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JOURNAL REPORT

FOOD

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THE WALL STREET JOURNAL.

Monday, October 17, 2016 | R1

GLOBAL
FOOD
FORUM
HIGHLIGHTS
R8-12

MORINGA TREES

grow in tropical and temperate climates and produce nutrient-rich leaves year-round.

REGENERATIVE GRAZING uses cattle or bison to enrich cropland.

CONSUMER-FRIENDLY products with less sweetener may get a boost from bitterness-blocking mushrooms.

THE NEXT HOT TRENDS IN FOOD

You may not have heard of moringa or regenerative grazing yet. But there's a good chance you will before long.

NEW PLANT WATERS such as cactus water are popping up in mainstream stores.

JACKFRUIT has a meaty texture and absorbs the flavors in which it is cooked.

SPIRULINA, blue-green algae, completes the natural color palette for food makers.

BY JULIE JARGON AND ANNIE GASPARRO

N

NOT TOO FAR IN THE FUTURE, when you reach for a healthy drink, it might be full of water from a cactus. Your main course at dinner might be a pear-like fruit from Southeast Asia that does a remarkable job of imitating meat. The next candy bar your children bite into might be infused with mushrooms that help cut down on the sugar needed to sweeten the treat. And their breakfast cereal might be colored with algae instead of chemicals.

Why the wave of exotic delights? Nutrition science—and customers' rapidly changing tastes—are forcing the food business to search ever farther afield for new edibles.

Everybody knows standards change—fat was bad, for instance, until the big no-nos became carbs and gluten—and each time they do, a rash of new products appear that claim to be packed with good stuff and free of things that cause harm.

But now it's no longer enough to claim a product is simply free of something that's frowned upon. Consumers want to know that the bad ingredient hasn't been replaced with something equally bad or worse. And they want to know the story behind their food—how it was grown or raised, and whether its production and distribution was kind to the environment. The less processed and simpler the ingredients, the better. That has left food and restaurant companies rushing to clean up their labels with ingredients derived from natural sources consumers can understand and pronounce.

For a trend to go mainstream, it has to provide health benefits, be easily comprehensible, make economic sense for the manufacturer, and of course taste good, says David Garfield, food-industry consultant at AlixPartners. It's even better if the product tells a story and has third-party verification, such as a certified-organic label.

Of course, not all foods that are popular on the fringe go mainstream. Cricket bars, for instance, haven't taken off in the U.S., even though eating insects is common in 80% of the world and they are high in protein. "It will be hard to overcome

the yuck factor in the U.S.," Mr. Garfield says.

But crickets aside, food experts have identified the super-healthy foods—and concepts—that are hitting supermarket shelves, and have the potential to become the next açai berry or coconut water. Here's a closer look at them.

THE NEXT SUPERFOOD MORINGA

Move over, kale—there's a new super green. The leaves of the moringa oleifera tree, grown in Haiti, parts of Latin America and Africa, are drawing interest from trend watchers for their nutritional content. The leaves contain high levels of calcium, potassium and protein, as well as vitamins A, B, C, D and E. Because the trees can grow in both tropical and temperate climates and produce leaves year-round that can be eaten fresh, cooked or dried without losing their nutritional content, moringa is becoming an attractive additive.

Shipping fresh leaves from so far away would result in spoilage, so there currently isn't any fresh moringa commercially available in the U.S., according to Melissa Abbott, vice president of culinary insights at Hartman Group, a food consulting firm in Bellevue, Wash. So it's currently being sold as a powder and in energy shots, bars and teas at retailers including Target Corp. and Amazon. Ms. Abbott expects to see commercial plant-

ing of moringa trees in the U.S. as awareness grows.

She adds that moringa's appeal extends beyond its nutritional benefits to its "incredible narrative." Female farmers in Ghana and Haiti grow moringa as a means of supporting their families, she says. "People want to know the story behind their food, and this is a product that helps empower women."

THE NEXT BUZZWORD REGENERATIVE GRAZING

"Grass fed," once a progressive term in the food world, has become a mainstream buzzword used to attract consumers who want to eat beef that doesn't come from cows raised in feedlots. It has expanded from expensive meat sold at Whole Foods Market Inc. and steak burritos at Chipotle Mexican Grill Inc. to Chili's Grill & Bar, which recently began offering grass-fed burgers, and Annie's Mac & Cheese, which uses milk from grass-fed cows.

Now, Ms. Abbott argues, it's not enough just to know the diet animals were fed, but also to understand the impact those animals have on the environment.

There is a growing movement called regenerative agriculture, in which different farming practices are used to restore soil degraded by planting and harvesting crops. One way to regenerate the topsoil is to graze cattle or bison on land used for growing crops, because their manure

Please turn to the next page

INSIDE

The Supermarkets' Best Weapon: Produce

To counter online grocers, physical stores highlight their fruits and vegetables
R2



When Health Labels Hurt

Consumers expect to like "light" and "reduced-salt" foods less
R2

Big Bets on No Frills

Aldi, a German deep-discount grocery chain, is expanding into wealthier areas of the U.S.
R3

What's Behind the Commodities Glut

The boom-bust production cycle has expanded across the globe
R3

A Buck for Broccoli?

Paying your children to eat their fruit and veggies may create good long-term habits
R3

The Battle Against Food Deserts

A search for new solutions to many poor Americans' limited access to healthy food
R4



Not Your Father's McNuggets

Famous food products change to meet consumers' health priorities
R4

As Crop Prices Fall, Farmers Focus on the Seeds

New services collect data from their members, giving growers information about what works best
R6

A Food Empire in a Changing World

Cargill's CEO reflects on GMO food, record harvests and climate change
R6

JOURNAL REPORT | FOOD

The Supermarkets' Best Weapon: Produce

In the battle against e-tailers, physical stores are placing their bets on fruits and vegetables

BY SARAH NASSAUER

BERNIE DAVE, a regional manager for Wal-Mart Stores Inc. near Detroit, starts his weekly store visits in the backrooms of the produce departments.

Mr. Dave checks the “crisping” stations where workers keep lettuce fresh longer by washing it, cutting off the browned ends and culling any crushed leaves. It is one of several upgrades Wal-Mart is making to its produce areas—improving lighting, training staff to better care for fruits and vegetables, and putting produce in bins that mimic wood grain and aim to give the section the feel of a farmers market.

“There has been a massive improvement on fresh from where we were at,” says Mr. Dave, who started at the company managing stores nine years ago.

While Wal-Mart and other retailers, including Ahold USA and Meijer Inc., are pouring money into ramping up online sales, the grocers are also buckling down on the basics of the produce department. That’s because high-quality fruits, vegetables and other fresh foods are emerging as a physical store’s best defense against growing competition from Amazon.com Inc.

Picky about produce

Many customers decide where to shop based on the quality of the produce, and—for now—most shoppers want to pick their own ripe tomatoes or perfectly green heads of lettuce, say grocers and industry researchers. Shoppers who don’t buy groceries online most often cite the desire to pick their own produce as the reason, according to an online survey from Morgan Stanley earlier this year.

Online food and beverage sales are growing fast, up 20% since 2013, but still make up a



Bfresh stores bought branded green and wood cases to hold its produce, for a premium touch.

tiny 0.16% of the \$670 billion food and beverage market, according to Commerce Department figures. Only 4% of consumers said they purchased some produce through online grocers in the past year, a 2015 Nielsen survey found.

Produce also is often part of “fill-in” trips, those moments a shopper dashes to the store for a last-minute ingredient and might not wait for an online order. Produce itself isn’t usually a big money-maker, but it draws people to stores to buy higher-margin packaged food, apparel, electronics and other items—products customers increasingly are buying online. Even Amazon wants part of the valuable market. It plans to build small stores that sell perishable foods and allow shoppers to order shelf-stable items for same-day delivery, say people familiar with the matter.

Improving Wal-Mart’s fresh food is “a huge priority for us because it’s a big traffic driver,” says Steve Bratspies, chief merchandising officer for

Wal-Mart U.S. in a March call with investors.

Ahold USA—the U.S.-based unit of Ahold Delhaize NV and owner of Stop & Shop, Giant and Peapod, an early online grocery-delivery company in the U.S.—is investing heavily to make its supermarket produce departments more appealing, says John Ruane, senior vice president of fresh for Ahold.

Pyramids fall

Over the past two years, Ahold moved seasonal products and easy meal additions like cut vegetables to the front of its stores to make shopping faster, Mr. Ruane says. Ahold now trains employees to ask “WIBI” (Would I Buy It?) when stocking, to weed out products that are past their peak. Ahold also is adding unusual items like yucca and dragon fruit, and store workers have stopped stacking produce into neat pyramids, a costly effort that also can damage produce, Mr. Ruane says.

Ahold has also created a new brand of store called

Bfresh, a chain of smaller stores in cities meant to attract young, urban dwellers, who are “big Amazon customers,” says Paul Kneeland, lead fresh merchant for the new chain. In the two locations open so far, both in Massachusetts, produce gets more space than any other department and makes up the largest chunk of sales, Mr. Kneeland says.

Aesthetics are particularly important in the produce department because most purchases are impulsive, grocers say. “People go into the produce department with a list that says ‘fruits’ and ‘vegetables,’ versus specific products,” says Michael Castagnetto, director of fresh sourcing for Robinson Fresh, which is owned by C.H. Robinson, an Eden Prairie, Minn., logistics company that supplies produce and transports other goods to retailers including Wal-Mart.

One way to grab attention is with a “local” moniker. That has Robinson Fresh working with a wider variety of farmers, often a higher-cost way to

The In-Store Edge

Consumers are reluctant to buy produce and other fresh food online. The percent surveyed who said they had made an online purchase in these categories in the prior 12 months:

Clothing	52%
Books	43%
CDs, DVDs, Blu-Ray discs	31%
Beauty, cosmetics products	27%
Children’s toys, durables	22%
Jewelry	21%
Pet food, pet supplies	19%
Groceries (packaged food)	18%
Sporting goods	16%
Groceries (fresh food)	12%

Source: Morgan Stanley AlphaWise survey of 5,000 consumers in five countries, April-May 2016

THE WALL STREET JOURNAL

source. “The global supply chain might be easier to execute than getting 20 items from 20 places around Illinois to the same distribution center,” Mr. Castagnetto says. To control costs, the company encourages farmers to supply crops when demand is high, and ensures full trucks by adding fresh juice, yogurt and other products to delivery routes.

Even the containers that hold produce out on the store floor are getting more attention. At Midwestern supercenter chain Meijer Inc., managers found metal carts on wheels perfect for moving seasonal fruit and vegetable displays to

high traffic areas to grab attention and keep sales moving. But metal doesn’t have a “farmers market” feel, so the company is building its own versions with wooden exteriors that hide the metal frame, says Jamie Postell, director of produce for the company.

“We are working on developing an ideal display,” Mr. Postell says. “It is somewhat of an art.”

Wal-Mart has long struggled to become known for the best produce, not just low prices on bananas, onions or other staples. Greg Foran, Wal-Mart’s U.S. CEO of two years, is pushing stores to change. During a surprise visit to a Wal-Mart in Dearborn, Mich., earlier this year, Mr. Foran spent “80% of his time in produce,” says Mohammed Saleh, co-manager of the store.

The executive walked workers through new produce requirements. To draw shoppers’ eyes, the department should always use “color blocking,” alternating the color of fruits and vegetables on display. The “wet wall” now starts with leafy greens, not bagged salad, to convey freshness. Seasonal fruit should get prime placement in front to spur impulse buying.

“We want to be known for having fresh all the time,” says Mr. Saleh. “We have very little room for error.”

Ms. Nassauer is a reporter for The Wall Street Journal in New York. Email her at sarah.nassauer@wsj.com.

Light in the Head

The low expectations of eating low-fat food

BY BECKIE STRUM

Consumers might be demanding more low-fat food, but new research suggests that perhaps they’d be better off not knowing they’re eating it.

In a Catch-22 for food manufacturers trying to appeal to health-conscious consumers, a recent study found that people tended to like the taste of a food labeled “light” less than the flavor of a supposedly higher-fat alternative, even though the two were actually identical.

Joachim Schouteten, a researcher at Ghent University in Belgium, and five other researchers enlisted 129 consumers to evaluate four pieces of cheese that came from the same block of Belgian young Gouda. The only information participants had about the cheese came from four different labels: “cheese,” “cheese with reduced salt,” “light cheese” and “light cheese with reduced salt.”

Participants liked the flavor of the two cheeses with “light” labels less than the taste of the others. They also tasted less salt in the cheeses labeled “reduced salt,” though they liked them almost as much as they liked the supposedly saltier versions, according to the study, which was published in the scientific journal *Nutrients*.

Participants also said they had expected to like both the “light” cheeses and the “reduced salt” cheeses less than those that didn’t carry those labels.

“This negative effect of health labels on the expected liking could discourage taste-oriented consumers to even try or buy the product,” the researchers wrote. Companies “should be aware that taste-oriented consumers could interpret these labels as a warning sign regarding their flavor.”

The study also found that more participants associated the regular cheese with positive emotions like “glad” compared with the cheeses labeled light or low-salt.

How, then, do producers let consumers know their cheese is low in fat or salt without saying it? “You look for more-general labels that are not that linked to taste,” says Dr. Schouteten.

He says further research is needed to identify how labels affect what people actually choose to buy and eat.

Ms. Strum is a writer in New York. She can be reached at reports@wsj.com.

Identical cheese labeled differently elicits different reactions.

The Next Hot Trends in Food

Continued from the prior page and left-behind forage act as natural fertilizers.

In the next three years, Ms. Abbott expects, restaurants and food companies will highlight that their grass-fed beef was raised in a regenerative-grazing fashion. She adds, though, that there would have to be a verification system designed to ensure the claim has meaning.

THE NEXT INGREDIENT SOMETHING CONSUMERS UNDERSTAND

Food companies have long struggled to keep up with changing government guidelines and regulations by reformulating their products to remove unhealthy ingredients such as trans fatty acids, sugar and salt. In some cases, though, shoppers are even more suspicious of the stuff companies put in, such as artificial sweeteners.

Now the goal is “clean labels”—lists of ingredients consumers can understand and pronounce. So, food makers are experimenting with adding natural ingredients to mask bad flavors or enhance good ones without swapping one bad ingredient for another.

“It’s a shift in thinking for food and ingredients companies,” says Dave Donnan, a partner at consulting firm A.T. Kearney, where he leads the global food and beverage practice. “They’re not just looking for a replacement for sugar, but how to change the taste profile” of products so that they don’t need as much sweetener in the first place.

For instance, one biotechnology company is using mushrooms to remove the bitterness in cacao beans so that chocolate can be made with less sugar. Other companies are moving to soy protein and natural flavor enhancers to reduce sodium levels in food.

THE NEXT HEALTHY BEVERAGE PLANT WATERS

The coconut-water fad appears to have unleashed a new category in the drink aisle: plant waters. From aloe water and maple water to artichoke water and cactus water, they are replacing more sugary sports drinks and artificially flavored waters that don’t appeal to consumers’ desire for nutritious and natural beverages.

While U.S. soda sales fell for the 11th year in a row last year, coconut water sales rose 27%, according to market research firm Technavio.

Some drinks are more likely to make it from health-food stores to convenience stores than others. Maple water and cactus water are more appealing than, say, artichoke water, since many people know cactuses contain water and view maple syrup as tasty.

Not only do these provide more flavor than plain water, they also tout health benefits beyond hydration. Aloe-vera juices claim to aid digestion and weight loss. Cactus-water makers say their drinks contain electrolytes and antioxidants.

Some of these plant waters are already popping up next to coconut water in mainstream grocery stores such as Kroger. The new plant waters are taking aim at the coconut beverage, advertising that maple water or cactus water contains significantly less sugar.

THE NEXT MEAT ALTERNATIVE JACKFRUIT

In health guidelines issued early this year, official U.S. dietitians say Americans eat too much meat. That’s giving fodder to new meat alternatives aiming to replace the usual meat replacement, tofu, which has worn out its welcome with many consumers.

There are burgers made with protein extracted from yellow peas, a molecule called heme that makes plants taste like beef and faux pulled pork made from shredded jackfruit.

Equity-research firm Wedbush estimates the overall industry of plant-based alternative foods, including replacements for meat and dairy, has \$3.5 billion in annual sales. Analysts there expect that to continue growing as a result of increasing health and sustainability concerns around meat, as well as new technologies—like the heme molecule—that make the texture and taste of vegetables more similar to meat.

Of all the budding meaty substitutes, food experts say jackfruit has the most potential to go mainstream because of its meaty texture and ability to absorb the flavors in which it’s cooked. A large fruit with a spiky outer shell, it comes from trees grown mostly in South America and Southeast Asia, but it’s increasingly making its way to the U.S. The inner flesh—somewhat pear-like when raw—develops a savory flavor when cooked.

“People who want to avoid soy are looking for alternatives, and a lot of the alternatives are highly processed,” says Ms. Abbott of Hartman Group. “This is just fruit that’s been minimally processed and seasoned with things you have in your kitchen.”

THE NEXT NATURAL FOOD DYE SPIRULINA

The move toward cleaner food labels is pushing out artificial food dyes like Red No. 40 and Yellow 6, which were popularized for making Jell-O dessert bright red and giving Froot Loops cereal its neon glow. Food makers are responding to growing concerns among parents that artificial food colorings may cause hyperactivity and allergic reactions in their children.

While red and yellow are relatively easy to replicate with natural spices like turmeric and paprika, blue and green have given food makers trouble—until now. Blue-green algae called spirulina are often sold as a health supplement at vitamin shops or as an energy shot in smoothies. But now they are being harvested for use as a natural blue-green dye.

In 2013, M&M’s maker Mars Inc. received the green light from U.S. regulators to use spirulina to color candy and gum. That was later expanded to include cereal, ice cream and more—completing the natural color palette for food makers. Mars said in February it would switch M&M’s to all-natural colors by 2021. Other small companies are already using spirulina for organic candy, like Black Forest gummy bears.

The Food Marketing Institute, a grocery trade group, expects the volume of spirulina used for food and beverages to quintuple in 2020 from 2014, and the natural food-coloring industry to grow at an average annual rate of 6.8% in that time frame.

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Taste Trends

U.S. food sales in these health-oriented categories for the 52 weeks ended July 2, and the percentage change from the prior 52-week period

	SALES, IN BILLIONS	PCT. CHANGE
Gluten-free	\$61.3	12.5%
No artificial preservatives	12.2	5.8
No artificial colors	3.8	16.6
Grass-fed	0.4	50.1

Source: Nielsen

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Big Bets on No Frills

Aldi, a German deep-discount grocery chain, is expanding into wealthier areas of the U.S.

BY ANNIE GASPARRO
AND HEATHER HADDON

ARE SUBURBAN consumers ready to give up the familiar grocery experience for bare-bones stores where they have to do their own bagging and leave a quarter deposit for a shopping cart?

That's what **Aldi** and other deep-discount chains are betting as they make a big expansion push across the U.S.

Up until now, the German chain and competitors like **Lidl** and dollar stores have mostly attracted cash-strapped customers. Now they're moving into wealthier areas as Ameri-

cans of all stripes get more budget-conscious and their traditional low-to-middle-income niche gets crowded with competitors. Aldi is going even further in appealing to upscale tastes by stocking some fancier goods, such as organic foods.

Bernstein Research analyst Alexia Howard expects discounters to more than double their average annual sales growth to 15% between 2015 and 2020, from 6% over the prior five years. "They seem to have rolled up their sleeves and planned to make inroads with major expansions," Ms. Howard says.

Still, she warns, the shopping experience may not resonate with Americans and "it might be hard to re-create their European" success.

Indeed, for American shoppers, especially those used to the coziness of suburban stores, Aldi's stores can be jarring. The outlets feature no-frills décor, skimpy in-store marketing and a limited assortment of foods, more than 90% of which are house-branded.

Aldi, which has about 1,600 locations in the U.S., says the majority of the latest 500 stores it has opened have been in large suburban retail centers in middle-income or higher neighborhoods.

The company takes a number of measures to save on labor costs. The quarter deposits prod shoppers to return carts to the holding bin. Aldi also

puts multiple bar codes on its food packaging so that cashiers can more easily and quickly scan them, cutting down on the need for more staffers to handle customer checkout traffic.

Similarly, milk and egg refrigerators have shelves that roll in and out from both the front and back so that employees can restock 80 gallons of milk and 240 dozen eggs in seconds.

If Aldi customers have a question for their local store, they have to drive there. Individual stores don't take phone calls as a means of keeping costs down and prices low.

The result? Prices can run 25% to 40% lower than traditional grocers.

Customers such as Sam Bridgeland, a 31-year-old consultant from Chicago, like Aldi's no-frills approach. "I don't care about the services," he says.

But Aldi—which opened its first U.S. store in Iowa in 1976—is feeling much more competition in its core market these days. A broader range of retailers are getting into the discount-food business, from Target to dollar stores.

Lidl, another German discounter, has plans to come to the U.S. next year, and has spent more than a decade studying the U.S. market. While Lidl hasn't confirmed how many stores it will open, it's building three regional headquarters and distribution centers in Virginia, North Car-



Aldi stores stack cases of products rather than stocking individual packages on shelves.

olina and Maryland, and has plans to open stores along the East Coast from Pennsylvania to Georgia—a region where Aldi operates hundreds of locations.

"Everyone wants to sell groceries," says Scott Patton, Aldi's divisional president. "It gets people in stores."

A move into the suburbs is one way for Aldi to reach new customers. Another is to cater to more upscale tastes. Back in the 1990s, Aldi sold no fresh meat and barely any produce. Now it sells fresh organic ground beef, and as of this year, all of its store-brand foods no longer contain synthetic dyes.

Aldi recently added refrigerated produce for the first time, and it's so popular it's causing a backup in the aisle. "Everyone's stopping there," Mr. Patton says. "One of the things we're working on is the turn at the refrigerated section" to alleviate the traffic jams.

The push into the suburbs has caught the attention of grocery executives across the spectrum. **Whole Foods Market** Inc. opened its own discount chain earlier this year, called 365 by Whole Foods, as it felt pressure to lower prices given increased competition.

Natural-food stores, like Whole Foods, will see their average annual sales growth fall to 5% between 2015 and 2020 from 17% over the prior five years, partly because discounters have added more fresh and organic food to their offerings, predicts Ms. Howard.

"We have a tremendous amount of respect for Aldi and Lidl," Rodney McMullen, chief executive of **Kroger** Co., recently told investors when asked about the new competition. "There are certain customers that we believe like to shop in that environment."

In 1998 and 1999, Kroger bought deep-discount grocery

chains **Food 4 Less** and **Ruler Foods**, which resemble Aldi with their bare-bones style and requirement that customers bag their own groceries. Kroger says its larger scale has helped save money, but it hasn't been able to make the stores work, finding it difficult to understand and communicate with that "value customer."

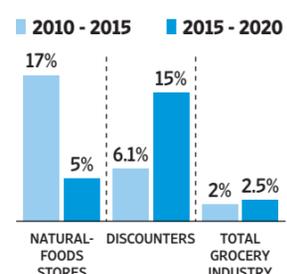
For now, the Aldi formula appears to be resonating with consumers. On a recent visit to a store in Chicago, some shoppers said they were willing to sacrifice luxuries like free grocery carts and plastic bags for cheaper groceries.

"I come for the prices," said Steve Bryla, a 70-year-old retiree.

Ms. Gasparro and Ms. Haddon are Wall Street Journal reporters in Chicago. Email annie.gasparro@wsj.com or heather.haddon@wsj.com.

Growth on the Cheap

If the Aldi and Lidl discount chains are successful in their U.S. expansion, they will shake up the industry, mostly at the expense of natural-food stores like Whole Foods. Here is one projection of average annual sales growth of food in the U.S.:



Source: Bernstein Research
THE WALL STREET JOURNAL.

What's Behind the Commodities Glut

The boom-bust production cycle has expanded across the globe

BY KELSEY GEE
AND JESSE NEWMAN

HARVESTS ARE under way of what are projected to be the largest corn and soybean crops in U.S. history, which soon will hit a global market already sitting on the largest-ever grain stockpiles.

Indeed, some farmers are hoping for a weather hiccup somewhere in the world to curb yields and breathe life into crop prices that recently hit multiyear lows.

They may be waiting a long time.

It is a dramatic turnaround from four years ago, when prices for many commodities were soaring to the highest levels U.S. producers had seen in their lives. Back then, extreme drought slashed production of major row crops, forcing ranchers to cull cattle herds as feed costs soared.

But now farmers face a problem of the opposite sort. Prices for some crops are hovering near multiyear lows as storage facilities bulge with farm goods.

To make space for crops like corn after a massive wheat harvest last summer, Frank Riedl, general manager at Great Bend Co-op, a Kansas grain elevator and farm supplier, bought and leased extra land on which to build bunkers the size of football fields where he can heap millions of bushels of overflow grain.

"There's an abundance of corn out here in the country and we don't have the storage base for it," he says. "Farmers are trying to find any place they can dump their crops."

The boom-bust cycle of commodity production in America has expanded across the globe in recent years, as crop and livestock farmers in South America, China and the Black Sea region have adopted farming practices that largely mirror those in the U.S. breadbasket. That has raised the potential risks and rewards for producers looking to sell, as weather, currency swings and policy changes in far-off countries have a greater impact on U.S. food prices than ever before.

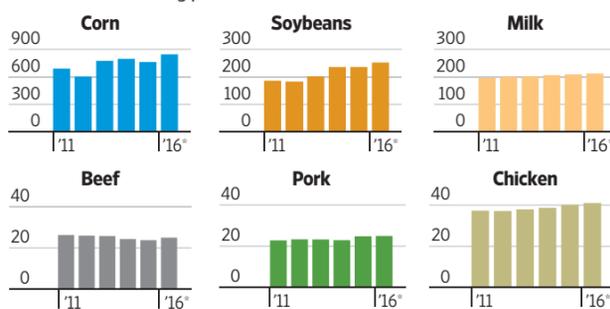
"The world is still expanding production area, and because of that, this cycle could go on awhile," says Dan Basse, president of Chicago-based commodities firm AgResource Co., who notes that farmers world-wide have added nearly 180 million acres to cultivation in the past decade, about as much as the combined acreage of the entire U.S. Grain Belt. Still, "it just takes one drought in a major production area to cure this," he says.



'Farmers are trying to find any place they can dump their crops,' says one co-op manager.

Time of Plenty—and Peril

U.S. annual farm production, in billion pounds. High output in the U.S. and abroad is undercutting prices.



How We Got Here

SUMMER 2012 | Severe drought strikes, corn prices top \$8/bushel

WINTER 2012 | Cattle herds culled as costs soar

FALL 2013 | Mild weather restores crops, and Texas drought eases

WINTER 2014 | Ranchers rebuild herds as cattle, meat prices skyrocket

FALL 2015 | Record soybean harvest adds to ample grain stocks

SUMMER 2016 | Massive grain, meat supplies send prices plunging

*Forecast Source: U.S. Agriculture Department

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Prices for cereal grains and meat globally declined in August and September from the year-earlier period, according to the United Nations' Food and Agriculture Organization, due in part to large harvests across the Northern Hemisphere. The barnyard-wide glut stems from decisions made globally to plant more row-crop acres and to raise bigger herds in response to new demand and high prices during the most recent shortage.

"There's an old industry adage that money makes milk, and more money makes more milk," says Chuck Nicholson, a professor of supply chain and informa-

tion systems at Pennsylvania State University, who focuses on agricultural markets. The current glut has "a lot to do with the decisions that farmers make in aggregate—producers can turn on the milk spigot relatively quickly and tend to be more reluctant to turn it off."

Also fueling increasing production is a growing global population hungry for more protein in daily diets. Foods like infant formula, pork, cheese and poultry are becoming staples for a growing class of consumers who can afford meals that seemed luxurious to an earlier generation.

To make more protein, meat

and dairy producers rely on a steady supply of inexpensive feed grains. The Food and Agriculture Organization projects that by 2050, the world would need to generate 455 million metric tons of meat a year to feed an additional 2.4 billion people. That is around 40% more than even this year's massive production.

Along the way, however, producers are increasingly susceptible to missteps in the delicate dance of supply and demand across the world.

For farmers who raise animals for food, calculating when to expand the business is a gamble on market conditions that could be months or years away. It takes more than a year for a calf to mature to the point when it can be impregnated, and nine months to produce a new heir to be added to a milk or beef herd.

Some able to weather the lower prices say credit belongs to marketing arrangements, such as long-term contracts with buyers or farmers, locked in well in advance.

"We're producing a very perishable product and have a few hours or at most a day to sell" the milk before it spoils, says Scott McGinty, president of Aurora Organic Dairy LLC, based in Boulder, Colo.

"You have to be close to your market," Mr. McGinty says, "or the conditions that drove you into the business might be gone by the time you get there."

Ms. Gee and Ms. Newman are Wall Street Journal reporters in Chicago. Email them at kelsey.gee@wsj.com and jesse.newman@wsj.com.

A Buck for Broccoli?

Why you may want to pay your children to eat their vegetables

BY BECKIE STRUM

Science says it's OK to pay your children to eat their fruits and vegetables.

The strategy not only works in the short term, but can create healthful eating habits in children in the long run if the little bribe is carried out consistently for several weeks, according to a study published earlier this year in the *Journal of Health Economics*.

"As a parent, imagine that there's something to do that might be worth my effort, and I get the long-term benefit," says Joseph Price, associate professor of economics at Brigham Young University. He co-wrote the paper with George Loewenstein, professor of economics and psychology at Carnegie Mellon University, and Kevin Volpp, professor of medicine at the University of Pennsylvania.

For a year and a half, the researchers carried out a study of 8,000 children in first through sixth grade at 40 elementary schools to test whether short-run incentives could create better, and lasting, eating habits in children.

At lunchtime, students who ate at least one serving of fruit or vegetable, such as an apple, fresh peaches, pineapple, side salad or a banana, received a 25-cent token that could be redeemed at the school's store, carnival or book fair.

The researchers saw an immediate spike in consumption, Dr. Price says. "These small incentives produced a dramatic increase in fruit and vegetable consumption during the incentive period," the researchers wrote. "This change in behavior was sustained."

Two months after the incentives ended, many more students than before the program started were still eating a fruit or vegetable at lunch. For schools that provided the 25-cent incentive for three weeks, 21% more children were eating at least one serving of fruit or vegetable at lunch than before.

The effect was even greater for schools that implemented the program for five weeks, which led to a 44% increase in consumption two months out.

Positive peer pressure played a role in getting the children to adopt and then stick to the program. A health economist from Cornell University has even suggested that one way to establish the social norm even quicker was by making sure the "cool kids" were the early adopters of the behavior, Dr. Price says. "Anything you can do to change the norm," he adds.

The researchers also believe that the more often students ate fruits and vegetables, the more they learned to like them. Dr. Price draws an example from his personal life, saying he offered his son an incentive to practice hitting a baseball. The more his son practiced, the better he got and the more he liked playing, Dr. Price says.

Parents or schools could also try nonmonetary rewards, such as extended recess or gym class, Dr. Price says.

Ms. Strum is a writer in New York. She can be reached at reports@wsj.com.

Short-term rewards for eating fruits and veggies can create good habits in the long term.

JOURNAL REPORT | FOOD

The Battle Against Food Deserts Rages On

As many poor Americans continue to have limited access to healthy food, companies and the government struggle to find new solutions

BY HEATHER HADDON AND ANNIE GASPARRO

FRUSTRATED WITH years of hit-or-miss efforts, retailers and the government are still searching for ways to address food deserts.

These areas, which can be in either remote rural regions or dense inner cities, don't offer low-income residents big supermarkets where they can get fresh, healthy food. The stumbling block preventing supermarket chains from moving into these areas is profit—their margins are already razor-thin, and stores in food deserts subsist on a patchwork of government subsidies and food-stamp payments from low-income customers.

Now some big supermarket players are opening test stores

that use charitable contributions and tax incentives for funding—an attempt to sidestep the problem of turning a profit. Other companies are experimenting with online food-delivery services that bring groceries to households that aren't served by supermarkets.

"We think it's important, so we're not going to give up, but we still have a lot of work to do," Kroger Co. Chief Executive Rodney McMullen said earlier this year when asked about the profit struggles of one of its banner stores serving lower-income areas. "The way I like to talk about it, we've learned more of the things not to do than the ones to do."

A struggling effort

The U.S. Agriculture Department estimates that 23.5 million Americans live in low-

income areas that are farther than one mile from a large grocery store or supermarket, and 11.5 million of these people have incomes below the poverty level.

In 2011, executives from Wal-Mart Stores, Inc., Walgreens Boots Alliance Inc., SuperValu Inc. and other grocery stores joined with the Obama administration to announce an initiative to open more than 1,500 stores in areas designated as food deserts. The White House sought hundreds of millions of dollars in public and private funds toward financing and tax credits for companies to open in areas that lacked access to a grocery store.

The government spending has ended up being far more limited, and many of the brick-and-mortar stores haven't generated enough sales to stay afloat. Earlier this year, Wal-Mart said it was closing 154 stores, many of them smaller stores designed to serve neighborhoods with low volume, like food deserts.

Kroger, the nation's largest food retailer after Wal-Mart, has been experimenting with a chain of several dozen no-frills stores called Ruler Foods, which serve rural areas in the Midwest. Company executives have said that its pilot has proved difficult to make profitable, although it intends to open a total of eight more stores this year.

"We're still trying to understand the economics of the model to get to where it actually performs at [a return on investment] that we're happy with," Mr. McMullen told investors earlier this year. "We continue to make progress, but we do not think we've figured it out."

Some stores may get new sources of funding so that low profits won't sink fledgling efforts. Whole Foods said it would open stores in low-



A sign on a Dollar General freezer case of ice cream and other desserts welcomes food stamps.

come neighborhoods—including in New Orleans and Chicago—through a foundation that relies on charitable contributions. The efforts are boosted by local tax incentives to break ground. The company, based in Austin, Texas, provides loans and training to local food purveyors to act as potential suppliers. The Chicago store began hiring employees in July and opened in late September.

Online option

Some grocers are extending online grocery shopping to low-income neighborhoods. FreshDirect, the online delivery service most associated with affluent urban foodies, started a pilot in two ZIP Codes in poor communities in New York's Bronx borough to deliver groceries two years ago. Feedback so far has been positive, and the company is collecting data to further assess the pilot's effectiveness, says FreshDirect Vice President Larry Scott Blackmon.

Part of the trick for FreshDirect was figuring out how recipients of the government's \$75 billion Supplemental Nutrition Assistance Program, or food stamps, would pay for groceries. The company's delivery people can use hand-held

debit-card readers to process SNAP benefit-card transactions, a company spokeswoman says.

Other retailers hope to be included in a federal pilot program next year that will allow food-stamp recipients to use their benefits with online grocery sellers. Providing access to fresh foods in food deserts, along with cost savings, motivated the Agriculture Department to conduct the test, an agency spokeswoman says. Unlike with FreshDirect, recipients would pay for their groceries directly online with their SNAP benefits, not through hand-held devices at delivery.

Some observers warn, though, that providing access to healthier foods is only part of the problem. For instance, education on nutrition is crucial, says Roger Thurow, senior fellow at the Chicago Council on Global Affairs, who writes about nutrition.

Fast food is often cheaper than fresh goods, and poor consumers may not have the time, transportation or incentive to cook healthy meals for their families if they don't know its importance, he says. "There's all these variables," Mr. Thurow says. "It's not as simple as putting a grocery store or farmers market or

some shop with fresh food available there."

Logistics are also important. Time is scarce in low-income neighborhoods where people work shift jobs or multiple jobs and aren't home at mealtimes. "Long work times cut into cooking," says Mr. Thurow, whose research has focused on poor mothers in Chicago. Long work hours may also make it a challenge to get to stores, even if they're nearby, he adds.

Mari Gallagher, a Chicago-based consultant who researches food deserts agrees that "plopping down a grocery store is not a silver bullet."

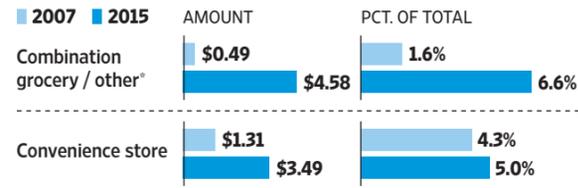
But at least having the option can do a lot of good, she adds. A study she conducted in 2014 in rural Iowa found that not having ready access to a supermarket fueled obesity among adults, and shorter heights and worse grades among children.

"We can't choose healthy food if we don't have access to it," Ms. Gallagher says.

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Unhealthy Fare

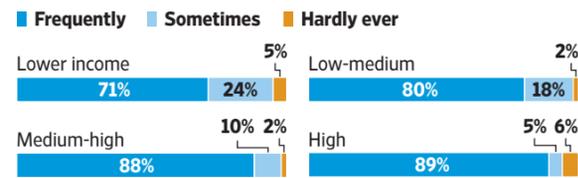
Food-stamp use at stores that typically offer little or no produce and other fresh foods has jumped. The dollar value, in billions, and percentage of total food-stamp redemptions at these two types of retailers:



*Primary business is sale of general merchandise, but also sell a variety of food products; includes independent drugstores, dollar stores and general stores
Source: U.S. Agriculture Department

Income Link

Frequency of fresh produce purchases, based on household income



Source: "The Power of Produce," Food Marketing Institute and 210 Analytics LLC, based on online panel of 1,327 U.S. consumers in April 2015

NOT YOUR FATHER'S MCNUGGETS

How famous food products keep evolving to meet consumers' changing health priorities

Food makers and restaurants are always hustling to tailor their products to the latest trends in health, hoping that old-line brands can stay relevant in this era of fast-paced change in food.

In the 1980s and 1990s, consumers were focused on low-fat diets as they were told reducing fat intake was the most important thing they could do to improve their health. But that eventually gave way to concerns about sodium, then sugar, then the artificial

sweeteners that replaced sugar, and now external factors like what the animals making up the food ate when they were alive.

Here are some popular foods and how they have evolved over the years to keep pace with changing consumer demands on health and wellness.

—Annie Gasparro

Email annie.gasparro@wsj.com

COCA-COLA

- 1886 | Coke is invented
- 1982 | Diet Coke is introduced
- 1985 | New Coke debuts, in one of the biggest product fiascoes ever
- 2005 | No-calorie Coke Zero debuts, claiming to taste more like the original recipe than Diet Coke
- 2014 | Coke Life, sweetened with a natural zero-calorie sweetener and cane sugar, comes to the U.S.

CHICKEN MCNUGGETS

- 1983 | Invented
- 2003 | McDonald's comes out with all-white-meat chicken
- 2015 | Announces plans to reduce antibiotics
- 2016 | Removes artificial preservatives



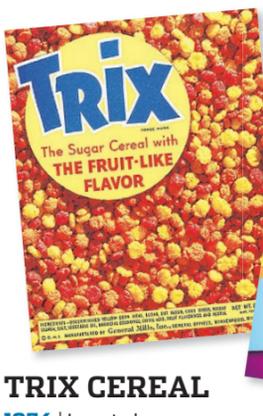
BURGER KING FRENCH FRIES

- 1953 | The chain opens, with original fries recipe
- 1997 | Alters its fries, coating them with starch
- 2001 | Changes the formula again to have less of a coating after customers complained about the previous recipe
- 2011 | Changes again, making the fries thicker
- 2013 | Introduces Satisfries, a version with less fat and fewer calories
- 2014 | Drops Satisfries



OREO COOKIES

- 1912 | Invented
- 2006 | Replaces trans fat with nonhydrogenated vegetable oil
- 2015 | Introduces thin versions, called Oreo Thins, with just 40 calories per cookie



TRIX CEREAL

- 1954 | Invented
- 2005 | Begins increasing whole grains to an eventual 11 grams a serving from less than 8 grams
- 2007 | Begins cutting sugar from 13 grams a serving to 10 grams
- 2015 | Removes artificial colors and flavors

Prepare, Eat, Enjoy

The pleasure of self-made meals

BY BECKIE STRUM

A scientific experiment has tackled an eternal question nagging city dwellers and busy parents: Cook, or order takeout?

To someone with a GrubHub addiction, the first part of the study's findings may surprise. Taste tests showed that when it comes to healthy food, people like their own preparation better than the same recipe ready-made.

"The mere act of preparing foods leads to higher likings because people overvalue objects that they have put effort in," say a team of European researchers in a paper published earlier this year in Health Psychology.

Their findings underscore what other researchers dub the "IKEA effect," a reference to the Swedish company that sells assemble-it-yourself furniture. "When people prepare things—if they build, for example, a cupboard—people like it more," says Simone Dohle of the University of Cologne. Dr. Dohle co-wrote the prepared-foods research paper with Sina Rall and Michael Siegrist of the Swiss Federal Institute of Technology in Zurich.

But the preference for self-made meals changes when the food is unhealthy. We like our own concoction less when we know ingredients like fat and sugar went into it, according to the study.

To reach that conclusion, the three researchers enlisted 120 women, mostly German students, to taste two very different shakes.

Half of the participants tasted a low-calorie smoothie made from raspberries, milk and sugar. Some measured and blended it themselves, while others tasted one the researchers made ahead of time.

Those who had to mix their own rated the raspberry smoothie higher on a scale from "do not like at all" to "like very much" than those who drank it pre-made. They also estimated that it was healthier and had fewer calories.

"Psychologists explain this as 'justification of effort' because participants have put all this effort into making a milkshake," says Dr. Dohle.

The effect was particularly pronounced for those women who said they were on diets or had other dietary restraints, the researchers found.

In contrast, the other half of participants tasted a high-calorie milkshake of chocolate ice cream, milk and cream, which they either mixed themselves or received already prepared.

Those who made the chocolate milkshake on their own rated it worse than those who drank the prepared version—evidence that people are turned off when they know exactly how much in the way of unhealthy ingredients is in their food, the researchers wrote.

The study lends credence to the avalanche of advice in countries with rising rates of obesity that people should cook at home more. It also shows that when people cook at home, they are more likely to lean toward healthier recipes.

"There's this second process: If you prepare something, you become more aware of all of the ingredients you put into your food," Dr. Dohle says. "Food preparation could be a way to foster healthy eating habits."

Ms. Strum is a writer in New York. She can be reached at reports@wsj.com.

Healthy food tastes better when we prepare it ourselves, a study finds.

THE COMPANIES

ADVERTISEMENT



Export Food, Not Jobs

Let's start a national conversation about how to double the sales of the American food production industry and create millions of new American jobs.

At the inaugural Global Food Forum hosted by *The Wall Street Journal* in New York City on October 6, Anthony Pratt, Executive Chairman of Pratt Industries, delivered the sponsor's opening remarks. Here are the key points:

- America is the world's food superpower and food production is its largest industry. It has sales greater than the auto, movie, technology, and oil and gas industries — employing 4 million Americans and should get the attention it deserves.
- As big as it is, we can double the sales of the food production industry to \$1.8 trillion and create millions of new American jobs.
- America can do this by selling into the great Asian middle-class boom, as 2.5 billion more people have access to greater disposable income.
- America can capture this opportunity by exporting more added value fruit, vegetables and meat, along with finished processed food such as infant baby formula — thereby playing to one of America's greatest strengths, food safety.
- Food produced and packaged in America ensures its cleanliness and safety.
- Food exports are America's greatest opportunity to expand the food industry, address trade imbalances, compete for a larger share of the world's expanding global food market and grow jobs here in America.

**Pratt Industries was proud to be the lead sponsor of
The Wall Street Journal Global Food Forum**



Pratt Industries, one of the largest corrugated box manufacturers in the United States, proudly supports the American food industry!

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JOURNAL REPORT | FOOD

As Crop Prices Fall, Farmers Focus on the Seeds

New services collect data from their members, giving growers information about what works best

BY JACOB BUNGE

U.S. FARMERS, bogged down in one of their toughest patches in years, are looking for a little magic—in seeds.

Some are returning to the old-fashioned variety, bred without genetic engineering, and back in fashion as farmers strive to save money following three straight years of falling prices for major crops like corn and soybeans.

Others, meanwhile, are joining new subscriber-based services that collect seed and other detailed crop-related data from their farmer members, who then use the data to determine which seeds and pesticides will work best on their fields and at the fairest price.

The plunge in crop prices—corn has roughly halved since the start of 2013, while soybeans have fallen by one-third—has chipped away at farmers' financial cushions and led many to re-examine their costs across the board.

Plows and pencils

"People are sharpening their pencils," says Brian Marshall, who farms about 4,600 acres of corn, soybeans and wheat near Maysville, Mo. "When corn was double what it is now, and soybeans were a lot better than what they are today, you didn't have to be as good with a calculator."

Many farmers already have found ways to stretch the fertilizer applied to their fields and have switched to generic versions of popular pesticides.

Now, they're scrutinizing seeds—often the most expensive component in raising a crop each year. Seeds have multiplied in variety, complexity and cost in recent decades. As genetic engineering has enabled plants to survive herbicides and fend off pests, corn-seed costs have nearly



A sign along a field in Illinois shows the brand of Monsanto seed from which the corn was grown.

quadrupled over the past 20 years, and soybean seed costs have soared as well, according to data from the U.S. Agriculture Department.

Farmers today must consider thousands of seeds with varying characteristics, with some bred to flourish in certain climates or soils, and others to resist plant diseases and bear different grain varieties.

A growing number of farmers thus are turning to new types of agricultural data-analysis services, such as Farmers Business Network Inc., a San Francisco-based startup backed by Google Ventures and other Silicon Valley investors. FBN allows farmers to query thousands of their peers about seed and pesticide performance. The idea, also being pursued by such startups as **Farmers Edge** and **Granular Inc.**, is to create a Consumer Reports or Kelley Blue Book of seeds.

"Farmers have basically crowdsourced the largest seed-performance database that's ever existed," says Charles Baron, co-founder and head of product for FBN. Members of the service have contributed information on more than 2,100 seed varieties, ranging from corn to cotton, rice and oats. The company charges \$500 a year and requires members to share data on their own crop performances to access seed data. Membership has tripled in the past 12 months to about 2,800 farmers, Mr. Baron says, and more than nine million acres of farm fields are enrolled.

Top seed companies like **Monsanto Co.** have developed similar services, capitalizing on their own expertise in plant science. Monsanto says it has about 14 million acres' worth of farms paying for its Climate Corp. suite of ser-

VICES, and it expects to have 25 million acres enrolled next year.

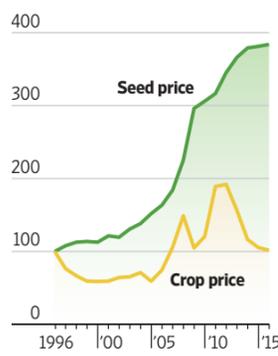
Some farmers are wary of taking advice on seeds from the same companies that sell them. FBN, for its part, contends that its independence makes its service more attractive to farmers.

Inside advice

Officials for Monsanto's Climate unit say that its privacy policies keep farmers' data confidential and that their data isn't used to price seeds and pesticide products. The company says its deep research on seed performance—Monsanto is the world's largest supplier of seeds and crop genes in terms of sales—allows Climate to draw on 40,000 acres of research fields across 20 states, in addition to thousands of other crop field trials conducted by Monsanto itself. That translates to

Out of Whack

Corn seed prices have nearly quadrupled over the past two decades, while crop prices have ended up back roughly where they started. Seed price per acre planted vs. crop price per bushel, indexed to 1996=100:



Note: Crop prices are annual average, most active futures contract.

Sources: U.S. Agriculture Department (seeds); FactSet (crops)

THE WALL STREET JOURNAL.

santo and Syngenta AG patent the genes they insert into plants to protect their investment. But in 2014, the first of those genes—one that enables soybeans to withstand the popular herbicide glyphosate, marketed by Monsanto as Roundup—saw its patent protection expire after 20 years.

Newer varieties

Now, academic plant specialists like Donald Dombek, director of the Crop Variety Improvement Program at the University of Arkansas, are putting the formerly patented gene into newer soybean seed varieties, which farmers can buy for about \$28 to \$34 a bag, versus \$44 to \$68 a bag for big companies' latest varieties in the region. Mr. Dombek figures the university will sell about 190,000 acres' worth of generic Roundup-resistant soybean seeds across the region this year, which works out to about 5% of Arkansas' total soybean acreage.

Another plus: Unlike the latest soybean seeds marketed by Monsanto, Syngenta, Dupont Co. and other companies, farmers using the University of Arkansas variety can save the seeds they now harvest and replant them next year, yielding further savings.

Seed industry officials, however, don't expect current generic versions to displace the big companies' top brands, which use high-tech breeding technology to produce plants capable of producing big harvests. That means the companies' newest seeds typically yield the biggest crops.

"We're not attempting to compete with the big seed companies," Mr. Dombek says. "We put this out there as an alternative for our farmers."

Mr. Bunge is a Wall Street Journal reporter in Chicago. Email jacob.bunge@wsj.com.

A Food Empire In a Changing World

Cargill's CEO reflects on GMO food, record harvests and climate change

BY JACOB BUNGE

FROM THE Minneapolis suburbs, **Cargill Inc.** runs one of the biggest food empires the world has ever seen, spanning the supply chain from farm to table—shipping fertilizer to farmers, buying the crops that are grown, processing grain into feed for livestock and poultry, and producing burgers and nuggets for the world's biggest restaurant chains and retailers, including Wal-Mart Stores Inc. and McDonald's Corp.

As consumer tastes shift, Cargill is striving to make its immense size an advantage rather than a hindrance. It has revamped its corporate structure and portfolio of businesses as it responds to consumer concerns in developed countries about food ingredients and animal welfare, while investing to provide more Western-style diets to developing parts of the world.

We spoke with Chief Executive David MacLennan about growing demand for foods produced without genetically engineered crops, further investments needed in food-shipping infrastruc-

ture, and how Cargill can respond to climate change. Edited excerpts of the discussion follow.

Different needs

WSJ: *In developed countries like the U.S., more people are seeking food produced with less intervention, from organic produce to cage-free eggs, challenging companies like Cargill to respond. But in developing parts of the world, many people are just starting to add meat to their diets and are looking for cheap, safe food. How does Cargill succeed on both ends of this spectrum?*

MR. MACLENNAN: When incomes rise to several thousand dollars, people change their diets from a carbohydrate-based diet to one that's more protein-based. In places like North America, where as a consumer you have plenty of protein, plenty of choices, you have people who want to know, "What's in my food, who made it, who supplies them?"

For us, that's where you have to be agile. Non-GMO is that here to stay? Talking to an egg farmer, McDonald's is going to cage-free eggs—his dilemma is, is

that permanent? "I have to invest, do I redo my barn? But if in 2020 nobody cares anymore, am I going to be able to make my return?" Going back to the supply chain, that is the challenge—different parts of the world have different needs, and there are different trends, and how can we meet those needs doing business in 70 different countries?

Personal choices

WSJ: *How do you know what's the right thing to do?*

MR. MACLENNAN: More people are making their food consumption choices based on their value system. So it's part of, "I want to feel healthy or identify with the food that I eat." The fact is, I think the food industry could have handled the non-GMO debate in a more constructive way.

If you think back a few years, the strategy was, let's fight it at the ballot box. Washington state, California, Colorado, they had ballot initiatives on GMO labeling. The message [of those initiatives was], people want to know. But the idea [of the food companies] was, let's fight it at the ballot box, and the science shows that GMOs are not bad for you. But people who don't want GMOs don't trust the science.

There's a growing group of people who don't want GMO ingredients. So let's develop a supply chain for that, rather than say, "You're wrong if you don't want GMOs."

If you think about consumption choices, health care and food are incredibly intimate and personal choices. And people need to and want to trust products that are providing them with those choices and ingredients. Our mind-set is we're going to empathize



David MacLennan says Cargill must be agile to meet different needs and trends around the world.

and understand the consumer on what they want in their food.

WSJ: *Big harvests have pressured farmers' incomes, and some farmers in places like South America have struggled to get financing. What about the farming model may need to change to ensure people can stay in business?*

MR. MACLENNAN: Farmers are technologists. Many, many farmers have an iPad in their harvester or in their combine, and they're using precision agriculture. And we actually do a lot of this in terms of sustainability and which parts of their farm have the most nutritious soil, the most moisture, where I need to plant the seeds. They use GMOs as a tool for increased productivity.

And fewer people are going into farming. The world needs farmers. There's the farm industry and the food industry. One of our questions is, how do we make it exciting? Feeding the world is exciting, it's a noble purpose, but how do we communicate that to a new generation, where people are interested in tech, or in consulting?

You have to make it exciting, to come work at a food company. Technology and modern farm techniques have helped take some pressure off, because yields have

come up over time, but you still need people to go into farming.

Getting it there

WSJ: *Right now farmers are bringing in what could be another record corn and soybean harvest in the U.S., and supplies of poultry, pork and beef are swelling. As grain bins fill around the world, is food security meaningfully improving as a result?*

MR. MACLENNAN: Not at the rate that it needs to. The production areas—North America, South America, the Black Sea, where food is grown—it's really unbelievable. You are looking at a fourth successive year of bumper crops, great growing weather and significant supplies. It's keeping the price of food down. That's a good thing. At the same time, we—food and farming supply-chain companies—need to do a better job of how do we get it to where it's needed.

Infrastructure in Brazil for the agricultural economy is not yet where it needs to be. That's one of the areas that needs investment. Ports, river terminals. It's great if Brazilian farmers can grow corn and beans and get it to China to feed that country or get it to the Middle East. But if you don't have the infrastructure, the barges and ports to get it out, it doesn't do any good.

WSJ: *How do you see climate change affecting food production and what you're doing at Cargill?*

MR. MACLENNAN: Climate change is here, and it's going to change how and where food is grown. Today, the U.S. corn belt is in Iowa, Illinois, Indiana. In 50 years, it may be in Hudson Bay, Canada.

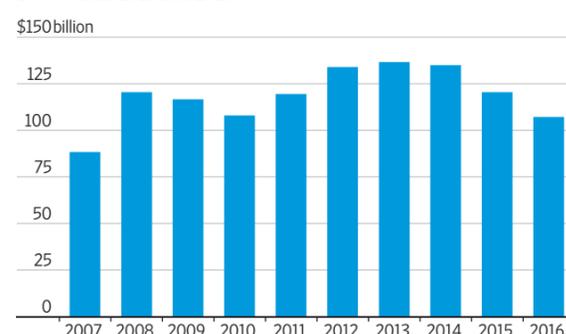
What does that mean for supply-chain companies and food production, and trying to get in front of it? How farmers grow the food, where they grow it, the need for analytical tools to help them respond to periods of great weather or horrible weather—that's where Cargill can play a role.

WSJ: *Free trade has been one of Cargill's guiding principles since the company started 151 years ago. How much is at stake in the U.S. election?*

MR. MACLENNAN: It's one of the critical issues. We have worked diligently with Secretary of Commerce Penny Pritzker, who's been a big supporter of the Trans-Pacific Partnership, Agriculture Secretary Tom Vilsack—the administration's been great. I don't know where this election will go, but I hope that when a new administration is in place there is a more open issue around TPP. I think it would be tragic if we go backward relative to trade, and I think the world needs it.

Challenging Times

Cargill's annual revenue. After several flush years, sales fell more than 10% in fiscal 2015 and 2016.



Note: For years ended May 31.

Source: Cargill Inc.

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PAID ADVERTISEMENT

Export Food, Not Jobs

BY ANTHONY PRATT

Executive Chairman of Pratt Industries

I was delighted to be part of the first Global Food Forum held by *The Wall Street Journal*. Pratt Industries was excited about our sponsorship, which is a testament to the *Journal's* leadership in reporting about food.

Food is vital for America's economy — a powerful engine for job creation employing 20 million Americans. American food is also crucial to global food security: Exporting American-produced food to a needy world helps well-being, without exporting American jobs.

But the food production industry is neglected. In fact, Bill Gates said to me (and I agree) that the American food industry doesn't get the attention it deserves. Yet last year, food manufacturing sales were \$850 billion, making food production the biggest nongovernment industry in the United States — bigger than movies, tech, auto, and oil and gas.

So food's worth focusing on. And that's why we sponsored this forum. We want to shine a spotlight on America's food industry to identify how it can grow, invest and generate even more quality jobs for the nation. We propose starting a national conversation, including industry, government and civil society.

One goal is to double our food production sales to \$1.8 trillion, creating millions of new American jobs. A challenging goal, but achievable given the huge food export opportunity. And when we increase manufacturing here, we support American jobs.

The big opportunity to grow exports is that Asia has over 2.5 billion people coming into the middle class who want safer, cleaner American food. So Asia is a massive opportunity, with countries like China, Indonesia, Vietnam, Korea and India wanting more high-quality food. If we view these Asian economies as major valued customers for our safe and nutritious food, America can begin to address its \$550 billion imbalance in goods traded with Asia.

But we are not alone in seeing this opportunity. In fact, in the past 15 years America's share of global exports has slipped, with countries like Brazil, New Zealand and several others lifting their food-export game and nipping at our heels.

By comparison, unbelievably, America's food exports in

dollars have begun to decline. Last year, there was actually almost 10% decline in the value of U.S. agriculture exports, compared to 2014 — while Asia's total food imports continued to rise, especially high-protein food, which the Asian middle class craves. The reasons for this decline are complex, and part of the issue is America's traditional focus on exporting bulk commodities like soybeans.

I believe America can leverage an important advantage if it pivots towards more high-value agriculture exports like fruit and vegetables and processed exports like meat, dairy and infant formula. That's because American food standards are the highest in the world. And the over 2.5 billion Asians joining the middle class want safe, clean food produced and packaged in America.

Food processing and packaging also means more factories and therefore more jobs for America. And for small food processors, export is easier and less risky than trying to set up factories overseas. In China alone, the demand for infant milk formula has grown by about 15% annually since 2010 and is currently \$27 billion. American milk cows are the most productive globally, so our dairy exports have the potential to take off. The U.S. has less than a 2% share of the global market for infant formula, where safety is critical.

Another big focus for food export must be California — the fruit and vegetable salad bowl of America. It's also the closest mainland American state to Asia, making shipping cheaper. To help California, we must address the most important food production issues it faces — the ongoing drought and, what many Californian farmers consider an even greater challenge, the labor shortage. I've been told that in some areas, up to 20% of crops are left unpicked because of labor shortages, as it's backbreaking work.

Could technology help? It's already starting with dramatic advances in robotic harvesting and processing technologies. Technology can also tackle water issues, and is being used in Israel and Australia to help boost water-use efficiency.

Improving freight and logistics efficiency on the West Coast will also improve our competitive edge.

All these ideas are up for discussion, so let's give this an "all-of-society" focus and create a vision for new, sustainable jobs and investment here, while helping America boost global food security.

The Food Conflict Consumers Face

Two CEOs on what people think they should eat vs. what they actually want to eat

Changing consumer tastes and priorities are shaking up the food industry. The hunger for healthier and fresher fare is growing, as well as transparency about what food contains. What opportunities—and challenges—does this changing situation create for big companies that put food on the plate?

Matt Murray, deputy editor in chief of *The Wall Street Journal*, spoke with Denise M. Morrison, president and chief

More important, when you look under the hood, there are all different kinds of families. That has fundamentally transformed the way people eat.

MR. MURRAY: What does that mean for you? Are you going in other directions?

MS. MORRISON: One of the most fundamental shifts that has happened is the change in consumers' preference for healthier food. We see this manifested in both fresh food,

are niches. The largest single niche in the marketplace today is that the consumer wants food that is both good for them and is simply good.

Each of our organizations, Denise's and mine, and each of our brands, we have to figure out who we are, what we stand for and what consumer we're in alignment with. Panera isn't the place for the average, or for everybody. It is for a consumer that is particularly interested in resolving that conflict. Food that's both good and good for you.

MS. MORRISON: Health and wellness does mean different things to different people. We tend to treat eating and diets as one size fits all. But the human body is very personalized. And so a food regime for me could look different than the one for Ron.

I think that with technology that's coming there's a whole world opening up to have a deeper understanding of the impact of nutrition for better living, better-quality living.

MR. MURRAY: Are you talking about technology for me, the consumer, or for you, the company?

MS. MORRISON: There's been 69 million wearables sold this year. People are literally tracking everything. People are becoming more empowered, and knowing what's going into their body.

Cleaning up meals

MR. MURRAY: You've both had different clean-food and labeling efforts. How hard is it to take ingredients out? There's got to be a certain amount of

chemicals or preservatives or things that you have to have. Can you go all the way and make everything totally clean?

MS. MORRISON: We do believe that consumers today want simplicity, and they want cleaner labels. So we have, similar to Panera, been taking out the artificial colors and flavors, BPA [bisphenol A, a chemical often used in packaging] out of our cans, reduced high-fructose corn syrup. Things that are on consumers' minds.

Food is art and science. So, you take something out, you have to work with the recipe to make sure that you're providing delicious food with cleaner labels. And so we work at that constantly.

We do not have preservatives in our soup. We sterilize it. It's cooked for safety. We call that "prepared with care."

It's also a matter of educating people. They want to know what's in their food. We have a website and an app, whatsinmyfood.com, where people can actually go and click on any product that we make, and find out right down to where the food is sourced, how it's made, what ingredients we use, and why.

So, there's an education to that. It's not perfect yet, but it's a good start. And we'll continue to build out more products on it and enhance the information as we get into more traceability and ethical sourcing.

MR. SHAICH: I think in our case it came down to a fundamental commitment. And it came from the very top, from the board, and from me as the CEO, that we really wanted clean food.

We wanted it free of any artificial colors, any artificial flavors, any artificial preservatives and any artificial sweeteners.

We essentially introduced the policy two years ago. We said, "If we're going to do this, let's make it comprehensive. And let's make it so that the consumer doesn't have to read a label."

They know when they walk



DENISE M. MORRISON | 'We do believe that consumers today want simplicity, and they want cleaner labels.'



RONALD M. SHAICH | 'We have to figure out who we are, what we stand for and what consumer we're in alignment with.'

in, there's a certain fundamental commitment.

We simply said, "We're going to take anything out of there that people essentially question."

MR. MURRAY: What about GMOs?

MR. SHAICH: We've been around this debate. I've seen arguments on both sides of it. Our view is we simply are not trying to draw the conclusion on GMOs, from our perspective. What we want is GMO labeling. For us it's a matter of transparency.

We're not taking a unilateral position that we're removing all GMOs. We are saying we very much support GMO labeling.

MS. MORRISON: GMO, for me, is more a transparency issue than an ingredient issue. You've got 90% of the soy, corn and sugar-beet crop in this country that's GMO. People have been eating that for more than 20 years, and it's fine. But they want to know what's in their food, and they have the right to know. So we have declared that we are labeling.



At The Wall Street Journal's recent Global Food Forum, Journal editors and reporters talked with leaders in the business of food about the principal opportunities and challenges they face. Highlights of the conference appear on these pages and, with additional interviews and video excerpts, at WSJ.com/LeadershipReport.

executive officer of *Campbell Soup Co.*, and Ronald M. Shaich, founder, chairman and chief executive officer of *Panera Bread Co.*, to get their take on the state of the food business and where they think it's headed.

Here are edited excerpts of their discussion.

New tastes

MR. MURRAY: Let's start by talking about your customer. Who are you trying to serve, and how are they changing?

MS. MORRISON: Our customers are really different today. Mom, Dad and two kids and a Labrador retriever are 24% of families. The family has definitely changed. I would say that we focus on two cohorts, baby boomers and millennials.

and natural and organic. And a desire for cleaner labels. That has prompted acquisitions that we've made in the past five years.

MR. SHAICH: Today's consumer is really in conflict between what they think they should eat and what they want. Organizations that can resolve that conflict for them—give them food that is both what they want and [what they believe they need]—are the organizations of the future.

MR. MURRAY: How contradictory is the consumer in wanting both healthy food and food that's not as healthy?

MR. SHAICH: Let me start and say that I think we all know there is no such thing as an average. The reality is there

The Nutrition Mission at the FDA

Robert Califf and Susan Mayne say the agency can—and should—give consumers more incentives to eat healthier

The politics of food can be a touchy subject. On the one hand, most people care deeply about guarantees that their food is safe. On the other, not many like being told what they should and shouldn't eat.

Issues such as these are at the heart of what the Food and Drug Administration sees as its mission. Robert Califf, commissioner of food and drugs at the FDA, and Susan Mayne, director of the FDA's Center for Food

Safety and Applied Nutrition, sat down with *The Wall Street Journal's* Matt Murray, to discuss the challenges surrounding food and public health. Edited excerpts follow.

Healthy eating

MR. MURRAY: There's a lot of confusion or conflicting information out there. How can the FDA make things better?

MS. MAYNE: We have a big public-health mission. We're

concerned about things in our food supply like too much sodium. How do we help promote health by working with industry to make a healthier food supply? Often people focus on the food-borne illness, contamination side of things, but don't think about the chronic diseases.

In our country today, the top killers are heart disease, cancer, diabetes—diet-related chronic diseases. I want to be sure people realize that healthy eating is a tool to reduce the rates of these really prevalent chronic diseases. I want consumers to be confident in the safety of produce and fruits and vegetables, and that's one of the things we're working on.

MR. MURRAY: Are there things that have FDA approval right now that aren't optimal?

MS. MAYNE: Many industries have been trying diligently to reduce sodium in food. The question is, what are the alternatives? Industry has indicated to us there may be some challenges we might be able to help with, making sure that there are healthy alternatives.

With the updated nutrition-facts label—added sugars will now be declared—I would expect that some companies will be using fruit as a sweetener, rather than things like high-fructose corn syrup. So by putting something on a label, we can help incentivize a healthier food supply.

Food labeling

MR. MURRAY: Talk a little about the redefinition of the term "healthy" and how that process is shaping up with regard to food labeling.

MR. CALIFF: What's healthy in the long run, I would bet, as we get better data, will depend somewhat on your genes and what you eat. I've interpreted what we're doing at the FDA as mostly trying to nudge society in the right direction with enticement and better information. Hopefully, it's beginning to work.

MS. MAYNE: Healthy has a reg-

ulatory definition that said [the product] couldn't exceed a certain amount of total fat, saturated fat, etc., containing beneficial nutrients as well. Some of that science has changed over time. I've worked in nutrition policy for almost three decades, and the monumental shift in how we look at that science is really striking. My training was in nutrition biochemistry, and the term "fat" really doesn't mean anything. There's polyunsaturated, monounsaturated, saturated, omega-3's, omega-6's. Each one of those means something specific to me.

But what's difficult is taking that complexity and giving it to consumers in a way that they understand. What the science really shows is that the type of fat matters, and that higher-fat foods can be healthy as long as the predominant sources of fat are monounsaturated and polyunsaturated fatty acids.

So, under the old regulatory definition of healthy, certain foods would not have qualified, while the dietary guideline says these *are* healthy foods. That's why the FDA wants to relook at this issue of the term healthy. What should it mean? What do people believe about that? This is again a regulation to really make sure that that reflects the most current science.

MR. MURRAY: What are the things most concerning to you in the American diet?

MR. CALIFF: The dietary pattern. A lot of it is tied to socioeconomic, where you have so-called food deserts where people can't even get to a place that has generally healthy food. And it worries me a lot that there seems to be an inverse relationship between the price of food and its nutritional value. That is, the things that are best for us tend to be more expensive. So, poor people are eating much worse diets.

Good and bad calories

MR. MURRAY: There's a lot of debate about calories and the quality of calories. A lot of peo-



ROBERT CALIFF | The FDA is 'trying to nudge society in the right direction with enticement and better information.'



SUSAN MAYNE | 'In our country today, the top killers are heart disease, cancer, diabetes—diet-related chronic diseases.'

ple say if you eat 2,000 calories of salad, that's preferable to 2,000 calories of Twinkies.

MS. MAYNE: Calories are important, and FDA has done many things to try to make this really clear. The first is the update to the nutrition-facts label, where calories will be displayed much more prominently, along with serving-size information.

Other changes include menu labeling, which comes to us through the Affordable Care Act, where now menus will have to display calorie information for chain restaurants with 20 or more locations.

MR. MURRAY: Isn't the evidence that, here in New York, after Mayor Bloomberg introduced it, people ate more? That it had the opposite effect of what was intended?

MS. MAYNE: There's research around this as well, and one of the things studies have indicated is if you only give calorie information but don't tell people what a normal amount of calories is, they have a hard time interpreting it. Putting "700 calories" on an entree didn't mean things to people who didn't know what normal calorie intake is. So this is being implemented.

The Wall Street Journal thanks the sponsors of the Global Food Forum for their generous support.



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Thank You!

Thanks to all who participated in the inaugural Global Food Forum hosted by *The Wall Street Journal*. The team at Pratt was proud to sponsor a conference with so many great leaders to raise the profile of the important issues facing the American food industry. We have started a national conversation that we hope will lead to lasting change that bolsters America's economy and global food security. We believe in the American food industry!

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JOURNAL REPORT | GLOBAL FOOD FORUM

The Problem With All-or-Nothing GMO

Monsanto's Mike Frank says there is a danger in making this a debate of good vs. bad

The food industry is constantly adapting to changes in consumer tastes and priorities, and today a big part of that is adjusting to resistance among consumers to foods made with genetically modified ingredients.

Mike Frank, senior vice president and chief commercial officer of **Monsanto Co.**, a global leader in seed sales and crop genetics, talked with *The Wall Street Journal's* Chicago bureau chief, **Joanna Chung**, about the **GMO** debate and what other technological advances are in store for agriculture. Edited excerpts of their conversation follow.

How GMOs fit in

MS. CHUNG: Why is it that the non-GMO side of the debate seems to have prevailed?

MR. FRANK: If you look at the scientific journals, the regulators around the world, they've all come to the same conclusion—that GMOs are safe from

a consumption standpoint, they're safe in the environment, and they offer farmers real benefits. And so, from a scientific consensus standpoint, there's really no argument on that from my perspective anymore.

Now, some people do want to buy organic or non-GMO, and I think that's great. We sell a lot of seed that's non-GMO.

Often what happens is, there's a conversation that it's kind of good versus evil, or good versus bad. Farmers everywhere, whether they're organic or conventional or using GMOs, they're all trying to do the same thing: They're trying to produce successful harvests, they're trying to manage pests, they're trying to do the right thing in the environment, and they're trying to create a viable business model, so that they can hand it down to the next generation.

And so it's not one system is good and one system is bad. I think all of the systems are good. And ultimately, in order to feed a growing planet, we need every farmer on the planet, whether they're organic or conventional, or they use GMOs, to be more successful going forward.

MS. CHUNG: Do you think it's a good thing for people to want to know where their food comes from, and have more information about it?

MR. FRANK: Yes. It's great that consumers are interested in where their food comes from. The more the agricultural industry and the food companies can help educate the public and give them honest, factual information, so that consumers can then choose what they want, then I think that's fantastic.

I also think affordability is a very important issue. A lot of our population in the U.S.



MIKE FRANK | 'It's not one system is good and one is bad. I think all of the systems are good.'

MR. FRANK: Data science in agriculture is probably at the top of the list for us. We think that by understanding the soil conditions, the weather, and being able to track year after year exactly how all of these things combine to impact the ultimate harvest, this will change agriculture. It'll change it for the equipment companies, it'll change it for the seed companies, for the crop-protection companies and for the fertilizer companies. This is going to be an extremely important change that's coming quickly to agriculture, and it's very exciting.

I also think it's the integration of solutions. A lot of the solutions that farmers use are very fragmented. They go buy their seed from one supplier, they buy their fertilizer from another supplier, and their crop-protection products. With data science, being able to provide in a seamless way that solution on the square meter, that's going to be very important.

So, it's not just the data science, it's also how can you bring it together in a way that the farmer can ultimately translate it into the field in a practical way?

MS. CHUNG: In terms of global markets, what are the hurdles to offering our technology and our experience with agriculture in markets like China?

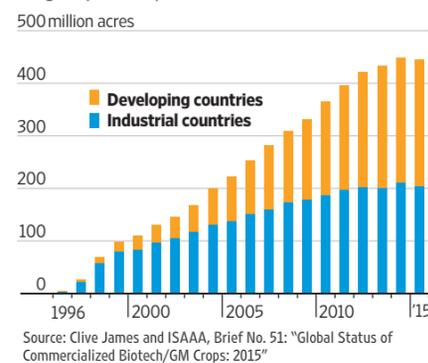
MR. FRANK: China has 20% of the world's population, and 9% of the arable land. They want to try to be self-sufficient, but they're not. So the reality is China imports a lot of grains from around the world. A lot of our soybeans go to China.

And this is the same in Europe. A lot of people think, well, Europe doesn't have GMOs. Europe is not self-sufficient either.

And so, whether it's China or Europe, most of the grains they're importing are GMOs. Their regulators have looked at the science of it and said, yeah, this is fine. But because of political and societal pressures, they haven't allowed their farmers access to the tools.

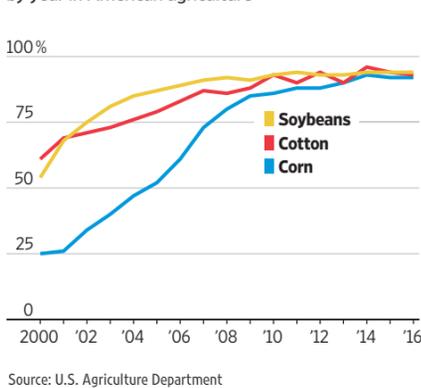
Biotech Boom

Acreage in biotech crops around the globe by year. Developing countries had a slower start but have caught up to and passed industrial countries.



Growing in the U.S.

The genetically engineered share of these crops by year in American agriculture



Chickens Without Antibiotics

Jim Perdue on the impact of the change—on both the chickens and the market

How can meat companies best respond to rapidly changing consumer priorities about animal care and healthy products?

For insights into the question, The Wall Street Journal's Jason Anders spoke with Jim Perdue, chairman of Perdue Farms Inc.

Here are edited excerpts of their conversation.

Slashing antibiotics

MR. ANDERS: We're at this unique moment where consumers are scrutinizing like never before what goes into the food they eat. And there's a big focus on antibiotics. They're a very effective tool for fattening chickens and fighting off disease, but there's an increase in attention now and some debate over whether all this exposure to antibiotics in the food chain is weakening our ability to use them to fight disease in humans.

So you have been on a very long journey to banish antibiotics. We want you to tell us how you did it.

MR. PERDUE: We had enough evidence that this was becoming an issue that was not a fad. We needed to do something about it. We called it Project Wheaties. The reason we called it Wheaties is because I believe a consumer will let us do to our chickens what they'd do to their kids.

What we were doing to our chickens, we were giving them antibiotics every day in the feed, regardless of whether they were sick or not. But a consumer—they don't put antibiotics in the cereal every morning.

MR. ANDERS: You're still in the business of selling large chickens. How do you get the chickens big without using the antibiotics?

MR. PERDUE: When we took it out, there was no difference in the growth. We had been using it because we had always used it, which is not a good reason to do anything.



JIM PERDUE | 'We have a goal to double the activity of our chickens in the next two years.'

They also have to have pasture access. They have to have full light, six hours of sleep at night or there are density differences. And there are enhancements, things that the chickens can play with in the house. That may sound funny, but what we have found is that the organic chickens are twice as active as our chickens were in our houses which have no windows.

When we embarked on the no-antibiotics-ever program, we went to an all-veggie diet. We replaced the animal by-products with more soybean meal. We replaced the lard with corn oil or soybean oil. We found it actually gave it a better flavor.

MR. ANDERS: Is the price of Perdue chickens any higher because you made this no-antibiotics push?

MR. PERDUE: If it is or isn't, it's because of the market in general, and whatever premium we may enjoy that the consumer is willing to give us. Most of the time you invest in things hoping down the road, they will pay off with market share, and that's most important to us.

What we've found is that this has created somewhat of a revolution in the last couple of years. Chick-fil-A, for example, is a customer of ours, and

we do about 20% of their volume. And they came to us once they saw what we were doing and they wanted no-antibiotics-ever chicken.

So they made a commitment over five years. Once they made their statement, then you had a lot of other [chains make similar statements]. You're seeing sort of a domino effect because now somebody large enough can provide enough no-antibiotics-ever product to satisfy a large customer.

Humane treatment

MR. ANDERS: The other piece of this that people are very focused on now is animal welfare. Walk us through some of what you're doing on that front.

MR. PERDUE: We have a goal to double the activity of our chickens in the next two years. We're putting windows back in our chicken houses, for natural light. We're putting enhancements in the houses, as I mentioned. Bales of hay. Swings.

Reducing stress. We're going to use CO2 combined with oxygen to put the chickens to sleep before they are killed, versus electricity.

We give chickens what they need, which is a roof, food and water. The question is, what does a chicken want? That's the question we're asking.

Where Our Food Comes From

The problem is that most of the time, we have no idea, says Randall Fields of ReposiTrak

The food industry has become so globalized that much of the U.S. public doesn't even know where its food comes from, much less whether it is safe. Randall K. Fields, CEO of ReposiTrak Inc., a company that helps retailers and suppliers in the food, pharmaceutical and supplements industries comply with federal requirements, sat down with John Bussey, associate editor of The Wall Street Journal, to discuss some of the challenges. Edited excerpts follow.

Organic concerns

MR. BUSSEY: If I presented you with a head of lettuce in a package that said organic, would you as a consumer be interested, or would you see it as a lethal weapon?

MR. FIELDS: It's much closer to the latter than the former. Most heads of lettuce have relatively indeterminate origin. So, for people who know too much about the supply chain, it's not something you'd be willing to eat without a lot more knowledge.

In supermarkets and other retail food sources, they don't have a lot of transparency in their supply chain. Their job is to keep a product on the shelf. So if they're short on cantaloupe, their buyers will call the broker who in turn will find cantaloupe. Maybe it comes from a farm that they should be doing business with, and maybe not. Because of the opacity of the supply chain, the risks are higher than any of us would like.

It's going to get fixed. It's either going to get fixed because, under the new Food Safety Modernization Act [signed into law in 2011], the Food and Drug Administration and their partners at the Department of Justice will dress a few executives up in orange and silver, or because there's pressure from retailers—we see that—to improve the compliance and safety of the supply chain. That's the



RANDALL K. FIELDS | 'Because of the opacity of the supply chain, the risks are higher than any of us would like.'

only way it's going to work. Consumers can't get it done.

MR. BUSSEY: What are companies doing right or wrong in analyzing their sourcing?

MR. FIELDS: We've been disappointed at the general level of compliance to basic standards across the industry. If you take a look at all the facilities that are actually food-safety audited, it's 10% to 12% of all the facilities registered with the Food and Drug Administration. And there's a lot of companies that do business that aren't registered.

So, in terms of a safe practice and audit, not enough of that is being done. It's so paper-intensive when you have thousands of suppliers, it just hasn't been done till now. The consequence is an unsupervised supply chain. Not everywhere. Many companies do this just right. But in general, there's not enough compliance.

MR. BUSSEY: A majority of Americans say they would not buy a food product from China. But a lot of our food comes from China. People just are not aware of where their food comes from, right?

MR. FIELDS: Absolutely correct. We [Americans] eat on average 2,000 pounds of food per person per year. That's a big number. Almost 400

pounds of that comes from outside the U.S. one way or another. And because of these multiple points of distribution where a grower in China sends it to a broker in China, who sells it to a broker in Europe, who then sends it to the U.S., there's absolutely no way to know where that came from.

Here's a stunning fact: Seventy-some-odd percent of the ingredients that go into supplements and vitamins are sourced in China or India. How many of you will now quit?

Food-safety officer

FROM THE AUDIENCE: Mark Baum, with the Food Marketing Institute. As an industry, we're only as strong as our weakest link. So, in an era where we're sourcing more globally, and locally—because of consumer preferences—that exposes us. What can we as an industry do to advance a culture of food safety throughout the supply chain?

MR. FIELDS: If I were CEO of a food firm, the food-safety person in my company would become an officer and a direct report. He or she would become as important to me as my general counsel. I would give him the ability to pull on the cord of the bus and stop the bus at any moment. Until that's done, honestly, we don't have a culture of food safety.



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JOURNAL REPORT | GLOBAL FOOD FORUM

How U.S. Farmers May Gain From TPP

Darci Vetter argues that the trade pact would expand access for American agriculture

The White House is in an uphill battle to win support in Congress this year for the sweeping 12-nation trade agreement known as the Trans-Pacific Partnership, or TPP. Darci Vetter, chief agricultural negotiator in the office of the U.S. Trade Representative and a key figure in the negotiations, is helping to lead that charge.

She sat down with Rebecca Blumenstein, deputy editor in chief of The Wall Street Journal, to discuss TPP and why she thinks it will level the playing field for U.S. farmers and food companies.

Edited excerpts follow.

Sensitive spot

MS. BLUMENSTEIN: You were the lead negotiator for the agriculture section of the Trans-Pacific Partnership. You also were born and raised on a farm in Nebraska, so you have a unique perspective on agriculture. It seems the success of the negotiations on agriculture is kind of a hidden story in

TPP that not enough people understand, from what you're telling me.

MS. VETTER: I think TPP really provides an opportunity for U.S. agriculture to access some very high-income, high-value markets, but also to get a foothold into emerging economies in Southeast Asia through Vietnam and Malaysia. Vietnam and Malaysia right now buy our feed grains, skim-milk powder and basic commodities. But as their populations grow and more people enter the middle class, we see a huge opportunity to send them more protein, fresh fruits and vegetables.

MS. BLUMENSTEIN: Let's talk about Japan. You were saying every country has a sensitive sector. Japan is famously protective of rice. But you got them to blink a bit on this.

MS. VETTER: I think it's important for people to remember that the second part of agriculture is culture. And when you look around the world, the

most protected markets, the highest tariffs, the most difficult barriers are often in that agriculture sector.

If you look at both Canada and Japan, which have some very closed markets, for the first time in a free-trade agreement every product without exclusion was on the table and was liberalized in some way. Never before in a free-trade agreement had Japan opened its sectors for beef, pork, wheat, rice, dairy or sugar. All of those products are on the table in TPP, with significant new access. In our previous trade agreements with Canada, they didn't offer any access to dairy or poultry or eggs. We will have access in all three sectors if TPP is entered into force.

MS. BLUMENSTEIN: Many people aren't optimistic about the prospects for TPP. What happens if it isn't passed?

MS. VETTER: I'm an eternal optimist. And there is in fact a narrow window to be able to approve TPP in the lame-duck



GABE PALACIOWSKI/JONES

DARCI VETTER | 'You see benefits on everything from grains and staple products to specialty crops—tree nuts, fruits.'

session. And agriculture is really critical in that fight.

I grew up listening to price reports every morning about whether pork-belly futures were up or down, and what the price of wheat and corn was. But in that same report every morning, U.S. farmers and ranchers hear about whether there's a drought in Brazil or too much rain in Russia. They firmly understand that they are competing in a global commodity market. So I think there's a real opportunity to continue to build the support and momentum, and there is time to get this done.

MS. BLUMENSTEIN: We're not hearing a lot about agriculture and the benefits of trade in the current discourse.

MS. VETTER: I think that's right. Although I would say we've been working very closely with agriculture stakeholders who are getting the word out about what this

means, and the income returns to the average American farm family that will come from TPP. There are certainly party differences on trade in general. Typically any trade agreement that passes does so with a bipartisan effort. And we will be looking for that same effort here.

MS. BLUMENSTEIN: Could we talk a bit more about Canada and Australia, which are part of TPP? You said earlier that we really haven't renegotiated trade pacts with them since the North American Free Trade Agreement.

MS. VETTER: You're right that we already have free-trade agreements with several of the countries that are part of TPP. And TPP gives us a chance to update those agreements.

When we negotiated Nafta, we didn't put inside trade agreements the labor and environmental commitments that we put in agreements

now. Measures for protecting intellectual property, or making sure that we have a free and open internet also weren't included. There wasn't an internet when we negotiated Nafta. So this is a chance for us to raise the standards of some of our current trade agreements with existing trade partners, as well as establish new and very high standards with other partners.

Staying competitive

MS. BLUMENSTEIN: You say the U.S. in a way is uniquely positioned here. We almost underestimate the diversity of what the U.S. produces.

MS. VETTER: We are blessed with good supplies of water. We have rich and fertile soils. We can grow cold-weather crops and tropical products.

The vastness and the richness of our agriculture production is often underestimated. But because of that, when we do negotiate these agreements, you see benefits on everything from grains and staple products to specialty crops—tree nuts, fruits.

MS. BLUMENSTEIN: Anthony Pratt, executive chairman of paper and packaging company the Pratt Group, said earlier today that he's concerned that exports from the U.S. are slipping a bit. Are you concerned?

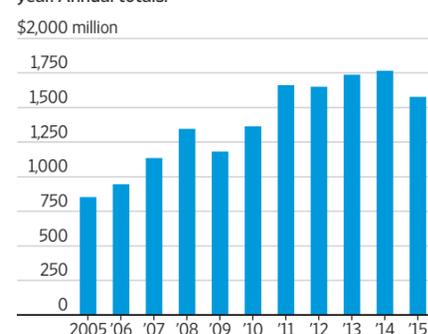
MS. VETTER: Well, I think the slippage in recent numbers, in part, is by value, and reflects a real drop in commodity prices. But if we don't move forward with these free-trade agreements, we will fall behind.

During our TPP negotiations, Australia and Japan completed and implemented a bilateral free-trade agreement. And so today, a pound of beef from the U.S. going to Japan pays a 10% higher tariff than that same pound of beef coming from Australia.

And Australia, one of our key competitors in Southeast Asia in dairy and wine, has the Asean free-trade agreement, where they will have zero-tariff access for wine and dairy, and we will fall behind. If we implement TPP, we will stay on a level playing field with our competitors in that region. If we stand still, we won't.

Feeding the World

Global trade in agricultural products more than doubled from 2005 to 2014 before a decline last year. Annual totals:



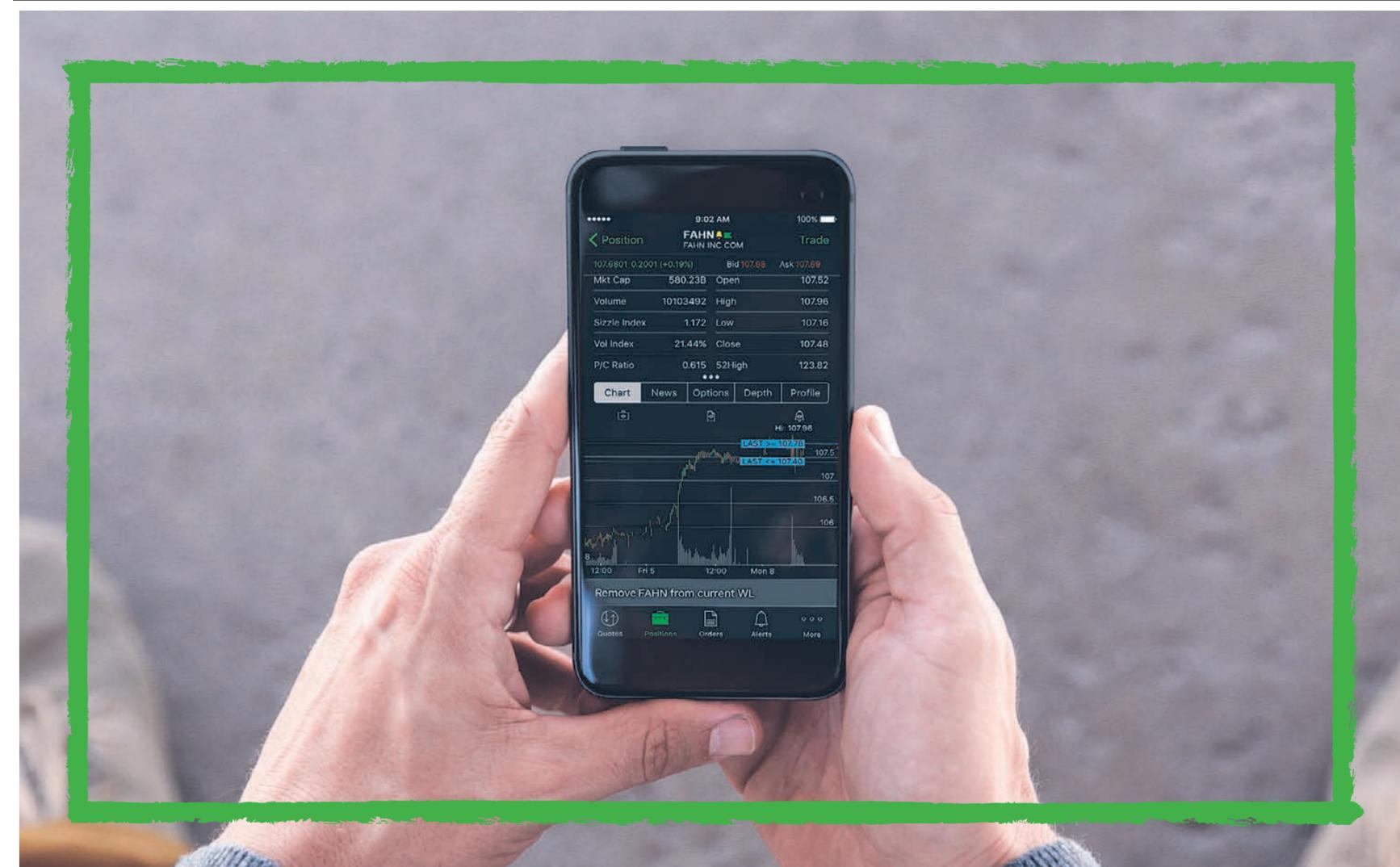
Source: World Trade Organization

Top 10 agricultural exporters in 2015

	Pct. of world exports	Total (in billions)
U.S.	10.4%	\$163
European Union*	10.0	158
Brazil	5.1	80
China	4.6	73
Canada	4.0	63
Indonesia	2.5	39
Thailand	2.3	36
Australia	2.3	36
India	2.2	35
Argentina	2.2	35

*Excludes shipments within the EU.

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