ON-FARM EXPERIENCE WITH SWINE LIQUID FEEDING: NURSERY PIGS

Fred Tinholt
RR #2, Gorrie, Ontario N0G 1X0
E-mail: fctinholt@aol.com

ABSTRACT

At the Tinholt farm a two-line and two-mixing-tank liquid feeding system for nursery pigs was installed in 2002. After some initial challenges, especially with trough management, good pig growth performance is now being achieved. For about the first two weeks after the 17 to 20 day old pigs arrive, feed intake and growth performance are somewhat reduced as compared to conventional dry feeding system, but thereafter growth performance improves rapidly. Largely because of using co-products, slight improvements in feed utilization due to steeping, and reduced use of medication, feeding costs are lower and profits are slightly higher than dry feeding systems. Main drawbacks of the system are the high initial investments and the higher level of skill required to manage the system.

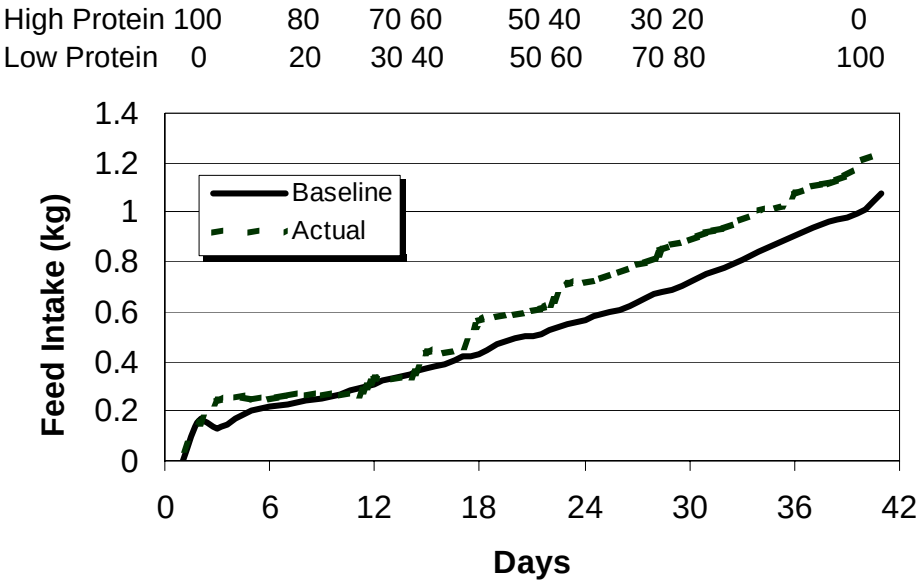
INTRODUCTION: BRIEF DESCRIPTION OF THE SYSTEM

The Tinholt's family farm has a 5200 head nursery that is managed on an all in-all out basis by room. A two-line and two-mixing-tank liquid feeding system was installed in 2002. The liquid feeding system is used to deliver two different diets ("high protein" and "low protein") to each trough. During the first 32 days of the feeding period, the composition of the feed that is delivered to the troughs is gradually changed from 100% "high protein" to 100% "low protein" (Figure 1), and stays on the 100 % "low protein" until the pigs are shipped. Each of the two mixing tanks can hold up to 2500 kg of mixed liquid feed. A new batch of the two diets is made as needed and allowed to steep in the mixing tanks between 2 and 12 hours. The main ingredients are a custom complete dry feed blend, a high dry matter whey (38 %), a low dry matter whey (6%), and a liquid fish product. Dry matter levels are typically at 34 % for the high protein and 30 % for the low protein.

New batches of newly-weaned pigs, 16 to 18 days old, arrive in the morning. Pigs are placed in pens sorted only as barrows and gilts, with 135 pigs per pen and 3 ft^2 per pig. Additional sorting, for size, is done after the pigs are 2 to 3 weeks in the barn. The feed troughs are placed in the centre of the pens. There is 1.6-2" trough width per pig in the pen. When the pigs first arrive, about half of them can eat at the same time. Towards the end of the nursery period only about one quarter of the pigs can eat at the same time. For the first three days, extra water is added to the trough along with the feed. The system is ad lib, so feed is added whenever the 2 sensor rods indicate feed levels are low, according to the curve (Figure 1). As the pigs grow, the frequency with which feed is added increases. For the first 2 weeks, feed will be added 9-18 times per day, during the last week, feed may be added as many as 50

times per day. In each pen there are 2-3 nipple drinkers allowing the pigs to always have access to fresh water.

Figure 1. Target and actual feeding curve and changes in proportion between the "high protein" diet and the "low protein" diet.



PRACTICAL EXPERIENCES, ADVANTAGES AND DISADVANTAGES

For the first few batches of pigs, growth performance was rather disappointing, largely because of lack of experience in trough management and lack of reasonable feeding curves. Since that time we have replaced our feed troughs (Figure 2) and have come to accept somewhat reduced feed intake (Figure 1) and growth performance for about the first two weeks. Thereafter, feed intake and growth increases rapidly. We now routinely generate average final body weights of 26 kg for batches of 1,000 pigs over a 50-52 day period. Overall, our production costs are lower than in our contract dry fed 2nd nursery, largely because of the use of relatively inexpensive co-products.

The following are the advantages of the system:

- Optimizing gut health and reduced medication use: Typically and for a batch of 5200 pigs, we will to loose 150-175 pigs and have to move 150 pigs to off-sort (restart) pens. Pigs that are moved to the off-sort pens receive dry feed and are treated with injectable antibiotics. About half to two thirds of these pigs can be moved back onto the liquid feeding system, while the remaining pigs are sold as off-sorts. We do use in-feed antibiotics at a low level, with issues like diarrhea being a minor problem. The high level of lactic acid and a pH below 4.5 in the feed help provide for optimal gut health.

Figure 2. New stainless steel feeders for nursery pigs.

- Steeping feed: During 'storage' of feed in the mixing tank some fermentation occurs. This allows some growth of beneficial lactic acid producing bacteria and may improve feed digestibility. Steeping appears to enhance feed utilization and helps aid in digestibility as dry feed is given time to absorb some water.

- Co-product use: We routinely use whey and whey permeate to reduced feed costs.

- Improved feed intake in later growth: Growth performance during the last 4 weeks is better than what we experienced previously with conventional dry feeding systems.

- Flexibility with feeding program: We have 4 storage tanks for liquid feed ingredients. When opportunity ingredients are available we can use them easily and quickly.

- Reduced feed costs and improved profits: This is the combined result of use of inexpensive co-products, better feed utilization, reduced need for in-feed antibiotics and slightly better growth performance.

The following are the disadvantages of the system:

- Higher capital cost: The initial investment in the liquid feeding system was higher than for a conventional dry feeding system. However, given the lower feed costs, the pay back time would be expected to be 2-4 years (depends on initial investment, feed program, number of pigs fed, barn design and layout, etc.).

- Lower feed intake in early stages: To maximize feed intake during this time, it is necessary to do some extra work with the troughs, like adding extra water since the little pigs like to drink as opposed to eating the thick solids sitting on the bottom of the troughs.

- Higher management level: Management of a liquid feeding system requires additional skills, including working with computers, fixing plugs in feed lines or replacing broken valves, and early identification of poor doing pigs.

- Higher yeast and bacterial risk: We normally only clean the system thoroughly between batches of pigs, and we have had no serious problems with bad yeasts or bacteria that have reduced feed intake or caused scours.

- Trough design: The initial trough design resulted in too much feed wastage, build up of feed in corners, and with pigs getting stuck and drowning. Since that time we have moved to a simpler stainless steel trough, with cross bars that are spaced about 8" apart (Figure 2).

- Higher daily operating cost: The system does consume more energy and has higher maintenance costs than a dry feeding conventional system.

- Medication inclusion limited: With the two tank system, the challenge is medicating through the changes in the feed curves.

- Co-product consistency and supply: We routinely check the dry matter content of the liquid feed ingredients and we have learned to only buy from reliable suppliers. We were using a waste soft drink product and a waste milk product, but inconsistencies made these too hard to work with. By the time a sample was taken and tested, the load was almost gone.