Not withdrawing feed from hogs before slaughter is costly to producers, packers, and Canada's pork exports

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Feed withdrawal or denying hogs access to feed on farm before shipping to slaughter is nothing new. In fact, it is a requirement of most producer-packer contracts. Existing barns were not designed to implement it, so producers tend to avoid it. These producers don't realize how it reduces their profitability. Not withdrawing feed from hogs before slaughter can also increase transportation losses and complicate packer operations due to carcass contamination. Most important, it threatens Canada's pork export markets because it compromises pork safety. It also affects consumers' shopping preference for pork. Herein I discuss the cost and benefits of on-farm hog feed withdrawal and provide suggestions for its implementation.

Producers take the largest $ hit

Producers not practicing hog feed withdrawal take 2 main hits to their pocket: First, feed is wasted. Finishing feed for the fall of 2012 exceeded $300 per tonne. Yet stomachs like those shown in Figure 1 were still seen at hog packing plants. Any feed left in the gut at the time of slaughter goes entirely to waste. Simply 10 kg of finishing feed left in the gut implied $3 loss per hog (Table 1). Second, there is a drop in dressing percentage. Feed in the gut swells live hog weight, but after evisceration results in lower carcass weight (Table 2). A 1%-point drop in dressing percentage equates to $2 loss per hog. The worse of it is that these 2 factors are additive ($3 + $2 = $5 loss/hog!).

Hauling dirtier hogs and transit losses

More feed in the gut increases in-transit defecation and skin contamination. Pigs that gorge on feed before leaving the farm are more prone to vomiting. Truckers tell us that hogs with full guts are much harder to move, increasing loading time and prod use. These hogs are more susceptible to die in transit or lairage due to their reduced ability to cope with the stress of transportation and mixing. Defecation and faeces caked to the skin increase contamination at the plant lairage pens and scalding tank. Dirtier hogs on arrival thus increase the pathogen load at the packer.

Figure 1. Pig stomachs full of feed after evisceration

Table 1. Cost of undigested feed in gut wasted at evisceration

Feed in	Finishing diet cost/1000 kg				
gut, kg	$200	$225	$250	$275	$300
3	0.60	0.68	0.75	0.83	0.90
6	1.20	1.35	1.50	1.65	1.80
9	1.80	2.03	2.25	2.48	2.70
12	2.40	2.70	3.00	3.30	3.60

Contamination increases condemnations

Feed in the gut at the time of slaughter increases the chances of someone nicking or cutting it during evisceration. The weight of the hanging full guts creates tears in the intestines. According to the extent of digesta contamination, a part of or the whole carcass could be condemned, reducing payout to the producer. Even slight carcass contamination reduces line speed because someone has to trim it off. If the line stops, it costs the packer employee time, more labour, and line efficiency.

Table 2. Carcass revenue ($) as affected by dressing %

Live pig	Dressing	Carcass	/kg of pork	
weight, kg	Percent	weight, kg	$ 1.70	difference
125	80%	100.00	$ 170.00	
125	79%	98.75	$ 167.88	$ 2.13
125	78%	97.50	$ 165.75	$ 2.13

Pork safety is compromised

Despite the best carcass washing efforts at modern plants, a single contaminated carcass can compromise neighbouring ones hung on the rail or chilling. Further spreading of contamination can occur by butchers and equipment breaking the carcass into primal cuts or packaging. Contaminated pork could then spoil in transit for distribution. Fresh pork boxed for export may take up to 30 days to reach Asian consumers. A pork contamination scandal could cost Canada access to treasured export markets, which are competitively difficult to secure and retain. Contamination thus compromises the shelf life of pork.

Hogs not taken off feed have lower pork quality

Hogs store cereal grain sugar as glycogen in liver and muscles for maintaining body functions during fasting. But hogs that continue to eat feed before departing the farm can have too much glycogen. Upon exsanguination, the lack of blood oxygen can cause muscle glycogen to break down too quickly acidifying the meat before the carcass has time to chill. Muscle membranes then break and cellular juices leach out increasing pork drip loss. Hogs that gorged on feed have a higher incidence of pale, soft and exudative (PSE) pork. Consumers would then avoid whitish, mushy pork sitting on a pool of juice at the retailer counter. In contrast, if hogs are fasted for more than 24h and hurried to the kill floor, they can indeed run out of muscle glycogen and the pork does not acidify increasing the incidence of dry, firm and dark (DFD) pork. Either type of pork (PSE or DFD), and it doesn't need to be extreme, can be unappealing.

What to do?

Producers are most likely in breach of contract with packers if not practising feed withdrawal, which can have legal repercussions. Your contract could be suspended or terminated. Below is a prioritized list of actions to implement on-farm feed withdrawal:

1. Know your Packer's receiving hog policy

Communicate with your packer or marketing agency (i.e., Western Hog Exchange). Find out at what time hogs MUST BE at the plant by to be slaughtered the same day (e.g., 12 noon). Ask what the minimum lairage time at the plant is (e.g., 3h). Packers typically require hogs to rest and drink to rehydrate after transport to ensure animal well-being and minimize incidence of DFD pork.

2. Know your transportation time

Know the average hauling time (e.g. 3h). Account for time loading at the farm and unloading at the plant (e.g., 1h for both). Hogs travelling for slaughter to another province have a long haul that may require shorter on-farm feed withdrawn or even none at all. The stress of transportation slows down digesta passage rate almost to a halt. Discuss with your packer the feed withdrawal time required prior to long hauls.

3. Count backward to narrow withdrawal

Lower carcass contamination and optimum pork quality are achieved between 14 to 18h of hog fasting. If hogs need to be loaded by 7AM for the same day kill, feed access should be denied as of late afternoon the day before. Thus, conduct hog weighing to ensure carcass weight falls within the grid core and sorting late the afternoon of the day before shipping or day(s) before.

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4. Fasting in finishing pens or the loadout

The recommended barn setup is a series of pens with only water access in the loadout area. Pig density at these loadout pens should be similar to truck partitions, but hogs should be able to lie down for the night. Keep familiar hogs from the same finishing pen together to minimize fighting due to mixing. If you must fast pigs in finishing pens, weigh and tattoo hogs to ship days in advance. Deny feeder access by 7-8 PM and turn the lights off. The next morning, promptly remove hogs to ship after turning the lights on. Restore feed access for those that stayed to minimize their out-of-feed event to while they slept. You have thus achieved the necessary fasting for hogs that have reached market weight and go to slaughter.

Conclusions

Table 3 provides a simple calculator that one can setup to enter his own values to estimate savings in feed cost, carcass dressing, condemnations, and transport losses if not already practicing on-farm hog feed withdrawal. For a farm that ships 2 truckloads of hogs per week, $1000 savings per week could payback for a $50,000 renovation of the loadout area to setup holding pens with drinkers to fast hogs overnight.

In conclusion, hog feed withdrawal prior to slaughter minimizes feed wastage and improves dressing %. It reduces transportation losses, carcass contamination, and increases packers' plant efficiency. Safe pork should help maintain foreign market access and facilitate establishment of new markets. On-farm hog feed withdrawal will also increase the proportion of pork that meets export grade. And ultimately, it will also enhance consumers' shopping preference for Canadian pork.

Table 3. Simple calculator to estimate the opportunity revenue of implementing on-farm hog feed withdrawal

		Current situation		Feed withdrawal
Effect of reduced dressing %				
Live weight of market hogs, kg		126		125
Dressing %		78%		80%
Carcass weight, kg		98.5		100
$/kg pork 100 index		1.5		1.5
Index		110		110
Health bonus, $		1		1
REVENUE PER HOG, $	(A)	162.53		165.00
Effect of undigested feed in the gut				
Undigested feed found in gut, dry kg		10		2
Finishing feed. $/1000kg		250		250
FEED WASTED PER HOG, $	(B)	2.50		0.50
Effect of trucking, condemnations losses				
Breeding herd size, # sows		600		600
Hogs marketed/sow/year, #		25		25
Trucking loss due to feed, #/1000	3	450	2	300
Condemnation loss due to feed, #/1000	2	300	1	150
TRUCKING, CONDEMNATIONS	(C)	14250		14550
A - B x C = $		2,280,356		2,393,475
Opportunity revenue of hog feed withdrawal, $			113,119	