

## Hog heaven: Is it on the Yucatan Peninsula of Mexico?

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Areas of the United States have done well to carve out a low-cost niche of pig production, and while markets for United States pork have remained strong, there is an emerging and growing integrated swine production industry in Mexico. This emerging industry will potentially affect the United States with increased sales of soy products, corn, medicines, technology, feed additives, and other inputs needed for swine production. This will lower United States pork exports to Mexico and provide a new player in the global pork export market.

Garland Reeves, of Elanco Animal Health USA, used the Elanco Animal Health network to organize an international educational trip. The Yucatan Peninsula of Mexico has current technology and a high concentration of large swine units. This allowed United States swine consultants to observe pig production techniques in Mexico. The participants included: Greg Armbruster, Allan Carlson, Christopher CL Chase, Monte W. Fuhrman, Everardo Garza del Pozo, Manuel Gual Cosio; Garland Reeves; Richard Roth, and Bob Thaler. This report is a compilation of their experience.

Our hosts, Dr. Manuel Gual and Dr. Everardo Garza, veterinarians for Elanco Animal Health Mexico, showed us their advanced production facilities and techniques. In general, we found the Mexican industry to be efficient and, in some ways, to have competitive advantages over the United States swine industry.

We visited with hog operation managers from two companies. The first company was Univasa Corporation, which is a fully integrated swine feed, production, and slaughter plant company. Univasa is a joint venture with ConAgra USA and Campi—a local poultry company. Campi has been in the poultry industry in Mexico for 50 years and expanded into the Yucatan in 1973. In 1989, Campi became involved in pork production. The production units of Univasa consist of all-in—all-out (AIAO) finishing farms with capacity of 5600 pigs each (1 week's production), nursery farms, and four breeding/gestation/farrowing (BGF) farms to supply the pigs needed to fill these growing facilities. One of the BGF farms is a sow multiplier for the "commercial farms." Campi's goal is to own and produce pigs from 30,000 sows in the very near future. The Director of Production for Univasa is Dr. Mario Gomez, a former veterinary school professor who has a complete knowledge of pigs and how they perform in the Yucatan environment.

The second manager was Dr. Luis Arceo, Director of Production for Aric Cancun. He is also extremely well versed in pig production. Aric has 3000 sows on six different farms and is located just 15 miles from

Cancun. Aric purchases complete feeds from Campi and other feed suppliers and at this time does not slaughter its own production. These are only two of the companies locating on the Yucatan.

### Facilities

The finishing facilities at Univasa are outstanding assets to the economics of production. The AIAO farms house 720 pigs in each of eight buildings. The average environmental temperature far exceeds anything we have in the Midwest, so one of the challenges in the finishing house is keeping the pigs cool enough to eat and grow. A modification that helps in this regard and reduces slaughter check lung lesions from a mean of 10% to a mean of 3% is the use of "piggy pools." Previously the farms used drippers, misters, and fans in the buildings. Now the piggy pools in newly constructed farms have completely replaced the more conventional cooling methods. Each pool services four pens or 60 pigs. The pools are located toward the outside of the buildings. The slope of each pen, moving from the center of the building toward the outside, changes from 5% to 8%. The slope is 12% in the piggy pool. The pigs lie in the piggy pools much of the day. Every 2 days the pools are emptied out of a pull-plug type hole in the outside wall, and allowed to drain into the gravity flow waste removal channels that lead to the waste treatment areas. Amazingly, there was not a fly on the farm! In addition to the piggy pools, the nine farm workers spray the pigs down with water every 2 hours throughout the day. Worker attentiveness to the details of animal comfort is excellent. For every six pens a 35-inch fan provides wind for evaporative cooling.

The workers on the finishing farms are members of a local community that lease the land the farms are on from the Mexican government. These people also provide labor to build the facilities and take care of the pigs in exchange for \$N (new pesos) as negotiated with Univasa. Univasa pays for the building materials. After 10 years, the contracts will be renegotiated, at which time the local community will own the buildings. Univasa owns the pigs and provides feed, training of workers, supplies, utilities, transportation of pigs, and all other inputs except labor. The cost-per-pig-space in the finishers was between \$100 and \$110 US in April 1995.

All workmanship, except for a little of the cement work, looked good. These buildings will last a long time! There are no major temperature changes. There are no earthquakes. There are no climatic events that destroy buildings. We saw 1600-year-old Mayan ruins in the area that are still in remarkably excellent shape. The physical separation between production sites is enviable. Uniformity of pigs within the finishing barns is good.

The waste treatment area consists of a holding tank, a chopper pump,

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a settling tank, an aerobic fermentation tank, and an evaporative area. The entire system was designed by a Cuban engineer. The construction is almost Mayan in appearance. Through the process, effluent is sprayed or irrigated out onto surrounding land. The surrounding water table is near 6 m in depth. The solids that are left are collected in the evaporative area and shoveled up by hand and collected for cattle feed. The solids, they reported to us, have a 26% usable protein level. The future sales of these wastes will contribute to the economics of the farms.

The slaughter facilities were the most inefficient aspect of the company that we observed. The plant, named KeKen, was clean and was certified for food safety. Although the meat cooling areas worked well, the 8-hour kill rate was less than 1 hour kill time in the larger United States plants. The physical facility of the slaughter plant was designed for many more pigs to be killed per unit time. When the company needs the physical facility, it is there. Efficiencies of packing will be taken care of when the need occurs.

## **Nutrition**

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Gilts and barrows are housed in separate buildings, and split-sex feeding is used. Pigs are divided 15 to a pen. There are two nipples and one feeding space per pen. The feeder is a Porcicon 3000 wet/dry feeder. One of the nipples in the pen is contained in the feeder. There is absolutely no feed wastage of the pelleted feeds used throughout the finishing phase. The pellet quality was poor; however, because feed is not accumulating in the bottom of the feeders, the effect of 50% fines may be causing no problems with production, as it may in other feeder designs. Many of us questioned the need for pelleted feeds in the finisher.

Feed costs vary greatly since much imported grain from the United States ports is used. The Nuevo Peso actually devalued 82% (N\$3.4 per US dollar to N\$6.2 per US dollar) from December 1994 to April 1995. We were told 10 boatloads of grain were brought to the Yucatan in March, compared to 150 boatloads of grain in December. The Nuevo Peso varied in United States value from \$0.139 to \$0.174 the 4 days we were there (\$1US=\$N7.2 to \$1US=\$N5.75). Whole herd feed efficiency from breeding herd to finish is 2.904 kg feed: kg gain.

The feed:gain ratio was 2.712 from 30 kg pig weight to 100 kg pig weight, which is the weight at which pigs are slaughtered. We did not see days-to-market or average daily gain data. At 100 kg, the 10th rib backfat measurement, we were told, averaged 17mm (0.67 in). We did not see other kill data.

## **Reproduction**

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Nonproductive sow days were not ideal due to low number of farrowings per number of mated sows in early 1994, but are improving. Parity-two performance is less than ideal. Overall, farrowing rate is improving. Farrowing rate increased from 72% to 83% in a 12-month period. Much of the > 1 parity problem may be due to poor lactational feed intake. The high ambient temperature has been con-

tinually dealt with by using conventional drip/air movement in the farrowing houses, with baffles for baby pig comfort. More recent management practices to improve lactational feed intake include getting sows up at least four times during the day, spraying sows with water four times daily, and offering feed through the night. These practices have increased lactational feed intake by 2 kg per sow per day. Feed density has subsequently been reduced. Farrowing rate has been increased. Day 10–14 nipple dry ups have decreased. Piglet preweaning mortality varies by farm from 7% to 12%. Currently piglets are weaned at 22 days average age. Cost to produce a weaned pig from the four BGF farms was \$N106 (about \$17US).

There are four reasons for not weaning pigs earlier:

- high-density/high-fat baby-pig feeds do not keep well in 100°F environments;
- the nurseries at this time are not built to maintain a consistently draft-free environment;
- sow lactational nutrient intake is low; and
- the health status of the growing pigs is now good.

Opinions varied as to how these barriers could be overcome. Lactational feed intake may never be as good as what we can attain in more temperate climates. The group generally believes that by bringing the animals into farrowing crates in lesser condition, lactational feed intake targets could be better approached. Current gestational intake is 3 kg per sow per day. Reducing this amount by 33%–40% was suggested. We all feel that the future planning of facility and pigflow should be considered with the possibility of SEW in mind.

## **Health**

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The pigs are fed Tylan®/sulfa up to finisher ration weight and then are switched to an ionophore, named Narasin, for the remainder of the growing period. Growing pig vaccinations include mycoplasma and erysipelas. The mortality rate is an impressive 0.66% from wean to market. The complete list of medicines on the farm for animal treatments include:

- ketoprofen and dipyrone (nonsteroidal anti-inflammatories),
- injectable tiamulin, and
- injectable B-vitamins.

With the piggy pools the incidence of sore feet is high. These medications are used to treat lame pigs. It is interesting to note that replacement breeding stock is not being grown out in the new piggy pool environment. Sore feet on sows would decrease their longevity in the herd. Breeding herd replacements are being raised on partially slatted floors with conventional cooling by drippers, misters, and fans.

There have been no hog cholera outbreaks on the Yucatan in the past 4 years. Mexican officials declared the Yucatan hog-cholera free but international cooperation with that decision has not yet occurred. Possibly the production is gearing up in the region because the free status is getting closer.

## Labor

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Pay for production workers on the farm is \$4.00US per day. Production workers in the slaughter plant receive about \$6.00US per day. If all production goals are reached each quarter, each employee receives 15 days of pay. This amounts to about 17% of total wage. The incentive to perform is great. Our views on these pay scales vary. One extreme is if the companies want to maintain quality workers, pay should increase or out-of-country companies may try to woo away the newly trained, but now skilled labor. The other extreme is the feeling that paying the employees \$4.00US per day when minimum wage is \$2.40 per day shows a commitment by the company to obtaining and keeping good labor and that the incentive program should encourage acceptable performance. The labor force appears happy and grateful for the jobs they have. They seem to be grateful they live in the relatively wealthy country of Mexico rather than the poorer countries to the south or in Cuba.

## Markets

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Good genetics, favorable tariffs on feedstuffs, and potential new animal health products should all contribute to the possible marketing of heavier animals than the current 100 kg weight. Currently 80% of the pigmeat is sold as fresh pork to local restaurants and retail grocery

outlets. There are no middlemen nor any kind of distribution system. The Mexican purchased meat consumption is 8 kg per capita per year, 18% of which is pork. The retail price of fresh pork in April 1995 in the Yucatan was around N\$5 per kg or \$0.85US per lb. Only 20% of retail pork sales from the plant are frozen or processed pork meats. The plant personnel we visited feel the people would eat more pork meat if it was available for less cost. If expansion continues, the large companies that are producing pork in Mexico will shortly be able to market many more kg of pork meat. After the hog cholera quarantine is released, nondomestic markets will develop. The Yucatan Peninsula is located close to both Atlantic and Pacific shipping opportunities. Hence, export to eastern and western points is easily accessible.

## Conclusion

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We can't have a smug attitude about United States pork production. The Yucatan is nearing hog cholera-free status. Mexico has abundant land, water, and labor available in a consistent climate. The industry decision makers have engineered low-cost production with currently adequate pork processing facilities in place. In addition, oceanic transport availability and relatively less stringent environmental regulations add to the great potential the Yucatan has to become a major global player in supplying pork.

