



Practical Ideas to Address High Feed and Production Costs

Pork producers are facing a period of rapidly increasing feed and production costs. The following management tips and resources have been compiled by the Pork Checkoff to assist producers in identifying opportunities to increase efficiencies and reduce costs.

This information was gathered from experts and producers across academia and industry and from many valuable industry based Web sites in the United States and Canada. These tips are not listed in order of priority and implementation should be considered based on the needs of each operation. Included with many of the tips are links for additional information. The list and resources are not all-inclusive and there may be many other sources of information in addition to the ones we have identified in this document.

Many of these tips and many other suggestions for reducing feed costs and increasing efficiencies are available from sources including extension Web sites at many major universities. In addition, most of these tips are supported by fact sheets and references that can be found on the [Pork Information Gateway \(PIG\)](#) (user registration is required) and the Pork Checkoff's Web site at www.pork.org.

Additional tips are available from the [Prairie Swine Center](#).

Producers should keep in mind that decreasing feed and production costs is very complex and should be considered carefully. However, small gains in several areas will produce significant savings. By only decreasing the cost of feed per ton, the cost of feed per pound of gain or total feed cost per pig to market weight may actually decrease profitability. Improving feed efficiency may also decrease profitability if actual feed costs increase more than the return received on the increase in efficiency. Producers need to focus on production practices that optimize feed costs and efficiencies while maximizing profitability. Contact your local extension service, nutritionist or veterinarian for additional information and regional recommendations.

There are many links in this document to view them just click on the link that is highlighted in blue.

Feed Processing and Manufacturing

Decrease feed particle size

For every 100 micron change in particle size, feed efficiency is impacted by 1.2 percent. Decreasing particle size from 750 microns to 600 microns will result in substantial savings per pig. In most cases, this particle size is not fine enough to worry about ulcer problems, but feed dust will be increased. For more information on analysis of particle size, [Click here](#). Spreadsheets and guidelines for calculating particle size are available on this site. For more information view this factsheet titled: "[Effects of diet particle size on animal performance](#)". Similar information may be found at other universities. Contact your local extension educator for assistance.

A PIG Reference on this topic is also available: [Impact of Repeated Out-Of-Feed Events and Fineness of Grind on Grow-Finish Performance](#)



Improve pellet quality.

Fines cause feed wastage but feed utilization and efficiency can be improved by implementing a quality pelleting process that ensures less than 20 percent fines at the feeder. Research at Kansas State University shows that pelleted diets result in more highly available nutrients, less dust, less feed wastage, better feed conversion and lower incidence of ulcer problems. Always check the cost of pelleting against expected efficiency gains to determine if pelleting is economically beneficial. [Visit here](#) for more technical information.

Maintain equipment for optimal efficiency.

Rotate or replace hammers in the hammer mill to ensure consistent particle size. Also, make sure rolls on the roller mill are properly maintained for the desired particle size. Make sure that mixing equipment is maintained so that distribution of nutrients is ensured throughout the entire volume of feed. Also, calibrate and maintain the scales for weighing pigs and feed at least twice per year.

Consider use of wet-dry feeders.

Wet-dry feeders may reduce feed wastage and dust due as pigs can wet the feed to the consistency they desire. Palatability also is improved over dry diets thereby increasing consumption and performance in some cases. For more information view the article: ["Impact of feeders and drinker devices on pig performance, water use, and manure volume"](#).

Repair or replace broken feeders.

Broken or damaged feeders can result in excess costs due to feed wastage or inadequate feed provisions for the pigs resulting in poor performance. Consider replacing older or inefficient feeders with well designed, efficient feeders that minimize feed wastage and promote maximum performance.

Adjust feeders to reduce waste.

Adjusting feeders to reduce feed wastage should be a routine practice. Minor adjustments of feed bins and transport systems can also result in big savings. Kansas State University recommends the following steps for proper feeder adjustment:

- Close feeder completely after cleaning before putting any feed in the feeder
- Open feeder just enough to start small feed flow
- Shake feeder to increase amount of pellets or meal in pan (to cover 1/3 of pan)
- Clean corners daily instead of increasing feeder adjustment to increase feed flow.
- Prevent moisture damage and spoilage in feed systems and storage.
- Eliminate all rodents, birds and other pests.

For feeder adjustment cards showing properly adjusted feeders for nursery, grow-finish and lactation, [click here](#).

For a useful reference on how to prevent feed waste, [click here](#).

A PIG Factsheet on this topic is also available: [Managing Feed Waste](#).

Feed Management

Monitor feed ingredients for potential mycotoxin contamination.

Scientists have identified several mycotoxins that cause significant, detrimental health and performance problems in swine fed contaminated plant based feedstuffs. Fungal infestation and subsequent mycotoxin production can occur during plant growth, maturity, harvesting, storage and processing of grains, and is influenced primarily by moisture level, temperature, and availability of oxygen. In addition, grain that is damaged, immature, drought stricken or otherwise stressed is more susceptible to mold growth. For more information, [visit here](#).



A PIG Factsheet on this topic is also available: [Mycotoxins and Swine Performance](#)

Monitor feed allocations or budgeted amounts and utilize least-cost formulations.

Follow feed budgets aggressively to ensure accurate compliance for each class of pig. Inaccurate rations or incorrect budgets decrease efficiencies and increase costs. For example, rations that have mistakes due to inaccurate scales or measurement or rations that are formulated for the incorrect class or pig weight are inefficient and increase costs. Formulating diets with economic costs in the equation, as well as modeling input requirements, will allow the development of diets at optimum performance and the least cost of ingredients. There are always trade-offs, so it is important to be aware of any detrimental effects of diet formulation on overall cost and/or performance. For a standard feed budget chart based on a feed efficiency of 2.8 from 50 to 250 pounds, a Swine Nutrition Guide from Kansas State University, is available [here](#).

Reevaluate phase feeding and options for split sex feeding.

Review all protocols for each ration phase. Make sure your weight categories and genetic description fit your current rations for each phase as closely as possible. Consider split-sex feeding to further increase feed efficiency. Both of these techniques can improve the accuracy of your rations and increase your production efficiencies. Consider finishing rations that limit or eliminate excess nutrients just prior to slaughter to lower feed costs on your heaviest weight hogs just prior to market.

Target sows' nutrients.

Improve sow productive lifetime by targeting diets for different parity ranges. Diets should have higher protein and energy levels for replacement gilts through parity two to prevent excess mobilization of body reserves during lactation. As sows become older, micronutrients (zinc, copper, iron, etc.) become critical nutrients that need to be maintained at high levels in order to maximize production efficiency. Consider the added costs of adding additional feed storage and delivery equipment in gestation and lactation and strategies to sort and feed sows accordingly against the benefits of targeting sow nutrition more accurately and efficiently.

To order sow body condition posters, contact the Pork Checkoff at (800) 456-PORK or visit the www.pork.org Web site.

For an article from The National Hog Farmer titled, "[Feeding strategies for lactating swine](#)". For the publication, "[The changing mineral status of high producing sows—what are their needs and when are the critical periods?](#)".

A PIG Factsheet on this topic is also available - [Feeding the Lactating Sow](#).

Decrease/eliminate feed outages.

Feed outages significantly impact the efficiency of feed utilization in pigs. The frequency and duration of feed outages needs to be assessed and should be minimized or eliminated whenever possible. For more information visit this extension publication titled, "[Out of feed events in grow-finish pigs: Causes and consequences](#)", .

Make measuring of feed intake/wastage part of the work routine.

While difficult to measure feed intake on individual pigs, pen feed intake should be monitored continually to quickly recognize feed wastage, pen health problems, water quality/availability, ventilation challenges and other issues.

Check water flow and quality often.

Water is an often-overlooked essential nutrient of pigs. Inadequate flow or availability of water or poor water quality can seriously impact performance or even cause death. Waterers should be easily accessible and checked regularly. Be sure waterers are delivering the designed volume at the proper rate. Check waterers furthest from the well head as this is the point at



which pressure is likely to be the poorest. Excessive water use is also inefficient because it has to hauled or pumped as manure.

For more information on suggested daily water intake and water quality guidelines, an extension publication is titled, ["Water: the essential nutrient"](#).

This information also is available in the POA Plus program. [Click here to Download the POA Plus manual.](#)

A PIG Factsheet on this topic is also available - [Water Systems for Swine.](#)

Practice proper feed withdrawal prior to marketing hogs.

Consider withdrawing feed from pigs to be marketed for up to 12 hours prior to when the pigs are scheduled to be processed to save on feed consumed, lighten the actual live weight of the hogs marketed and to enhance average carcass quality. For medicated feed, follow recommended withdrawal times for feed additives to prevent costly carcass condemnations, disruption of market channels, bad publicity for the pork industry or costly rejections of pork in foreign markets. Inadvertently including an ingredient that requires a withdrawal period may force a producer to feed a group of hogs longer than desired which adversely impacts feed efficiency. For more information, see the PIG fact sheet on [Feed Additives.](#)

Feed Formulation

Use DDGS when available at cost effective prices.

Distillers dried grains with soluble (DDGS) are readily available in most areas where pigs are fed and corn is grown. Where transport distance is feasible and product quality and variability can be verified, these byproducts are usually available at competitive prices. Be careful with feed formulation. Typical DDGS have only about 90 percent of the nutrient value of corn with a poor amino acid balance. Follow guidelines for inclusion rates closely.

| Recommended levels of DDGS in swine diets – University of Illinois | |
|--|--|
| <i>Stage of Production</i> | <i>Recommended Level (Percent of diet)</i> |
| Gestation | 40 |
| Lactation | 20 |
| Early Nursery | 0 |
| Late Nursery | 20 |
| Growing | 20 |
| Early Finishing | 20 |
| Late Finishing | 20 |

From Stein, H.H. 2007. Distillers dried grains with solubles (DDGS) in diets fed to swine. Swine Focus #001, Department of Animal Sciences, College of ACES, The University of Illinois at Urbana-Champaign.

Sows and older market hogs can utilize higher percentages of DDGS in their ration. However, high levels of DDGS in market hogs may negatively impact carcass quality. In proceedings from the 2007 AI Leman Conference, J.E. Pettigrew suggests the following:

- Buy DDGS from one or a few plants with which you have developed a relationship
- Buy only light-colored DDGS
- Buy only DDGS in which lysine is at least 2.8 percent of crude protein



- Avoid DDGS with a high level of “syrup balls”

For additional technical information on feeding distillers grains to livestock, go the [University of Minnesota Web site](#).

South Dakota State University, the University of Illinois, and other universities have done considerable research work with DDGS. For more information, contact your local extension service professional.

Look for alternative feed ingredients.

There are alternative feedstuffs and byproducts available in many areas. Some of these have become very competitive with high grain prices. However, determine the nutritional profile of an alternative feedstuff and its feeding value at the price quoted before you decide to use it. Also, make sure to understand the form in which it will be delivered so extra labor or machinery is not required to make it practical. Examples of alternative feedstuffs include bakery products, glycerin (byproduct of biodiesel manufacturing), poultry fat, etc. A publication, [“Alternative feed ingredients for pigs”](#) is also available.

A resource from the Prairie Swine Center is also available by [clicking here](#).

A PIG Factsheet on this topic is also available - [Relative Value of Feedstuffs for Swine](#).

Use crystalline amino acids to replace protein ingredients.

The cost of many crystalline amino acids such as lysine, methionine, tryptophan and threonine have decreased to the extent that replacement of soybean meal in the diet can result in a very palatable, semi-synthetic diet for the pigs with real cost savings. Producers should aggressively monitor ingredient prices and reformulate rations accordingly. An extension publication titled, [“Role of crystalline amino acids in reducing grow-finish feed costs”](#), is available.

Reduce traditional animal protein sources in starter diets for pigs.

Animal protein sources should be strictly budgeted in starter diets. Research from North Dakota State University suggests that lower cost, nutrient-dense, high performance, transition pig starter diets can be effectively prepared using reduced levels of spray-dried animal plasma, soy protein concentrate, spray-dried blood meal and dried whey when high energy hull-less oats and hard red spring (HRS) wheat are selected as basal grains. The nutrient-dense ingredients to use in pig starter formulations will depend largely on availability and current economics. For more information, [click here](#).

A PIG Factsheet on this topic is also available - [By-Products in Swine Diets](#).

Reformulate rations based on energy - review animal requirements for both energy and amino acid levels

Historically, protein has been the most expensive component of a swine ration. Today, energy costs are higher in many rations than protein. Consequently, producers should pay close attention to both the energy and protein costs in the diet to meet the nutritional requirements of their pigs. Rations should be reformulated as often as ingredient prices change. Currently for most producers, energy is the single most critical nutrient because it is the most expensive to provide in the diet. All other nutrients, including protein, are now less expensive and can always be included in amounts that meet or exceed the pig's requirement for optimum growth. For more information on energy in swine rations, [visit here](#).

A PIG Factsheet on this topic is also available - [Principles of Balancing Swine Diets](#).

Evaluate the use of antimicrobials, enzymes, acidifiers and other non-nutritive additives.

Feed grade antimicrobials have been used for many years in numerous production systems to



improve growth and efficiency in nursery and grow-finish hogs. Always follow the label requirements and monitor withdrawals closely. Certain enzymes when added to the ration may help to enhance efficiency. Acid blends and feed medications fall in this category as well. These opportunities should be evaluated for value in each operation. Understand the biological activity to best match the enzyme to your production system and watch for consistency and nutritive value issues with any enzyme or additive. Consider that these compounds may produce the largest return on your feed dollars invested if they produce even a small improvement in growth and/or efficiency in your rations. Now is the time to use all reasonably priced products that have a proven positive effect on feed efficiency. For more information on acidifiers, visit the [Pork Checkoff's Web site](#) for a copy of the document, "A Critical Review of Acidifiers" by C.M. Tung and J.E. Pettigrew or [click here](#).

Explore possible alternative sources of fat.

The advantages to added fat in the diet are well established. However, there may be lower cost alternative sources with similar performance or functional values. Examples include choice white grease, tallow, poultry fat, vegetable oils, restaurant grease, etc. Diets based on metabolizable energy added fat may be more expensive than those featuring lower fat inclusion levels or alternatives to typical fat sources.

Ensure correct evaluation of ingredients.

Assays of ingredients should be done routinely for nutrient levels and digestibility values so that diet formulation is accurate. In addition, purchasing some ingredients from a single source can help to ensure consistency combined with routine evaluation will help provide more uniform diets for efficient production. Standard operating procedures for product handling will result in a more consistent feed product. Check with your local swine extension educator for a list of laboratories capable of performing feed analyses. An extension bulletin titled, "Swine herd monitoring: feed" is available at <http://www.ag.auburn.edu/~owslewf/extswine/monitor-feed.pdf>.

Management

Review stocking densities in all phases of production.

Optimal stocking densities will result in the greatest economic gain with the least negative impact on performance or animal behavior. Consider the end weight of the hogs at typical marketing times and adjust the number of pigs per pen accordingly. For more information, access the article titled, "[Effect of stocking density on the welfare and performance of grow-finish pigs](#)".

A PIG Factsheet on this topic is also available - [Space Allocation Decisions for Nursery and Grow-Finish Facilities](#).

Identify and sell non-select replacement gilts by 260 lbs body weight.

Marketing females earlier will remove them before their growth curves change significantly resulting in lower feed efficiencies and more costly feed for the gain realized. Marketing these animals early also lowers the risk of injury or loss and prevents the gilt from reaching a market weight out of the ideal range for your packer.

Reduce mortality/morbidity.

Losses of pigs or sows at all stages of production are costly. Attempts should be made to address the most costly and most easily remedied losses. For instance, by increasing the number of pigs weaned per sow, the amount of sow feed needed to produce each pig is reduced. Sow death loss also figures into the total pigs per sow per year. Additionally, sows



are costly to replace with gilts. Focus your attention on heavy pig management and care. Pig losses at market weight are costlier than losses in the nursery or during lactation.

Avoid changes which could affect safety and/or quality.

Inadvertent contamination of feed as well as a sudden change in source could result in reduced performance or put pigs off-feed. Consideration also should be given to pork quality which may be compromised by changes in the type or source of feed ingredients or additives such as DDGS. Special considerations should be given to feed safety as it can impact product safety.

Maintain correct ambient temperature.

Consideration should be given to providing an optimal room temperature for each stage of production. Colder pigs will consume more feed at a loss in feed efficiency in order to generate heat because their maintenance requirement is increased. This trade-off needs to be costed and decisions made accordingly. For a publication titled, "[Effective environmental temperature](#)". Information on the thermoregulatory behavior of pigs and how to use it to determine the animals' thermal needs can be found in [PQA Plus](#).

Reduce environmental stressors.

Many factors can impact pig comfort and performance. Overcrowding of pigs, poor air quality (in terms of ammonia levels), poor ventilation or air flow, humidity and extreme ambient temperatures at the level of the pig can negatively impact pig comfort and performance. Information on ventilation control and its effect on animal well-being and performance can be found in [PQA Plus](#) and in the distance learning resource titled, "Ventilation management". The Pork Checkoff's distance learning resources are available from the [Pork Store](#) at no cost to U.S. pork producers.

Assure that employees have proper stockmanship skills.

Ensure humane and effective handling of all animals in a production system to improve efficient pork production. Research has consistently shown that pig performance is improved through positive and humane handling of pigs. Refer to the [Pork Checkoff's PQA Plus and Transport Quality Assurance](#) programs for more information. The Pork Checkoff's distance learning resources, "Effective handling of pigs" is available from the [Pork Store](#).

Train employees to identify normal behavior of sows.

Injured animals, irregular open sows and sows with reproductive abnormalities are all costly occurrences. Sow barn employees can be a critical help in identifying these abnormal behaviors. Teach employees that work in breeding barns to be observant and to make daily observations part of their routine. This will help reduce some of these avoidable costs. Tips on daily animal observations, checklists and sample records can be found in [PQA Plus](#).

Become certified in PQA Plus.

There are many advantages to becoming certified in the PQA Plus program. In addition to producing a safer product and being able to demonstrate the industry's commitment to animal care and well-being, improvements in efficiencies, performance and reductions in costs also are created through discussions and consultation with the PQA Plus Advisors.

Review the workload and responsibilities of employees.

Improved labor efficiencies result in reduced costs and many times will result in improved production efficiencies due to closer involvement with the details of the operation. Training employees thoroughly and facilitating necessary support and continuing education for all employees will improve morale and loyalty while ensuring optimal performance and efficiency.

Understand your equipment and operate it efficiently.

Make sure all equipment is running at maximum efficiency and is appropriate for the job.



Make sure ventilation equipment and heating units are properly set and running efficiently. Ensure that curtain machines and ventilation fans are working correctly. Routinely clean fans because dirty ones do not run as efficiently, do not move the desired volume of air and consume more energy while running. Proper use and maintenance may produce large returns on your investment in labor and repairs. For more information on saving money by maximizing energy use efficiency in swine production, [click here](#).

Swine Health

Establish a vaccine compliance program.

As part of a total herd health program, costs of unnecessary or incorrectly administered treatment or vaccination can be avoided. Vaccination mistakes can be very inefficient due to labor, vaccine, and health/performance costs that provide little benefit. Be sure to calibrate syringes to ensure proper dose administration. Using too much vaccine is a waste of money. Using too little vaccine will decrease efficacy and may not adequately protect the pig from disease.

Identify disease early to promote a quick response.

One of the ways to have a better handle on the onset of disease in a pen or in the herd is through routine feed intake measurements. Often, the first sign of an emerging illness or onset of disease is that pigs will go off feed. Know what diseases may be present in your area and may pose challenges in the future. Closely monitor sow herds for early signs of disease, such as feed refusal, spontaneous abortions, irregular returns to estrus, etc. Early identification and response to emerging infections will improve efficiency of the production unit. Additionally, monitor water use with accurate meters in your nursery and grow-finish facilities. Decreased water usage also may be a sign of an emerging disease.

Control disease in the nursery and grow-finish areas.

Morbidity and mortality during the grow-finish period can cause huge economic losses. Controlling or eradicating some of these prevalent diseases through implementation of a herd health plan can help reduce pig losses and economic costs. This herd health plan should include an evaluation of the vaccination and medication programs and revisions as needed. Consideration should also be given to the cost to the packer of carcasses affected by pig diseases due to trim losses or condemnations. Tips on what to include in a herd health plan are available in the Pork Checkoff PQA Plus program. Contact your local veterinarian to design a comprehensive herd health plan specific for your operation.

Practice timely euthanasia and sort pigs aggressively.

Poor performing pigs may show little or no improvement after treatment and result in ongoing losses to the operation if a decision to market or euthanize them is not timely. Poor performing pigs should be removed from each nursery and grow-finish pen. Humanely euthanize these pigs early or market them in a lower weight channel. A standard operating procedure that prescribes the conditions under which pigs should be sorted or euthanized so as to cut losses and improve herd performance and economic returns should be described in every operation. Sort out nursery pigs aggressively before moving them to the finishing building. The National Pork Board/American Association of Swine Veterinarian publication, ["On-Farm Euthanasia of Swine – Options for the Producer"](#) is available.

Reduce transport losses and the incidence of fatigued pigs during transport.

There are many management techniques that will reduce the incidence of fatigued pigs or losses in transport. Most relate to pig handling and stressors immediately before, during and after transport and may include equipment issues, handling facilities and transport vehicle issues. However, most of the immediate relief can be achieved through gentler pig handling to reduce the level of blood lactates caused by stress and fatigue. Mortality and quality issues associated with the fatigued pigs cost the industry a significant amount of money each



year. A little prevention in this area will produce large returns on your investment. The [Pork Checkoff's Transport Quality Assurance \(TQA\) program](#) has a good overview of some of the factors and techniques that can help reduce the incidence of fatigued pigs and transport losses. A fact sheet titled, "[Welfare of pigs during transport](#)", is also available. Also, an extension publication titled, "[Effect of environmental factors on the frequency of fatigued pigs and mortality rates at a commercial abattoir](#)" is available.

Marketing

Communicate weaned pig acceptance standards.

Effective standards for health status, performance and carcass quality of pigs purchased as weaners should be clear and understood as purchase specifications.

Optimize market weights and consider the "marketing grid" when evaluating changes in feed and production programs.

Check your packer's buying grid and consider marketing weights that will avoid excessive feed costs during a time when the growth curve of the pig is changing toward lower efficiency of feed conversion. It is important to spread more pounds of pork over each reproductive unit, but the point of diminishing returns has become lower with rising feed costs. Consider that the optimum end weight depends on your packer and on your specific genotype. Be sure to carefully consider all options to add value at heavier weights against the cost of the additional feed, including your packer's grid and the genetic potential of your genotypes. Give attention to the grid value at specific weights and lean percent levels. Positive changes from a cost standpoint may result in deleterious impacts on returns from marketing. The optimal combination will include an evaluation of production costs as well as throughput and market value.

Revisit input ingredient hedging and contracting mechanisms and strategies.

Economic risk management through the use of the futures market for pork and feed ingredient inputs can help mitigate some of the wild swings in ingredient pricing and can help producers lock in prices and lower risk. For additional information on hedging, contracting and options [click here](#), and search for publications B2-50, B2-51 or B2-52. This Web site also includes additional information on livestock pricing, marketing and basis determination.

Purchase heavier weaned pigs.

Heavier weight pigs at weaning can get off to a more rapid start and are less fragile, increasing performance and lowering risk. Search for sources that can consistently supply these pigs.

Genetics

Evaluate genetic influence on feed conversion.

Feed conversion efficiency is only of medium heritability, but with rising feed costs, genetic progress can still result in substantial savings. In addition, large differences may exist between commercially available terminal lines. Seek out breeding stock that maximizes performance for feed conversion while ensuring adequate performance for all other economically important traits of interest. Producers that select their own replacements should revise selection indices accordingly to ensure that potential replacements are evaluated with accurate economic weights for each trait of interest. There are several new commercial DNA markers for feed efficiency and lean deposition available to all interested producers.

Improve lean gain feed efficiency.

Review genetic programs with consideration given not only to feed efficiency in terms of pounds of feed per pound of gain but also in terms of lean gain. These carcass traits are highly



heritable and when coupled with performance in a selection program can result in significant progress toward producing a hog the packer wants at economic value for the producer. Selecting for increased live weight growth or adopting faster growing genetic lines tends to improve overall feed efficiency as well.