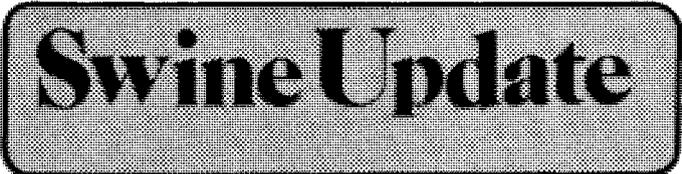
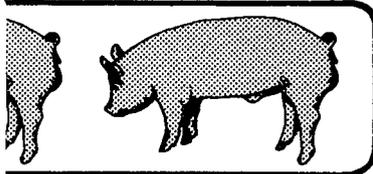


**MAGR
 GOVS
 MN 2000 SU-2/1**



VOLUME 2, NO. 1

FEBRUARY 1984

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Feeding Whole Milk to Hogs

Feeding whole milk to hogs is one way of taking milk off the market. Hogs will readily consume fresh whole milk. The variable or uncertainty is -- how much milk will a hog consume on a daily basis? This will depend mainly upon the size of the pig (intake capacity). Also, the ambient temperature, the provision of other feedstuffs, and the freshness of the milk can affect daily milk intake. Pigs weighing 150-200 pounds are known to consume up to three or more gallons of milk daily, whereas the 40-pound pig may only consume one gallon, or less. Usually, hogs will drink more during warmer weather than when their ambient temperature is colder. It is also known that when the ambient temperature is colder hogs will consume more if the temperature of the milk is warm (90 to 100° F.).

In order to realize a greater daily milk consumption, it may be advantageous to wait until pigs are weighing 40 pounds or more before feeding milk. The 20- to 40-pound pig will readily consume whole milk; however, their intake capacity is limited. One could only expect a milk consumption of from 1/3 to 1 gallon daily per pig during this growth period. In some instances when pigs under 40 pounds are full fed milk, they will not have the intake capacity to consume enough dry feed to maintain satisfactory growth performance. Consequently, one should expect less uniformity of pig size in groups of pigs started on milk at a very early age. Regardless of when pigs are started on milk, it should be done gradually. Start at perhaps a level of 1/4 to 1/2 gallon per day, and over the next few days build up the intake to whatever level they will consume on a daily basis. If pigs are immediately started on a full milk intake, it is possible that a digestive disturbance (scours) could occur. Even when daily milk intake is gradually increased it is likely you will observe pigs with a looser stool. This should be expected due to the increased intake of milk sugar and fluids.

Remember: When feeding milk to hogs, it is essential that it be kept fresh -- meaning fed at least once a day. This is important, as hogs of all ages, especially the younger pig, are quite sensitive to stale, off-flavored, contaminated feedstuffs and will consume them in lesser amounts or not at all.

Feeding recommendations:

Feed the whole milk along with a self-fed, complete mixed dry feed. The milk could be fed in troughs and the dry feed placed in a self feeder. Possibly from 1/4 to 1/3 less dry feed will be consumed when pigs are fed a full milk intake. The protein level could also be reduced in the complete mixed dry feed; however, mineral and vitamin levels should not be altered. Simply stated: Even though less dry feed is consumed daily, leaving the pig with a nutrient deficit, the whole milk intake should adequately compensate for the deficit.

Pigs less than 40 lbs.: Gradually work up to a maximum daily milk intake (1/2 to 1 gallon/pig/day) and self feed a 15-16% protein-high energy diet (corn-soybean meal) fortified to meet the pigs' requirement for minerals and vitamins.

40 lbs. to 80 lbs.: Gradually build up to a maximum daily milk intake (1 to 1-3/4 gallon/pig/day) and self feed a 14% protein complete mixed high energy diet fortified to meet the pigs' requirement for minerals and vitamins.

80 lbs. to 150 lbs.: Provide a full intake of milk daily (1-3/4 to 2-3/4 gallon/pig/day) and self feed a 12% protein-high energy diet fortified to meet the pigs' requirement for minerals and vitamins.

150 lbs. to slaughter wt.: Provide a full intake of milk daily (2-3/4 to 3-1/2 gallon/pig/day) and self feed a 10% protein-high energy diet fortified to meet the pigs' requirement for minerals and vitamins.

Some Rough Economics:

One cow producing 16,000 lbs. of milk per year should provide enough milk to finish approximately 8 hogs from 40 to 225 pounds (assumes an average of 2 gal./pig/day over 125 days, and fed along with dry feed). Generally, one can assume that it takes about 660 lb. of dry feed to finish a pig from 40-225 lb. when milk is not fed. If approximately one-third of the dry feed is saved when milk is full fed, this would amount to about 220 lb. of feed. If the complete mixed dry feed is priced at 8 cents per pound, the savings is about \$17.60 (220 x .08). Since the high producing cow can provide enough milk for 8 pigs per year, then a little over \$140 (\$17.60 x 8 pigs) in hog feed savings is gained per year by that cow. How much does it cost to feed a cow per year?? A lot more than what is gained in feed savings by feeding her milk to hogs.

Feeder Comparisons (Meal-Time vs. Ad Libitum)

Over the past year or two, there has been increasing interest in a different feeding system for growing-finishing hogs -- namely, the meal-time feeding system. Ad libitum feeding (feed is continuously available), using dry feed in self feeders, is the most commonly used system of feeding by producers. A few years ago, Chore-Time Equipment, Inc., introduced meal-time feeding as an alternative to ad libitum feeding. The meal-time feeding system is automated and programmed to feed hogs

"meals" 2 or 3 times per day. The system includes built-in waterers and is supposedly designed to fit hogs' eating and drinking habits. The manufacturer of this feeding system claims that it is more natural for hogs to eat "meals," and meal-time feeding is the natural way to feed compared to ad libitum feeding, where hogs tend to eat out of boredom. With meal-time feeding, hogs receive feed and water at the same location, thus eliminating the feed wastage often seen by frequent exits from an ad libitum feeding system to a waterer located elsewhere in the pen. An improvement in feed conversion of at least 5% is claimed by the manufacturer when a meal-time feeding system is used rather than a conventional ad libitum system.

Recently, Kansas State researchers conducted a study to evaluate programmed meal-time feeding versus ad libitum feeding (using both rectangular and oval-shaped feeders). A summary of their work involving three trials indicates no difference in daily gain or feed efficiency between the two feeding systems. Although not seen in the Kansas research, a limited number of other studies and some field reports support the claim of slightly better feed efficiency when growing-finishing pigs were fed from the meal-time feeding system. It should be mentioned that in the Kansas study ad libitum feeders were kept in excellent adjustment to minimize feed wastage. (Comment: If producers would do a better job of adjusting conventional ad libitum feeders, it would be difficult to economically justify changing to a meal-time feeding system based only on the savings in feed wastage.)

A fourth trial in the Kansas study compared the performance of growing-finishing pigs using only rectangular and round-shaped ad libitum feeders. Pigs using the rectangular feeders grew slightly faster and were about 5% more efficient. Both feeder types were closely monitored to minimize wastage. The 8 round feeders required 22 adjustments (2.8/feeder) during the trial, whereas the 8 rectangular feeders required a total of 9 adjustments (1.1/feeder). Comment: This was an interesting trial, but don't throw out your round feeders until considerably more research is done in this area. However, it does point out the importance of good feeder management.

Lactation Energy Level and Delayed Postweaning Estrus

A delayed return to estrus following weaning is a common problem seen in many Minnesota swine herds. Research studies indicate that the percentage of sows in estrus by 7 days postweaning can range from 27% up to nearly 100%. Also, the problem occurs at a much higher rate in first-litter sows than multiparous (second litter or more) sows.

The amount of energy consumed by sows during lactation may be a big factor contributing to the delayed estrus problem. In a recent Nebraska study, a total of 235 first- and second-litter crossbred sows were fed either 8,000, 12,000, or 16,000 kilocalories of metabolizable energy per head daily during a 28-day lactation period. These energy intakes correspond to a daily feed intake of 6, 9, or 12 pounds of a standard fortified corn-soybean meal lactation diet. Following weaning, all sows were fed at a level of four pounds and heat checked daily with boars.

The results are shown in the accompanying table. As daily energy intake decreased from 16,000 to 8,000 Kcal M.E., sow weight loss and backfat loss during lactation increased. It would appear that these sows were using their body reserves to compensate for an inadequate energy intake. The data also point out that fewer sows fed the low level of energy during lactation exhibited estrus by 7, 14, 21, and 70 days postweaning compared to sows fed either the medium or high level of energy. In this study, a rather prompt return to estrus was noted when sows were fed at the higher energy levels.

Effect of Energy Intake During Lactation on Sow Weight and Backfat Loss (During Lactation) and Return to Estrus

	Diet Energy		
	Low	Medium	High
No. of Sows	104	28	108
Daily Energy Intake, Kcal M.E.	8,000	12,000	16,000
Weight Loss, lb.	-51.7	-29.3	-3.6
Backfat Loss, in.	-.3	-.2	-.1
Percentage in Estrus			
by 7 days	60	91	97
by 14 days	74	96	99
by 21 days	74	96	99
by 70 days	86	96	100

Apparently, 74% of the sows fed at the low energy level were not affected by an energy restriction and returned to estrus by 14 days following weaning. What about the other 26 percent? What was different about those that did not cycle within 14 days following weaning compared to the 74% that did? To find an answer, the Nebraska scientists evaluated three studies and compared sows fed only the low energy level who returned to estrus by 14 days postweaning to those fed the same energy level who did not return to estrus. They found that in each study, sows in the non-return group had less backfat at weaning than those in the return group.

From this study, it is quite evident that loss of body fat during lactation is associated with the problem of delayed return to estrus. Consequently, producers should attempt to keep the sows' feed intake at a high level during lactation to reduce loss of their body reserves. It is therefore recommended that sows be on a full feed within 4-5 days following farrowing and receive a daily intake level of at least 10 lbs. of a high energy diet. However, in some herds sows will not voluntarily consume more than 6-9 pounds of feed daily during lactation and, thus, are more vulnerable to delayed estrus postweaning.

If such is the case, the following management suggestions may be beneficial.

- 1) Keep the farrowing house temperature near 70°F. A warmer temperature is associated with reduced feed intake (poorer appetite).
- 2) Feed sows 2-3 times daily. More frequent feeding insures improved feed quality (freshness) and gets the sow up on her feet more often; both should improve her appetite.
- 3) Wet Feeding -- When water is mixed with dry feed, there is some evidence to suggest an improvement in feed intake.
- 4) Feed a high energy diet that does not contain fibrous feedstuffs (i.e., wheat bran, beet pulp, alfalfa meal, etc.).
- 5) Add 5% fat to the lactation diet to increase its energy density, or top dress the regular lactation diet with .5 pounds of fat daily.
- 6) Provide a continuous supply of fresh water.
- 7) Feed correctly during gestation. Sows that are over-fed during gestation often tend to eat less during lactation.
- 8) Wean earlier -- shortening the lactation period to 3 or 4 weeks will prevent sows from losing excessive weight, especially when their voluntary feed intake is less than desirable.

Drip Cooling of Lactating Sows

It is not too early to start thinking about maintaining a comfortable environment for the lactating sow during summer. Summer heat stress in sows during lactation is a definite problem for many swine producers -- even in Minnesota. Obviously, the lactation phase places a very high energy demand on the sow. When the temperature in the farrowing house is at or exceeds the sow's normal skin or surface temperature, she can be heat stressed. If so, in an attempt to reduce her body heat production, less feed is generally consumed. This usually results in greater weight loss during lactation and may lower her milk production and adversely affect return to estrus postweaning. Exposure to heat stress also increases the energy demand for panting (panting is a major method by which swine expel body heat during heat stress). The ability of the sow to withstand heat stress will depend largely on her ability to maximize evaporative heat loss. Even though swine are poor sweaters, wetting the skin surface can increase heat loss through evaporation and thus reduce heat stress.

A recent Kansas State study evaluated the value of drip cooling to reduce heat stress in sows during a 3-week lactation period. One group of sows served as the control (no wetting), whereas sows in the other group were wetted with a commercially available drip irrigation system used for horticultural applications. A polyethylene pipeline (1/2") was installed above the farrowing crates, and drippers were centered over the sows to wet their neck and shoulder areas. The system was controlled by thermostat and operated when the temperature exceeded 85°F. Each nozzle produced a steady drip of water at a flow rate of



about .8 gallons per hour. During the study, the temperature in the farrowing house ranged from 81°F to 94°F, with an average relative humidity of 68 percent.

It was noted from the results of this study that wetted sows appeared more comfortable than controls and had a significantly lower respiration rate (28.5 vs. 63.6 breaths per minute, averaged over 3 weeks). It is reported that sows are heat stressed at 50 breaths/minute. Also, the three-week lactation weight loss for wetted sows was considerably less (8.36 vs. 38.53 lbs.) and the average daily feed intake was 2.11 lbs. greater (12.66 vs. 10.55 lbs.) compared to the controls. There were no differences observed between groups in number of pigs born alive or dead, number weaned, or birth weight. However, litters from wetted sows were 11.69 lbs. heavier than those from control sows at weaning, suggesting possible improvement in milk production when sows were cooled. No difference was noted between groups for days to return to estrus postweaning.

This study does suggest that, under heat stress conditions, drip cooling of sows during lactation improves feed intake and allows for more energy for milk production and maintenance of body weight.

Jerry D. Hawton

Prepared by Jerry D. Hawton, Extension Swine Nutritionist

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