that's going to happen soon. It may be a commitment from a major food manufacturer or retailer with customers demanding a change that will propel these companies to throw their full support behind sustainable packaging. Demands like these may just be the catalyst needed to drive this change across the industry.

NEW SOLUTIONS

Tray overwrap has proven itself through the years to be a reliable, inexpensive packaging option for fresh protein. It's popular with manufacturers and retailers, and consumers are familiar with the style. But as new, greener packaging designs emerge, does that mean you have to get rid of your tray overwrap equipment and buy something to keep up with the times? Not necessarily.

As R&D in sustainable packaging continues to develop, some of those new designs and materials can be run on existing tray overwrap equipment. Recyclable plastic trays have been gaining traction as an easy replacement to foam trays. Being able to repurpose perfectly working machinery is certainly a huge cost-savings to operators. While change is coming down the road, don't be panicked by thinking you have to figure out a solution to replace tray overwrap right now. It likely isn't going away anytime soon.

Nonetheless, proactive OEMs continue to work closely with food manufacturers, retailers and material suppliers to test new alternatives that will someday change the face of protein packaging. Many of these ideas have merit and warrant further testing. The key is striking a good balance between many factors, notably meeting the packaging goals of the food manufacturers and retailers, gaining acceptance of consumers and keeping costs in line. Accomplishing all three in one product, however, is the complicated part.

For example, we recently worked with a vendor that manufactures compostable trays that can run on tuck and fold and end-seal overwrap machines. While the material wasn't ideal for poultry due to the high moisture content, it did show promise when paired with recyclable film to package pork, red meat and processed (sausage) products. The cost to manufacture this type of sustainable tray/film solution is currently more expensive than a traditional foam tray option. But, as production rates of these materials grow and there is more competition to produce materials, efficiencies occur, driving prices down. So, while it may not be the most cost-effective choice right now, it does offer options to retailers looking for something compostable or recyclable to meet their sustainability goals.

Another example of new possible solutions came from a vendor wanting to produce foam trays using their corn-based foam material. They presented this material as an environmentally-responsible alternative to Polystyrene. We performed tests on the material and compared it to similar Styrofoam and plastics, and it performed fairly well. That vendor is still working through factors in determining the right market for this type of tray, but this kind of innovation is indicative of where the packaging industry is going.

GETTING STARTED

Implementing a new fresh protein package design requires thorough understanding of all the variables that are involved in your packaging line. To do that, you need to look at the whole picture. Here are some questions to ask yourself when getting started:

- What are you trying to accomplish with the change of your packaging?
- Are you open to the idea that a new solution may cost more than your current packaging?
- Are you trying to improve shelf life?
- Are you trying to improve the appeal of the product?
- Is there any sort of value-add that you're looking to place on the package or product for the consumer?
- Are you looking for a more environmentally friendly package material?
- Are you looking for a package material that's compostable and/or recyclable?

Knowing this information upfront will help define the overall scope of the project and greatly improve communication with the partnering OEM. Also, having answers to these questions in the early stages is critical because each one influences the other; if one of the answers to a question is unknown, it can sometimes dramatically change the scope of the project, and it is important to discuss before the project begins.

The trend in packaging is going green, and this push toward sustainability shows no signs of slowing. In response, the responsibility has been placed on material suppliers and OEMs to develop packaging to meet this growing demand. Success won't be achieved alone, but rather by collaborating on ideas, sharing information and working together. The next new thing in fresh protein packaging is out there waiting to be discovered...and it might not be that far away.

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MEGAN FLETCHER



BRIAN GUILLAUME





THE PRESCRIPTION FOR PROFITABILITY: HOW PREVENTIVE MAINTENANCE SAVES FOOD PROCESSORS TIME AND MONEY

BY LARRY CHURCHWELL, SEALED AIR

Today's food industry is highly competitive, and processors are challenged to protect and/or improve profit margins while operating as efficiently as possible.

A processor's ability to operate efficiently is heavily dependent on their equipment running consistently and smoothly. Automated packaging processes are one way that processors can help ensure consistency in equipment operations... and a way to stay ahead of the competition.

But along with the benefits of automation comes the need for a reliable maintenance program that will keep equipment running in top form, day in and day out.



LARRY CHURCHWELL

THE CRITICALITY OF AVOIDING DISRUPTIONS

Consistency is the key to operational efficiency. If you wait until equipment fails to repair it, you're likely losing critical production hours and risking unhappy customers.

And, you'll also risk unhappy employees who will need to work overtime, not to mention additional unplanned costs. It would cost your company in overtime payments, as these employees will have to stay late to finish the job they would have completed on time if the equipment had not failed.

By being proactive or preventing issues before they happen, food processors can win by avoiding costly downtime and improving yield rates.

Think about preventive maintenance the same way you think about maintaining your health with yearly health checkups. Being proactive with your health is a giant step toward protecting your longevity and well-being. Missed checkups may mean a missed opportunity to treat a severe illness before it becomes a serious problem.

MAINTAINING THE HEALTH OF YOUR BUSINESS

Let's further illustrate this by talking about your dental health. Flossing and brushing daily are similar to ensuring your food processing systems are cleaned every day and have the right amount of oil and grease in the correct locations.

Scheduling regular dental visits with the experts – dentists and dental hygienists – is critical for identifying potential issues and preventing much more expensive health issues from occurring later on. If too much time goes by, root canals, gum issues, or crowns may be needed. These fixes are often 5 to 20 times more expensive, and most could have been prevented had they had been caught earlier on.

The same goes for protecting the health of your business. A proactive approach to equipment maintenance means you'll prevent issues that can cost time and money. It's about preventing a catastrophic issue, which causes downtime that may seriously hurt the health of your business.

ADDING THE LABOR CONUNDRUM TO THE MIX

Labor shortages have been an ongoing challenge, and some food processors report labor turnover rates of 40 percent to as much as 100 percent per year. As the economy picks up, finding and keeping good maintenance people likely will only get worse.

Automation can help answer labor woes, but maintenance workers are hard to retain and often are not skilled at working with complex mechanical or electronic equipment like rotary chamber, bag loading, and vertical packaging machines.

Furthermore, plants don't rebuild these complex machines often enough for the maintenance team to become experts at rebuilding them. It is usually all they can do to keep the machines properly greased, the oil changed on time, and the seal bars and seal tape replaced as needed. Doing heavy-duty work is becoming too complicated and time-consuming for plants.

An outsourced maintenance program staffed by experts that have the technical know-how to service complex automated equipment can be a game-changer and will help these understaffed, inexperienced maintenance teams by doing the yearly rebuilds for the plants.

A PRESCRIPTION FOR PROFITABILITY

From keeping operating budgets in check and equipment running efficiently to increasing customer satisfaction, proactive preventive maintenance offers a number of benefits.

- **Overall cost savings** – With preventive maintenance, overtime costs are reduced due to working on a scheduled basis as opposed to a responsive basis to repair breakdowns. Additionally, the sourcing of spare parts and labor can be planned and purchased more economically in advance. Otherwise, companies end up paying a premium for emergency parts shipping, travel time and after-hours support.
- **Reduced energy costs** – Preventive maintenance enhances the efficiency of equipment and reduces energy costs by keeping it running more effectively. When equipment is not properly maintained, it uses more energy. Doing simple things like greasing moving parts or changing filters can reduce energy consumption.
- **Increased uptime** – fewer machine breakdowns means production downtime is minimized. And with the ability to schedule planned maintenance work during slower periods, there is less disruption to production schedules.
- **Look to the future** – As automation takes center stage for food processors, forward-thinking maintenance programs that use data capture and remote connectivity for optimal machine performance become even more important to stay competitive.

SAVING TIME AND MONEY WITH THE RIGHT PREVENTIVE MAINTENANCE PROGRAM

Choosing the right maintenance program for your business is key to maintaining the health of your business.

Consider a proactive preventive service plan that provides the technical support and expertise to improve the operational efficiency of your equipment. Look for features such as regularly scheduled service visits, equipment audits, and catastrophic parts coverage to help avoid unplanned expenses, increase uptime and improve yield rates.

In an advanced maintenance program, remote connectivity and data capture add another layer to help identify and address immediate issues and find opportunities for enhancement.

HOW A CLOUD-BASED MAINTENANCE PLATFORM WORKS TO IMPROVE OPERATIONAL EFFICIENCY

For example, when a machine is down, if a maintenance service plan includes a cloud-based remote connection, the maintenance team can see the alarms, look at the production history, and, in time, start predicting downtime events based on the data that is being collected. With this information, it is much easier to determine the problems, troubleshoot the issue, and call the plant with repair suggestions. This can dramatically help food processors reduce the amount of time they are down because they get remote help through a smart link to diagnose the issue more quickly.

With an eye on the future health of your business, preventive maintenance services, enhanced by remote monitoring and data capture, can increase system uptime and overall operational efficiency, giving food processors a leg up they need to stay competitive in today's environment.

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MORE THAN 1,500 EXHIBITORS WILL FILL FOUR HALLS OF THE LAS VEGAS CONVENTION CENTER THIS SEPTEMBER.

Thousands of packaging and processing professionals will gather in Las Vegas this fall, as large-scale trade shows are returning for the first time since 2019. PACK EXPO Las Vegas will return to a live event at the Las Vegas Convention Center on September 27-29.

PACK EXPO Las Vegas and the co-located Healthcare Packaging EXPO will cover all aspects of the food packaging and pharmaceutical packaging industry. The event will feature full-scale processing and packaging machinery across four halls of the convention center.

“We continuously monitor the industry, and exhibitors and attendees alike are eager to return to conducting business and experiencing new machinery, materials, technologies and solutions in-person,” says Jim Pittas, president and CEO of show producer, PMMI, The Association for Packaging and Processing Technologies. “There is no substitute for seeing technology up close, manipulating materials and containers, experiencing controls systems, speaking to multiple vendors and getting answers on the spot.”

In addition to the busy exhibit halls, free educational sessions will provide chances to grow, learn and accomplish professional goals with suppliers showcasing breakthrough technologies, best practices and case studies at the Innovation Stages. The Forum, an interactive stage encouraging open discussions with industry experts, the Reusable Packaging Stage, hosted by the Reusable Packaging Association, and the new PACK to the Future Stage are also must-visit show floor destinations to learn about the latest trends and discuss the future of the industry.

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