



- **13** ··· INTRODUCTION
- 04 ··· KEY TERMS
- **05** ··· WHAT IS A GESTATION CRATE?
- **06** ··· WHAT IS GROUP HOUSING?
- **07** ... WHAT IS GESTATION CRATE-FREE HOUSING?
- 08 ... THE CONVENTIONAL PRODUCTION CYCLE FOR SOWS IN THE U.S.

**BREEDING GESTATION FARROWING WEANING & RECOVERY** 

- ... THE INDUSTRIALIZATION OF U.S. PIG FARMING
- 12 ... STRATEGIES TO ENSURE SUCCESSFUL GESTATION CRATE-FREE HOUSING
- 15 ··· STATE LEGISLATION
- **BUILDING A MEANINGFUL SOW WELFARE POLICY**

THE POLICY ROADMAPS TO ACHIEVE SOW WELFARE **COMMITMENTS** 

- **COMPARING SOW WELFARE UNDER DIFFERENT U.S. CERTIFICATIONS**
- ··· PRODUCER FEATURE NIMAN RANCH
- ··· PRODUCER FEATURE PEDERSON'S FARMS
- 24 ··· COMPANY FEATURE APPLEGATE
- 25 ··· REPORTING FRAMEWORK
- ... U.S. COMPANIES WITH MEANINGFUL SOW WELFARE POLICIES
- 29 ··· GOOD SOW COMMENDATION
- $30\ \cdots\ {\text{U.s. Producers supplying fully}\atop\text{CRATE-FREE PORK}}$
- 30 ··· LOOKING FORWARD
- ··· METHODOLOGY
- ··· REFERENCES







Credit: Gorodenkoff, iStock

#### Introduction

Welcome to Compassion in World Farming's (CIWF) first iteration of PigTrack, a corporate resource that aims to highlight the importance of sow welfare, the state of the pork market in the United States (U.S.), and what leading companies are doing to improve the welfare of these sentient animals.

In the U.S., an estimated 6 million sows, or mother pigs, are bred each year to produce litters of market pigs, resulting in hundreds of millions of pounds of pork meat. In 2021, the USDA reported ~58% of U.S. sows still spend part of their lives confined in individual gestation crates roughly the same size as their bodies.85 This prohibits their ability to turn around, fully stretch their legs, or walk. Thankfully, companies and the American public are increasingly prioritizing more humane treatment for sows. The U.S. pork industry is at a critical juncture for sow welfare. With groundbreaking legislation, such as California's Proposition 12 and Massachusetts's Question 3 prohibiting the sale of products in systems that confine sows in gestation crates – along with similar production bans in nine other states – corporate commitments toward banning the use of inhumane confinement have never been more imperative. Pork producers are transitioning to either group housed or gestation crate-free housing," with 40% of U.S. breeding sows already housed in groups.<sup>2</sup>

Food businesses are actively implementing sow welfare policies, aligning their procurement practices with their company values.

Beyond eliminating gestation crates, companies can further lead on transparency by publicly reporting on their progress, building consumer and stakeholder trust.

CIWF is excited to launch PigTrack, our first compliance tracking tool to measure progress toward a crate-free supply. In this report, CIWF aims to:

- Educate companies on the different U.S. production systems for sows, state legislation requirements, and current market trends.
- Promote U.S. companies committed to 100% gestation crate-free and fully crate-free sow welfare policies, and those reporting progress.
- Encourage transparency and compliance as the U.S. market continues to shift toward crate-free housing systems for sows.

Future PigTrack reports will emphasize company reporting as they publish progress towards a crate-free supply chain. For any questions, please contact our food business team at FoodBusinessUS@CIWF.org.

Group housing typically refers to group housing of pregnant sows in the United States. In the National Pork Board's PQA Plus® Version 5 Education Handbook, "group housing for pregnant sows is defined as a housing environment for more than one sow where, after confirmed pregnant, they can lie down and stand up unimpeded and turn around." 19

in gestation crate-free housing, breeding sows are in pens with other sows immediately after weaning and until approximately one week before farrowing. Sows may be temporarily confined to crates for ≤ 4 hours for management procedures (i.e., breeding), but breeding sows are never kept in gestation crates for permanent housing.

"The U.S. pork industry is facing a crucial turning point. An inspiring number of sows are no longer in crates, as businesses embrace empathy in their supply chains. By moving away from this intensive farming method, this shift echoes the growing trend to source with compassion at the forefront. Pigs are intelligent, social animals that can experience happiness, and we will continue working with companies until all mother pigs are able to turn around and lay down comfortably. At CIWF, we are thrilled to introduce PigTrack, our latest tool designed to empower and support companies on their journey to a fully crate-free future."



Julia Johnson
U.S. Head of Food Business
Compassion in World Farming

### **Key Terms**

- Pigs: (or hogs) refers to all the sows, gilts, piglets, boars (sexually mature males used for breeding), and market/meat pigs used in commercial pork production.
- **Gilts:** iii sexually mature female pigs that have not reared a litter. After farrowing her first litter, a gilt then becomes a sow.
- **Sows:** female pigs that have previously given birth.
- **Boars:** sexually mature male pigs used for breeding.
- **Market/meat pigs:** the offspring of sows. In the U.S., market/meat pigs are raised and then slaughtered for their meat between six and seven months of age.<sup>3</sup>
- **Breeding sows:** also known as dry sows. Refers to sows which may or may not be pregnant in the time between weaning their last litter of piglets and before farrowing their next litter.
- **Estrus:** when a sow is "in heat" (sexually receptive) and ready for breeding.
- **Gestation:** the period when the sow is pregnant, which extends from insemination (breeding) until the sow gives birth (approximately 114 days).<sup>3</sup>
- **Farrowing:** The process of a pregnant sow giving birth to her litter.



Credit: Jo-Anne McArthur / We Animals Media

### What is a Gestation Crate?

Gestation crates are one of the most extreme examples of physical confinement for farm animals today. Gestation crates are typically 7 ft x 2 ft narrow pens made of metal bars providing only 14 ft² of space for a sow.⁴ Each crate is only slightly larger than the body of a sow. Inside the gestation crate, a breeding sow is only able to stand up, lie down, and take one step backward and forward. The sow is unable to turn around, walk, or fully extend her legs. At the front of the crate is a feeder and drinker. There is no bedding as the floor under the crate is fully slatted to allow the sow's excrement to collect below in a pit.

The severe physical restriction of gestation crates leads to numerous health issues for breeding sows. These include lameness from reduced bone density, diminished muscle strength, painful pressure wounds and ulcers, and overgrown hooves.<sup>5–7</sup> Research has shown sows kept in gestation crates have reduced disease resilience.<sup>8,9</sup> The sows are forced to urinate and defecate where they lie, making them more prone to urinary infections.<sup>8,9</sup>

Sows are gregarious social animals, but constant crating prevents them from interacting with other pigs. Crates hinder the performance of their innate natural behaviors, including walking, foraging, and rooting. Pigs are highly motivated to forage and will spend ~50% of their day foraging under free range conditions. <sup>10,11</sup> Long periods spent in gestation crates can cause the sows to become stressed and exhibit stereotypic behaviors, including bar biting, head weaving, excessive drinking, and vacuum or sham chewing. <sup>iv,5,12–15</sup> These abnormal and repetitive behaviors are associated with clinical depression, frustration, and low welfare production systems. <sup>8,16</sup>

"Productive sows will spend several years in the cages...But as the sows get larger over the years, some cannot fit in the cages and are either slaughtered or forced to live in conditions where they can sleep only on their chests, rather than their sides as they do normally." <sup>17</sup>

- Dr. Temple Grandin

Pigtrack 2024 / Compassion in World Farming USA / Pigtrack 2024 / Compassion in World Farming USA

iii Note: Throughout this report, "sows" will refer to breeding sows and gilts for ease of reading.

<sup>&</sup>lt;sup>iv</sup> Vacuum or sham chewing is repetitious chewing without the presence of food in the mouth.<sup>14</sup>



Credit: U. J. Alexander, iStock

# What is Group Housing?

In the United States, group housing refers to housing pregnant sows with other pregnant sows in a group pen. Before confirming pregnancy, breeding sows will be confined to individual gestation crates for 28-35 days. 18,19 However, some U.S. group housing systems will keep sows in gestation crates for up to six weeks until confirming pregnancy after which they are moved to group pens. In total, sows in group housing systems could still be confined for over 50% of each pregnancy (Figure 1). This is why CIWF does not recommend group housing systems to achieve good sow welfare.

# What is Gestation Crate-Free Housing?

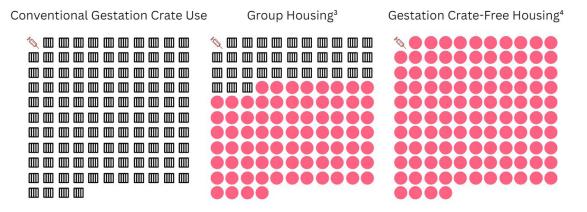
In gestation crate-free systems, breeding sows are in indoor pens or outdoors with other sows immediately after weaning and until approximately one week before farrowing (Figure 1). CIWF recommends this gestation crate-free housing for good sow welfare during breeding and gestation.<sup>v</sup>



# The Length of Gestation Crate Confinement of Breeding Sows in Different Housing Systems in the United States<sup>1</sup>

Each icon represents one day in a sow's pregnancy

- Artificial Insemination<sup>2</sup>
- Confined to Gestation Crates
- Housed in Groups



<sup>&</sup>lt;sup>1</sup>The total gestation length of sows in the United States averages 114 days.

<sup>3</sup>In the U.S., group housing typically refers to the housing of pregnant sows in groups. However, sows will spend 28-35 days (up to six weeks) confined to gestation crates until they are confirmed pregnant and moved to pens with other sows.

<sup>4</sup>Gestation crate-free housing systems have sows in open group pens with enough space to move around, lie comfortably, and to turn around unimpeded from weaning until one week prior to farrowing. Short durations of confinement in a crate may be allowed for management purposes, such as breeding, but should be restricted to ≤4 hours at a time.

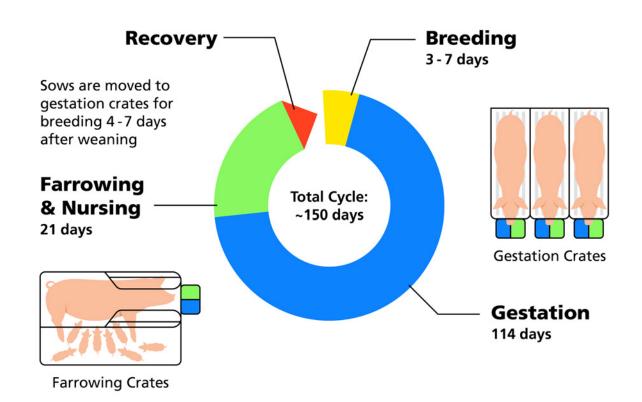
Figure 1. The length of gestation crate confinement of breeding sows in different housing systems in the United States.

Pigtrack 2024 / Compassion in World Farming USA Compassion in World Farming USA / Pigtrack 2024 7

<sup>&</sup>lt;sup>2</sup>Sows may be bred via a single or multiple sessions via natural mating or more commonly, artificial insemination. For sows bred multiple times, these sows may be confined to crates for ≥1 day.

Note: Some operations may allow short-term confinement (no more than four hours) for insemination or other health or management purposes

# The Conventional Production Cycle for Sows in the U.S.





#### **Breeding**

In standard U.S. operations, the first stage of a sow's production cycle starts with breeding. Sows are confined to gestation crates for breeding and the duration of pregnancy. The first step in breeding is the detection of estrus to determine if the sow is ready to be bred. Sows may be bred naturally with a boar; however, artificial insemination is more common.



#### Gestation

The typical gestation (pregnancy) for sows is about 114 days – or three months, three weeks, three days. In conventional operations, a breeding sow in the U.S. will spend her entire pregnancy confined to a gestation crate (Figure 1).



#### **Farrowing**

Shortly before she gives birth, the sow is moved to a farrowing crate where she farrows and nurses her piglets for approximately 3 weeks. In the U.S., sows give birth to an average of 12-14 piglets, with each piglet typically weighing two to three pounds.<sup>1,6,20,21</sup>



Credit: Gabriela Penela / We Animals Media

Farrowing crates, like gestation crates, severely restrict a sow's movement and her natural behaviors. The total farrowing area measures 8 ft by 5 ft, with the sow confined in a smaller individual crate about the same size as a gestation crate (7 ft x 2 ft).<sup>22</sup> This leaves the sow with barely enough space (14 ft²) to stand up, lie down, and nurse her piglets. Like gestation crates, farrowing crates have a drinker and feeder near the sow's head, but there is no bedding, and the floor is fully slatted, allowing excrement to fall into manure pits beneath the floor. Metal bars running along the crate restrict the sow's movement as she lies down, reducing the risk of crushing her piglets. Farrowing crates first gained popularity in the 1960s due to concerns about piglet crushing<sup>vi</sup> mortalities. However, these highly restrictive systems significantly compromise sow welfare and have many disadvantages for piglet welfare during lactation.<sup>6</sup>

In the 24 hours before farrowing, a sow is naturally driven to isolate herself from other pigs and gather materials to build a protected nest for her piglets.<sup>23,26</sup> However, the farrowing crate severely inhibits the sow's movement, and she is prevented from performing her instinctive maternal behaviors, including fully interacting with her piglets, leaving her frustrated and restless.<sup>25,27–29</sup> Frustrated sows in farrowing crates can develop stereotypic behaviors (e.g. bar biting and snout pressing) like sows confined in gestation crates.<sup>30</sup> Research also shows that sows confined to farrowing crates are inhibited from performing the pre-farrowing behavior of nest building, so experience longer farrowing times, poorer nursing abilities, more stillbirths, and lighter piglets.<sup>31–34</sup>

Once her piglets are weaned after 3 weeks, the sow is returned to a gestation crate, and the cycle begins again.

vi Piglet crushing occurs when the mother sow changes position and lays on top of one of her piglets. If the piglet is caught underneath the sow's body, the piglet will often be killed from severe physical injury and/or suffocation.<sup>84</sup>

#### **Welfare-Friendly Alternatives to Farrowing Crates**

Concerns about the poor welfare of sows and piglets in farrowing crates have driven investment in commercial alternatives, such as free farrowing pens. Free farrowing pens provide privacy for the mother sow and her piglets while allowing the sow to move freely within a much larger space. More space allows the sow to have separate functional areas within the pen to perform different behaviors, such as nesting, dunging, feeding, and lying. Separate functional areas allow the free farrowing pens to remain cleaner than farrowing crates.<sup>35</sup> In these loose pens, sows are less stressed during farrowing and lactation, allowing sows to nurse their piglets to heavier weaning weights compared to sows confined to crates.<sup>27,34</sup> Additionally, the sloped walls in free farrowing pens allow sows to slide down into a lying position slowly and carefully, which reduces the incidence of piglet crushing.<sup>36</sup> Improved management and selection for better maternal traits in sows can reduce piglet crushing mortalities in free farrowing pens to levels comparable to or lower than those in farrowing crates.<sup>24,37–41</sup> For more information on commercially available free farrowing pens and guidance to ensure high sow and piglet welfare in these systems, please see our guide on 'Indoor farrowing systems for sows – practical alternatives to the farrowing crate'

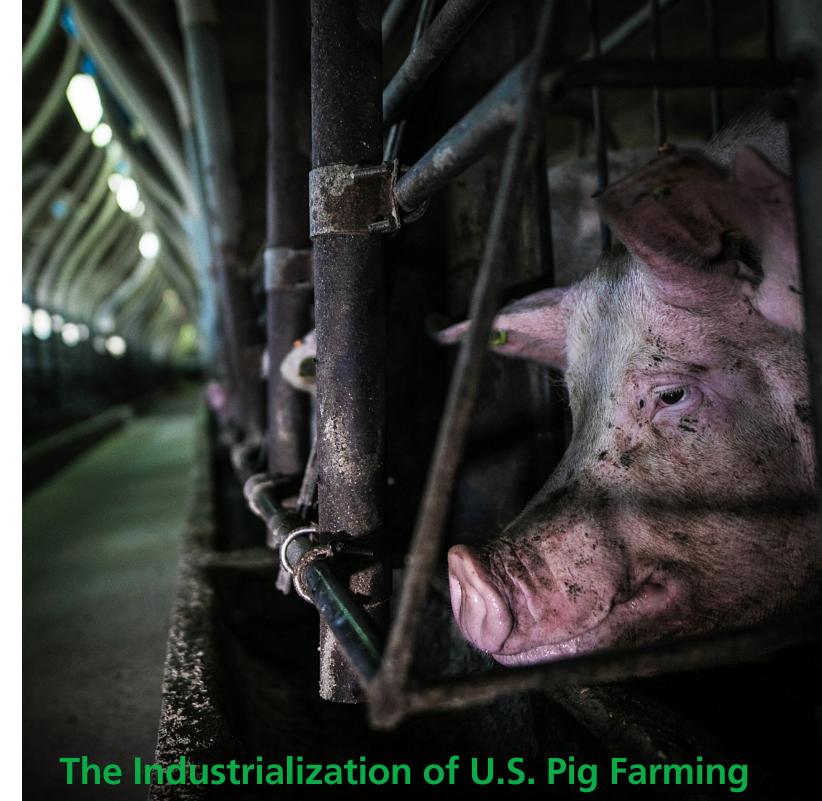


Sows in higher welfare free farrowing PigSAFE pens. A PigSAFE pen provides: continuous freedom of movement for a sow; separate lying, dunging, and nesting areas for a sow; sloped walls to support the sow when lying to protect the piglets; straw bedding for comfort and nesting; social contact between neighboring sows; and improved udder access for the piglets.<sup>35</sup>



#### Weaning & Recovery

In low welfare conventional operations, the continuous cycle of confinement is the norm. After her piglets are weaned, the sow is moved back into a gestation crate and re-bred after one week, when she is observed to be in estrus. Most sows will have approximately two litters each year and will give birth to an average of 3.5-4.5 litters in their lifetime until before being culled when unable to conceive or suffering from severe locomotor issues.<sup>20,42</sup> In these conventional operations, the intensive confinement equates to **72.5-77% of a sow's lifetime.**<sup>vii</sup>



Hog farming has undergone a significant transformation over the past 50 years. The number of farms with pigs reared for meat in the U.S. has fallen **70%** since 1990, yet pork production has risen over 60% within that same period.<sup>21</sup> As farms in the United States industrialized for efficiency, smaller family-owned farms with ~10 sows living in spacious pens gave way to larger facilities housing up to 24,000 pigs in crammed, barren conditions with the sows continuously confined in crates.<sup>43</sup> These intensive farms are known as **CAFOs**, or concentrated animal feeding operations, with small CAFOs housing a minimum of 2,500 pigs.<sup>44</sup> CAFOs have numerous negative impacts, including pollution and environmental damage,<sup>45</sup> serious human health risks,<sup>46</sup> immense animal suffering, and harm the livelihoods of small generational farmers.<sup>47</sup>

Credit: Andrew Skowron

Compassion in World Farming USA / Pigtrack 2024 11

vii See the methodology section for further details on this calculation.



Credit: Stephanie La Porta, iStock

# **Strategies to Ensure Successful Gestation Crate-Free Housing**

Producers transitioning from crated to higher welfare systems may face challenges due to limited experience with managing sows in groups. There is no single blueprint for a successful gestation crate-free sow housing, as pen design will vary according to feeding system, group size, and group stability. However, it is crucial to invest in gestation crate-free systems that can be successfully managed by producers to ensure high welfare for sows. Knowledge transfer of successful systems and their key features is essential, along with fostering a positive attitude among farmers.

Breeding sows should be kept in groups from weaning until one week prior to farrowing. For crate-free housing to be successful, the following practices and housing considerations are necessary:

#### Managing sow aggression

The scientific literature shows pigs are sentient beings that can learn, feel, and express both negative and positive emotions. 48-50 Pigs are also highly social and can recognize the pigs around them as familiar or unfamiliar from memory. 51 Pigs have a hierarchical social structure, which can lead to aggression when mixing unfamiliar individuals in a group. Aggression can also occur in groups of sows during feeding, which is a major concern in crate-free sow housing. If not managed correctly, aggression can cause chronic stress, injury, lameness, poor body condition, and pregnancy loss. 5,14,52 To minimize these risks, sows should be grouped at the time of weaning their last litter of **piglets**. When sows are grouped at weaning and prior to estrus, the sows can form stable, cohesive groups before weeks two and three of pregnancy, which is considered the vulnerable period for pregnancy loss.<sup>53</sup> This reduces the possible consequences of stress during early pregnancy on sow reproductive performance.<sup>54,55</sup> Good mixing practices can also include gradually familiarizing sows via fence line contact, the use of specialized mixing pens (Figure 2), and keeping a boar in the group.<sup>56</sup> Ample space should be provided in the pen to allow less dominant sows to distance themselves from aggressors.

#### Pen structure & layout

The layout and the quality of the space is just as important as the space allowance for minimizing aggression within groups of breeding sows. The pen layout should allow for separate feeding, dunging, and resting areas. Physical barriers, such as walls or straw bales, should be placed throughout the space and provide cover for hiding. To further reduce aggressive encounters, consideration should be given to the placement and ratio of feeders and drinkers to sows, the amount of bedding, and the use of non-competitive feeding systems (e.g., free access stalls and electronic sow feeders vs. floor feeding and short stalls) (Figure 2).<sup>53,57</sup>

#### **Adequate spacing**

A higher space allowance (≥32 ft²/sow or ≥3 m²/sow) enables sows to access feeders and drinkers, lie comfortably, engage with enrichments, socialize with other sows, and move freely throughout the pen. Sufficient space also ensures sows can move away from each other, which is especially important during mixing and feeding. A higher space allowance will reduce aggression, physical injuries, and sow culling rates. More space within pens will also improve the reproductive performance of sows, leading to larger litter sizes and fewer stillbirths.<sup>58–65</sup>

# Providing solid floors & bedding

Sow pens should have solid flooring with dry, clean bedding (preferably straw), which is regularly replenished and cleaned out. Unfortunately, fully slatted floors are used in the majority of today's conventional sow housing. Fully slatted flooring is more common due to the ease of manure management. However, fully slatted floors have a higher incidence of sow lameness. Sows also prefer solid vs. slatted flooring for lying because solid floors provide greater support and heat transfer to lying sows. <sup>66,67</sup> Solid flooring with ample bedding is more physically comfortable for the sows, which reduces hoof injuries and skin lesions. Bedding also improves the sows' thermal comfort. Straw bedding is particularly beneficial in encouraging the sows to forage, root, chew, and ingest the straw, which improves the sows' gut fill (Figure 2). <sup>67–72</sup>

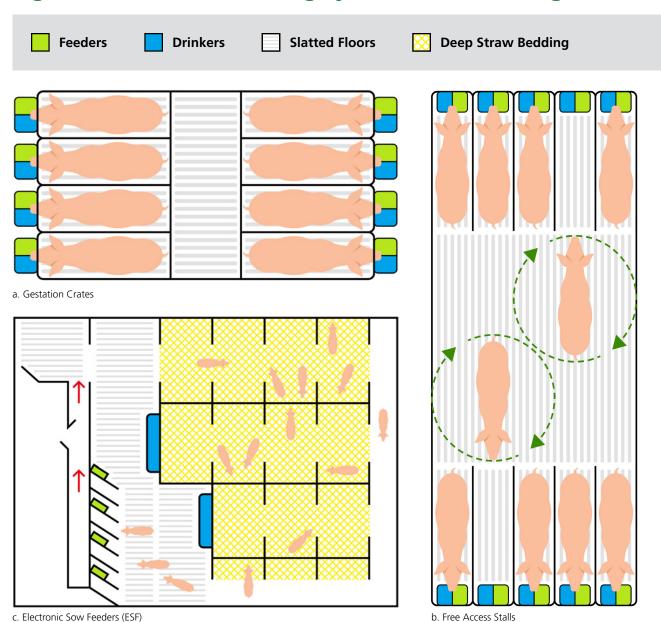
# Dietary fiber & manipulable enrichments

In conventional operations, sows are fed a concentrated diet to maintain their reproductive performance. This provides little opportunity for sows to fulfill their feeding and foraging needs and leads to the feeling of hunger. Providing sows with straw and dietary fiber (e.g., silage racks or higher fiber diets) helps increase feeding time, satisfy hunger, reduce aggression, increase resting behavior, and prevent the development of stereotypic behavior. Feeding a high fiber gestation diet (~13% crude fiber) also prepares sows (and particularly gilts) for the much higher feed intake required during lactation, improving piglet growth during the first week of life. F8,79

# Regular welfare assessments & proper handling

Staff should regularly observe sow behavior, especially at feeding, as it is essential to detect and promptly treat any welfare issues. A reduction in body condition, aggressive sow interactions, skin lesions, and vulva biting indicate poor welfare. Staff should also be trained in proper handling techniques to reduce sow stress, especially during and after breeding.

#### Figure 2. Different housing systems for breeding sows in the U.S.



(a) Gestation Crates – The majority of sows in the U.S. are housed in gestation crates for breeding and the entirety of their pregnancies. The welfare of these sows is undoubtedly bad as these crates severely restrict both the sows' movement and behavior, causing reduced health outcomes and significant mental distress.

**(b) Free Access Stalls** (or lockable feed stalls) – These group pens have a better welfare potential and are becoming widely adopted for group housing and gestation crate-free sow operations in the U.S. Feed is provided in full length stalls with lock-back gates, which prevents competition as each sow is isolated during feeding. However, free access stalls are typically installed with only a small area separating the rows of feeders, so the sows have a limited area to lie and will become regularly disturbed by other sows moving into or out of the feeders. Sows may also remain in these feeders for hours at a time to rest undisturbed, preventing other sows from accessing the feeders. Unless specified, free access stalls typically have fully slatted floors and no bedding or other enrichment.

(c) Electronic Sow Feeders (ESF) – ESFs are a good group pen system that feeds individual rations based on a programmed allotment allocated to each sow through electronic ear tags. ESFs are common in larger, more complex pen structures that have partitions to separate the space into distinct functional areas for feeding, drinking, dunging, and lying. The floor is only slatted over the dunging area and underneath drinkers. ESF systems with deep straw bedding have the best welfare potential by providing comfortable lying areas and a foraging enrichment for the sows.

### **State Legislation**

As of August 2024, 11 states have passed legislation restricting the use of gestation crates for breeding sows (Figure 3).<sup>80</sup> California and Massachusetts have passed the strongest policies that prohibit both the **production and sale** of pork produced with any gestation crate use. California also requires breeding sows are provided a minimum of 24 ft<sup>2</sup> of floor space per sow, surpassing the industry standard of 14 ft<sup>2</sup> in crates. Meaningful language is important to ensure that no gestation crate use is permitted for breeding sows – regardless of their pregnancy status. Arizona, Colorado, Florida, Maine, Michigan, New Jersey, Ohio, Rhode Island, and Oregon only require group housing of breeding sows (Figure 1), so allow gestation crate use until confirmation of pregnancy (Figure 3).

State legislation should also ensure sows are not moved to farrowing crates more than one week prior to their expected date of farrowing. For example, the current laws in Colorado and New Jersey allow the confinement of pregnant pigs in farrowing crates 12 and 14 days before the sow's expected delivery date (Figure 3).

CIWF's Campaigns Team is actively working with state legislators to advocate for meaningful policies that align with scientifically backed animal welfare standards.

#### Legislative Protections for Sows by State

■ Total gestation crate production and sales ban ■ Partial gestation crate production ban – upon pregnancy confirmation¹ ■ Partial gestation crate production ban – extended time in farrowing crates³ ■ No Ban on Record



Source: U.S. Census Bureau 2021 boundaries, CIWF Welfare for Pigs, USDA ERS

<sup>1</sup>These state laws only prohibit the use of gestation crates for pregnant sows, so sows may be kept in gestation crates up to 6 weeks (average 28 to 35 days) until confirmed pregnant.

<sup>2</sup>Rhode Island's §4-1.1-3 law will only apply to confirmed pregnant sows starting July 1, 2026

<sup>3</sup>New Jersey's A1970 law prohibits gestation crate use for sows but allows sows to be confined to farrowing crates up to 14 days prior to their expected delivery date. Colorado's article 50.5 allows sows to be moved to farrowing crates up to 12 days before their expected delivery date. However, Colorado's legislation only prohibits gestation crate use for sows confirmed to be pregnant.

Figure 3. Legislative protections for sows by state.

## **Building a Meaningful Sow Welfare Policy**

#### The Policy

As crates are used more than once in the production cycle of sows, it is essential to be as clear as possible when committing to banning intensive confinement in your company's supply chain. CIWF's Food Business Team collaborates with companies to develop, strengthen, and support meaningful animal welfare policies, including those focused on sows.

We encourage companies to commit to removing both gestation crates and farrowing crates from their supply chain. However, we recognize this goal may not be obtainable for all companies in the next five years. Legislation in California and Massachusetts has drastically increased volumes of gestation crate-free pork in the United States. **At a minimum, companies should have a timebound and public-facing commitment to source only gestation crate-free pork.** 

A meaningful **fully crate-free** sow welfare commitment should:

• Commit to only sourcing pork from producers that operate without any crates for gestation or farrowing. Temporary confinement of sows is permitted for up to four hours (ideally less than two hours for farrowing sows) for management procedures.

A meaningful **gestation crate-free** sow welfare commitment should:

- Commit to only sourcing pork from producers that operate without gestation crates. Temporary confinement of sows is permitted for up to four hours for management procedures, such as insemination.
- Unless otherwise stated, group housing may still use gestation crates for up to six weeks until sows are confirmed pregnant.<sup>81</sup>

  Therefore, it is key to explicitly state in the commitment to only source gestation crate-free pork. A truly humane system fully prohibits the use of long-term intensive confinement.
- It may be helpful to mention compliance with California's Proposition 12 or Massachusetts' Question 3 if your company operates in these states.

Both fully crate-free and gestation crate-free commitments should:

- Cover a company's entire pork supply
  - All pork products should be covered by your crate-free commitment. If not, it is imperative to list which products are included to improve transparency.
- Have a clear, meaningful timeline for full implementation
- CIWF recommends working to fully transition within five years of establishing a commitment.
- Be public facing with annual progress reporting towards meeting the commitment





Credit: Pandemin, iStock

#### **Roadmaps to Achieve Sow Welfare Commitments**

To ensure successful implementation of a company's animal welfare commitment, CIWF encourages companies to establish annual reporting benchmarks to reach 100% compliance, better known as a **roadmap**. With roadmaps, companies outline and maintain a plan toward meeting their animal welfare commitments. Roadmaps provide accountability, a structured approach to compliance, and clear goals for responsible procurement efforts. They also help align the entire company – including its staff and shareholders – toward a common goal.<sup>82</sup>

#### **Example Policies and Roadmaps:**

- 1. "We are committed to source 100% of our pork supply from pigs raised without the use of both gestation crates and farrowing crates by 2028. We are also compliant with Proposition 12 in California and Question 3 in Massachusetts for sow welfare. To ensure full transparency, we will report this progress in our annual responsibility reports. As of 2024: 25% of our supply was produced without the use of gestation crates, and 14% of our supply was produced in a crate-free environment without gestation or farrowing crates. Our supply is third-party audited to ensure compliance and traceability."
- 2. "We will work to increase our supply of crate-free pork by 10-20% annually to meet our 2028 goal."

# **Comparing Sow Welfare Under Different U.S. Certifications**

	Aligned with U.S. state crate-free legislation? (Prop 12, Question 3)	Gestation crates prohibited? <sup>a</sup>	Do breeding dry sows have enough space in groups? <sup>b</sup>	Farrowing crates prohibited? <sup>c</sup>	Do sows have enough space for farrowing? <sup>d</sup>	Do all sows have adequate bedding?	Manipulable enrichments for all sows? <sup>e</sup>	Nesting materials provided to farrowing sows?	Fully slatted floors prohibited?	Do all sows have outdoor access?	Annual third party auditing required?
CIWF Higher Welfare Criteria	YES	Housed in groups from weaning until 1 week prior to farrowing. Zero confinement or short durations (≤4 hours) of confinement when deemed necessary.	≥32 ft² per sow	No farrowing crates	71 ft² per sow or 84 ft² total farrowing pen size	All sows have deep loose bedding (e.g., straw)	All sows should have continuous access to long, natural, fibrous, and manipulable material (e.g., straw)	All farrowing sows should have access to natural loose nesting material (e.g., straw) at least 24h prior to farrowing.	At least 50% solid flooring	Outdoor access (free range)	Annual third party auditing to verify compliance
Global Animal Partnership (G.A.P.) Steps 1 - 5+1  ANIMAL WELFARE CERTIFIED CertifiedGAP.org	YES	YES. Sows and gilts can only be confined ≤4 hours for breeding or pregnancy confirmation.	ONLY FOR STEPS 2-4. Step 1: 24 ft², Step 2: 32ft², Step 3: 60 ft², Step 4: 60 ft² if temporarily indoors.	YES	NO. Steps 1-4: Pens ≥48 ft² with ≥35 ft² for the sow. Steps 5-5+: 48 ft² in farrowing huts.	YES	YES	YES. Farrowing sows must have long straw, corn stalks, hay, or other long, fibrous vegetation at least 3 days before farrowing.	YES. For operations with indoor housing (Steps 1-4), all pens must have 75% solid flooring. Steps 5-5+: only pasture	Only for Steps 3 and above	YES. Authorized, independent third party audits every 15 months (to capture any seasonal differences), but every 12 months if operation seeks compliance with Prop 12.
Regenerative Organic Certified (ROC) <sup>2</sup> Regenerative Organic Certified	YES	YES, but the length of temporary confinement is unclear.	G.A.P. Steps 4+ and AWA certified operations provide sufficient space. Certified Humane only provides 28.9 ft² for gilts or sows with ≤2 litters.	YES	Only for AWA operations	YES	YES	YES, but not necessarily straw.	YES. Animals are primarily reared on pasture.	YES. Continuous and open access to pasture.	YES. An annual audit is required of every producer by an independent approved certifying body to maintain ROC status. Producers must be compliant with the minimum ROC criteria and also maintain certification under G.A.P. Step 4+, AWA, or Certified Humane.
Animal Welfare Approved (AWA) by A Greener World³  ANIMAL WELFARE APPROVED	YES	YES, but the length of temporary confinement is unclear.	YES. ≥700 ft² of space on ranging and foraging areas, plus ≥16 ft² in huts or arks for shade and shelter. When excluded from the outdoors, sows have 64 ft² indoors.	YES	YES. 700 ft <sup>2</sup> of space on ranging and foraging areas, plus 42 ft <sup>2</sup> in huts or arks for farrowing sows. When excluded from the outdoors, farrowing sows have 112 ft <sup>2</sup> indoors.	YES. Straw or cornstover bedding is preferred.	YES. Sows always have access to forage (e.g., grass, clean hay, straw, soybean hulls, or similar fiber sources and crop stubble). Sows also have continuous access to outdoor ranges.	YES. Prior to farrowing, sows must have ample fresh, dry bedding to manipulate, but material type unspecified.	YES. Sows are primarily on outdoor range, but shelters and housing must have solid floors.	YES. Continuous ranging and foraging area access for all sows.	YES. A qualified independent third party auditor visits the farm (and the separate slaughter facilities, if applicable) to conduct inspections for recertification every 12 months.
Certified Humane (Humane Farm Animal Care)4  CERTIFIED HUMANE RAISED & HANDLED	YES	YES, but the length of temporary confinement is unclear.	Mature sows: 37.6 ft², but only 28.9 ft² gilts and sows with ≤2 litters.	YES	NO. Total pen size only 48 ft².	YES	YES. Straw preferred, but finer and less fibrous materials, e.g., wood chips, sawdust or peat, are also acceptable. In addition, chains, balls and rope are required.	YES. Non-specified farrowing materials (not sand or sawdust) provided 48 hours prior to farrowing.	NO. Sows must have access to solid lying areas at all times, but a minimum amount of solid floor is not specified.	NO. Outdoor access is optional and fully indoor housing is permitted.	YES. Independent third party audits every 12 months of individual producers. For group certifications, a minimum of 10% of producers are inspected by Certified Humane.

<sup>&</sup>lt;sup>1</sup> Global Animal Partnership's 5-Step® Animal Welfare Standards for Pigs v2.5

<sup>&</sup>lt;sup>2</sup> Framework for Regenerative Organic Certified Version v4.1. In addition to the program's animal welfare requirements, Regenerative Organic Certification requires an additional third-party animal welfare certification under one of the following programs: Global Animal Partnership Step 4 or above, Certified Humane, or Animal Welfare Approved by AGW.

<sup>&</sup>lt;sup>3</sup> Certified Animal Welfare Approved by AGW Standards for Pigs 2023 version 1

<sup>&</sup>lt;sup>4</sup> Humane Farm Animal Care Animal Care Standards for Pigs January 2018 (Last update: August 13, 2020)

<sup>&</sup>lt;sup>5</sup>7 CFR Part 205 National Organic Program (NOP); Organic Livestock and Poultry Standards - Final Rule [Doc. No. AMS–NOP–21–0073]

<sup>&</sup>lt;sup>6</sup> PQA Plus® Version 5 Education Handbook

<sup>&</sup>lt;sup>7</sup> American Grassfed Association Swine Standards - January 2018

<sup>&</sup>lt;sup>8</sup> American Humane Certified Animal Welfare Standards for Swine (April 2017)

<sup>&</sup>lt;sup>a</sup> Fully compliant (dark green): sows are housed in groups with no or ≤4 hours of confinement for necessary procedures. Mostly compliant (light green): sows are housed in groups. Short term temporary confinement is permitted, but the maximum length of time is not specified. Not compliant (red): Breeding sows are housed solely in gestation crates or sows are only group housed following pregnancy confirmation.

b Fully compliant (dark green): ≥32 ft² per sow. Mostly compliant (light green): ≥27 ft² per sow. Uncertain (yellow): breeding sows appear to have plenty of space (≥32 ft² per sow), but an exact minimum amount is not specified. Alternatively, sows may only have ≥32 ft² per sow under certain program conditions. Not compliant (red): Breeding sows do not have enough space in housing or no minimum space allowance is specified.

<sup>&</sup>lt;sup>c</sup> Fully compliant (dark green): farrowing crates are prohibited. Mostly compliant (light green): Farrowing crates are now specifically prohibited, but the date of compliance is not until Jan 2, 2025. Not compliant (red): farrowing crates are permitted.

# **Comparing Sow Welfare Under Different U.S. Certifications - Continued**

	Aligned with U.S. state crate-free legislation? (Prop 12, Question 3)	Gestation crates prohibited?ª	Do breeding dry sows have enough space in groups? <sup>b</sup>	Farrowing crates prohibited? <sup>c</sup>	Do sows have enough space for farrowing? <sup>d</sup>	Do all sows have adequate bedding?	Manipulable enrichments for all sows? <sup>e</sup>	Nesting materials provided to farrowing sows?	Fully slatted floors prohibited?	Do all sows have outdoor access?	Annual third party auditing required?
USDA Organic <sup>5</sup> USDA ORGANIC	МАҮВЕ	YES, but clarifying language prohibiting crate use, including before pregnancy confirmation, only in effect Jan 2, 2025. Temporary confinement not addressed.	NO. No minimum space allowance is specified.	YES. Farrowing crates are prohibited. However, clarifying language specifically prohibiting crate use only in effect Jan 2, 2025.	NO. No minimum space allowance for farrowing sows.	YES. Sows must have access to clean and dry bedding. Acceptable types include organic crop residue, or non-organic shredded newsprint, wood chips, wood shavings, sawdust, or sand.	Rooting materials must be provided to sows at all times, except when sows are farrowing and nursing.	NO. Nesting material for farrowing sows is not required.	Not addressed	YES. Organic pigs must have access to the outdoors as suitable for the animal's stage of life, the climate, and the environment.	YES. Accredited third party certifying agents conduct onsite audits every 12 months of every operation that grows or handles organic products, including slaughter facilities. A certified organic slaughter facility must be used for processing meat that is to be marketed as organic.
American Grassfed Association (AGA) <sup>6</sup> American  Grassfed	YES	YES, but temporary confinement not addressed.	Outdoor range and shelters must be large enough to allow all animals to graze/feed without crowding or competition for food, but no minimum space requirement outlined for sows in groups.	YES. Farrowing crates are prohibited.	NO. No minimum space allowance is specified for farrowing sows in shelters recommended for nesting and farrowing.	Not addressed	YES. AGA Pastured pigs must have continuous access to forage. Forage and pasture should provide ~ 60% of the animal's dry matter intake throughout the year.	Not addressed. Shelters should be available to sows to nest and farrow. However, nesting materials are not mentioned.	YES. Animals are primarily reared on pasture.	YES. All pigs must be provided maximum access to pasture.	YES. AGA-Certified producers are inspected at least every 15 months by independent third parties to ensure continuing compliance with the standards.
American Humane Certified (Humane Heartland) <sup>7</sup>	NO	NO. Gestation crates can be used for the first 7-10 days after breeding.	NO. 20 ft <sup>2</sup> per sow. Extra space must be provided as necessary for sows to lie apart in hot conditions, but the additional space provided is not stipulated.	NO. Farrowing crates are permitted.	NO. Sows can be housed in crates during farrowing and a minimum space allowance is not addressed.	Not required	At least 2 different types of enrichments must be provided to sows. However, enrichments are not required to be natural, fibrous, or manipulable (e.g., straw, wood chips, sawdust, balls, ropes, ice blocks, or hanging chains).	Not required	NO. Swine may be housed on fully slatted floors indoors.	NO. Outdoor access is optional and fully indoor housing is permitted.	YES. Independently audited and certified annually. The program reserves the right to perform spot checks at any time during the certification period.
Pork Quality Assurance® Plus (PQA Plus)8  PQAPLUS Our Respossibility, Our Premise.	NO	NO. Sows may be housed in gestation crates for their entire pregnancy.	NO. No minimum space requirement specified.	NO. Farrowing crates are permitted.	NO. Sows can be housed in crates during farrowing and a minimum space allowance is not addressed.	Not required	Not required	Not required	Not required	NO. Outdoor access is optional and fully indoor housing is permitted.	NO. Internal site assessments conducted quarterly on sow farms. Operations are assessed on-farm by PQA Plus advisors once every three years to maintain PQA Plus site status. One of the PQA Plus site status operations is then randomly selected to be third party audited.

<sup>&</sup>lt;sup>d</sup> Fully compliant (dark green): sows have a minimum of 71 ft<sup>2</sup> per sow during farrowing or the farrowing pen is at least 84 ft<sup>2</sup>. Uncertain (yellow): farrowing sows may only have enough space during farrowing under certain program conditions. Not compliant (red): sows do not have enough space during farrowing or no minimum space allowance is specified.

<sup>&</sup>lt;sup>e</sup> Fully compliant (dark green): all sows have continuous access to long, natural, fibrous, and manipulable material (e.g., straw), Uncertain (yellow): sows do not have access to suitable enrichments that are long, natural, fibrous, and most importantly, manipulable. Alternatively, most sows have access to suitable enrichment, but it is not a requirement during certain periods (i.e., farrowing and nursing). Not compliant (red): sows do not have access to suitable enrichments.



# Producer Feature – Niman Ranch

Spanning over 600 independent family farms today, Niman Ranch began offering pork in 1995 after bringing on Paul Willis, an lowa hog farmer with compassionate animal care as a core principle of his farming practices.

Niman Ranch goes far above and beyond conventional standards by:

- Prohibiting the use of gestation crates, farrowing crates, and tethering for all pigs.
- Prohibiting the practice of teeth clipping and tail docking piglets.
- Raising all pigs outdoors or in deep bedded pens that allow pigs to forage, explore, root, and play. Sows are given extra forage to nest when farrowing whether indoors or on pasture.
- Ensuring compliance and transparency through regular on farm audits as well as Global Animal Partnership and Certified Humane oversight, two voluntary labels that emphasize animal welfare. Niman Ranch requires at least 150% more space per pig than the conventional industry standard for gestation.

Along with elevated husbandry standards, Niman Ranch farmers work hard to improve the land through sustainable and regenerative farming practices. Many Niman Ranch farmers strengthen their soil by planting cover crops, rotating annual crops, and using no-till (or reduced tillage) practices. Because Niman Ranch hog farmers do not use liquid manure pits, their farms produce solid manure mixed with bedding that is composted and applied back to the land. This provides vital nutrients for the soil and mitigates harmful runoff that can cause environmental damage and deadly algal blooms.



Credit: Niman Ranch

Niman Ranch's small- and mid-size independent family farm model also creates 150% more jobs than conventional hog production per 100,000 pigs, which allows these farmers to reinvest in their local communities, generating 50% more added value than the commodity industry.<sup>83</sup>

Despite the pressures of continued intensification looming over agricultural operations in the United States, Niman Ranch continues to raise the standards of care for the animals, the people, and the planet.

"You don't have to be the biggest farmer in the county, you don't have to be the one with the most animals... You can be small, you can do a great job, and you'll be rewarded. There's a lot of pride in that."



**Paul Willis**Niman Ranch Founding Hog Farmer



# Producer Feature – Pederson's Farms

Over the last 30 years, Pederson's Farms has made a name for itself in high welfare, all natural meat production. Founded in Hamilton, Texas in 1992, the company has since expanded to include a network of 18 family-owned farms, all dedicated to "making the best, better."

Pederson's farmers manage high welfare systems designed to best support the sows' well-being. Gestation crates and farrowing crates are prohibited in Pederson's operations, ensuring all pigs are provided the freedom to move freely. The barns are climate controlled and have outdoor access, giving every pig a comfortable and more natural environment to thrive. Sows live in open group pens with deep straw and shavings bedding. This deep bedding allows the sows to rest comfortably and fulfill their natural drive to forage by rooting and digging. The farrowing pens provide each sow with ample space to farrow in privacy, allowing the sow to better care for her litter, and creating a richer, healthier relationship between the sow and her piglets.

The level of care goes beyond just the environment for Pederson's Farms. Pederson's farmers raise Large White x Landrace sows, a crossbreed of pig well known for their superior maternal skills. Through their hard work and commitment to transparency through Global Animal Partnership, it is clear that Pederson's Farms deeply cares for its pigs, farmers, and consumers.



Credit: Pederson's Farms

"We believe in enabling better lives for our farmers, animals, partners, team, communities, and you and your family. Honesty, integrity, and good stewardship are our core principles at Pederson's, and we take pride in passing those onto you.

Onward and Upward, Progress over Perfection, Love, and Respect... Pretty simple really!"



**Neil Dudley**VP of Business Development



## **Company Feature – Applegate**

For over 37 years, Applegate has delivered high quality meat products while maintaining responsible sourcing at the core of its mission. With the company's mission, "Changing The Meat We Eat®", Applegate is setting the standard for others to follow. In addition to all pork having certification from either Certified Humane or Global Animal Partnership, Applegate requires that **all** pigs are raised:

- Without the use of gestation crates and farrowing crates, and instead sows are raised in open pen systems with more than twice the space for gestating sows (Applegate requires at least 29 ft<sup>2</sup> found in conventional settings.)
- Without harmful tail docking or teeth clipping practices.
   The added space, enriched environment, and elevated husbandry standards mitigate the need for these practices.
- With increased solid flooring to reduce the chance of injury that may occur with slatted floors. These floors are also enriched with bedding materials – such as hay or straw – that encourage pigs to nest and root and display natural behaviors.
- With increased weaning age requirements, allowing the piglets to spend more time with mom, compared to conventional standards, and allowing for an easier transition into the nursery.

APPLEGATE® pork products go beyond the welfare standards of California's Proposition 12 and Massachusetts's Question 3.

Applegate challenges conventional practices through continuous improvement of its products, while keeping environmental sustainability and the humane treatment of animals as central pillars of its mission. "Animal welfare has been at the core of Applegate's mission for over 37 years and we are proud of the impact that we have made over that time. We value our longstanding farm partnerships that uphold high standards for animal production—supporting farmer livelihoods makes all of this possible. We are honored to be included in Compassion in World Farming's first PigTrack report."



**Carolyn Gahn**Senior Director of Mission and Advocacy for Applegate



Credit: Michele Jackson, iStock

# **Reporting Framework**

This year's PigTrack report intends to equip companies with the knowledge and framework needed to establish meaningful commitments toward a crate-free pork supply. The companies featured in this year's report serve as exemplary policy examples, demonstrating clear dedication to the full removal of all crates - or at minimum, gestation crates, from their supply chains with a set deadline for completion. Additional companies will be featured in future iterations, following the same methodology.

See the below sample disclosure and reporting metric for a breakdown of our progress tracking:

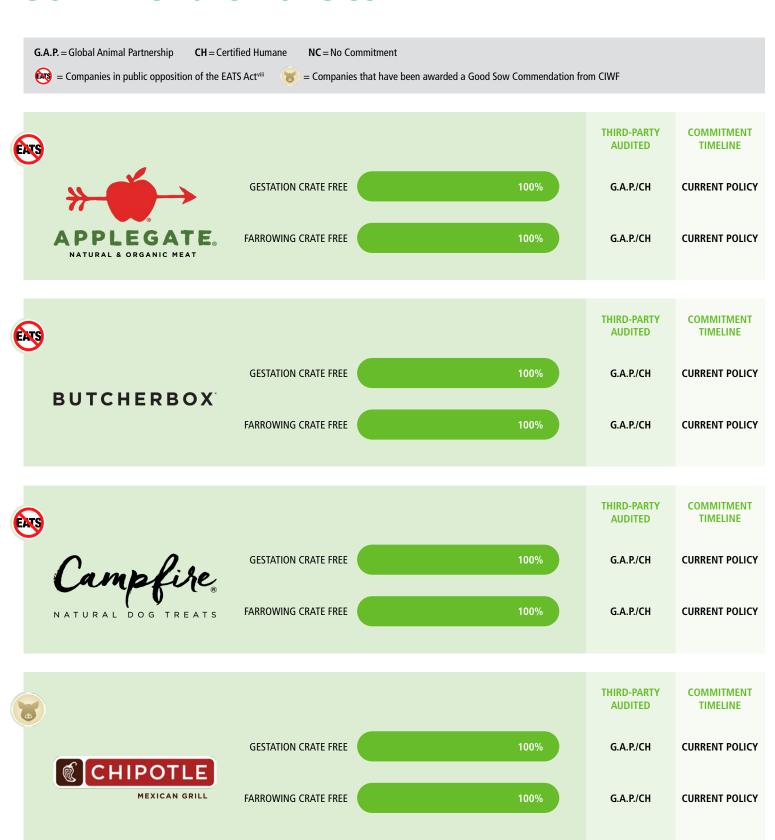
#### Sample Disclosure:

"We are committed to source 100% of our pork supply from pigs raised without the use of both gestation crates and farrowing crates by 2028. To ensure full transparency, we will report this progress in our annual responsibility reports.

As of 2024: 25% of our supply was produced without the use of gestation crates, and 14% of our supply was produced in a crate-free environment without gestation or farrowing crates. Our supply is third-party audited to ensure compliance and traceability."



# U.S. Companies with Meaningful Sow Welfare Policies



viii The EATS Act is harmful proposed legislation that would prevent states or local governments from regulating imported agricultural products from other states, nullifying state bills such as California's Proposition 12 and Massachusetts's Question 3.



Compassion in World Farming USA / Pigtrack 2024 27



#### **Good Sow Commendation**



CIWF acknowledges that implementing meaningful farm animal welfare policies can be challenging. That is why CIWF established our Good Farm Animal Welfare Awards (GFAWA) in 2007 to recognize companies and producers that are committing to improve welfare standards for farmed animals. The GFAWA program spans 12 categories and ranges from sustainable food sourcing practices to ending cage and crate use across entire supply chains.

Nearly 1 billion animals are set to benefit annually from the policies and programs implemented through these awards, and this number is only expected to grow as companies continue pursuing ambitious welfare commitments.

One of the award categories – The Good Sow Commendation (GSC) – celebrates significant achievements in sourcing pork from the offspring of sows raised in higher welfare housing. To apply for the GSC, the following criteria must be met:

- 1. No confinement (gestation crates/sow stalls) during the sow's dry and observation periods (*i.e.*, the time period up until confirmation of pregnancy).
- 2. No confinement during the sow's farrowing and lactation periods (farrowing crates)
  - a. Confinement for only a short duration for management purposes (no more than 2 hours at a time).
  - b. Minimum space requirements for farrowing pens must be met, if used.
  - Monitoring systems must be in place to ensure temporary crates are operated in the "open position," if used.
  - d. Active monitoring and improvement programs for pre-wean mortality.
- 3. Provision of adequate manipulable material and bedding throughout the sow's life must be provided.



In 2019, CIWF awarded Chipotle the Good Sow Commendation for upholding high sow welfare standards for its pork supply. This year, GFAWA has returned with an exciting ceremony in Paris, France. The recipients are recognized for their steadfast commitments to improving welfare in all areas of the food industry. The U.S. CIWF team is delighted to announce that two U.S. producers – Niman Ranch and White Oak Pastures – will receive the Good Sow Commendation in 2024.





"While change is being driven by a myriad of stakeholders concerned about the welfare of farm animals and the need to look after our planet, it is the food industry that makes this change a reality."



**Dr. Tracey Jones**Director of Food Business
Compassion in World Farming

### **U.S. Producers Supplying Fully Crate-Free Pork**











#### **Porter Road**













## **Looking Forward**

CIWF is excited to begin tracking and highlighting the meaningful progress companies are making toward improving the welfare of sows in the U.S. pork industry. Over the next year, our team will continue to support companies in developing commitments and roadmaps to fully implement sow welfare policies across their supply chains.

Future editions of PigTrack will include a more thorough list of company policies, company and producer features, and additional guidance on how to craft an impactful sow welfare policy. In addition, new reports will cover the latest legislative and scientific updates on sow welfare, with an additional focus on how to advance pig welfare beyond crate-free commitments.

To inspire full transparency on sow welfare commitments, PigTrack 2025 will rank each company's sow welfare commitment under one of the following categories:

- Leading the way: Companies that have an established, timebound public commitment to a fully crate-free sow welfare policy, which bans the use of both gestation and farrowing crates across their entire supply chain and reports progress annually towards their commitment.
- Making Progress: Companies that have an established, timebound public gestation crate-free commitment covering their entire supply chain and are reporting progress annually towards their commitment.
- Progress Needed: Companies that have committed to sourcing fully crate-free or gestation crate-free pork within their supply chain, but have not demonstrated meaningful progress towards their goal, their commitment does not cover all their pork offerings, and/or no timeline has been set for the company to fully meet their goal.
- At Risk: Companies that have a partial sow welfare commitment to source pork from sows in 'group housing', but still allow the use of gestation crates in their supply chain before the confirmation of pregnancy.
- Falling Behind: Companies that have yet to publish a sow welfare policy, allowing for the unrestricted use of gestation and farrowing crates in their supply chain.

If your company does not currently have a sow welfare policy or needs help strengthening your framework, please contact CIWF's Food Business team. Whether it is providing technical resources or assisting companies with evaluating and mapping their supply chains, CIWF is eager to help your company achieve its animal welfare goals. To learn more, contact FoodBusinessUS@CIWF.org

### Methodology

PigTrack 2024 captures the public disclosure of 11 companies reporting progress towards the use of intensive sow confinement from their pork supply chains. In this iteration, companies must have a timebound, fully crate-free or gestation crate-free commitment covering all their pork offerings and are working toward implementing this goal (if not already achieved). Only information published within two years of our reporting deadline is considered accurate and up to date. The tentative deadline for reported progress to be included in PigTrack 2025 is July 31st, 2025.

While companies only need a gestation crate-free commitment to be included in PigTrack, CIWF encourages companies to remove all crates in their supply chain and include language prohibiting the use of farrowing crates. This leadership in sow welfare will be positively reflected in PigTrack.

To provide the percentage of time a conventionally raised sow spends in intensive confinement over her lifetime (pg. 10), the following calculation was performed:

- Gilts are first bred at 170 to 220 days of age.<sup>3</sup>
- Pregnancy is 114 days long.<sup>3</sup>
- After farrowing, the piglets are weaned at 21 days.3
- It takes approximately 7 days after weaning to return to estrus.<sup>21</sup>
- 114 days (gestation) + 21 days (weaning) + 7 days (recovery) + 3-7 days (breeding) = 145-149 days (average: 147 days).
- Therefore, if a sow is first bred at 170-220 days (average: 195 days) and has 3.5-4.5 litters<sup>42</sup> in her lifetime:
- 147 days) \* (3.5 or 4.5 litters) = 514.5-661.5 days.
- 514.5/ (195+514.5) or 661.5(195+661.5) = 72.5%-77%



#### References

- U.S. Department of Agriculture National Agricultural Statistics Service. Quarterly Hogs and Pigs. https://downloads.usda.library.cornell.edu/usda-esmis/files/rj430453j/q811n8305/s46573384/hgpg0324.pdf (2024).
- 2. Johnston, J. Prop 12 a lost battle in a larger war NPPC. Meatingplace (2023).
- 3. The National Pork Board. Lifecycle of a market pig. https://porkcheckoff.org/pork-branding/facts-statistics/life-cycle-of-a-market-pig/#:~:text=The%20life%20cycle%20of%20a,of%20up%20to%20280%20pounds. (2024).
- American Veterinary Medical Association. Welfare Implications of Gestation Sow Housing. https://www.avma.org/sites/default/ files/resources/WelfareImplicationsOfGestationSowHousing.pdf (2015)
- 5. Karlen, G. A. M. et al. The welfare of gestating sows in conventional stalls and large groups on deep litter. Appl Anim Behav Sci 105, 87–101 (2007).
- 6. Schenck, E. L. et al. Exercising stall-housed gestating gilts: Effects on lameness, the musculoskeletal system, production, and behavior. J Anim Sci 86, 3166–3180 (2008).
- 7. Marchant, J. N. & Broom, D. M. Effects of dry sow housing conditions on muscle weight and bone strength. Anima Sci 62, 105–113 (1996).
- 8. Scientific Veterinary Committee. The Welfare of Intensively Kept Pigs. (1997).
- 9. Perini, J. E. G. N. et al. Housing system during pregnancy on behavior, reproductive and health parameters of sows. Archivos de Zootecnia 70, 260–269 (2021).
- 10. Stolba, A. & Wood-Gush, D. G. M. The behavior of pigs in a semi-natural environment. Anim Prod 48, 419–425 (1989).
- 11. Petersen, V. The development of feeding and investigatory behavior in free-ranging domestic pigs during their first 18 weeks of life. Appl Anim Behav Sci 42, 87–98 (1994).
- Vieuille-Thomas, C., et al. Stereotypies in pregnant sows: Indications of influence of the housing system on the patterns expressed by the animals. Applied Animal Behavior Science 44, 19–27 (1995).
- 13. Jensen, P. Diurnal rhythm of bar-biting in relation to other behavior in pregnant sows. Appl Anim Behav Sci 21, 337–346 (1988).

- 14. Chapinal, N. et al. Evaluation of welfare and productivity in pregnant sows kept in stalls or in 2 different group housing systems. J Vet Behav 5, 82–93 (2010).
- 15. Zhou, Q. et al. Group housing during gestation affects the behavior of sows and the physiological indices of offspring at weaning. Animal 8, 1162–1169 (2014).
- 16. Van der Staay, F. J. et al. Effects of chronic stress: A comparison between tethered and loose sows. Physiol Behav 100, 154–164 (2010).
- 17. Kaufman, M. Largest pork processor to phase out crates. The Washington Post https://www.washingtonpost.com/wp-dyn/content/article/2007/01/25/AR2007012501785.html (2007).
- Levis, D. G. & Connor, L. Animal Well-Being Group Housing Systems: Choices and Designs Objectives. https://porkcheckoff. org/wp-content/uploads/2021/05/Group-Housing-Systems-Choices-and-Design.pdf (2013).
- 19. National Pork Board. PQA Plus 1® Version 5 Education Handbook. https://www.porkcdn.com/sites/lms/
  References+and+Resources/PQAv5+Handbook+English+2.8.22.
  pdf (2021).
- MetaFarms Inc. & National Pork Board. Production Analysis Summary for U.S. Pork Industry: 2019-2023. https://www. porkcheckoff.org/wp-content/uploads/2024/07/2024-Production-Analysis-Full-Report-1.pdf (2024).
- 21. U.S. Department of Agriculture Economic Research Service. Hogs & pork: sector at a glance. https://www.ers.usda.gov/topics/animal-products/hogs-pork/sector-at-a-glance/ (2024).
- 22. Swan, K., Peltoniemi, O. A. T., Munsterhjelm, C. & Valros, A. Comparison of nest-building materials in farrowing crates. Appl Anim Behav Sci 203, 1–10 (2018).
- 23. Barnett, J. L., et al. A review of the welfare issues for sows and piglets in relation to housing. Aust J Agric Res 52, 1–28. Preprint at https://doi.org/10.1071/AR00057 (2001).
- Marchant-Forde, J. N. Sow Welfare Fact Sheet: Welfare of Sows and Piglets at Farrowing. https://www.ars.usda.gov/ ARSUserFiles/50201500/Farrowing%20System%20Fact%20 Sheet.pdf (2011).
- 25. Wischner, D., et al. Nest-building behavior in sows and consequences for pig husbandry. Livest Sci 124, 1–8 (2009).
- 26. Jensen, P. Nest building in domestic sows: The role of external stimuli. Anim Behav 45, 351–358 (1993).

- 27. Andersen, I. L., et al. Nest building and posture changes and activity budget of gilts housed in pens and crates. Appl Anim Behav Sci 159, 29–33 (2014).
- 28. Chidgey, K. L., et al. Observations of sows and piglets housed in farrowing pens with temporary crating or farrowing crates on a commercial farm. Appl Anim Behav Sci 176, 12–18 (2016).
- 29. Singh, C., et al. The behaviour and welfare of sows and piglets in farrowing crates or lactation pens. Animal 11, 1210–1221 (2017).
- 30. Damm, B. I., et al. Nest-building, behavioural disturbances and heart rate in farrowing sows kept in crates and schmid pens. Livest Prod Sci 80, 175–187 (2003).
- 31. Devillers, N. & Farmer, C. Effects of a new housing system and temperature on sow behaviour during lactation. Acta Agriculturae Scandinavica A: Animal Sciences 58, 55–60 (2008).
- 32. Oliviero, C., et al. Effect of the environment on the physiology of the sow during late pregnancy, farrowing and early lactation. Anim Reprod Sci 105, 365–377 (2008).
- 33. Pedersen, M. L., et al. Improved udder access prolongs duration of milk letdown and increases piglet weight gain. Livest Sci 140, 253–261 (2011).
- 34. Kinane, O., et al. Freedom to grow: Improving sow welfare also benefits piglets. Animals 11, (2021).
- 35. Edwards, S. & Baxter, E. The PigSAFE Project: Developing an Alternative to the Farrowing Crate, Final Summary Report. https://freefarrow.wpengine.com/wp-content/uploads/2021/02/pigsafe\_final\_report.pdf (2012).
- 36. Damm, B. I. et al. Sow preferences for walls to lean against when lying down. Appl Anim Behav Sci 99, 53–63 (2006).
- 37. Andersen, I. L., et al. Crushing of piglets by the mother sow (*Sus scrofa*) Purely accidental or a poor mother? Appl Anim Behav Sci 93, 229–243 (2005).
- 38. Edwards, S. A. et al. Design principles and practical evaluation of the PigSAFE free farrowing pen. in 4th European Symposium of Porcine Health Management 113 (2012).
- 39. KilBride, A. L. et al. A cohort study of preweaning piglet mortality and farrowing accommodation on 112 commercial pig farms in England. Prev Vet Med 104, 281–291 (2012).
- 40. Weber, R., et al. Piglet mortality on farms using farrowing systems with or without crates. Anim Welfare 16, 277-279 (2007).

- 41. Weber, R., et al. Piglet losses in free-farrowing pens: Influence of litter size. Agrarforsch Schweiz 11, 53–58 (2020).
- 42. Sasaki, Y. & Koketsu, Y. Reproductive profile and lifetime efficiency of female pigs by culling reason in high-performing commercial breeding herds. J Swine Health Prod 19, 284–291 (2010).
- 43. Konopacky, J. EWG Study and Mapping Show Big CAFOs in lowa up Fivefold since 1990. https://www.ewg.org/interactive-maps/2020-iowa-cafos/ (2020).
- 44. U.S. Government Accountability Office. Concentrated Animal Feeding Operations EPA Needs More Information and a Clearly Defined Strategy to Protect Air and Water Quality from Pollutants of Concern (GAO-08-944). https://www.gao.gov/assets/gao-08-944.pdf (2008).
- 45. Dye, S. & Hutchinson, D. The Rap Sheet on Smithfield's Industrial Hog Facilities in Missouri. https://dnr.mo.gov/water/business-industry-other-entities/permits-certification-engineering-fees/concentrated-animal-feeding-operation-cafo (2022).
- 46. Son, J. Y., et al. Exposure to concentrated animal feeding operations (CAFOs) and risk of mortality in North Carolina, USA. Science of the Total Environment 799, (2021).
- 47. McGreal, C. How America's food giants swallowed the family farms. The Guardian (2019).
- 48. Siegford, J. M., et al. Effects of pre-weaning exposure to a maze on stress responses in pigs at weaning and on subsequent performance in spatial and fear-related tests. Appl Anim Behav Sci 110, 189–202 (2008).
- 49. Dalmau, A., et al. Fear assessment in pigs exposed to a novel object test. Appl Anim Behav Sci 117, 173–180 (2009).
- 50. Zebunke, M., et al. Autonomic reactions indicating positive affect during acoustic reward learning in domestic pigs. Anim Behav 81, 481–489 (2011).
- 51. Souza, A. S., et al. A novel method for testing social recognition in young pigs and the modulating effects of relocation. Appl Anim Behav Sci 99, 77–87 (2006).
- 52. McGlone, J. J. et al. Review: Compilation of the scientific literature comparing housing systems for gestating sows and gilts using measures of physiology, behavior, performance, and health. Prof Anim Sci 20, 105–117 (2004).

- 53. Spoolder, H. A. M., et al. Group housing of sows in early pregnancy: a review of success and risk factors. Livest Sci 125, 1–14 (2009).
- 54. Soede, N. M. et al. Influence of repeated regrouping on reproduction in gilts. Anim Reprod Sci 96, 133–145 (2006).
- 55. Krauss, V. & Hoy, S. Dry sows in dynamic groups: An investigation of social behaviour when introducing new sows. Appl Anim Behav Sci 130, 20–27 (2011).
- 56. Stewart, C. L., et al. The effect of feeding a high fibre diet on the welfare of sows housed in large dynamic groups. Anim Welf 19, 349–357 (2010).
- 57. Jensen, K. H. et al. Management factors affecting activity and aggression in dynamic group housing systems with electronic sow feeding: a field trial. Anim Sci 71, 535–545 (2000).
- 58. Petherick, J. C. Spatial requirements of animals: Allometry and beyond. J Vet Behav 2, 197–204 (2007).
- 59. Salak-Johnson, J. L., et al. Space allowance for dry, pregnant sows in pens: body condition, skin lesions, and performance. J Anim Sci 85, 1758–1769 (2007).
- 60. Remience, V. et al. Effects of space allowance on the welfare of dry sows kept in dynamic groups and fed with an electronic sow feeder. Appl Anim Behav Sci 112, 284–296 (2008).
- 61. Averós, X. et al. Quantitative assessment of the effects of space allowance, group size and floor characteristics on the lying behaviour of growing-finishing pigs. Animal 4, 777–783 (2010).
- 62. Spoolder, H., et al. Preparatory Work for the Future Development of Animal Based Measures for Assessing the Welfare of Pigs Report 1: Preparatory Work for the Future Development of Animal Based Measures for Assessing the Welfare of Sow, Boar and Piglet Including Aspects Related to Pig Castration. EFSA Supporting Publications vol. 8 (2011).
- 63. Johnston, L. J. & Li, Y. Z. Performance and well-being of sows housed in pens retrofitted from gestation stalls. J Anim Sci 91, 5937–5945 (2013).
- 64. Greenwood, E. C., et al. Hierarchy formation in newly mixed, group housed sows and management strategies aimed at reducing its impact. Appl Anim Behav Sci 160, 1–11 (2014).
- 65. Chidgey, K. L. Review: Space allowance for growing pigs: animal welfare, performance and on-farm practicality. Animal 18, 100890 (2024).
- 66. Nielsen, E. O. et al. Associations between housing system, management and lameness in slaughter pigs. in 17th International Pig Veterinary Society Congress (Ames, Iowa, USA, 2002).

- 67. Vermeij, I., et al. Effect of Slatted and Solid Floors and Permeability of Floors in Pig Houses on Environment, Animal Welfare and Health and Food Safety; a Review of Literature. http://www.asg.wur.nl (2009).
- Spoolder, H. A. M., et al. Provision of straw as a foraging substrate reduces the development of excessive chain and bar manipulation in food restricted sows. Appl Anim Behav Sci 43, 249–262 (1995).
- 69. Tuyttens, F. A. M. The importance of straw for pig and cattle welfare: A review. in Appl Anim Behav Sci 92, 261–282 (2005).
- 70. Heinonen, M. et al. Lameness and fertility of sows and gilts in randomly selected loose-housed herds in Finland. Vet Rec 159, 383–387 (2006).
- 71. KilBride, A. L., et al. A cross-sectional study of prevalence and risk factors for foot lesions and abnormal posture in lactating sows on commercial farms in England. Anim Welf 19, 473–480 (2010).
- 72. Whittaker, X., et al. The influence of dietary fibre and the provision of straw on the development of stereotypic behaviour in food restricted pregnant sows. Appl Anim Behav Sci 61, 89–102 (1998).
- 73. Danielsen, V. & Vestergaard, E.-M. Dietary fibre for pregnant sows: effect on performance and behaviour. Anim Feed Sci Technol 90, 71–80 (2001).
- 74. De Leeuw, J. A., et al. Nutrient metabolism dietary fiber stabilizes blood glucose and insulin levels and reduces physical activity in sows (Sus scrofa). Nutri Metab 134, 1481–1486 (2004).
- 75. O'Connell, N. E. Influence of access to grass silage on the welfare of sows introduced to a large dynamic group. Appl Anim Behav Sci 107, 45–57 (2007).
- 76. Ramonet, Y., et al. Feeding motivation in pregnant sows: effects of fibrous diets in an operant conditioning procedure. Applied Anim Behav Sci 66, 21–29 (2000).
- 77. Stewart, C. L., et al. Influence of access to straw provided in racks on the welfare of sows in large dynamic groups. Appl Anim Behav Sci 112, 235–247 (2008).
- 78. Guillemet, R., et al. Feed transition between gestation and lactation is exhibited earlier in sows fed a high-fiber diet during gestation. J Anim Sci 88, 2637–2647 (2010).
- 79. Guillemet, R. et al. Dietary fibre for gestating sows: Effects on parturition progress, behaviour, litter and sow performance. Animal 1, 872–880 (2007).

- 80. Ufer, D. J. Animal Welfare Policies Cover Breeding Sows, Veal Calves, or Laying Hens in 14 U.S. States. U.S. Dem https://www.ers.usda.gov/amber-waves/2023/april/farm-animal-welfare-policies-cover-breeding-sows-veal-calves-or-laying-hens-in-14-u-s-states/ (2023).
- 81. ter Beek, V. Maintaining sow performance in group housing. Pig Progress (2017).
- 82. Thorne, B. Using product roadmaps as a strategic growth tool. LaunchNotes https://www.launchnotes.com/blog/product-roadmap-strategy (2022).
- 83. Swenson, D. The Economic Contribution of Niman Ranch Hog Production in Iowa. https://www.nimanranch.com/about-nimanranch/ (2021).
- 84. Liu, T. et al. New insights into factors affecting piglet crushing and anti-crushing techniques. Livest Sci 265, 105080 (2022).
- 85. USDA NAHMS. Percentage of sites by type of housing used for the majority of sows and gilts in the gestation phase and by breeding size of site. https://publicdashboards.dl.usda.gov/t/ MRP\_PUB/views/SwineStudyDR1/BreedingManagement-Confine mentTypes?%3Aembe&%3Aembed=y&%3AisGuestRedirectFro mVizportal=y (2021).



