Cull Sow Feeding Management

Introduction

The decision to cull a sow from the breeding herd typically occurs after weaning due to poor lactation performance, lameness or if she fails to breed or conceive. Once the decision to cull a sow from the breeding herd has been made, a producer must decide to either immediately market the sow or to increase marketable body weight by feeding her for a period of time. The decision to feed cull sows to add additional body weight is not a simple decision. Many factors such as current cull sow market prices, available housing space, feed cost, and health of the animal contribute to this decision [1]. Revenue from marketing cull sows contributes to the profitability of pork operations, therefore much care should be placed on deciding when to market cull sows.

Objectives

- Identify market trends in cull sow prices to predict future market prices
- Identify the factors associated with the decision process for feeding cull sows
- Identify economic factors that affect cull sow feeding

Cull sow markets

Cull sow prices are typically reported for 4 separate classes according to body weight [2]. Weight ranges for those classes are 300 to 450 lb, 450 to 500 lb, 500 to 550 lb, and 550 lb and greater. Price per pound or hundred weight (cwt) for cull sows typically increases as market body weight becomes heavier [2]. Figure 1 shows average cull sow prices for a 12 year period (1997 to 2008) by each USDA cull sow weight class. These prices represent plant-delivery including freight and commission [2]. In each case, as the body weight class increases, price received by the producer increases as well. Increasing sow body weight at marketing can improve price received. Typically, there is a greater economic incentive to add weight to the lightest of the 4 USDA cull sow body weight classes so sale weight is above 450 lb. There are some time periods where a producer would have an economic incentive to feed cull sows to the next market weight class as indicated by a greater market price spread to increase sow weight to the next weight class. Additionally, there are time periods where there is no advantage and even a disadvantage for producers to feed cull sows to the next weight class. Typically, the greatest difference in price received for cull sows is between sows in the lightest USDA cull sow classification (300 to 450 lb) and the second cull sow weight class (450 to 500 lb). Hence, the decision to feed cull sows is usually considered when producers are evaluating feeding sows from the very lightest weight class. In this case, revenue per sow is increased in two ways. First, a greater price per pound is typically received in the second, third and fourth weight classes. Secondly, the added weight has additional value.

Producers should pay close attention to marketing trends when making a decision to feed cull sows. Cull sow prices tend to follow the same price trends as those seen for market hogs as shown in a 12 year...
(1997 to 2008) summary of monthly average cull sow prices (Figure 2). As producers might expect, cull sow prices also follow distinct seasonal or monthly trends. Typically, producers receive greater prices for cull sows for all market weight classes during the late spring and summer seasons (May through August). Producers may only want to consider adding weight to cull sows when there is the greatest potential for price increase. The monthly market weight price spreads between weight classes are most pronounced for the lightest USDA cull sow weight class during the winter months, typically November through January. Larger operations that have cull sows on a weekly basis must determine when to hold and feed sows for additional days, which can be influenced by these seasonal trends relative to cull sow price.

**Figure 1.** Average yearly cull sow price for each of the 4 USDA market weight classes from 1997 to 2008 [2].

**Figure 2.** Average monthly cull sow prices for each of the 4 USDA market weight classes from 1997 to 2008 [2].
Questions to answer before feeding cull sows

Once a producer recognizes a marketing opportunity to add weight to cull sows, a series of other decisions need to be considered by the producer. These questions include the following:

1. Is space available either in the gestation barn or in alternative facilities to feed cull sows?
2. What is the disease and reproductive status of the cull sows that are being considered (e.g. lameness, health status, wet sows)?
3. How much do cull sows weigh at present?
4. What is the feed cost for the current diet provided to cull sows?
5. Does the producer have the ability to feed a less expensive diet that is designed for cull sows?

If producers have limited space or do not have facilities apart from the normal breeding and gestation facilities to feed cull sows, it is not advisable to attempt to add weight to cull sows before marketing. Also, if cull sows are taking up feeding spaces in facilities housing the sow / gilt replacement pool for the breeding herd, it is not recommended to sacrifice breeding herd performance results in an attempt to add weight to cull sows. Secondly, producers must conduct a thorough evaluation of all cull sows and pay particular attention to sows with the greatest potential to add weight with minimal risk for health or other problems in order for the producer to maximize return on investment [i.e. sows in the lightest market weight class (300 to 450 lb)]. Producers must determine that the health of the candidate sows is not compromised by unhealthy sows.

Decision making time

A pork producer managing a farrow-to-finish or a breed-to-wean operation encounters 3 options when culling a sow from the breeding herd. The first option is to sell cull sows immediately after weaning. This practice is discouraged because a $5-10 cwt. price discount is commonly assessed against “wet” sows or sows that still possess mammary tissue typically found on sows that have just been weaned. This tissue is trimmed from the carcass at harvest because it has little, if any, value to the processor. Fewer than 5% of sows are sold at weaning in this condition (USDA Market News, Louis Langell, personal communication).

Option two involves removing sows from the herd after approximately 2 weeks. Research has shown that housing sows for approximately 2 weeks will allow involution of mammary tissue [3] sufficiently enough that they will not be discounted when marketed. Option three involves feeding sows for greater than 2 weeks to increase body weight prior to marketing and the possibility of the sow remaining in the breeding herd if she recycles and the mating is successful.

The second and third options are the most commonly practiced by swine producers. Both options require housing and feeding sows which allows time for mammary tissue involution while taking advantage of compensatory body weight gain. The second and third options only differ in the amount of time the cull sow remains onsite. The decision to add body weight is dependent upon the ability of the producer to accurately assess the productivity of the cull sows. Thin sows that have recently weaned large litters of piglets could be candidates to add body weight; whereas sows that have exhibited considerable feed intake variation (possibly due to stomach ulcers) or appear morbid and/or lame are ideal candidates for immediate marketing after weaning (option 1) or as soon as mammary tissue involution has occurred (option 2).

Finally, herd health must be incorporated into cull sow feeding decisions. Producers attempting to feed unhealthy or lame sows for extended periods of time, in an attempt to have them overcome these challenges and increase body weight, generally make this practice unprofitable. Since unhealthy and/or lame animals have decreased performance potential, their efficiency of growth is reduced. Also, any mortality that occurs from attempts to increase body weight of these sows may eliminate the improvement in total revenue for the entire group. Pork producers should carefully consider medications utilized for sow treatment as withdrawal periods extend the amount of time the sow remains onsite increasing mortality risk. However, if a sow has a good probability to recover due to treatment, the subsequent withdrawal period can add significant weight to the sow prior to marketing.
Growth rate and efficiency of cull sows to add body weight

Cull sows of lower body weights will gain body weight faster and more efficiently then heavier sows [4]. One research project has shown that average daily gain (ADG) for sows weighing 300 to 500 lb (lightest two USDA weight categories) had an ADG of 3.8, 2.9, and 2.2 lb/d and feed conversion ratio (F/G) of 2.58, 3.86 and 5.54 during 0 to 14, 15 to 28, and 29 to 42 days of full feeding, respectively [4]. However, for sows weighing over 500 lb (heaviest two USDA weight categories), ADG was 3.0, 2.3 and 1.6 lb/d and F/G was 3.59, 5.28 and 7.78 for the same three time periods, respectively [4]. However, other research evaluating full feeding cull sows (not separated by weight category) on weekly growth post-weaning showed that sows lost weight during the first week after weaning (-2.3 lb/d) [1]. However, sows then began to have positive gains but at a decreasing rate for the reminder of the 5 week study (approximately 5.4, 3.8, 1.1, 3.5 and 2.8 lb/d for weeks 2, 3, 4, 5 and 6, respectively) with the overall gain for the 6 week study at approximately 2.4 lb/d. For feed efficiency, sows had F/G of 2.44, 3.95, 13.15, 3.95, 5.36 for weeks 2, 3, 4, 5 and 6 respectively with the 6 week average being 5.53. The low ADG and high F/G in reported for week 4 was mainly driven by the open sows that had minimal ADG (0.22 lb/d) and very high F/G (57.4) probably due to those sows cycling during this week altering their growth performance.

Producers also have the option to breed cull sows if they are going to feed them for an extended period of time to improve growth and feed efficiency during the feed period. Research has shown that pregnant sows gain faster (+27%) and are more feed efficient (-16%) then open cull sows over a 6 week feeding period [1]. Thus, inseminating sows with inexpensive or extra semen is a viable option for improving growth and feed efficiency.

The most efficient time to add weight to cull sows is when they are in poorer body condition after lactation, especially the first 2 to 3 weeks after weaning. Regardless of body weight and body condition, sows have decreasing ADG and worse F/G the longer they are fed prior to marketing. Sows will also have increased ADFI from the beginning of the feeding period until a plateau is reached similar to peak lactation feed intake.

Economics of Feeding Cull Sows

An economic evaluation should always be on a producer’s mind when deciding whether to feed cull sows to heavier weights or to sell them shortly after weaning. Average cull sow prices from 1997 to 2008 for each market weight category 1 through 4 were $0.33, $0.37, $0.38, and $0.39/lb, respectively. Because gross revenue generated from selling cull sows is related to body weight gain, similar trends are observed when evaluating predicted revenue by the number of days that cull sows are or will be fed. Research has shown that total revenue equaled total cost (feed + facility) at approximately 90, 80, 45, and 53 days on feed for market weight categories 1 through 4, respectively, using $0.05 feed and $0.25/day fixed costs. However, profit was not achieved for sows of any body weight category when using $0.09 feed and $1.00 fixed costs [4]. In the case of the low cost scenario, sows of body weight category 1 and 2 had maximum net return (approximately $12 and $10 per sow, respectively) when fed for 42 days while sows of body weight category 3 and 4 had maximum net revenue when fed for 28 days (both approximately $4.50 per sow) [4]. However, other research has shown that feeding cull sows for 3 weeks had profitability of $3.40 per sow with cull market price of $0.41/lb and a feed cost of $0.045/lb [1]. However, at a feed cost of $0.068/lb, net losses were realized. Also, if cull sow price was reduced to $0.32/lb, regardless of feed price ($0.045 or $0.068); it was unprofitable to feed cull sows for 3 weeks. For a 6 week feeding period, the same pattern was present with cull sows returning $6.79 with the higher cull sow price and low feed cost. However, in high feed cost or low revenue scenarios, net losses were realized. Also, pregnant sows were more profitable at both 3 and 6 weeks of full feeding then open sows due to their added growth rate and improved feed efficiency as previously described.

The diet fed to cull sows has a great impact on the economics of feeding cull sows. Producers who have the option to utilize a lower cost diet, formulated to similar nutrient levels as a late finishing diet, will meet the needs of the cull sow while lowering feed cost. Feeding a diet similar to a late finishing pig ration compared to a typical gestation ration will lower feed cost by reducing the amount of dietary phosphorus, trace minerals, and vitamins while generally maintaining similar levels of amino acids for lean growth.
Summary

Many factors unique to individual pork operations must be evaluated before producers should consider adding body weight to cull sows. Foremost, the operation must be able to physically house prospective cull sows, and typically, only using inexpensive feed and depreciated facilities are the most profitable. Second, the producer must have current market condition knowledge and be able to predict, with some degree of certainty and associated risk, future market trends based on historical prices. Finally, each producer should evaluate their sow operation and determine whether adding body weight to cull sows will be a profitable decision based upon sow weight, health, facility space and feed prices.

References


Frequently asked questions

Can I feed Ractopamine HCL hydrochloride (Paylean®) to cull sows?

Paylean is a feed additive labeled for feeding market animals for the last 45 to 90 lb at an inclusion rate of 4.5 to 9.0 grams per ton regardless of final weight prior to slaughter. Thus, while traditionally Paylean is fed to finishing pigs, it can also be used in cull sows designated for slaughter. Feeding Paylean to cull sows prior to marketing has been shown to improve daily gain and feed efficiency while decreasing fat accretion. While less data is available to determine the actual growth response in cull sows compared to finishing pigs fed Paylean, it can be assumed that the majority of the ADG improvement would be seen in the first 3 weeks from feeding Paylean. However, economic benefit of feeding Paylean to cull sows must be evaluated to ensure the added revenue from selling a heavier sow offsets the increased feed cost of a 16% CP diet minimum to meet Paylean label requirements.