KEY FACTORS THAT AFFECT WEAN TO FINISH PERFORMANCE

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INTRODUCTION

The recent difficult economic conditions within our industry has changed the way we evaluate our wean to finish operations. As I refer to wean to finish throughout this paper it applies equally to actual wean to finish facilities and conventional nursery and finishing systems. Historically when given a topic like this to discuss one would have went into lengthy explanations on what strategies we should pursue in order to improve a number of physical performance parameters such as average daily gain and feed conversion. At producer meetings I still hear people discussing these types of performance parameters, however, with increases in feed prices and changes in the cost of facilities, these numbers are not as important as they once were. Comparisons on physical performance traits alone can be very misleading. Almost every decision we make comes down to the relationship of feed prices compared to housing and pig input costs. Below I will address performance measures we use to evaluate grow-finish performance and then discuss individual factors that should be considered and acted upon to improve profitability in your farms.

PERFORMANCE REPORTING

I will not spend much time reviewing conventional closeout information as most producers have good systems in place to evaluate this type of physical performance. There are a few areas that I will present that might give you a different perspective on how to measure wean to finish performance traits. Any trait that you measure today must be tied back to the economic impact that it has on your operation. Key areas that I will address are:

- Full Value Pigs Marketed or Top Hog Index (THI)
- Optimal Slaughter Weight / Marketing
- Contract Finishing Equivalent
- Grower Index Value
Top Hog Index

Top Hog Index (THI) is an index which places a value on all animals exiting the system bench marked against the value a Number 1 Market Animal generates. This index is measured by the total number of animals weaned and placed into a group, and what percentage of the animals make it to a particular market. Various deductions to the Index are taken based on the market value received for each of the following categories; off-grades, subjects, and light slaughter animals. Zero credit is given for nursery and finisher mortality, transport DOAs and condemns. Our target Top Hog Index is set at 93%. The strength of this measurement is that it takes into account across all categories the combined affects of marketing, veterinary interventions and animal flow decisions. During normal market conditions we assign the value of approximately $1.00 per head marketed for each one point of change in THI. Minimally, this value should be evaluated annually using current or future costs along with projected market prices.

<table>
<thead>
<tr>
<th>Farm A</th>
<th>Value Index</th>
<th>Target</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>YTD Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortally</td>
<td>0.0</td>
<td>0.0%</td>
<td>4.6%</td>
<td>4.6%</td>
<td>7.5%</td>
<td>3.4%</td>
<td>5.1%</td>
</tr>
<tr>
<td>DOA &amp; Dips</td>
<td>0.0</td>
<td>0.5%</td>
<td>0.6%</td>
<td>0.7%</td>
<td>0.4%</td>
<td>0.5%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Off-Grade Sales</td>
<td>0.4</td>
<td>0.5%</td>
<td>0.1%</td>
<td>0.6%</td>
<td>2.1%</td>
<td>0.7%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Subject Hogs</td>
<td>0.4</td>
<td>0.4%</td>
<td>0.1%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.1%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Stoves</td>
<td>0.0</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Light Hogs</td>
<td>0.0</td>
<td>0.0%</td>
<td>1.9%</td>
<td>0.8%</td>
<td>1.6%</td>
<td>4.1%</td>
<td>2.3%</td>
</tr>
<tr>
<td>Top Hogs</td>
<td>1.0</td>
<td>98.0%</td>
<td>92.3%</td>
<td>88.2%</td>
<td>90.4%</td>
<td>89.8%</td>
<td></td>
</tr>
</tbody>
</table>

**Total Hog Index**

92.4% 94.0% 91.2% 90.5% 94.6% 92.6%

Optimal Slaughter Weight / Marketing

In difficult economic times one of the areas that can make an immediate impact on our business is how we market our animals with an emphasis obtaining our targeted slaughter weights. Three key performance indicators we measure and report daily are slaughter weights by plant, percent marketed by cut and number of pigs that fall outside the optimal marketing window on each of the various marketing cuts. I will explain the importance of the last two criteria as we proceed into the individual factors that affect overall performance in the finisher.

<table>
<thead>
<tr>
<th>% Marketed By Cut</th>
<th>% Marketed Outside &quot;Window&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region 1</td>
<td>Region 1</td>
</tr>
<tr>
<td>%</td>
<td>Car. &lt;180  Car. &gt;270</td>
</tr>
<tr>
<td>Wt.</td>
<td>820  288  289  282</td>
</tr>
<tr>
<td>26%</td>
<td>16%  5%  52%</td>
</tr>
<tr>
<td>Region 2</td>
<td>Region 2</td>
</tr>
<tr>
<td>%</td>
<td>Car. &lt;180  Car. &gt;270</td>
</tr>
<tr>
<td>Wt.</td>
<td>273  275  274  271</td>
</tr>
<tr>
<td>26%</td>
<td>16%  5%  52%</td>
</tr>
</tbody>
</table>

Cut 1-3          | All Cuts       | Opportunity |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Car. &lt;180</td>
<td>Car. &gt;270</td>
<td>Cost</td>
</tr>
<tr>
<td>2.94%</td>
<td>0.32%</td>
<td>$0.37</td>
</tr>
<tr>
<td>1.89%</td>
<td>0.35%</td>
<td>$0.25</td>
</tr>
</tbody>
</table>
Contract Finishing Equivalent

In systems that have both contract and company owned wean to finish facilities the contract finishing equivalent gives us the opportunity to compare how the costs of our own facilities compare to what it would cost for contract facilities. In conventional nursery and finishing systems we normally combine nursery and finishing facility costs to have a fair comparison to a wean to finish facility.

<table>
<thead>
<tr>
<th></th>
<th>Region 1</th>
<th>Region 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor</td>
<td>$5.32</td>
<td>$7.85</td>
</tr>
<tr>
<td>Utilities</td>
<td>$4.65</td>
<td>$3.36</td>
</tr>
<tr>
<td>Maintenance</td>
<td>$1.64</td>
<td>$5.69</td>
</tr>
<tr>
<td>Supplies</td>
<td>$0.46</td>
<td>$0.58</td>
</tr>
<tr>
<td>Carcass Removal</td>
<td>$1.04</td>
<td>$0.64</td>
</tr>
<tr>
<td>Environmental</td>
<td>$1.01</td>
<td>$3.00</td>
</tr>
<tr>
<td>Capital Cost</td>
<td>$26.67</td>
<td>$21.00</td>
</tr>
<tr>
<td>Cost / Space</td>
<td>$40.80</td>
<td>$42.11</td>
</tr>
</tbody>
</table>

Grower Index Value

The recent reduction in the number of sows has led to an increase in the number of wean to finish facilities available to rent. Historically the entire industry has been short of growing space and as a result we have placed pigs wherever we could find available facilities. Quite often these facilities were located in areas that were less than advantageous to our overall cost of production. We were in need of a tool that would allow us to objectively measure facility locations so that when we had the opportunity to choose between two facilities we could always pick the facility that would contribute most to decreasing our overall facility cost. We developed a matrix that values on a per head basis on the parameters listed below. Since the development of this matrix we have decreased overall cost on a per head basis by $0.73.

- Contract Rent Payments
- Feed Cost
- FCR
- Distance to the Packing Plant
- Distance to the Feed Mill
- DOAs for that particular facility
- Grower Rating
KEY FACTORS THAT AFFECT OVERALL PERFORMANCE

Listed below are a number of key factors that will affect overall wean to finish performance. Many of these topics may seem repetitious, but many producers still have difficulty implementing these concepts within their operations.

Health

I am not going to go into detailed vaccination or medication programs, but will discuss three much simpler concepts; pig flows, increased wean age, and biosecurity. I can sum up the requirements for improving health through pig flow into two simple words “single source”. As an industry when we discuss maintaining good health within our sow farms the first core principle is not to mix multiple sources of genetics or pigs into the farm. We made this mistake in the nineties with our sow units. We thought that if we weaned young pigs we could mix pigs from multiple sources and place them commingled into a site. We felt this concept would allow us to maximize both facility and transport utilization without any consequence from a health standpoint. Unfortunately we were wrong. This concept was not meant for large production systems with 10,000 head finisher sites. The research behind this concept was done on small groups of pigs as all-in all-out sites. When we implemented this concept in the 90’s our production systems were designed to comingle pigs from very large sow farms, this proved to be a fatal flaw. Over time we have adapted and found ways to single source all of our flows but unfortunately the early lessons were hard learned. Presented below is an example of the benefits of moving to a single sourced pig flow.

In addition to single sourced pig flow many producers in the US are working to increase wean age, with a target of greater than 21 days. The benefits of increased wean age are:

- improved sow performance on subsequent litters
- a larger average pig at weaning
  - an improvement in the pig’s overall health with less mortality in the nursery
  - substantial improvement in wean to finish performance especially through the nursery phase
  - a decrease in feed costs resulting from weaning fewer small pigs.
- overall lowering of production costs.
Within our system we have also found that with a one day increase in wean age beginning at 17-days we normally see an additional 0.1 pigs born alive per litter.

The last item that I want to discuss is biosecurity. This area is challenging in our wean to finish facilities that are located in Iowa where hog density is as high as it is anywhere in the U.S. It is common that producers usually have excellent biosecurity in their sow farms, but for some reason do not think it is necessary to carry that intensity on through to their wean to finish facilities. During difficult economic conditions producers tend to cut corners in an effort to reduce costs, the first to get cut is washing trailers. As we continue to invest more dollars in improving health within our sow units such as PRRS eradication strategies, we must also reduce the risk of lateral disease introduction into our wean to finish facilities in order to maximize the sow unit return on investment.
If you have invested capital to become PRRS negative in your sow farm and are not following up with keeping pigs negative in your wean to finish facility you are missing out on one of the biggest benefits of eliminating PRRS. One way to determine if your are missing this opportunity is by testing the groups for PRRS antibodies 10 weeks after arrival. If the prevalence of PRRS positive groups is over target these are some areas to concentrate on:

- If showers aren’t available, change boots and coveralls between sites along with washing hands and arms.
- Wash and disinfect slaughter trailers.
- Wash and disinfect loading chutes between loading slaughter and incoming pig loads.
- If at all possible eliminate rendering trucks on your site or increase the use of incinerators and composting
- Make certain that people vaccinating, loading, transporting and taking care of the pigs have been trained in bio-security. And if at all possible these people should not taking care of other sources of pigs, this includes the equipment that is moved from site to site.
- Implement adequate rodent and pest control
- Secure the site from unapproved visitors.
- If producers purchase or contract pigs they should understand the bio-security practices on the sow unit.

Genetics

Producers do your homework and make your genetic decisions based on the total economic value that different genetic lines contribute to the entire system. Too often this choice is made primarily on sow performance without enough emphasis or investigating how the pig performs in the wean to finish barn and the economic impact of traits you are paid on at the plant. Most of the major breeding stock companies have very good sow lines, but there is a substantial difference in how the terminal pigs from those sows perform through the growth phase and at the plant. The only way to truly get a feel for how pigs will perform is to purchase pigs with the genetics you are considering and to finish them yourself, and send them to your plant to see how well they perform when compared to your current program. Another way this can be accomplished is to compare notes with other producers that you trust who are selling to the same plant with similar genetics or partner with these producers to run genetic trials that you can both learn from. Producers also need to challenge and question genetic companies upon selection criteria and the rate of progress they are making on those particular traits. The same scrutiny needs to be placed on your gene transfer center whether you own the boars or are purchasing semen. It would be important to know how a GTC is measured i.e. estimated breeding values (EBV) and how they compare to other GTC’s with similar genetics. Another important question is what are the culling practices and turnover rate at the GTC you are receiving your semen from. Depending on the genetics,
there is value that can be assigned for every one point improvement in the EBV’s on the boars that are being collected. All of us need to continue to question and challenge our current genetic programs so that they keep pace and adjust to current input costs and market conditions.

**Nutrition**

When evaluating nutrition programs and the use of alternative ingredients be certain to work with your nutritionist to obtain the most economical gain and feed conversations. Long gone are the days that we can brag about having the top feed conversion and average daily gain. All of these parameters should be tied to economics that compare performance to facility and feed cost per pound of gain. Listed below is an example of when better feed conversion is a losing proposition.

**Marketing**

With current high feed prices and low market prices what weight and how we market our pigs has become increasingly more important. To maximize revenue while minimizing input costs producers should develop a model in which they should combine the growth curve, current and projected market price, the packer matrix along with feed, facility, and other input costs in which to determine your optimal slaughter weight. This model should be reviewed quarterly for the next 3 quarters to determine what your optimal market weight should be for each quarter. Many times your targeted slaughter weight may be different than what you traditionally may have sent to that particular market. During times of profitably
your model will most likely push you to take weights heavier than normal even after taking into account increased sort loss and facility cost. Again, we are looking to deliver the most overall value to the system. Listed below is an example of what our targeted slaughter weight will be for the third quarter of 2010 and the contribution that the different weights will make on a per carcass cwt. basis. Depending on what direction we feel the slaughter market is moving will directly affect our strategies on whether we want our pigs heavy or light when compared to our target. As market price decreases, we tend to error on keeping slaughter weights light and when the market price is increasing we tend to work towards keeping slaughter weights to the heavy side of our target.

Several key considerations need to be taken into account when determining when and how to market your pigs. On your first cut the two key objectives are to first create increased square footage for the balance of the pigs that are left behind and secondly, to make certain that the largest pigs are removed prior to those animals getting to a point that they receive discounts for being too heavy. We target between 15% and 25% or one to two loads on a 1200 head room for our first cut. We normally try to minimize the number head removed on second and third cuts in order to minimize the disruption that is created every time we go into a pen to market additional animals. Research has shown that every time we go into a pen to market pigs we increase days to market. Your goal is to remove only the minimum number of pigs you have to prior to the final cut in order to minimize the number of heavy weight pigs at the end. When we do the final cut and remove the balance of the animals from the room we are targeting between 45% and 60% of the pigs remaining until the last day. This not only maximizes facility utilization, but will
also minimize utility costs during cold weather. Our models have shown that every
time we market barns incorrectly the net effect ranges between $2.00 and $3.00 per
head marketed in lost revenues and increased costs.
The last portion of determining how and when we market our pigs is by measuring
the number of pigs that fall outside the optimal window on the packer matrix.
There is too much emphasis on overall sort loss which leads to a number of
behaviors that do not optimize profitability. The two main areas that we focus our
efforts on are light weight pigs that are sent on all loads being marketed prior to
the barn dump and on heavy pigs being marketed on any and all loads. The weights
in which you determine which animals are light and which are heavy will vary from
plant to plant. We typically set our targets based on where the first significant
break in discount occurs on the bottom and top side of the plant matrix.

Improving in all three of these areas is essential to maximizing revenue across
your system. In order to keep proper focus on these three areas you will need to
measure and report on these parameters at the very least weekly, if not daily. These
parameters must also be integrated into the overall compensation program of the
people performing the marketing function.

**Basic Production Practices**

It is difficult to discuss improving wean to finish performance without talking
briefly about improving basic production practices. The majority of these seem so
basic, but tend to get implemented incorrectly or missed completely especially in larger systems. Review on a continual basis these expectations and procedures to make certain they are getting implemented in a consistent manner across your farm or system. I will touch on a couple of areas that we observe as opportunities in many farms.

- **Ventilation** –
  - Utilize consultants to make certain that ventilation is adjusted in order to optimize air quality while conserving energy.
  - Make absolutely certain barns are setup properly for receiving weaned pigs. In wean to finish barns chilled pigs continue to be more of a problem than it should be.

- **Proper administration of vaccines and medical interventions.** - making certain that all employees are trained in the administration of vaccines, water medications and injectable antibiotics. Proper measures must be implemented to make certain that vaccines are actually given at the proper time.

- **Early identification and treatment of sick pigs.**

- **Proper and timely euthanasia in all phases of production.**

**SUMMARY**

In these extremely difficult times hopefully I have presented a few topics that will allow you to identify opportunities for improvement within your own farms. Continued improvement within our farms is the only way we can survive and be competitive in the future.