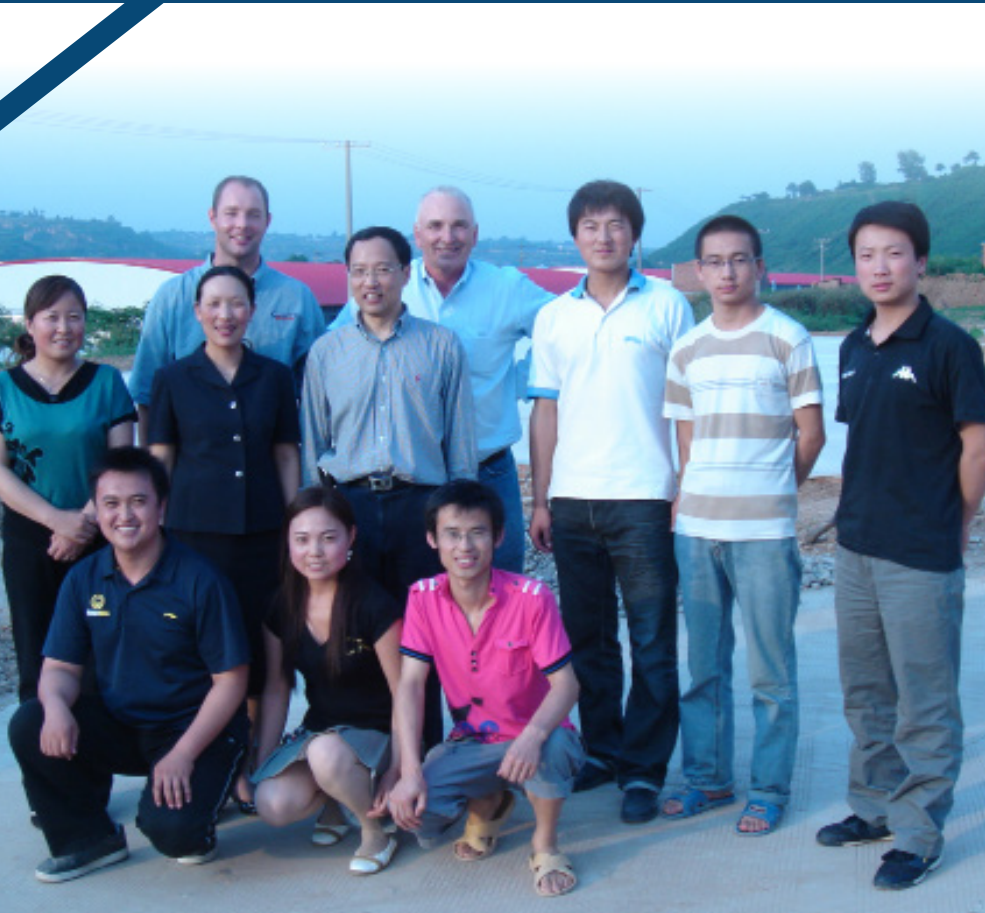


PIPESTONE JOURNAL

Winter 2022



Global Experience



PIPESTONE

Helping Farmers

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Terry Wolters
Vice President
Customer & Industry Relations

Angie Homann
Director of Records and
Information

Dr. Joel Nerem
Chief Veterinary Officer
Pipestone Veterinary Services

Researchers

Francisco Cabezon, Ph.D.
Dan Hanson
Erin Little, M.S.
Karyn Havas, DVM, MS, PhD, Dipl, ACVPM
Roy Edler, M.S.
Scott Dee, DVM, MS, PHD, Dipl, ACVM
Todd Williams, DVM

Nutritionists

Arkin Wu, Ph.D.
Casey Neill, M.S.
Emily Scholtz, M.S.
Hayden Kerkaert, M.S.
Kiah Gourley, Ph.D.

Veterinarians

Pipestone, MN

Dr. Adam Schelkopf
Dr. Carissa Odland
Dr. Evan Koep
Dr. Gordon Spronk
Dr. Joseph Yaros
Dr. Scott VanderPoel
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Dr. Taylor Spronk
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Dr. Bryan Myers
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Dr. AJ Smit
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Mexico

Dr. Sebastian Vaile-Rigo
Dr. Miguel Delgado
Dr. Mauricio Bernal
Dr. Marco Antonio Barrera
Dr. Abraham Lopez Saucedo
Dr. Jean Paul Cano

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Editor's Note

Welcome to the *PIPESTONE Journal*, the premier pork journal featuring and serving farmers just like you. The challenges and speed of business that independent farmers face today are different than the generations before them. By utilizing PIPESTONE's world-renowned resources and expertise, we can work together to create the farms of tomorrow.

At PIPESTONE, we are committed to providing you top-notch, timely information in the areas of Health, Management, Nutrition, Marketing, Research, and Business. Please feel free to communicate with us, your input is appreciated.

Editorial Comments



Pork production is a global endeavor, and PIPESTONE is not a rookie to the global market. With sow farm management in the United States, Mexico, and China, as well as research touch points in multiple other countries, PIPESTONE is global. In this January issue of the PIPESTONE Journal, team members share the value of being involved in a global market, and share tips and insight gained from global experience for the benefit of the family farmer in the United States. Throughout the next 44 pages, you will learn from team members about PIPESTONE's involvement globally in veterinary services, management, nutrition, markets, business and research.

Furthermore, this global issue contains knowledge, insight, and tips to serve as a guide through the potential risk of an emergence of a Foreign Animal Disease, particularly African Swine Fever, into the United States.

I encourage you to reach out to any PIPESTONE team member with comments and questions as you navigate the 2022 winter PIPESTONE Journal.

- Abby Hopp

Winter 2022

PIPESTONE
JOURNAL

Managing Editor

Abby Hopp

507.215.7458 | abby.hopp@pipestone.com

Contributing Editors

Alicia Place, Kyra Flom, Molly Peterson

Contributing Writers

Dr. Joel Nerem, Dr. Karyn Havas, Dr. Joseph Yaros, Dr. Gustavo Pizarro, Joyce Radke, Arkin Wu, Amber Pugh, Terry Wolters, Heidi Uilk, Francisco Cabezon, and Alicia Place.

Address of Publication

PIPESTONE
1300 So Hwy 75
Pipestone, MN 56164

Contact Information

507.562.PIGS(7447)
www.pipestone.com

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On the cover: PIPESTONE is proud to have management involvement in China and Mexico. On the cover is PIPESTONE team members involved in Mexico and China.



By: Dr. Joel Nerem
Chief Veterinary Officer
Pipestone Veterinary Services

Pork is the most consumed meat in the world. As a result, pig farming is a global pursuit. While the USA exports a significant portion of the pork we raise (nearly 30%), most pork is consumed within the country where the pigs were raised.

As PIPESTONE has grown and evolved over the last 25 years, we have gained significant experience and expertise in pig health and production. This has resulted in countless invitations to consult and provide services to pig farmers all over the world. Today, Pipestone is regularly providing services to farmers in China, Mexico, and Brazil. We have also consulted in Chile, Canada, Russia, Japan, and the Philippines, among others. Through these opportunities to work with pig farmers across the world, we have learned many things. All these learnings have helped shape our approach to pig production and the advice we give to our farmer customers.

In 20+ years of international work what have we learned?

- 1 Health is King! When we compare farmers over the world, the most successful producers generally have the healthiest pigs. This has been important for success historically, and we believe that farm health will be even more important in the future.
- 2 Healthy sow farms are the key to good production and healthy pig flows. Good pigs rarely come from bad (unhealthy) sow farms.
- 3 "Location, location, location": Locating sow farms away from other pigs is the key to long term health. This is true in the USA, Mexico, China, and the rest of the world. Relocating sows to remote areas might be the best investment farmers can make to their operation today.
- 4 Biosecurity is a great investment. It really pays off when you have to prevent new infections of ASF, Hog Cholera and PRV – just ask any Chinese pig farmer.
- 5 Biosecurity is really about execution every day. It takes extraordinary discipline. Anybody can have a biosecurity protocol, but daily execution of the protocol is the key to success.
- 6 "An ounce of prevention....." – vaccines are a better investment than antibiotics. It's almost always more profitable to prevent disease than to treat sick pigs.
- 7 An accurate and timely diagnosis is critical when managing a health challenge. The USA has the best veterinary diagnostic laboratories in the world, and that helps put US farmers and vets at a competitive advantage.
- 8 Three site or two site production is a must. Farrow to finish production on a single site is usually not sustainable in the long term.
- 9 Effective disease elimination strategies and the ability to execute are a big competitive advantage. Sow farms, regardless of location, should be designed with this in mind (on site gilt developer units, etc). The farmers that are reducing the number of diseases on their farms will be the winners in the end.
- 10 System design is critical. Single sourcing of sites and "All in/All out" pig flow have demonstrated value.

We have learned a great deal working with pig farmers all around the world and we think this brings value to all of PIPESTONE's customers. After all, PIPESTONE's mission is to "Help farmers today to create the farms of tomorrow", regardless of where their farm is located.

PIPESTONE Risk Assessment on African Swine Fever Reaching the United States



By: Dr. Karyn Havas
Director for Animal Disease Resistance
Pipestone Research

African swine fever (ASF) was diagnosed on Hispaniola in the Caribbean this summer, the Dominican Republic in July 2021, and in Haiti in September 2021. This is the first time since the 1980s that the virus has been found in the Western Hemisphere. It has never been diagnosed in the United States. There is a lot of activity happening to prevent its spread from Hispaniola to the United States, but we must be aware of what our risk is given this new situation.

Scientific publications tell us that, historically, undeclared goods from passengers traveling from the Dominican Republic is a significant risk for import of classical swine fever (Jurado et al, 2017, DOI: 10.1111/tbed.12996), and the same is likely true for African swine fever. We also know, thanks to Dr. Scott Dee, Director of Pipestone Applied Research, that soy feed can play a role in transmission of ASF virus when contaminated. It is one thing to have the virus on U.S. soil in illegally and legally imported items, but it is another layer to have it get into the swine population. What is the risk that ASF will make it to the U.S. and into our swine herd? PIPESTONE veterinarians discussed this very issue.

Risk is made up of the probability of an event happening and the impact when it happens. We feel the current probability of ASF virus making it into our herds is about 10%. That may seem low, but the impact, should this happen, is devastating. We can expect to lose all our export markets in the short term if the disease is only in a certain area, and in the long term if it is widespread. Our industry sells 30% of its products overseas. Domestic demand will likely fall as an outbreak in a product line often reduces consumer demand as well. The economic impacts will be devastating. As a result, even though the probability of import is 10%, the risk of this even is very high.



We should all be prepared to respond the moment we know or suspect ASF is present. This means having 30 days of movement data ready to share with the state, be enrolled in the Secure Pork Supply plan, have biosecurity audits performed where actions are taken to improve one's system, and participate in the Swine Health Improvement Program ASF/CSF certification program. And, of course, call your PIPESTONE veterinarian as soon as you see any signs of illness. Early detection of ASF falls on farm staff and private veterinarians. ASF can start off looking like a lot of common diseases, so if you have any concerns reach out to your veterinarian quickly.



GIFTS FOR GOOD

One of the core values we live by at PIPESTONE is Caring. Caring means caring for our team members, animals, and communities. Our charitable efforts aim to make a difference in the lives of our local and global community members.

Domestically, we donate to:

- Children's Home Society
- Atlas
- The Banquet in Sioux Falls
- Local animal shelters
- Local backpack programs
- Donating pork to food shelters through Meat the Need
- Pipestone Cares donations to local emergency services, children organization/clubs, and 4-H or FFA programs.

Similar to our local programs, our international efforts focus on helping children and hunger. This year, we launched our Team Donation Program, that allows team members to have a certain dollar amount deducted from each of their paychecks that will be used toward projects such as Gifts for Good. This year, with the help from PIPESTONE and the Team Donation Program, we were able to support 6 different projects in 4 countries with the ~\$154.5K that was raised. Below is the list of projects and organizations that we helped support.

Student Nutrition Program Adams Thermal Foundation

Location: Ethiopia, Africa



Project Overview: Through Gifts for Good, we contributed to a feeding program for students keeps them in school long-term and ensure their on-going physical development. Without a feeding program, their drop-out rate would be much higher and students would tend to withdraw from school as they become older and better able to contribute to the livelihood of the family. Adams Thermal Academies feed 1,280 at-risk students from K-12th grade.

Charity Overview: Adams Thermal Foundation operates two schools, grades K-12, for at-risk children. These schools also administer "Self-Help" programs so that women and mothers of students can learn business and job skills.

Learn more: <https://atf.reachapp.com/>

Gifts for Good



Hunger Relief

Tapestries of Life

Location: Guadalupe, Mexico

Project Overview: We provided nutrient filled food to over 300 local families in the local Guadalupe area.

Charity Overview: Once completed, Tapestries of Life will house over 200 children, making it the largest orphanage in Latin America. Tapestries of Life has been a constant presence in many border communities—feeding, educating, and rescuing children to the glory of God. Today, they are close to finishing what will be the most effective tool in setting a child's future on a new course.

Learn more: <https://www.tapestriesoflife.com/>



Widow Care & Online Education Devices

India Evangelical Team

Location: New Delhi, India

Widow Care Project Overview: The widows at the India Evangelical Team (IET) sometimes need extra care. Our support will help widows with seed money to enable them to set up a business, build a small home, provide resources to assist them in taking care of themselves in the long run.

Online Education Devices Charity Overview: As the pandemic continues our support equipped them with devices to be able to do online education during day.

Widow Care Charity Overview: IET focuses on rescuing children at risk, taking care of orphans, eradicating illiteracy in villages, physical healing through medical cares, disaster relief work, educating the poor, and much more.

Online Educational Devices Charity Overview: The children in our orphanage need cell phones to be able to do their online education, as all classes are now virtual. Most of the children in our orphanage lost much of their studies last year because of the pandemic and unavailability of this device to participate in online education.

Learn more: <https://ietmissions.org/>



Gifts for Good



Nutrition Support Children of the Promise

Location: Haiti

Project Overview: Children of the Promise offers nutritional support with baby formula or Medika Mamba to families of a malnourished child or infant. Our contribution supports the initiative, including providing families an opportunity to attend a session every other week while they journey toward wellness. Each session includes education, a medical consultation, community interaction and spiritual encouragement.

Charity Overview: Children of the Promise's mission is to help have a healthy Christian home and family for every Haitian child. Their family strengthening programs work towards keeping Haitian families together and to build strong future families through the investment in Haiti's youth.

Learn more: <https://childrenofthepromise.org/>



Brooder House Upgrade New Roots - Haiti

Location: Haiti

Project Overview: Last year, our efforts supported the build of the new brooder house. This year our funds will help upgrade the old brooder house, including upgrading the office, upgrading our space for corn, and Piyoup with the maintenance area.

Charity Overview: New Roots Haiti is dedicated to empowering parents to care for the needs of their families through education, employment, and nutrition assistance. Its mission is to use agriculture as a tool to invest in people's lives. They have a feed mill (supplied by PIPESTONE in 2019) that is used to feed the chicken and pigs along with a butcher shop where they distribute their product.

Learn more: <http://www.newrootshaiti.org/>

CHINA

Top 10 Learnings from Boots on the Ground Experience



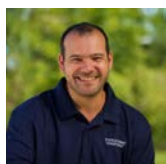
By: Dr. Joseph Yaros
Veterinarian
Pipestone Veterinary Services

- 1 The #1 key to preventing African Swine Fever virus (ASFV) breaks is improving biosecurity.
- 2 Be flexible. Use the sites and infrastructure around you to optimize health and production in ways you may not have attempted thus far.
- 3 Use feed mitigants.
- 4 Depopulating continuous flow sites with viral health challenges is key to recovering performance.
- 5 Grow/Finish biosecurity is just as important as sow farm biosecurity to limit viral spread throughout your system.
- 6 Trust, but verify. Then verify again in regards to execution of biosecurity protocols.
- 7 Filtration is key to preventing entry of all viruses, not just PRRS.
- 8 "In order to be hit by the luck bus, you need to be standing in the street." It's important to be in production at all times to capture both the ups and the downs of the market.
- 9 Be open to new diet formulations to capture financial benefits of alternative ingredients you may not be used to today.
- 10 Always be on the lookout for the purchase of good quality assets during distressed markets.

PIPESTONE's experiences in China have allowed our veterinarians and producers to get accurate real time updates on what is happening overseas instead of questioning reports from media sources. Seeing different protocols and systems brings insight on how to maximize the use of different sites and infrastructure in all production systems. Finally, given multiple experiences with ASFV throughout the country, we already know the playbook on prevention and management.

MEXICO

PIPESTONE's Experience in Mexico



By: Dr. Gustavo Pizarro
Director of Latin America Operations
Pipestone Management

PIPESTONE's relationship with the Mexican swine industry is not new. Multiple interactions between our technical team and local players have occurred over the past few decades. However, it was not until 2015, when PIPESTONE had the opportunity to participate in a start-up project of 10,000 sows, that this relationship got more formally established. This successful project proved that the PIPESTONE team was able to design, build and operate a farm in Mexico in a profitable way like we do in the USA. After this, other projects followed and PIPESTONE began to provide management services to farms and systems that were already established.

The Mexican swine industry has undergone a strong transformation from traditional production with low-technology, fragmentation, and significant health challenges, towards integrated systems that incorporate innovative technology for high productivity and health. This accelerated change is placing Mexico's one million sows at greater competitiveness level in the global pork market. In addition to contributing with our experience in farm and system design consultation we have focused resources on improved health and biosecurity. PIPESTONE's commitment to Mexican producers and the health of their herds is exemplified by the determination of our team. The following is just an example.



Dr. Jean Paul (JP) Cano, is a veterinarian from Venezuela who obtained his PhD from the University of Minnesota. After 20 years of experience in private practice, teaching, pharmaceutical and breeding-stock suppliers, JP joined PIPESTONE to lead the veterinary services team in Latin America. JP, his wife Dr. Maria Jose Clavijo, their son Tomas (10), and their daughter Manuela (6) previously lived in Hendersonville, TN. After a year of a lot of traveling south, the rapid

growth PIPESTONE was experiencing in Mexico motivated the Cano-Clavijo family to make a major change of course in their lives. In July, the family moved to Guadalajara, Mexico to spend more time together and to make it easier for JP to work on the ground to build the health team and serve our clients.

In the last month, three new veterinarians have joined the Mexican health team to attend 46,000 managed sows, a big portion of their growing pigs and 50,000 sows in veterinary services. Mexico swine production has some differences with the US that can make managing health a challenge. Recent sow farms are larger and include internal gilt multiplication. Growing sites are huge, making it almost impossible to flow them in an all-in/all-out way. Exaggerated biosecurity focus on people compared to feed, transport or air, extremely high PRRS and PED prevalence and the presence of diseases such as Blue Eye (paramyxovirus) are just some examples. Despite the challenges, the PIPESTONE team has been able to adapt and incorporate necessary tools and concepts to help our clients. Everything indicates that the number of clients and sows will continue to grow in the coming months, as well as the need for talent, tools and services to replicate the successful PIPESTONE model in Mexico.

Global Supply Chain Traffic Jam: Feed



By: Amber Pugh
Procurement Director
Pipestone Nutrition

There has been a lot of chatter regarding the global supply chain as of late. Whether its referencing store shelves being empty, truck driver shortages or national ports being clogged, there has been an increased awareness of disruptions. If we are truly going to solve the issues, we need to understand how we got in this traffic jam to begin with.

Understanding the Traffic Jam

Global supply began over 100 years ago, but didn't really take off until the 70's with the use of the shipping containers and computerization. Data computerization started to streamline logistics and created opportunities with other countries that before weren't an option. The transformation intensified in the early 2000's with the explosion of cheap manufacturing in Asia. As an example, if we focus in on feed ingredients to represent the overall supply chain picture, we find prior to 2020 the global supply was a well-oiled machine. Shifting in manufacturing, new animal feed markets, and feed rations were ever changing, but there was always balance. About 10 years ago, the shift of production became very one sided to the cheap labor source in Asia, and domestic and European plants began reducing capacities or exiting the market all together. The need to maintain a cheap supply of vitamins and amino acids to the market now came down to securing containers to ship around the world from Asia.

Current Global Supply Chain

The current issues started when ports in China began to shut down due to COVID-19 in early 2020. The supply was there, but there was no way to get the products out of the country. This initiated the domino effect that has repeated over and over this past year. The free trade world economy now came to a pause because there was one large kink in the supply chain right where most manufacturing was occurring. What was "on the water" headed to the U.S. of vitamin and amino acids would buy time to get the issues worked out: or so we thought. The normal Asian

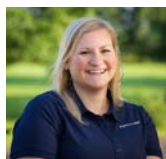
route for unloading in the U.S. market is on the West coast, but since this was backed up due to our own COVID issues many ships diverted to smaller ports like New Orleans. Unfortunately, hurricane Ida hit at the same time vessels were ready to unload several thousand tons of amino acids. This was the blow to the domestic marketplace that we didn't need. Since production was reduced in domestic plants, there wasn't a way to quickly remedy the situation. This caused panic buying and prices to began to soar. Without enough supply, diet changes and allocations have been implemented across the country. This will remain well into the first half of 2022.

What are we doing about it?

Pipestone Nutrition and procurement groups are working hand- in- hand to think outside the box in terms of ration and ingredient changes. We want to maintain pig health with low-cost ingredient substitutes and stretch the supplies that we do have. This has created new collaborations internally and with new vendors externally. In the long run, problems such as these, make us better prepared and broadens our reach on ingredients for any future disruption. We cannot afford to put all of our eggs in one basket. We, at Pipestone Nutrition, are so thankful for the producers that we work with being flexible and patient during these trying times. Whatever the future holds, one thing is certain. We WILL adjust, become more efficient, optimize, plan, and innovate in this global market like never before.



Supply Chain Crisis: Products



By: Joyce Radke
Purchasing Manager
Pipestone Veterinary Services

The 2021 supply chain issues are well known. Various news publications speak to the challenge of logistics via air, ocean, road and rail, as well as the lack of labor and materials. From an animal health perspective, the availability of raw ingredients that make up many of the products we use, or Active Pharmaceutical Ingredients (API), has been subject to these same issues. Countries such as China, Spain and India are the primary providers of API and manufacturers in the United States are scrambling to maintain inventory for finished good production. From penicillin to chlortetracycline and even minor ingredients like citric acid, supply chain woes have caused major havoc for the supplier, producer, and veterinarian.

Is the problem over?

If 2021 has taught us one thing, it is that we can't take for granted the importance of small items to prevent us from accessing the big item (think tiny chips in vehicles). For manufacturers, that kryptonite is in the cap, bottle, label, box and the API or other raw materials. Manufacturers and suppliers are carrying more inventory to cover the gap between delayed deliveries and increasing wages to maintain labor for production and fulfillment. The toilet paper crisis of 2020 taught consumers that stocking up in times of shortage further exacerbates the problem and proved

the importance of continued relationships with trusted suppliers-- even if we couldn't always see the product sitting in our closet.

What is PIPESTONE Doing for You?

Let's be honest, you have enough to worry about without the extra burden of wondering whether you will be able to get enough product to care for your pigs. At PIPESTONE, we take our obligation and responsibility to care for animals seriously and have taken the necessary steps to safeguard supply for you.

01

We have increased our inventory to ensure a consistent supply when you need it; preventing your need (and cost) to stock up.

02

We've strengthened relationships with multiple suppliers, from multiple countries, to further hedge our reliance on single sources or geopolitical risks.

03

Even with the above, market shortages inevitably occur. When they do, we guard our supply, and provide product to customers with loyalty and historical use. This does mean we turn away business, but it's our commitment to protect our customers. And...it's the golden rule of how we'd want to be treated.

Supply challenges will bleed into most of 2022. Flexibility on options and communication with your Pipestone Swine Resource team member or veterinarian will continue to be key to minimizing issues. As always, thank you for the opportunity to serve you and your operation.



Our Experience with Fighting African Swine Fever transmission through feed



By: Arkin Wu
Nutritionist
Pipstone Nutrition

African Swine Fever (ASF) is an inevitable topic as we talk about the global swine industry, especially after August 2018 when ASF was reported for the first time in China, the world's largest pig producer and consumer. As a highly fatal disease with no effective treatment or commercial vaccine, ASF resulted in a nearly 40% shrink (~15 million head decrease) of the Chinese sow herd in 2019 according to industry reports. Unfortunately, PIPESTONE's China operation, Riverstone Farms, was not immune to this disastrous disease. In 2019, 5 out of 12 (42%) of our owned or managed sow farms were infected with ASF; in 2020, 2 outbreaks among 14 farms (14%); in 2021, 2 cases out of 17 farms (12%). Each case caused enormous economic loss and production disturbance, but also equipped us with knowledge and tools for ASF prevention and control.

African Swine Fever can infect pigs via oral transmission. Swill feeding had once been identified as the main transmission route when ASF first swept China until it was banned by the government in 2019. Later, research demonstrated that feed and feed ingredients are a possible risk factor for ASF infection. In fact, ingredient samples collected at feed mills testing positive for ASF has been reported nation-wide. Based on our experience, by-product ingredients, especially wheat by-products that are normally not processed under heat, are more likely to harbor the virus. Understanding and verifying the sources of feed ingredients is critical. We have developed a protocol to routinely sample feed ingredients and the feed mill environment. The results have guided us to better ingredient selection and thus improved feed mill biosecurity.

Most thermal treatments are effective at deactivating ASFV in feed, but the required temperature and duration of heat exposure are higher than that for other pathogens like PEDV or

PRRSV. During the height of the initial ASFV break, pelleting feed utilizing an extended conditioning time of 3 min (vs. 15-30 seconds normally) under 185°F quickly became the new "industry standard" for feed processing. Some unpublished studies by feed companies have shown its' effectiveness, but additional research is needed to verify the exact time and temperature combination required to kill ASFV in feed. When we first adopted the extended conditioning time at Riverstone Farms, we worried about certain nutrients like vitamins and amino acids being damaged by heat. Through intensive testing we determined that there were adequate nutrient levels even after the extended conditioning times that were used.

Heat treatment, however, only provides a point-in-time protection. Once processed, pelleting does not protect feed from being re-contaminated during transportation. Additional means were put in place to mitigate transportation risk. One is to include a chemical additive in feed to accelerate virus decay if contaminated. Formaldehyde and medium chain fatty acid based products have proved to be effective against ASFV. In addition, we added feed bins (transition bins) inside the perimeter fence on farms to prohibit external feed trucks from entering. This modification also allows feed to be stored for an additional 5 to 7 days (quarantine) before a designated on-farm feed truck moves the feed to barn-specific feed bins.

The strategies implemented currently appear to have been effective, as noted by the decreased number of positive feed mill samples and in general better ASFV control over the last 2 years. However, these steps have added significant costs to our production systems. The fine balance between ASFV risk and the cost of preventative measures has led us to continually research and locally assess risk factors against added costs.

Risk Management



By: Brian Stevens
President
Big Stone Marketing

Having a risk management plan is critical for all hog producers, especially today with the extreme volatility of our hog and pork markets and with the increased risk of African Swine Fever making it into the United States. Hog producers really should protect their revenue and profit opportunities when they arise. Through Big Stone Marketing, approved producers can forward contract the price of pigs, without the financial burden of having to make margin calls. Big Stone Marketing's Forward Contract service is now offered to any producer, no matter where a producer sells their pigs.

Forward Contract is hassle free:

- Place orders for the future, with your targets or strike prices set, so they automatically fill when the price is met. When the order is filled, Big Stone Marketing will provide a written forward contract. This is a great way to let the current market volatility work for you.
- Big Stone Marketing can also take the order over the phone or email and lock in the current market level.
- Big Stone Marketing will "lift" the futures contract one day prior to delivery, and settle any gain or loss on the forward contract directly in your account.
- Never worry about margin calls again! Big Stone Marketing will provide 100% of the initial margin requirement and margin calls on your account until hogs are delivered. No need to tie up your capital!
- This is a transparent process. A Big Stone Marketing fee is deducted at the time of delivery, covering all transaction costs, margin calls, etc.

Please contact us today to get pre-approved and get started managing your risk!



Contact any of Big Stone Marketing Representatives to learn more!

Brian Stevens

bstevens@bigstonemarketing.com
507-215-5032

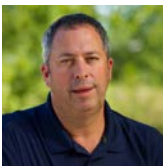
Chris McCulloh

cmcculloh@bigstonemarketing.com
563-249-1108

Christine Colemer

ccolemer@bigstonemarketing.com
507-825-7059

U.S. Pork Exports Continue to Surge,



By: Terry Wolters
Vice President of Customer and Industry Relations, PIPESTONE
President Elect, National Pork Producers Council

Despite COVID-19 and what seemed like a dozen other challenges, the U.S. pork industry in 2020 exported a record amount of pork, and it's poised to set a new record this year.

In fact, through August 2021, America's pork producers already had shipped to foreign destinations \$5.8 billion worth of product compared with about \$5.3 billion at the same point last year. (The industry exported \$8 billion of pork in 2020.)

Annual exports of U.S. pork have been increasing for the past several years, generally on the back of improving economies and rising middle classes in countries around the world. Other factors also have driven increases, including the emergence of robust hotel and restaurant industries as world travel has become relatively easier and cheaper, and disease challenges. (A number of our important export

markets in Southeast Asia, for example, have been battling African swine fever (ASF) for the past several years so have needed to increase pork imports.)

But the biggest reason why our exports continue to grow is trade deals, whether free trade agreements or less-formal trade, investment framework agreements, and one-off market access requests.

In early 2020, China and the United States struck the historic "Phase One" trade deal that helped boost our pork exports to the Asian giant, which took in nearly \$2.3 billion of U.S. pork last year, making it our No. 1 value market. And in September 2019, America inked a pact with Japan that put U.S. pork on a level playing field with other major pork exporters, kept our product flowing to that island nation – our No. 2 market in 2020 – and helped regain some of the access we lost after the United States withdrew from



Overcoming COVID & Other Challenges

the Trans-Pacific Partnership.

Of course, the U.S.-Mexico-Canada Agreement, which took effect July 1, 2020, and its predecessor, the North American Free Trade Agreement, ensured that U.S. pork continued to be shipped north and south of our borders.

To date, 60% of the hams and shoulders were exported to Mexico. There are a few reasons for this:

1. Labor: In the United States, we do not have the labor to debone hams and add the value. Several packers said they would like to increase value added on U.S. pork if labor was available.
2. Demand: Demand for hams in Mexico is significant because of the high consumption of pork and processed products made from pork.

The industry has been pushing for new export opportunities by urging the Biden and Trump administrations to join the 11-nation Comprehensive and Progressive Agreement for Trans-Pacific

Partnership, get permanent reductions on the Philippines' tariffs on pork imports and reductions on pork tariffs in Vietnam.

Without trade deals, there's no telling where U.S. pork producers would be now. Those existing measures kept our exports moving – if not always growing – in the face of a worldwide pandemic and, more recently, global supply chain disruptions, and the efforts to secure new access for U.S. pork gives us hope for the future.

To be sure, there are ongoing challenges for our industry, including congestion at West Coast ports, Chinese retaliatory tariffs on U.S. pork, non-tariff barriers in many countries, ASF in the Western Hemisphere, labor shortages and COVID-19.

But pork producers are a resilient bunch, and if the past truly is prologue, the U.S. pork industry will weather these tempests, set new export records, and continue providing international (and domestic) consumers with the world's safest, most nutritious pork.

PIPESTONE's Community Efforts

One of PIPESTONE's core values is caring. Caring for our people, communities and consumers. Through our community involvement, we are able to give back locally, nationally, and around the world!



To learn more about PIPESTONE's community involvement, visit our community page at www.pipestone.com/community-home/.

KIDS ACTIVITIES

Bacon Bit

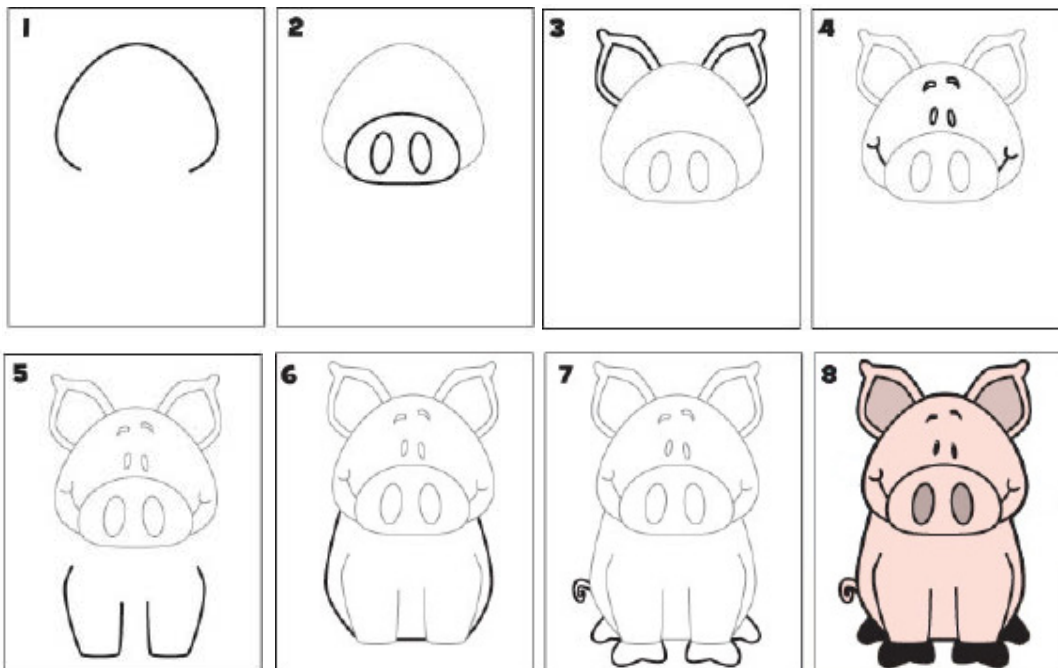


Europe
Canada
Brazil
Mexico
China
Japan

The United States ships pigs all over the world! Can you find the countries below that pigs are shipped to?

E	U	R	O	P	E	S	C
A	S	R	U	N	N	B	M
J	B	Y	X	B	L	C	E
W	R	I	J	C	K	H	X
C	A	N	A	D	A	I	I
P	Z	L	P	F	K	N	C
Q	I	D	A	H	G	A	O
M	L	U	N	S	U	P	Z

Draw your own pig!



Pork is the most widely eaten meat in the world!



MAKE YOUR OWN PIG BARN

Did you know that pigs live indoors all year round? This helps the farmer to monitor them closey and make sure they are warm in the winter, and nice and cool in the summer. The farmer can also make sure that they are getting the correct food and water.

Materials Needed:



Crayons



Dry Spaghetti

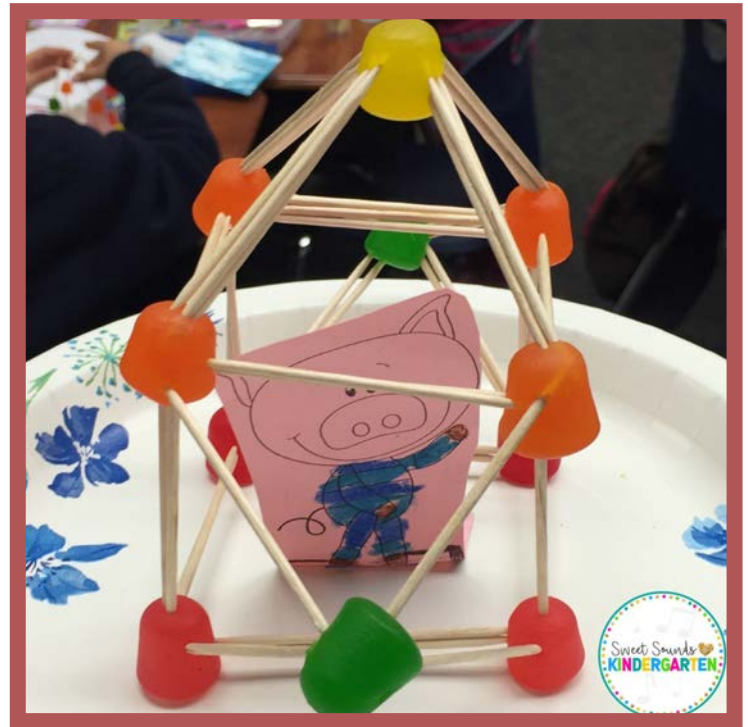


Scissors

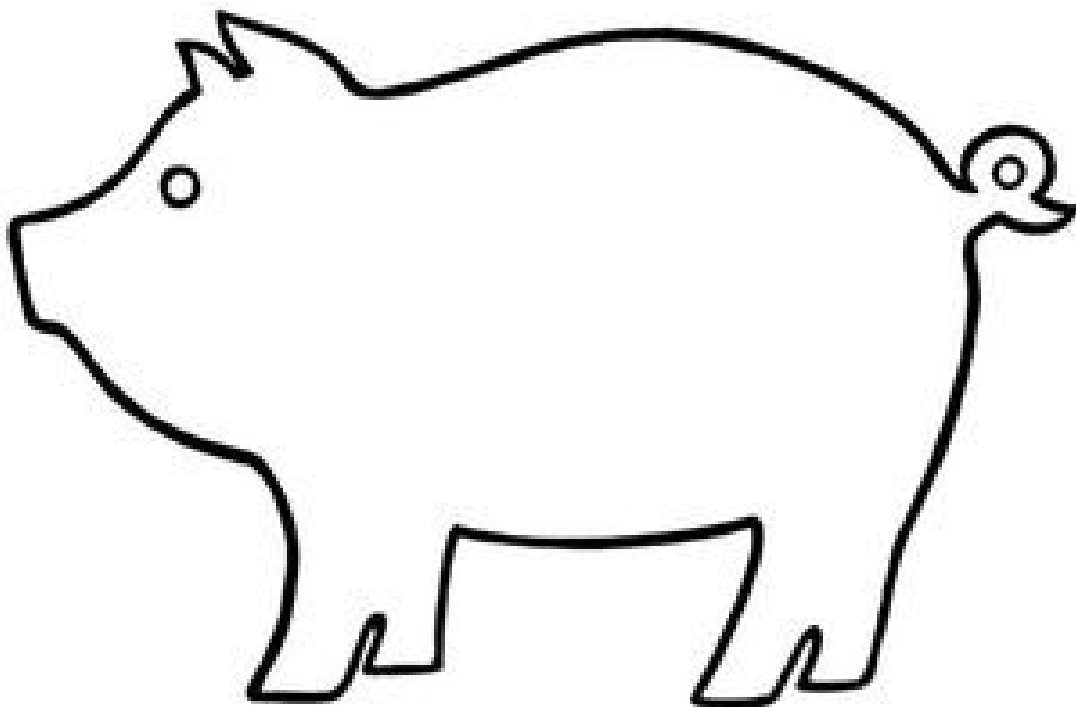
Marshmallows
or Gumdrops

Steps:

1. Color and cut out the pig below.
2. Using the marshmallows or gumdrops as corners and the spaghetti as walls, make a buidling for your pig to live in.



*Parents- You can also use packing peanuts instead of marshmallows.





INTERN WITH US.



PIPESTONE offers internships in all areas of our business, from sow production to working in the office. With our internship you will gain knowledgeable experience to take with you for your future careers.

- Practical, hands-on experiences within your internship focus
- Opportunities to work with and receive guidance from respective professionals in the industry
- Learn more about the swine industry
- Interaction with decision makers
- A professional environment
- Complete a project or research trial and present findings
- Communicate with consumers about their food



“ My PIPESTONE internship gave me an experience that I was able to mold and shape into a summer that I learned from and loved.

-Courtney Pholen, 2021 Intern

To learn more and apply visit:
www.pipestone.com

Internship Opportunities Available with:

- Pipestone Management
- Pipestone Veterinary Services
- Pipestone Business
- Pipestone Research
- Pipestone Nutrition
- BigStone Marketing
- Human Resources
- Information Technology
- Marketing & Communications
- Accounting





Q&A with Production Director, Duan Lian Mao

20 years ago, PIPESTONE started consulting in China. Consultation then turned into management, and later ownership. Today, PIPESTONE is a minority owner in Riverstone, the operations group in Shandong Province. Today, PIPESTONE oversees day-to-day operation for Riverstone, and Dr. Luke Minion serves as Chief Executive Officer and Chairman of the Board. In China, Riverstone is managing 100,000 sows at 17 sow farms.

Tell me about yourself:

My name is Duan Lian Mao. I am the Production Director for Riverstone in China. I graduated in 2008 and have worked as both a farm manager and supervisor in China. My wife and I were college classmates and married in 2013. In 2014, we had a baby girl. My wife is working in an animal disease testing center of the government. Due to the travel required with my job, I miss a lot of great time with my family and even missed my daughter's birth. When I do get to spend time at home, I like to take them shopping, out to a restaurant, watch movies, play games, and read.



I also have an honorary "brother", named Simba. Simba and I have known each other for 17 years and only 2 of those years we were not together. Simba and I were college classmates and lived in the same dormitory for 4 years. After graduation, we joined the same company named Besun, which was PIPESTONE's first client in China. While working at Besun, we met Dr. Luke Minion, Dr. Gordon Spronk, and Dr. Cameron Schmitt. Today, we both work for Riverstone. We are grateful to work together. We have the same value of life, same career planning, and share everything. Together, we have experienced the companies yesterday, today, and tomorrow. I am glad that Simba is a

good life friend and working partner.

How did you get involved with PIPESTONE?

I developed a relationship with Dr. Gordon Spronk, Dr. Luke Minion and the China team, which started my connection with PIPESTONE in 2010. PIPESTONE officially started business in China in 2013.

The first time I met team members from PIPESTONE was the first time I had met someone from a different country. Before this involvement, I was not fluent in English. Through working with PIPESTONE and watching American movies, I can now read, speak, and help translate for others on the China team.

What are some production differences in China, when compared with the U.S.?

The culture in China is very different than the US. Uniting the team as one is crucial to making progress and producing healthy pigs. I work hard to unify all team members toward the same goals. African Swine Fever (ASF) is a great challenge in China. Without a great team, it's hard to enforce protocols and combat the disease.

In China, the industry is moving very fast. Before ASF, the top 30 pork producing companies still only owned about 10% of the sows in the country. That was at a time when China had 40 million sows. In the last 3 years, we have about 25-30 million sows in the country, and the top 30 companies own about 30-50% of them. But again, they are having more challenges with disease, which is why proper management, barn design, and protocols are very important. We still have a long way to go in China.

Today, we are managing about 100,000 sows and 17 sow farms. We can wean 11.55 pigs per sow with 27.53 PSY in 2021. Our best farm is a 5,600 sow farm using PIC 1050 genetics. At this farm, we are weaning 14 pigs per sow with 34 PSY. Our production is a 3-stage system (sow

farm + nursery + finisher). Because of ASF, our strategy has changed. We now sell feeder pigs and gilts instead of raising market pigs on our own.

What is Riverstone's reputation in China?

Riverstone has done a great job in leading the pork industry in China. Our China team members are very proud of the work they do and are honored to be members of the company. Riverstone team members share what they know with other producers in China to help them improve their operations. The team in China is one with the PIPESTONE team in the US; and the Riverstone brand is very well-known throughout the country. In the last 10 years, Riverstone has continued to be leaders and other companies know our value.

What does PIPESTONE mean to you?

PIPESTONE has given us very valuable lessons such as pig genetics, nutrition, health, and management. The first time I visited a PIPESTONE managed sow farm in the United States, I spent three weeks learning about the farm's operations. After that, it opened many doors to the possibilities in China. I am very proud to work with the team from PIPESTONE. I consider myself very lucky to work for one of the top companies in the industry.

How has Riverstone changed the industry in China?

The protocols and practices PIPESTONE first brought to China were unheard of and very new. It took a lot of explaining and time to teach us their knowledge.

What is the life of a swine tech like in China?

When we talk to the public, our job is raising pigs. Most of them won't understand that we are educated on raising pigs. In the end, there is a lot of prejudice.

Farm life is enclosed and tedious because you must stay in the farm dormitory for about 24-25 days and only can go out of the farm once per month. Some companies also like to do a people closure to reduce the biosecurity risk in wintertime. The closure requires you to stay at the farm for 3-5 months. This is tough for team members and their families.

Thanks to ASF, more and more people know how important the swine industry is to society. For example, the highest pork price was 60-70 RMB/pounds (\$9.41-\$10.98) in 2020, so many people couldn't afford pork. Today, the pork price is only 10-20 RMB/pounds (\$1.57-\$3.14), so the industry and practitioners get respected.

Due to ASF, swine companies made a lot of money in the last two years and required companies to develop very aggressively. The entire industry is short of practitioners such as veterinarians, managers, techs, and others, so, the industry salary raised a lot. Before ASF the average salary was around 3500-5000 RMB (\$548.96-\$784.23) per

month, with sudden profits periods for an average salary of 6000-10000RMB (\$941.07-1568.46) per month. Today, the average salary is about 5000-7000 RMB (\$748.96-\$1097.92) per month.

What would you like producers in the U.S. to know about China?

China's market is amazing. China is the biggest pig producer in the world- if you want to be successful selling pigs, you can do that in China. There are more challenges, but there are also more opportunities. Like I mentioned, Riverstone has been leading China for 10 years already.

PIPESTONE has been able to learn a ton about ASF from being in China. If it were to enter the US, we would be much more prepared from the knowledge we've gained in China.

What is your favorite memory working with the PIPESTONE team?

The first time I went to a managed barn, there was a big snowstorm. I was riding with Dr. Luke Minion, and despite the snow, he was still driving 70 mph! I was so nervous the whole drive. It's still a great memory of mine today.



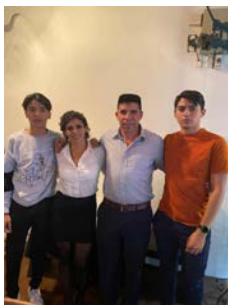


Mexico

Q&A with Production Director Ezequiel Guardado Valdez

Personal background

I come from a very humble family that had to immigrate from Zacatecas to Jalisco in search of opportunities. I am the fourth of seven siblings. I have always been involved in agriculture. From my childhood I was forced to leave school and start working at age of 13 to help my parents and siblings. From there, the first contact with the pig industry was in 1994 in a weaning of 9000 pigs, for that time it was a large farm. In 1997, I was responsible for 8 farms comprising 3 weaning and 6 finishing facilities. During my period, the farms grew to 18,000 pigs. In 2000, I had first contact with a pig site, and 4 months later, I was assigned responsibility for all the sites the company had (at that time 50,000 females).



I am married and have two boys who are 21 and 16.

How did you get involved with PIPESTONE?

In August 2015, I left a large company in Jalisco and went to Sonora to start a 10,000 sows project. The owners mentioned to me that they were associated with an American company called PIPESTONE, where I had the pleasure of meeting Dr. Gustavo Pizarro and Willy Langholz, great people from whom I learned a lot and I am still learning. In May 2018,

I spent some time back in the Jalisco company, and in September of that same year I started full time directly with PIPESTONE, which allowed me to develop professionally.

How long have you worked with PIPESTONE?

I have worked for PIPESTONE 3 years and 2 months, starting September 24, 2018.

What are the best results achieved in Mexico:

- Consistent 32 PSY
- Feed conversion of 2.27 with 127 kgs.
- Wean to Finish mortality of 2.7%

What are the main challenges of farms in Mexico:

- Health challenges
- Labor (low wages)
- Staff turnover
- Lack of qualified personnel for middle managers

What is the life of a swine tech like?

In general, life is difficult and a swine tech is not a job that is desired by most people. The average salary is \$100 per week, which is very difficult to live in Mexico.

What are the challenges of working in Mexico?

Mexico has a few challenges, including: security,

health challenges, politics, and skilled labor.

What is PIPESTONE's reputation in Mexico?

PIPESTONE's reputation in Mexico is very good, but it certainly generates uneasiness among advisors, suppliers, sellers, etc. who say they are dedicated to the same thing as us.

What are the good things about PIPESTONE in Mexico?

Something positive is that we are on the side of the producer, providing them with added value. Customers see PIPESTONE as an improvement in their productive results, and therefore in their income. They see a very strong team that can solve any problem that may arise.

What are the challenges about PIPESTONE in Mexico?:

As we grow, we may lose presence to our customers. It is necessary to find qualified people in order to meet the needs of our customers. It's important to keep up with customer expectations in keeping with PIPESTONE's growth.



Pictured is Ezequiel with Pipestone Chief Veterinary Officer, Dr. Joel Nerem (left).

What PIPESTONE has meant for you personally and for the Mexico team?

For me, it has meant a great personal fulfillment. Here I have the balance in a company that values you in your work, that supports you, that gives you a backup, that always gives you support, and that behind you there is always a great team to solve any challenge that may arise. I am very grateful to the entire team, both from Mexico and the United States. For the team it has meant opportunities for my colleagues to have a stable job with a living wage, adding value for the company and for our clients. **I always give my best in everything I do.**



Pictured from left is Ezequiel with Pipestone Management President, Dr. Barry Kerkaert, and Pipestone Latin America President, Dr. Gustavo Pizarro.



Pictured is Ezequiel with Dr. Gustavo Pizarro (left).



By: Jim Marzolf
Vice President
Pipestone Business



I Wouldn't Bet the Farm on it.

I'm an optimistic person by nature, but I've had to become more of a realist. This is truer than ever when preparing our business, and our clients, for the potential of a foreign animal disease entrance into the U.S.

In recent months, I've pivoted from talking about IF an African Swine Fever (ASF) introduction will happen to WHEN it will occur. The disease's entrance into the western hemisphere (found in Dominican Republic and Haiti in September) has certainly increased our risk in the US.

- Am I giving up hope that biosecurity practices will hold? **Nope.**
- Do I think we can keep ASF out? **Maybe.**
- Would I be willing to literally bet the farm on it? **Not a chance.**

As a realist (and not a fear monger), risk of infection in the US has definitely increased. How much? Nobody knows. A recent survey of the PIPESTONE veterinarians suggests a 10% chance of US infection. While those probabilities are only estimates and may seem low relative to other agricultural risks, they are certainly are worthy of planning given the severity of the production and financial impacts.



Basics of a Foreign Animal Disease (FAD) Readiness Plan

Complete a Secure Pork Supply (SPS) Plan

In the event of an ASF outbreak, all pig movement will stop for a minimum of 72 hours. State animal health officials have stated they will not allow animals to begin moving without a SPS Plan and movement records.

The SPS Plan is easy to do and inexpensive.

You will need to:

1. Request National Premise ID Numbers
2. Implement Enhanced Biosecurity
3. Conduct Surveillance Sampling
4. Maintain Movement Records – very important, see below.

Your PIPESTONE veterinarian is happy to complete.

<https://www.securepork.org/>

Maintain Movements Records

AgView seems to be the most comprehensive, user-friendly platform, and is encouraged by most packers. If you get wean pigs from a PIPESTONE Managed sow farm, PIPESTONE will upload the wean pig data for you. It's also FREE, so leaves little excuse not to use. **Please see page 28 for step-by-step instructions on AgView.**

You will need to:

1. Create AgView account.
2. Establish a regular process for updating movement data in AgView.

<https://www.agview.com/>

Manage Financial Risk

COVID showed us just how quickly we can burn through working capital and the importance of a risk management plan. COVID gave us a practice run for dealing with a FAD like ASF. The difference between COVID and an ASF break is that exports will likely cease immediately and lead to a 25% surplus

of the US pork supply. Domestic pork consumption hasn't increased in 20 years, so chances of "eating our way out of it" are dismal. Basic supply and demand rules will create an unfavorable revenue picture for quite some time. Be able to weather. You will need to:

1. Manage risk to protect the downside
2. Build working capital to weather extended negative margins
3. Stress test your financial position
4. Update your lender
5. Proactively have the conversation with your lender to discuss repayment terms or additional lending that could be accessible during a trigger event.

Understand Contract Obligations

To accommodate large investments of financial capital, the US pork industry is full of formal and informal partnerships, contracts and agreements. Many of the formal contracts include force majeure language. In the case where a FAD becomes a force majeure event, be familiar with the details of your contractual arrangements and obligations so you know how flexible you can be to weather difficult times.

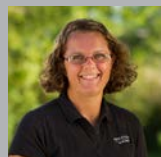
You will need to review:

1. Pig source contracts
2. Nursery/finish barn contracts
3. Marketing agreements
4. Debt agreements

Plan what is difficult while it is easy. You plan for natural disasters through crop insurance, fires through property insurance, and fatality through life insurance. Worst case scenario planning for a foreign animal disease should be no different, and in the very best case, it's just great insurance you hope you never have to use. **I'd bet the farm on that.**



A tool in Preparation for a Foreign Animal Disease Emergence



By: Heidi Uilk
Information Analyst
Pipestone Business

**Here is how
you get
started with
your AgView
account:**



1. Go to www.agview.com and click on "Create an Account"
2. Create your free AgView Account
 - a. Register as a "Producer"
 - b. Complete the form
 - c. Click on "Create Account"
3. Navigation within the AgView platform is from the black menu bar along the left side of the screen.
4. Once you have site and movement data entered, the map offers various views to display your pig movements.
5. AgView offers multiple options for entering data into your AgView account.
 - a. In app data entry
 - b. Uploading data files
 - c. Data sharing options with software platforms such as MetaFarms, PigChamp, and Prairie Systems

Tool

For handling of site and movement information, PIPESTONE is recommending producers use a voluntary on-line platform called AgView.

What is AgView?

AgView was developed for producers to securely share their site, movement, test results, and Secure Pork Supply (SPS) documentation with their state officials upon request in the event of a foreign animal disease (FAD) incident. AgView is free and your farm's information is accessible only by you as the account holder unless you have expressly agreed to release your information to a requesting USDA and state animal health official.

For questions or help with your account, please contact AgView

help@agview.com
800-767-5675

Research Globally

In the last couple years, Pipestone Research has increased its global presence through various international projects. Some of the reasons behind this are:

Relationships



Global research enables a gain of new perspectives and building relationships with other experts in the field, increasing our research potential. New ideas come when we can interact with people with different backgrounds. Sometimes a preconceived idea can change completely when we have different points of views.

Resources



Another important reason to increase our global research are resources. Finding different experts working in the same field can help to raise resources for a collaborative research project. Sometimes collaboration is essential to afford the science.

Validation



International research is essential for validation. It gives the opportunity to test the same technology or procedure in different environmental and management scenarios, making more robust research and conclusions.

All the above reasons improve our research and further our mission. Pipestone Research will strive to keep growing our global research operations in the future and Help Farmers Today Create the Farms of Tomorrow.

What's Next for Pipestone Research

Production:

- Evaluating methods of euthanasia during large-scale depopulation events.
- Continued evaluation of the wet/dry feeders compared to the current dry feeders in the wean-to-finish research facilities.
- Evaluation of the BreEasy ventilation system by PigEasy and its potential impact on air quality in a wean-to-finish facility.

Health:

- "Imagine" is an on-going project that focuses on antimicrobial resistance surveillance and antibiotic usage tracking at the level of the pig farm.
- PRRSV 144: A rapid response to a national crisis.
- Sampling of commercial feed mills to evaluate level of environmental viral contamination.
- BI Enterisol Salmonella in Gel.
- Zoetis Improvest in gilts.
- Determining the proper temperature to store feed over time to reduce viral contamination risk.

For Pipestone Research Questions Contact:

Robin Gilbertson

robin.gilbertson@pipestone.com

507.825.7136

www.pipestone.com/research



WINTER SURVIVAL

Products to get you through another winter on the farm



NEW
ITEM



Bekina Safety Toe Boots

The Bekina boot is a light weight, thermo-insulating boot. They provide excellent protection from chemicals and are proven to be slip resistant. This style offers a safety steel toe for extra protection.



Hooded Sweatshirts

Hooded sweatshirts come in either zip-up style or non zip-up. The perfect lightweight sweatshirt to wear for chores on chilly mornings and nights. Non zip-up comes in L, XL, 2XL and 3XL. Zip-up comes in M, L, XL, 2XL and 3XL



Stocking Cap

This stocking cap is super stretchy and made of durable, tight, 100% acrylic knit fabric. Unisex style and fits all sizes!



Leather Gloves

Leather gloves made of premium unlined grain cowhide. This style has a Keystone thumb and a shirred elastic back. Durable to last through a variety of winter farm projects.



Denim Bibs

These classic denim bibs come in multiple sizes. They are great for everyday barn use and add another protective layer from the cold during the upcoming winter months!



Thermal Lined Gloves

One size fits all with these thermal lined gloves. Keep your hands and fingers warm while working outside.



Winter Survival Kit

This winter survival kit comes stocked with non-perishable food items. Included is canned soup, beef ravioli, noodle cups, pop tarts, fruit cups, pudding, microwave popcorn, crackers and trail mix.



Sidewalk Salt- Ice Melt

Ice Melt begins working immediately upon contact and generates heat to melt ice. This product has the ability to melt snow and ice in temperatures down to -15 degrees F. Safe on concrete and vegetation.



Traffic C.O.P.

A dry foot bath for entering barns. No need to add water or dilute this product. Eliminates residue that could enable bacteria growth.

To see all products or to order, please visit www.pipestone.com.

It's no secret, the most dreaded job on the hog farm is... you got it, power washing!

What if you could change that?



Pipestone Veterinary Services is leading the industry in finding ways to relieve employee fatigue, while effectively tackling this tough job.

Our solution: Robotic Power washing

Wash Power x100, new technology we have placed in farms managed by Pipestone Management. Implementation of this robot has dramatically decreased employee time, stress and strain. This frees them up to do other important tasks on the farm.



**Provides up to 80% of what
human power washers can do!**

- Easy to program
 - Self sufficient
- Just hit play & GO!**



See the robot in action at:
<https://www.youtube.com/watch?v=Mm-3NcT8iv8>

DID YOU KNOW...



Pipestone Veterinary Services offers a wide variety of products including:

Antibiotics and Medications
Barn Supplies
Employee Supplies
Equipment

Parasite and Pest Control
Products for Farrowing
and Breeding

Swine Ear Tags, Marking and
Identification Products
Swine Vaccines
Vitamins and Electrolytes

Follow along with Dr. Cara Haden on her social media platforms!

Topics range from pig health, good stewardship and pork products



 www.pipestone.com

 Facebook

 Tik Tok

 Instagram

8 Winter Ventilation Concepts



By: Cameron Schmitt
Veterinarian
Pipestone Veterinary Services

There are many items to remember as winter ventilation is upon us of how we want barns to operate. Here are a few to think of as you are braving the cold:

1 | Set Points

<< This is what you are telling the barn to maintain temperature at. Typically, barns will be 1-2 degrees cooler most of the time during winter months. If you want the actual temperature to be 70 degrees for example, you may need to run your set point at 71 degrees to average 70 degrees. Every barn is slightly different.

2 | Soffets

<< Soffets are important to get air into your attic and then into the room. Soffets commonly get plugged with dust/dirt from harvest and can be further blocked with frost or snow. Take a long handled broom periodically on a barn walk around to clean soffets off to allow maximum air flow into your attic. Snow doors should be closed on North or West facing outer walls to prevent snow drifting in your attic.

3 | Heat off-sets

<< Heater off-sets – most commonly, you will want your heater to come on at 1.5 to 2 degrees below your set point. The off set is important to

check to be sure you are not warming up your barn over the set point. If you are, your fans begin to ramp up to cool the barn down again and you have wasted that heat. Simple to check – watch your controllers temperature reading when the heater is on. When the heater shuts off, the room will continue to warm. Watch to find the temperature at which it peaks at and then begins to fall. Ideally, the room warms up to just the desired set point and then begins to cool again. No wasted heat blown out by ramping up fans. If the temperature over runs your set point and fans begin to ramp up, you need to widen your off set.

4 | Back up heaters/alarms

<< Check your back up thermostats and alarms to come on at 55-60 degrees. Make them work by turning them up and seeing your heater kick on.

5 | Air speed from inlets at minimum ventilation

<< When you are in minimum ventilation, we still want good air speed for mixing of air from the inlets. You can purchase an anemometer for around \$50 to give you your exact speed of air from the inlets. Target to get 400 feet per minute. A good rule of thumb if you don't have

an anemometer, stand 10-12 feet away from the inlet – you should feel air on your forehead if you are around 400 feet per minute.

6 | Humidity

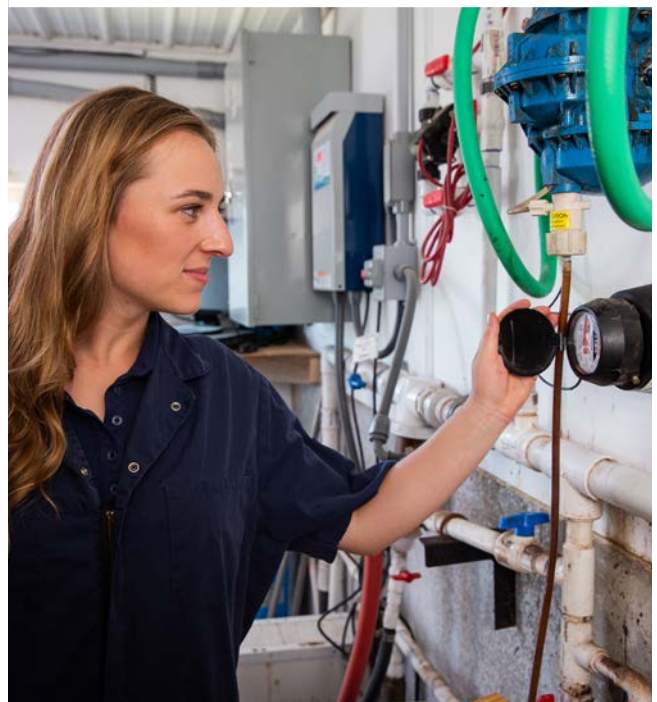
<< Rheostats are notoriously bad in pig barns (they only typically work for ~6 months). Most farms have a great permanent rheostat – the water lines. Ground water should be ~57 degrees F nearly year round – if your water lines are dripping in the middle of the room, you are running too high humidity and likely need to increase air exchange (increase minimum ventilation %)

7 | Pig Comfort

<< Pigs have 3 “rooms” in their house – a kitchen, a bedroom, and a bathroom. After pigs have established their house, you should only find ~25% of their space being the bathroom. If the dunging pattern is greater than this, you may need to adjust your ventilation.

8 | Temp probes

<< Be sure to check each individual temp probe reading at the controller. They should only vary by ~1 degree. If you find a variance greater than that, you likely need to change one of them out.



Kitchen without Borders

LOMOITO

This is a classic and famous Chilean sandwich is a pork loin sandwich and is perfect for lunch when in a hurry. This sandwich was made famous in Santiago, Chile.

The pork loin could be cook the day before, but it is important to keep it in the broth over low heat prior preparing the sandwich.

There are two popular versions:

- 1) Lomito Completo – “Full”, with all the ingredients.
- 2) Lomito Italiano – “Italian” Tomato, avocado and mayonnaise, call after Italian flag colors.



Ingredients (8 sandwiches)

Meat:

- 4 lb. of pork loin.
- 3 tablespoons vegetable or olive oil.
- 2 teaspoons salt and one of pepper.
- 1 teaspoon dry oregano.
- 1/2 teaspoon paprika or sweet paprika.
- 1 tablespoon yellow mustard.
- 1 onion, peeled and cut into wedges.
- 2 garlic cloves.
- 4 cups boiling water or broth.

Sandwich:

- 8 buns (A key component is type of bread used. Preferably hard surface)
- 4 tomatoes.
- 4 mashed avocados. (Do at the moment to avoid oxidation by gently smashing with a fork. Add salt, olive oil and few lemon drops.)
- 2 cups of Sauerkraut.
- Mayonnaise.

Instructions

1. Preheat oven to 350F
 2. Heat oil in a pan, add garlic, and sear the pork loin 2 to 3 minutes per side.
 3. Add all spices across all surfaces during the sear process.
 4. Spread mustard on the surface.
 5. Add onions, and water or broth, covering half of pork loin.
 6. Cook for about 1 hour until meat reaches 145°F to 155°F in the center.
 7. Let it rest and cut in thin slices.
 8. Return to pot with the juices and keep it warm on low heat. Add more broth if needed.
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1. Warm up buns in the oven – avoid over heating.
 2. Add pork loin in to the bun.
 3. Then add the slice of tomato, sauerkraut and the avocado.
 4. Add a generous portion of mayonnaise on top.
 5. In addition , you can add mustard, ketchup or chili sauce.
 6. ENJOY!



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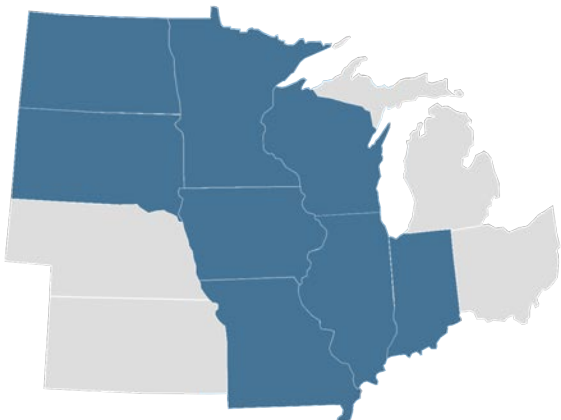
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