# Ten Thousand (10K) Sow Startup Experience in Mexico

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## 1. Introduction

With a population of 123 million people, a land surface of 758,400 m2, an increasing inventory of 800,000 sows and new permits conceded in 3 states to export pork meat to Japan, Mexico will play a key role in world pork production.

Currently, after the PEDv breaks, some companies in the region that have been impacted by health issues, have made the decision to drastically change the traditional way to produce pork and have started building modern sow farms in isolated places. This has allowed these companies to have better biosecurity conditions that have kept them free from diseases of high economic impact.

It has been stated many times that maximum potential in pork production can be achieved by orienting the efforts on 4 classic components: genetics, health, nutrition-feeding, and management. Also, the human resource factor is key for the performance of any pork production operation. However, the design, layout and equipment of a farm also facilitate the achievement of the farm crew and animal needs.

The objective of this document is to share a success story of a startup 10,000 sow farm in northern Mexico in which the interaction of all the key components have been accomplished and reflected on results.

## 2. The Project

Designing and building farms is not an easy task, especially with big farms or mega farms, because the economic impact behind each decision is much greater than smaller farms. The first, and maybe the most important decision, is the location. The location to build a farm must accommodate all the conditions needed to allow for sustainability of the project. These conditions are: biosecurity, water availability, energy, road access, and qualified people to do the work. Also, the farm culture of the people living near where the farms will be built must be considered.

Regarding design, the most important aspects to consider are that the design must: improve biosecurity, be in accordance with and updated to current health standards, be functional and easy to apply in the production operation, be friendly for the farm crew and animals, be aligned with the equipment and ventilation system, and be consistent with the operational protocols of the company.

### 2.1. Design must improve biosecurity

Generally, in Latin America the farms are open and naturally ventilated. A closed farm design, in which the crew do not need to have contact with the exterior once they have entered through the showers, is a strength from the biosecurity point

of view. The entry of birds and other vectors that can transmit diseases is prevented. At the same time, the number of entry points to the farm that are not necessary are decreased. Fewer entry points to the farm is translated in lower risks. We design our farms with 5 entry points:

- Showers: depending on each case, the system can have a dry shower or the Danish system. There must be a clear division between the clean and dirty zone with a bench that allows footwear to be kept in the dirty zone.
- Reception window: for farms where food enters, it must be entered using the double bag system. Nothing else is allowed to come in through this window. The rest of the day, this window is closed and secured and only can be opened from the inside.
- Disinfecting and down (D&D) room: all materials must enter the farm through this room. Materials are disinfected and they must remain in this room for at least 1 hour before they can enter the farm.
- Load area: generally, the load area represents the highest risk because it is involved with trucks that go to areas that are potentially contaminated, or they transport animals that are PRRS positive when there is no biosecurity control in the truck transport operation. The design of the load area is important to allow for protocols that reduce the risk of contamination. Procedures are very important here, for example, the crew working inside the farm, should never enter the truck and come back to the farm.

- Mortality loading: mortalities are transferred through a room designed for this purpose. The implementation of composting of mortalities is important to avoid having rendering trucks on the farm.

Each of these entry points must have a clear procedures manual, be easy to train and must be auditable.

**2.2. The design must be in accordance with and updated to current health standards**

Currently, it would be considered a mistake to build a mono-site farm. Farm designs that involve continuous flow must be avoided. Today, with access to more and better technology, building a mega-farm is very common and this implies building more pens and rooms in the farm. Both concepts are important to consider in the case of a health outbreak, because they will influence the success in stabilizing a farm and the time required to stop the entrance of replacement gilts. The capability to maintain a greater flow of gilts will facilitate the probability of success of these kind of programs. In general, the designs do not always consider these factors because the farms are designed for an ideal case scenario where the health is high, neglecting the fact that it is very probable that they will become contaminated at some point.

### 2.3. Design must be functional and easy to apply in the production operation

The size, length, width and location of the pens influences the ability of the farm crew and animals to move. Long pens and numerous hallways impact the time and efficiency to move inside the farm. The concept of a compact farm, with farrowing rooms in the middle and a central hallway that crosses all the farm allows better efficacy to move inside the farm.

### 2.4. Design must be friendly for the farm crew and animals

At this point, the use of stalls versus pens and size of the stalls must be considered. This normally will depend on the legislation or animal welfare trends that the company wants to take. In the current case, the decision was made for stalls. At this point, the level of brightness, slope of hallways, number and location of doors and most importantly, the quality of the door locks and door handles are extremely relevant. For example, when adequate conditions to move animals do not exist, it is common that the farm crew gets frustrated and can potentially take their frustration out on the animals, generating a negative interaction between them.

### 2.5. Designs must be aligned with the equipment and ventilation system

Equipment can impact the efficiency and time spent in each specific activity. For example, consider power washing in farrowing rooms with a central power wash boiler or with just a small power washer machine. One must consider that in Latin America the high cost of technology is supplemented by workforce.

Furthermore, the design of ventilation should be an exact science, but its performance will depend on the company that has installed it and the limitations of the climate. There are different ways to accomplish the cubic feet per minute (CFM) in each productive stage, but how it is achieved can make the difference between the productivity of one farm over another.

### 2.6. Design must be consistent with the operational protocols of the company

The design of a farm should facilitate the production management procedures. For example, something basic is to have an adequate number of stalls and spaces to achieve the breeding targets and the length of lactation established by the company. Something as basic as this is not always fulfilled. The design concept should consider all the aspects involved in the daily tasks of the operation to facilitate the accomplishment of protocols. If the company that designs and builds the farm do not have these concepts clear, the opportunity to do things right is lost, and the production team will have to deal with the design inefficiencies every day.

## 3. Startup

All the areas involved in the startup process of this project must be coordinated: engineering work, construction of buildings, electrical system, equipment, settlement, animal flow, training and associated production management. In our case, all these activities were coordinated between the company that owns the project and Pipestone Systems, based on the technical support agreement signed

between them. The settlement was made with the PIC Camborough 29 maternal line available in Mexico and the line L03 for internal multiplication.

The entry of animals was coordinated according to availability and requirements, with the corresponding quarantine and sampling processes. This included the entry of boars for puberty induction and heat checking.

The puberty induction process started with gilts at approximately 26 weeks of age. The gilts with detected heats, were moved to stalls in the gestation unit. At the next heat, the gilts were bred with conventional artificial insemination and arranged in order in the gestation “snake”. The first breedings of the project were done with the L03 line only. Given the weight and age of these gilts, it was considered convenient to start breeding them earlier, which represented a good opportunity to train the farm crew with a low number of breedings.

One of the objectives of this project was to finish the breeding process every day before 10:00 AM to avoid the heat of the day and prevent fatigue in the farm crew and sows. For this reason, a double “snake” was established to have 2 teams breeding at the same time, one in front of the other. The design of the snake is shown in Figure 1.

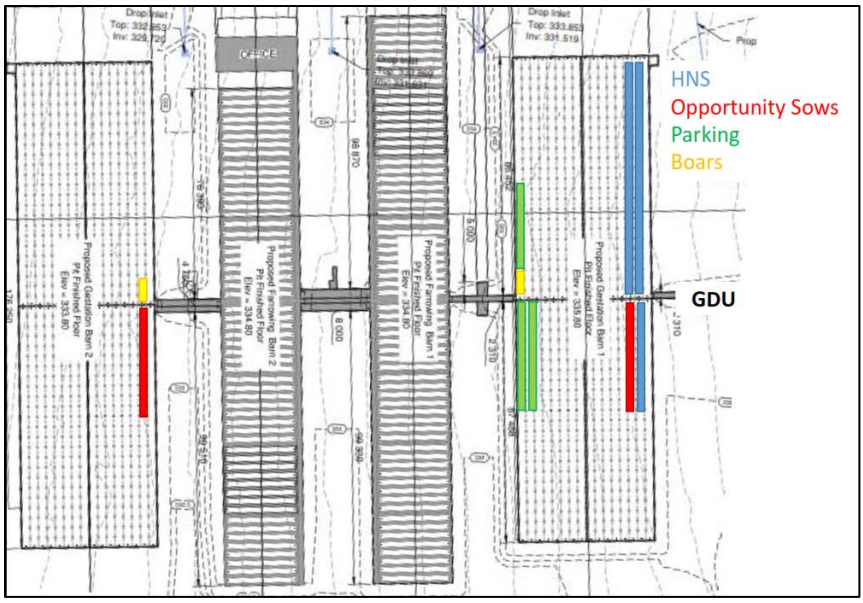


**Figure 1**. Gestation snake.

The feeding protocol in gestation was determined according to the body condition of the animals, with 3 categories: thin, fat and normal. Body condition was checked every week. At 90 days, a feed bump was performed only in sows with a thin or normal body condition.

Sows were introduced to the farrowing room at 112 days of gestation, according to their due date. Sows were moved after the farrowing process to group them according to the day of lactation. Induction of farrowing was only used to finish the rooms instead of to shift the farrowing process to increase attendance. The farrowing staff were scheduled to attend the farrowing process, dry piglets, and ensure colostrum intake and fostering. A 24-hour (24/7) supervision was provided

for sows during farrowing with special attention on colostrum intake. One person was dedicated exclusively to collect colostrum and individually administer it to piglets that did not consume sufficient colostrum. Feed in lactation is administered ad libitum after the farrowing process, adjusting the feeders according to the feed left in the feeder, keeping them clean.

A useful practice has been the management of nurse sows, which are used according to the average number of live born piglets. Fresh females are used as nurse sows in the case where the number of live born were less than the number of available teat counts per day.

One important aspect for the performance of the farm has been the farm crew. The farm was designed to be efficient. Currently, the farm has 42 people which provides a staff/sow ratio of 1/238. The farm crew did not have experience in pig production, except for the manager and gestation and farrowing leads. Adequate personnel recruitment, position selection according to people's abilities and characteristics, and constant motivation of the staff, have been essential for the implementation and execution of procedures.

## 4. Results

Current results obtained in this project have exceeded expectations. One of the most important achievements of the settlement has been accomplishing the

breeding targets during the process. This has allowed for a constant flow for the grow finish units and for the reproductive cycle (Figure 2).

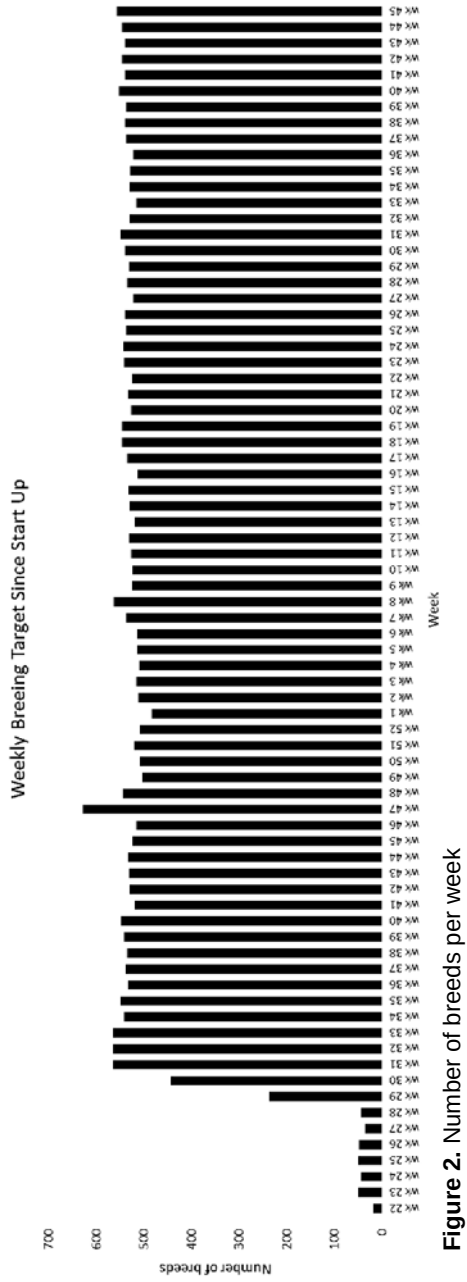


**Figure 2.** Number of breeds per week

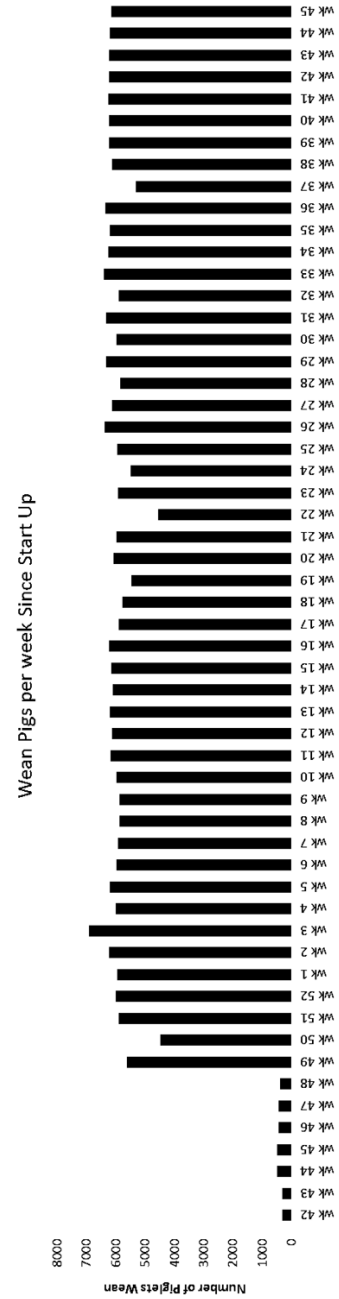


**Figure 3.** Number of piglets weaned per week

The wean flow is shown in Figure 3. Since the start of commercial weans, an average of 6,002 piglets have been weaned per week during the 49 weeks included in this summary. In 2017, the farm will be weaning over 310,000 piglets.

The reproductive performance of the startup has been consistent, with only a few cases of vaginal discharge and early pregnancy failures associated with environmental issues that have been taken care of.

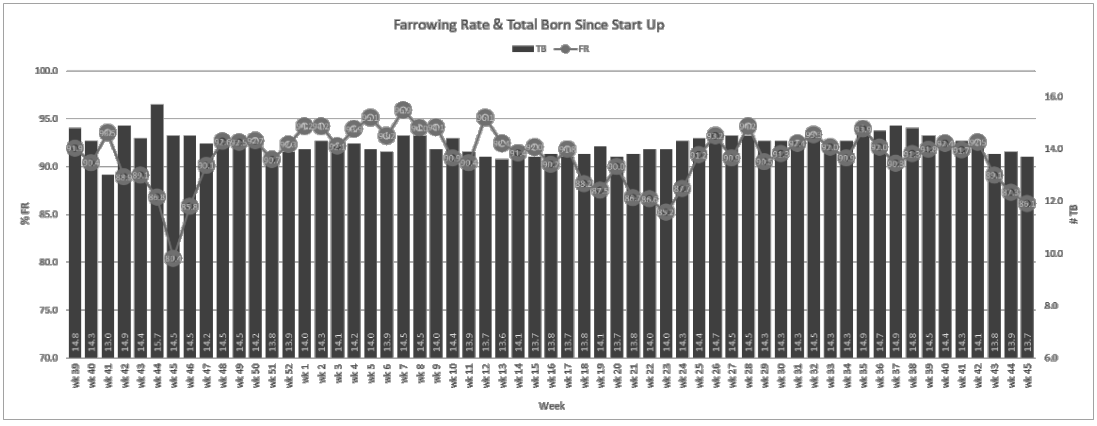


**Figure 4.** Total born and farrowing rate.

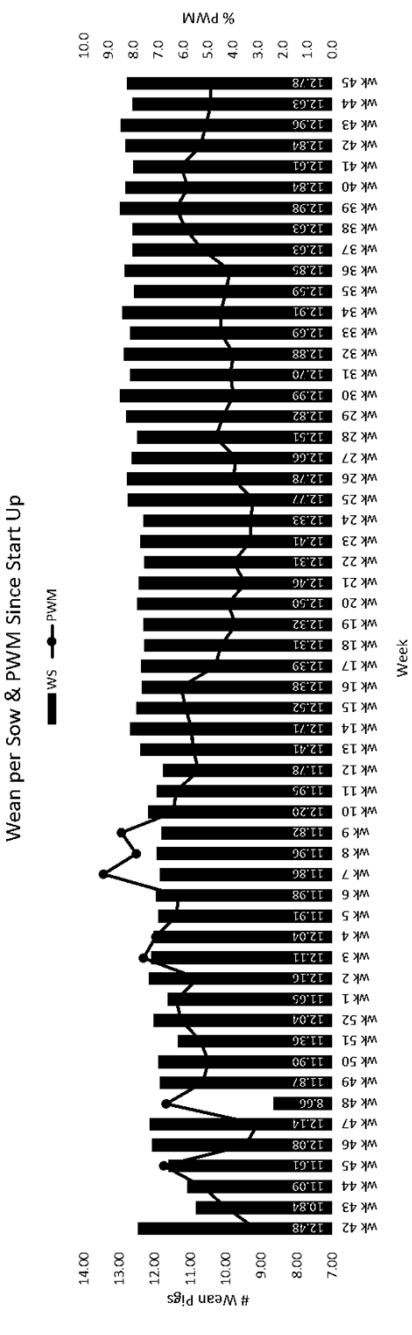


**Figure 5.** Weaned per litter and preweaning mortality (PWM).

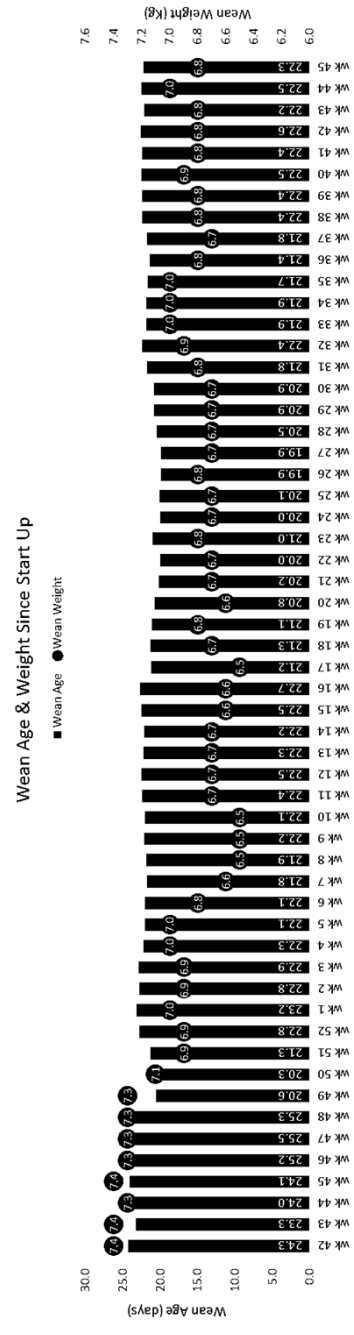


**Figure 6.** Wean age and weight.

The increase in herd age (towards parity 3), will increase the actual performance, but at the same time there will be more challenges as the farm adjusts to a typical parity distribution.

## 5. Summary

Startups are always a challenge. There is not a perfect one. However, when adequate coordination and communication is achieved between all the areas that participate in a project of this type, under a technical leadership that has the experience to determine the design, equipment and adequate procedures, the probability of obtaining good results increases. When a balance of all the principles associated with production is accomplished, it is possible to fully achieve the genetic potential of females, and this project has demonstrated this. However, undoubtedly one of the key aspects of this process has been the leadership by the head of the unit on staff. As many experiences show, the selection of a good farm manager makes a fundamental difference in the performance of a farm. Taking the time to select a proper leader is a practice that everyone should apply.