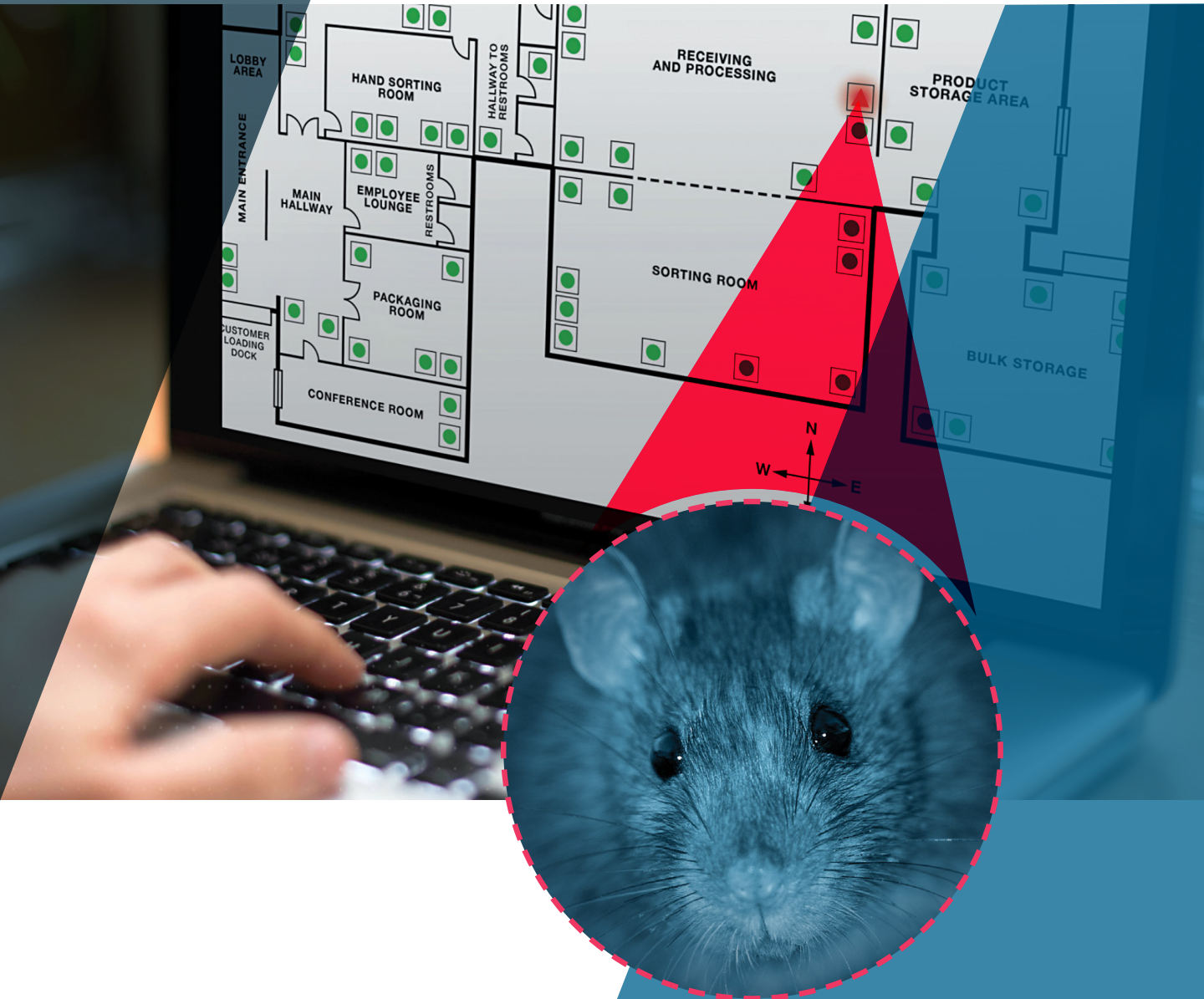


INDUSTRY INSIGHTS:

The Future of Rodent Control



Part Evolution, Part Revolution



It's hard to overstate the global importance of effective rodent control.

Research published by the Ecological Society of America found that, in Asia alone, the amount of rice lost due to rodent activity could feed approximately 200 million people; while the Centers for Disease Control and Prevention reported that worldwide, rats and mice are responsible for spreading more than 35 diseases. If that weren't alarming enough, there are major financial implications of the destruction wrought by rodent infestations. The United Nations once reported that rats destroyed nearly 42 million tons of food worldwide — a loss that totaled a staggering \$30 billion.^{1,2,3}

The pest industry has a collective responsibility for safeguarding critical food supplies. And — with the Food Safety

Modernization Act — that challenge has shifted in scope from requiring a *reactive* response to a *proactive* program. As an industry, we must rise to the challenge. That means a focus on innovation and proactive solutions to create space for new and disruptive technologies.

At Bayer, we are grateful to be among the pest management professionals who are at the forefront of innovation. We are committed to developing new ways to keep the world's food, communities and homes safe from public health threats. In fact, it's our mission to collaborate with customers to create *Science for a better life*.

Part evolution and part revolution, combining tech advancements (i.e., IoT-enabled devices, 24/7 automated reporting and cloud-based platforms, among others) with decades of integrated pest management experience has the power to shape the future of rodent control today.

Together, we have all that we need to not only create a paradigm shift in effective pest management with positive global impact, but also change public perception and elevate the industry. In the following supplement, we hope you will share our excitement in seeing how some of these ideas and innovations are coming to fruition in the rodent management industry. ☺

Ildem Bozkurt
Head of Pest Management & Public Health for the U.S.
Bayer

¹Stenseth, Nils Chr & Leirs, Herwig & Skonhøft, Anders & Davis, Stephen & P. Pech, Roger & Andreassen, Harry & Singleton, Grant & Lima, Mauricio & Machang'u, Robert & Makundi, Rhodes & Zhang, Zhibin & Brown, Peter. (2003). Mice, Rats, and People: The BioEconomics of Agricultural Rodent Pests. *Frontiers in Ecology and The Environment* - FRONT ECOL ENVIRON. 1. 10.2307/3868189.

²<https://www.cdc.gov/rodents/index.html>

³Almeida, Anthony; Corrigan, Robert; and Sarno, Ronald (2013) "The Economic Impact of Commensal Rodents on Small Businesses in Manhattan's Chinatown: trends and possible causes," *Suburban Sustainability*: Vol. 1: Iss. 1, Article 2. DOI: <http://dx.doi.org/10.5038/2164-0866.1.1.2> Available at: <http://scholarcommons.usf.edu/subsust/vol1/iss1/2>

With rodent control on the cusp of a new era, forward-thinking PMPs are turning to rodent monitoring systems to **grow their commercial business** and **strengthen their relationships** with food-processing accounts.



On a **GROWTH** Trajectory

When the topic of innovation comes up at industry events, the conversation usually turns to the latest advancements in formulation technology, vehicle tracking systems or pesticide application equipment. But in recent months, a relatively new entrant to the marketplace has dominated the conversation — *rodent monitoring systems*.

This shift is due, in part, to the global expansion of the rodent control market, driven by urbanization, population growth, regulatory compliance, climate change and the desire of food-processing accounts to protect their brand reputation by proactively addressing rodent issues before they become a serious problem.

The enhanced profile of the rodent control market isn't a surprise to longtime industry observers who have witnessed its rapid growth in recent years. Nationwide, service revenue derived from controlling rodents in commercial and residential accounts totaled \$860 million in 2017, a 6.4 percent increase over 2016, according to Specialty Consultants, which annually publishes a comprehensive survey of the U.S. structural pest control industry.

This market expansion is particularly evident in high-end accounts such as food facilities where a single rodent infestation can have a devastating impact on a company's brand. These "mission-critical" commercial accounts are keenly interested in proactive rodent control programs that provide 24/7 monitoring of their facilities.

As a result, progressive PMPs are field testing various rodent monitoring systems, recognizing the long-term value of investing in this technology. The systems have put the industry on the cusp of a "major disruption," says Stephanie Dickson, COO of McCloud Services. "The question we need to ask ourselves is, 'How can we use this new technology to focus our priorities on things that are truly meaningful?' There's a lot of time and labor invested in trap checking, but we can use that time more effectively. This new technology will allow technicians to spend more time understanding the environment and ecology of food plants and how that impacts pest populations," she says.

"Remote monitoring allows us to be more investigators rather than trap checkers," adds Shane McCoy, director of quality and technical training, Copesan Services. "We have an account with hundreds of interior rodent devices that we check once a week with little to no captures in years. This stops the madness of needlessly checking these devices and allows us to concentrate our time on pest management."

In fact, Dickson adds, "There are more applications for these systems than we originally thought. We're learning precisely when and where we're catching rodents in accounts, so our detective work is a little more fruitful now." They also are using it in less accessible areas like ceiling voids and other out-of-the-way places, she says.

"It's a wonderful problem-solving tool."

But that doesn't mean it's a silver bullet. Two areas of concern have been false positives and data integration, but manufacturers have worked to allay both. "This is a burgeoning technology and there will be some growing pains within the pest management industry and among our clients," says Bennett Jordan, director of technical support and regulatory compliance at Copesan Services. "Bayer has allayed many of our concerns and we have confidence that our grasp and use of this technology will come into sharper focus each day."

Any reservations expressed by Cook's Pest Control, Decatur, Ala., have been addressed, says Vice President of Technical Services Stephen Gates. "The technology works, and it has gotten even better with time. We have been through a couple of large audits and the auditors have accepted the new technology."

While the Internet of Things (IoT) may be relatively new to PMPs, it's already been embraced by the food-processing industry. "They're using IoT in other applications in their plants," Dickson observes, so it's not a significant leap of faith to extend the use of IoT systems to pest control.

"The future (of rodent monitoring systems) is very bright," Gates says. "I feel it will be widely adopted once the processes have been defined and the technology has been proven to work over time." ☺

IoT in FOOD PROCESSING

Digital rodent monitoring systems have the potential to **transform the way pest control is performed** in food facilities.

Since the final rules of the Food Safety Modernization Act (FSMA) were published, its overarching principles of prevention and documentation have become standard practice for the food industry. And with its new requirements for risk-based preventive controls and a *written* Food Safety Plan, it is causing significant process change and increasing the industry's implementation of technologies to simplify its processes.

The growing importance of prevention and documentation are further evidenced by a review of FDA Inspections Observations of 2017, for which noncompliance in pest control was a top-listed observation. These included lack of effective measures to exclude pests or protect against food contamination and lack of written pest control procedures and recordkeeping.

USDA also has increased recordkeeping requirements, such as the passage of a new rule that retailers that grind raw beef products now must maintain records on their suppliers, internal production and equipment cleaning and sanitizing. This can become quite complex when one

considers the mixing of ingredients from multiple sources into a single store-made product, such as deli meatballs, soups or pizzas. "The implications of the rule impact the entire food industry," says TAG Owner and Former FDA Associate Commissioner of Foods David Acheson. "Intended to expedite traceability to enhance USDA's ability to investigate outbreaks and identify source materials, it is one more example of the importance the federal food safety agencies are placing on recordkeeping."

When the food chain transparency being driven by consumers is added to this, it results in a confluence of consumer, retail and government demand that has pushed the envelope for the food industry, eliciting new-age technological applications of IoT for data gathering and analysis.

It is a world of hyper-connectivity that enables such transformation that, says Futurist and Author Gerd Leonhard, "Humanity will change more in the next 20 years than in the previous 300." Stating that "anything that can be automated will be automated. Business as usual is dead,

and food is next. A fundamental transformation of today's global food system is imminent."

This is being seen in areas such as SMART farming, collaborative robots (cobots), and even the development of "clean" meats using no animal products.

IoT IN PEST CONTROL. With such extensive technological developments, it's no surprise that IoT is seeping into pest management. One of the most significant developments is the digital rodent monitoring systems which alert PMPs to the trap-capture of a rodent. The real-time alerts enable rapid response, and the aggregation of data provides a deeper understanding of rodent presence and activity, enabling the implementation of preventive controls.

In a case study report, *Remote Monitoring for Rodent Control*, McCloud Services Technical Director Patricia Hottel discusses how these systems enable the opportunity to investigate equipment at time of capture instead of on the weekly basis of most conventional programs. "We increase our ability to reduce food safety risks with a faster response time and the increased ability to modify our action plan in a more timely manner," she says. "It promises to increase our knowledge of basic rodent behavior and the root causes of rodent problems in our sites."

"The majority of QA managers and auditors are hungry for more information," says Bayer Digital Pest Management Sales and Business Lead Scott Broadus. "System-generated trend reporting helps PMPs provide more tailored information, helping improve their customers' audit readiness and compliance." Additionally, system data about frequent rodent movements can enable the redesign of trap placement schemes for greater efficacy, he says. "These new insights allow for enhanced transparency and program refinement to ensure customers receive the most optimized rodent control program." 🌐





Better for BUSINESS

Bayer's Rodent Monitoring System gives PMPs the power of **24/7 data** and **real-time information** that drives **faster response times** at **mission-critical** accounts.

"Technology is one of our things here," says Rick Steinau, who equipped Ace Exterminating's trucks with hand-held computers in 1986. He's an early adopter — "I'm a techy," he admits. "We seize opportunities. We let Bayer know we were interested in remote rodent monitoring and that we wanted to do some field testing."

Steinau is among the PMPs who implemented the Bayer Rodent Monitoring System (RMS) at sensitive accounts, such as highly regulated food processing plants that face regular auditing and increasing compliance standards with the Global Food Safety Initiative (GFSI) and the Food Safety Modernization Act (FSMA).

Bayer's RMS is a wireless network of high-tech sensors added to traps. The sen-

sors broadcast the status of the trap using radio signals that are transferred to the cloud via cellular communication. PMPs get real-time notifications by email or text, and the RMS portal shows the network of traps and the status of each. It's a robust dashboard that gives PMPs information about captures and aggregates data for trending and reporting.

RMS is an evolution in how Bayer serves PMPs, and how industry professionals can deliver more value to customers. "Bayer is truly seeing the vision of IoT and is embracing the vision of having a digital platform that gives pest management professionals a broad understanding of why, when and where pest problems occur, and we are supporting that — and we see lots of potential," says Claudia

Rössler, Microsoft's worldwide industry director, Chemical, Agricultural, Life Sciences Industry. Rössler worked with Bayer on the RMS project, which uses the Microsoft Azure platform. "RMS can position a pest control company as a safety expert rather than being the service provider that comes in to check traps," Rössler says.

Steinau has watched that potential become a reality at a produce warehouse. Initially the customer wasn't sure how food safety auditors would accept the system, but that did not end up being a barrier. In fact, Bayer has received positive response from the audit community, says Peter Jardine, strategic marketing lead, Bayer, Environmental Science unit. "We worked alongside auditors to get feedback

from them on how our reporting would make their jobs easier. So, we checked that box.”

Steinau then pointed out to the customer that some employees were assigned the task of checking traps. If a capture was made, they’d alert Ace Exterminating instead of having Steinau’s team check traps weekly. “We said, ‘You don’t have to do that anymore. And, you can raise the bar on your safe, quality foods.’”

The customer agreed to use the Bayer Rodent Monitoring System; the auditor is pleased with the system; and the food processor can now reallocate some of its labor that was focused on trap checking. From a sales perspective, RMS is a competitive advantage. (See *Talking RMS*, page 8.)

THE TIME IS RIGHT. The business case for this remote monitoring technology has never been stronger. “There is a growing zero-tolerance mindset in food safety accounts,” says Scott Broaddus, sales and business lead, Bayer Digital Pest Management. (Bayer created a digital team within Environmental Science to focus on RMS technology.) “It should be the expectation of our industry to deliver around-the-clock monitoring — and it’s available,” he says. “Now is the time to embrace it.”

Actually, there has always been a case for real-time monitoring, but the technology wasn’t quite there to develop a solution for sensitive environments until a few years ago. That’s when Bayer began digging into the RMS project. “Technology is an evolutionary thing, and the technology has not always been there,” Broaddus says. “And now, with increased regulatory changes and consumer demands, the role of the PMP is shifting from being proactive to being *predictive*. The only way you can be predictive is by capturing and analyzing data. And you can’t do that without technology that delivers real-time insight.”

REMOTE MONITORING SERVICE.

PMPs are used to Bayer providing products in a bottle — solutions that PMPs physically apply in the field. But RMS positions Bayer differently, and in a way



“THERE IS A GROWING ZERO-TOLERANCE MINDSET IN FOOD SAFETY ACCOUNTS. IT SHOULD BE THE EXPECTATION OF OUR INDUSTRY TO DELIVER AROUND-THCLOCK MONITORING — AND IT’S AVAILABLE. NOW IS THE TIME TO EMBRACE IT.” — **Scott Broaddus, sales and business lead, Bayer Digital Pest Management**

that aligns with how global companies are evolving in response to consumer demand for real-time information, and with how technology is disrupting the way we do business. Think of industries like insurance and finance, and how tech natives are introducing services that fill a gap, an unmet need that’s not being delivered by existing players in the market, Broaddus says.

Bayer is taking a completely different business tack by introducing RMS as a service. That is, PMPs won’t buy and own it. They’ll rent and use it. “Think about software, cable and satellite TV,” Broaddus says. “These are services you lease. You rent the satellite dish on the side of your home, and you pay a service fee to get the outcome, which is HD television. What we are trying to do is not much different.”

PMPs pay a service fee to Bayer for RMS. Then, as the technology advances and new iterations are rolled out, they get the latest systems. “This is a business model we spent a lot of time and effort developing so there wouldn’t be a barrier to entry for the PMP to say, ‘I can do RMS and not shell out a lot of cash up front and wait for the ROI,’” Jardine says. “You pay as you go in a monthly subscription model, and we take care of the connectivity. We take care of the dashboards. We upgrade the software and devices. That way, our customers can concentrate on what they do well.”

Because RMS technology is new and will evolve just as any connected device does, the service model makes good business sense for PMPs, Broaddus says. “Customers are not used to seeing a service from us,” he says. “But, it’s really important for us to say, ‘Hey, we don’t think you should buy it today because the version that comes out in six months will be better. Why do you want to own

it?’ We want the industry to embrace the technology as a service, which then enables them to create differentiation in the market and drive additional profitability, higher margins and extract operational efficiencies.”

Broaddus emphasizes: “Don’t spend the capital buying [the technology]. Use it as an enabler.”

That’s what Wil-Kil Pest Control’s Shane McCoy did when he implemented RMS at an audited food plant and a big-box store. Adopting RMS did not require him to invest in monitoring stations or upgrade his technology. The service model made getting started easy. It was plug and play. “The customer service we receive from Bayer couldn’t be better,” he adds. “That’s so crucial. When we give them a call, they come out to our offices — they explain everything. They respond quickly to emails and phone calls. That’s important when using a new technology.”

Bayer often gets questions about RMS’s connectivity — how it sends signals from the traps. McCoy has RMS in place at a facility where one floor area gets hosed down daily. But the sensors are water resistant and dust proof up to the IP54 standard, Jardine says. “We are working on the waterproof aspects of it now to improve that further still,” he says.

The system’s transmitter is designed for frequency to travel about 13 miles in a completely unobstructed environment. But many buildings include layers of infrastructure that can reduce this. “When you add complexities like multiple floors and steel-reinforced concrete, then that range drops,” Jardine says. “But for us, going 13 miles to a million square feet is not hard to do.” Communication protocols are robust enough today to support RMS, Jardine adds. “The devices roam and look for the signal from the nearest

carrier,” so PMPs need not figure out the connection.

The dashboard provides real-time information quickly and accurately, he adds. This is especially beneficial for operators with multiple facilities, who can review a single dashboard to monitor all activity. So when a capture is made, PMPs know immediately. And that’s good for business.

TECH EMPOWERS PEOPLE. Finding qualified technicians is the greatest challenge for pest control operators of all sizes. But technology can help a PMP leverage top talent, Broaddus says.

At a 2018 NPMA Executive Leadership Forum, Bayer sat with a group to identify some of the top issues the industry faces. Technology was a piece of that, Broaddus says. “But without a doubt, the No. 1 challenge our industry faces is labor — retention and recruitment. Where do we get these really good technicians? It’s really difficult to grow your business if you don’t have good people to deliver the service, and PMPs that adopt and embrace RMS technology will see the benefit.”

For example: Figure a technician spends 10 hours a month at one commercial account, checking rodent traps. With RMS, that work could be cut up to 75%. “Now you can take one of your most qualified technicians and put him on new work, whether that’s a new account or existing business that needs more attention and drives more profit. Or he can focus on higher-revenue work that demands a more qualified technician.”

RMS can be the eyes and ears, collecting data and delivering real-time alerts upon capture. So rather than spending hours checking traps, the PMP can be identifying conducive situations that



The RMS provides real-time information quickly and accurately, so when a capture is made, PMPs know immediately.

could cause infestation — and be more of a consultant.

Using RMS at a food processing account allows McCoy’s team to move in quickly after a capture and identify the root cause, he says. “We can respond quickly and identify the reason — it could be that a shipment came in and introduced a rodent, or maybe there is construction happening on the site or a door was left open.” And understanding that information in a sensitive environment is critical.

“The client is excited about it, and RMS helps align us with their vision, which includes ‘using technology,’” McCoy says.

Technicians are still checking devices because this account has insect light traps

and exterior bait stations, too. “But technicians are spending less time, and when they’re there they can focus on looking around and being more of an investigator than a trap-checker,” McCoy says.

That’s exactly why Bayer pursued this technology, Jardine says. “Our customers told us they were interested in the technology because they saw it could help them elevate their service to an even higher level.

“The professional pest manager is doing a great service for the community, for neighbors and for society at large so you can trust the food you get at the store has not been contaminated,” Jardine continues. “That’s his job, and it’s an important one. We want to help him do that job even better than in the past.”

RMS does not replace people. It enhances their capabilities, Rössler emphasizes. “We want to be cautious about people being afraid of technological changes, and we want to get across that this is about making people more effective,” she says. “It’s about helping a company make better decisions, but at the end of the day, those decisions are made by people.” ☺



“WE CAN RESPOND QUICKLY AND IDENTIFY THE REASON – IT COULD BE THAT A SHIPMENT CAME IN AND INTRODUCED A RODENT, OR MAYBE THERE IS CONSTRUCTION HAPPENING ON THE SITE OR A DOOR WAS LEFT OPEN.” – **Shane McCoy, chair of the Copesan Technical Committee and director of quality and technical training for Wil-Kil Pest Control, Sun Prairie, Wis.**

Talking RMS

How do you explain the real-time monitoring technology and its benefits to clients? Here are some **talking points** to tuck into your sales presentation.

When Rick Steinau introduced the Bayer Rodent Monitoring System (RMS) to a large produce warehouse, the client listened. The technology seemed like a solution to raise the bar on its ability to provide safe, quality foods. Steinau, president of Ace Exterminating in Cincinnati, Ohio, encouraged the client, “Use this in your sales. Use this as a competitive advantage. You can say you have a system that is actually reporting real-time if there’s anything going on.”

That proposition appealed to the customer, especially because of increased regulations, the global spotlight on food safety, and a series of contamination issues across the U.S. in the past year that are raising consumers’ attention. Even the cleanest, safest environments are under scrutiny.

So Steinau asked his client, “How important is food safety to you? For a customer who can say we are now doing RMS, which exceeds what the Global Food Safety Initiative (GFSI) is asking for, that’s a big plus,” Steinau adds. RMS delivers peace of mind.

Scott Broadus, sales and business lead, Bayer Digital Pest Management, says, “One of the biggest questions we get is, ‘We love the idea of RMS. But how do we sell it? How do we market it?’”

Here’s what you need to know about presenting RMS to customers and why it’s an advantage for their business, too.

TALK: SENSITIVE ACCOUNTS

RMS is ideal for food processing facilities

and warehouses — sensitive environments that are highly regulated and audited. These customers are under pressure. They must comply with the Food Safety Modernization Act (FSMA) and many are under GFSI. Consumers are food-safety conscious, and an incident could destroy a firm’s reputation and put it out of business. There is zero tolerance for any infestation.

“Have the conversation about RMS with those accounts,” advises Peter Jardine, strategic marketing lead, Bayer, Environmental Science unit. “If you’ve got a once-a-month account that’s not so sensitive, RMS is probably not the right solution at this point. But, when rodent control is mission critical, those are the accounts where this message really resonates.”

TALK: SAFETY AND QUALITY.

Along with pest prevention, PMPs can talk about food safety and quality. Rather than trap-checking, PMPs should discuss the value of real-time monitoring and the quality assurance this service provides. The messaging changes when selling a robust technology service.

Shane McCoy, director of quality and technical training for Wil-Kil Pest Control, said his food processing client was hesitant to try RMS. The sell: saving the company’s people from trap checking. This particular account preferred to monitor its own traps, and then call McCoy’s company if there were to be a capture. “Now, with RMS, they don’t have to check the traps so that



“FOR A CUSTOMER WHO CAN SAY WE ARE NOW DOING RMS, WHICH EXCEEDS WHAT THE GLOBAL FOOD SAFETY INITIATIVE IS ASKING FOR, THAT’S A BIG PLUS.” – **Rick Steinau, president, Ace Exterminating, Cincinnati, Ohio**

employees’ time can be used elsewhere in their business,” he says.

TALK: PEST INVESTIGATOR. Customers want to know: What will change in my service because of RMS?

Assure them that a technician will still look at a representative sample of traps to make sure monitoring systems are clean and functioning properly. They’ll look for conducive conditions that pose a risk for pest infestation — and there’s more time for that investigative work. “There’s more time for technicians to be proactive, so technicians are re-tasked and refocused.”

Let customers know that RMS doesn’t mean they get less attention. The 24/7 data collection means technicians can now spend time on activities that add more value for the customer, like improving the environment.

TALK: THE HUMAN TOUCH.

RMS doesn’t take people out of the picture. It allows people to work more effectively, explains Claudia Rössler, Microsoft worldwide industry director, Chemical, Agricultural, Life Sciences Industry. While the RMS traps essentially become “agents that are with customers 24/7,” technicians can be more responsive and deliver better service. And, on site, they can dedicate time to doing work that machines can’t — the analyzing, investigating and problem-solving required to practice true IPM. 🌱



“IF YOU’VE GOT A ONCE-A-MONTH ACCOUNT THAT’S NOT SO SENSITIVE, RMS IS PROBABLY NOT THE RIGHT SOLUTION AT THIS POINT. BUT, WHEN RODENT CONTROL IS MISSION CRITICAL, THOSE ARE THE ACCOUNTS WHERE THIS MESSAGE REALLY RESONATES.” – **Peter Jardine, strategic marketing lead, Bayer, Environmental Science Unit**