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Split Marketing Finishing Pigs

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Introduction

Split marketing is a strategy that commercial swine producers often practice when marketing finishing hogs. The split marketing strategy encompasses the concept that the heaviest 25 to 50% of pigs in respective pens are marketed one to two weeks earlier than their remaining pen mates. Weight variation among market pigs within respective pens may prevent producers from marketing all pigs at the same time. Split marketing is employed in an effort to maximize premiums paid by processors for uniformity of animals marketed, and at the same time decreases the opportunity for producers to take full advantage of the benefits (decreased risk of disease transmission, reduced incidence of animal fighting and the cleaning and disinfecting of facilities) of the all in – all out system. The amount of research data on this subject is somewhat limited. However, the scientific work that has been conducted has evaluated performance characteristics and more recently, the effects on the social dynamics of remaining pen mates of marketed pigs.

Performance

Several studies have evaluated performance of pen mates of removed market ready pigs. Early work on this subject (Bates and Newcomb, 1997) reported that weight gain and feed intake increased of remaining pigs when the heaviest 50% of the pigs here marketed 2 weeks earlier than their pen mates. Additionally, a study conducted by Woodworth and coworkers (2000) utilized 1,272 pigs and 3 treatments (0 sort = no pigs marketed before prior to closeout, 1 sort = 4 pigs marketed 21 days prior to closeout, or 2 sorts = 2 pigs marketed at 27 days prior to closeout and 3 additional pigs marketed 14 days prior to closeout of market ready pigs) demonstrated that Average Daily Gain (ADG) was lower for pigs in the 0 sort pens versus 1 sort pens. Furthermore, carcass characteristics were not influenced by marketing strategy, however, sort discount was greater for pigs in the 0 sort pens when compared to pigs from the 1 and 2 sort pens. In contrast, Knauer et al., 2004 evaluated 649 barrows and gilts to investigate the effect of removing 25 or 50% of market ready pigs and the performance of their remaining respective pen mates. Results of this study suggest that producers will not gain or lose performance of pen mates when removing of 25% or 50% of market ready pigs two weeks prior to the final marketing date if pigs are allotted 8 sq. ft. per pig. DeDecker and colleagues (2005) also evaluated performance of finishing as a proportion of pigs were marketed. This study involved 1,456 crossbred pigs and 4 treatments which included: 1) 0% removed, 2) 25% removed, 3) 50% removed and 4) 50% removed with re-

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duced space. One aspect of this study evaluated these marketing strategies in terms of the overall live weight of pigs produced. The total live weight produced for the control and the 25% removed group was greater than that of the 50% removed treatments. Additionally, total feed consumption for the 25% removed and 50% removed treatments was less than that of the 0% removed treatment. This study suggest that in terms of total live weight produced, there is no benefit from removing 25% of the heaviest pigs and a disadvantage for removing 50% of the heaviest pigs. Furthermore, based on the findings of this study, it appears that removing 25% of the heaviest pigs in the pen to be marketed may create an economic edge for producers when taking into account total weight of pigs produced and total feed consumption.

Social dynamics

Research reports have documented that mixing pigs will increase fighting behavior and decrease growth performance. However, there is very limited research that has been conducted on the effect of removing pigs from an established group as it relates to split marketing strategies. Scroggs and coworkers (2002) evaluated aggression and immune responses in small groups of 6 pigs per group, pre and post removal. Results of this study indicated that post-removal aggression and measures of immune response were similar for groups with pigs removed compared to pigs that remained undisturbed (no pigs removed) in their respective pen settings. Conte and coworkers (2012) recently conducted a study involving the aspect of the effect of split marketing on the welfare of finishing pigs. As there appears to be a growing concern about the welfare of male pigs that are castrated, this respective study utilized non-castrated (intact) male pigs and female pigs for a total of 392 pigs. Pigs in this study were assigned to 4 different treatments with 14 pigs/pen. Treatments included: 1) male split marketing (3 heaviest were removed 14 days prior to the harvest of the 11 remaining pigs), 2) male, all out, 3) female, split marketing and 4) female, all out. Results of this study suggest that intact males in the split marketing groups spent more time engaged in aggressive behavior than those intact males of the all-out pen treatments. In the intact male groups reduced aggression was reported only on the day of split marketing. Skin lesion scores and severity were similar when comparing pigs in the split marketing groups and all out treatment groups. The male groups showed a greater number of aggressive behaviors; however, the female pig groups in general had greater lesion scores (more severe) than those of the male groups. Moreover, the removal of the three heaviest pigs from the groups of 14 pigs did not have any effect on growth performance for either the female or intact male groups.

Key Points

Removing pigs from an established pen increases the access to resources (floor space and feed resources) and may also change the social dynamics of the remaining pigs. In general, it appears from the documented research referenced in this article that split marketing of finishing pigs can be utilized by producers with minimal negative impact on pig performance, carcass characteristics or social dynamics of the pigs. However, marketing strategy will be dependent upon multiple factors (bio-security protocols, pig flow, floor space, feed resources, market outlets, packer buying matrix, etc.) within a respective swine production system and it is apparent that all factors be carefully evaluated.

Resources:

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Right to Farm: Site Selection for New and Expanding Livestock Operations

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Introduction

For many farms winter provides a break from constant outdoor activity and the opportunity to plan future farm projects. Granted, on livestock farms the regular animal care responsibilities still need to be done and the challenges of snow and cold make every day chores that much more difficult to complete. But even the busiest of farms need to plan their upcoming spring and summer activities. For many farms now is the time to plan the summer's major projects and many livestock farms may be in the midst of planning new animal housing and manure storage facilities. The Generally Accepted Agricultural and Management Practices (GAAMPs) for Site Selection and Odor Control for New and Expanding Livestock Production Facilities (Siting GAAMPs) should be part of that planning process.

The Advantages to Siting GAAMP Verification

Most farms complete the Site Verification process in order to maintain the protection from nuisance lawsuits provided by the Michigan Right To Farm Act. Farms that move ahead with construction projects without first getting Michigan Department of Agriculture and Rural Development (MDARD) site verification risk losing the protections provided by the Right to Farm Act and in some cases may be forced to shut the facility down. Right to Farm protection is not the only benefit from complying with Siting GAAMP verification guidelines. Other benefits include:

- Siting GAAMP verification maintains the farm's opportunity to participate in the Michigan Agriculture Environmental Assurance Program (MAEAP). MAEAP verification requires the farm meet all applicable GAAMPs. New and expanded livestock facilities built after August 2003 must meet Siting GAAMP standards to be verified in the MAEAP program. The site verification process remains available for farmers after the project is complete but this type of planning is always easier when done as part of the pre-construction process.
- Siting GAAMP verification assures the farm considers the social and community impacts of the facility prior to construction. Property line setbacks and odor management plans are both intended to help livestock farms minimize their impact on neighbors and the rural community.
- Verification also assures the farm plans for an adequate land base and the appropriate use of accumulated manure nutrients after the new or expanded facilities are placed in production.
- Meeting Siting GAAMP standards assures the manure storage facilities meet current environmental standards. The Siting GAAMP verification process requires a professional engineer (PE) stamped design verifying the storage will meet NRCS 313 or Midwest Plan Service standards. A PE must also monitor the construction process and provide "as built" documentation verifying the manure storage structure meets design specifications. This documentation also allows for a smoother transition to becoming a M-DEQ permitted farm should the livestock farm continue to grow and exceed the Large CAFO threshold.
- Siting GAAMPs also consider the facility's impact on ground water and any nearby residential water wells.

How Long will the Process Take?

MDARD staff is timely in their response to Site Verification requests. The time consuming portion of the process includes gathering all the information required within the site verification checklist, completing the Manure Systems Management Plan (MSMP), and other complementary documentation. Weather conditions, including frozen ground or extremely wet soils, may delay the subsurface soils evaluation. In these instances the verification request may be submitted to MDARD for review pending the results of the evaluation. If the farm lacks acceptable (defined as less than 3 years old and on increments of 20 acres or less) soil test results for all the fields included in the MSMP, the process will stall until all fields are sampled. Having acceptable soil test results are key to timely completion of the verification request.

The Verification Request

The approval or verification process begins with a livestock producer submitting a Site Verification request to MDARD. If the farm owner requests MDARD siting assistance, then MDARD staff will visit the site prior to any steps being taken, as a preliminary site evaluation. MSU Extension Educators may also be invited to the early site visit. Often these early visits will determine if the site has potential and if there are any extenuating circumstances the owner will need to consider during the application process. The site verification request requires the farm provide MDARD with the following information:

- The completed MDARD site verification checklist providing all the required information
- A site plan including the location of all utilities, fuel storage, water wells and driveways
- A complete Manure Systems Management Plan (MSMP)
- An odor management plan when needed
- If in-ground manure storage, earthen or concrete, is included in the project a subsurface soils evaluation indicating the seasonal high water table must be included in the verification request
- A PE stamped design certifying the manure storage structure meets NRCS 313 or Midwest Plan Service standards
- Results of the well isolation distance worksheet or a letter from the local health department verifying the well location. The well isolation distance worksheet is available at local NRCS offices.
- Aerial photos highlighting adjacent property owners and non-farm residents within one-half mile
- A topographical map and soils map of the site

Who Can Help?

MDARD staff is available to answer questions and make preliminary site visits. MSU Extension Educators are also available to help with the process. Many of Michigan's Certified CNMP providers also assist with completing the site verification process.

Siting GAAMPs provide a planning process that can be used to properly plan new and expanding facilities, increase the suitability of a particular site and enhance neighbor relations. They help ensure high environmental and social standards so that the Michigan livestock industry can continue to grow.

To learn more about Site Selection GAAMP and to download an application form, go to: http://www.michigan.gov/mdard/0,4610,7-125-1567_1599_1605---,00.html

A Webinar Series on Climate, Water and Agriculture

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Beginning on March 9, 2012 MSU Extension will be providing a series of five webinars on climate and water and their impact on current and future food, fiber and fuel production. These webinars are intended for farmers, agricultural professionals, state and national agency personnel and interested stakeholders.

While access to fresh and abundant water is one of Michigan Agriculture's greatest assets, increasing water use to meet the needs of Michigan residents, industry and agriculture has the potential to alter how we allocate our water resources. The additional impacts associated with climate variability and change has the potential to add further challenges to Michigan farmers' production of food, fiber and fuel. In order to lead the discussion on these challenging issues Michigan State University specialists, researchers and Extension educators from across the university along with representatives from USDA Natural Resources Conservation Service and Michigan Department of Environmental Quality will present a series of webinars discussing the important role water plays in modern agriculture production and the long term impacts of a variable and changing climate. The webinars will run from 1:00 PM to 2:00 PM beginning on Friday, March 9, 2012 and continuing on the Friday afternoons listed below.

March 9, Farming in a changing environment

March 16, Water – Michigan's abundant resource

March 23, World of water policy

March 30, Social aspects of water

April 13, Too much water/not enough water - Adaptation strategies for agriculture

Participating in webinars is easy and accessible through most internet connections. If your computer lacks the needed software it will automatically be downloaded when you click on the webinar's internet address. You may test your computer and internet connection by connecting to: http://connect.msu.edu/common/help/en/support/meeting_test.htm and if needed the appropriate software will be downloaded. Preregistration for the webinars is not required but would be appreciated. Everyone who preregisters will receive a reminder email 24 hours prior to each webinar. Preregister for the webinars at: <http://bit.ly/climatewaterwebinar> . If you prefer to connect directly to the webinars the URL is <http://connect.msu.edu/climateandwater> . Questions and concerns on connecting to the webinars should be emailed to Jerry May at mayg@msu.edu before and during each session. There is no fee for the webinar series.

How About Some Gelatin in Your Semen?

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Introduction

The vast majority of matings on swine farms in the U.S. are done using artificial insemination. This is also true in those countries that have adopted modern swine production technology. For the most part, sows are inseminated with fresh semen that is diluted and extended in various semen extenders and used within a few days after collection from a boar. There has been ongoing research to better understand what ingredients should be put within extenders to improve semen storage and maintain fertility. Recently there was a publication^a that reported studies evaluating the inclusion of gelatin in extenders for fresh semen.

Results

This study evaluated the inclusion of gelatin in a Beltsville Thawing Solution (BTS) type extender. A BTS extender is commonly used in the pork industry as a short-term extender. The gelatin used was a commercial, non-colored and unflavored gelatin containing 1.0% energy and 3% protein. Semen was collected from 4 crossbred boars and pooled for these experiments. In all experiments sperm concentration was adjusted to 3.5 billion sperm per 100 ml. In the initial experiment, semen was compared in extenders that included 0% gelatin, 1.5% or 3% gelatin. Sperm motility and morphology was evaluated over 72 hours after extension. In a subsequent experiment semen was extended in either 0% or 1.5% gelatin and compared over 108 hours for sperm motility, normal sperm morphology and sperm membrane integrity. In the final experiment semen extended in a BTS extender with 0 or 1.5% gelatin was inseminated into sows. Semen backflow was collected during and after insemination and farrow rate and litter size born were evaluated.

In the initial experiment sperm motility and sperm morphology was not different over the 72 hours evaluated regardless of the extender used (Figure 1). This suggests that neither sperm motility nor sperm morphology was negatively impacted by the inclusion of 1.5% or 3% gelatin in the extender. In the second experiment, extender with 0% and 1.5% gelatin were compared and sperm was evaluated for a longer period of time and included sperm membrane integrity. Over the 108 hour (4.5 days) time course, sperm motility was only slightly improved after 108 hours when sperm was extended with 1.5% gelatin compared to a BTS extender with no gelatin. However normal sperm morphology was dramatically improved after 108 hours when kept in extender with 1.5 % gelatin. Semen extended in the BTS extender with 1.5% gelatin had approximately 7% greater motility than semen extended in BTS alone. The difference for sperm membrane integrity was even larger. Semen extended in BTS extender with 1.5% gelatin had approximately 200% greater membrane integrity after 108 hours compared to semen stored in BTS extender without gelatin.

In the breeding experiment, 26 sows were inseminated for each of the two treatments of semen extended in BTS extender or BTS extender with 1.5% gelatin. Sows were inseminated three times, 12 hours apart after detected in behavioral estrus. Inseminations with semen extended in BTS took 1 minute longer compared to inseminations with semen extended in BTS with 1.5% gelatin (7.8 ± 0.4 min. vs 6.8 ± 0.4 min, respectively; $P < 0.05$). In addition backflow of inseminations with 1.5% gelatin in the extender was lower compared to inseminations that did not have gelatin in the extender (Figure 2). Farrowing rates were high for sows inseminated with semen extended with either the 0% or the 1.5% gelatin extender and did not differ (92.6% vs 88.5%, respectively). The same was true with total size born (12.0 ± 0.6 vs 13.2 ± 0.7 ; respectively).

Conclusions

As the pork industry looks for ways to improve efficiency and cost of production, the inclusion of gelatin in semen extender may improve storage life and sperm cell integrity. This may allow for fewer doses to be thrown

out due to reduced sperm cell viability. In addition the reduced backflow during and after insemination may take some of the guess work out of inseminating sows. Furthermore the possible increased litter size born observed for sows inseminated with semen that included gelatin in the extender may be an added bonus. This simple idea looks very promising; however, further research is needed to determine how well the differences observed in this study carry over to commercial production.

^aCorcini, C.D., F. Moreira, R. Pigozzo, A.S. Varela Jr., N.U., Torres, T. Lucia, Jr. 2011. Semen quality and reproductive performance after artificial insemination with boar sperm stored in a gelatin-supplemented extender. *Livestock Science*. 138:289-292.

Figure 1. Comparison of Extenders with Differing Amounts of Gelatin

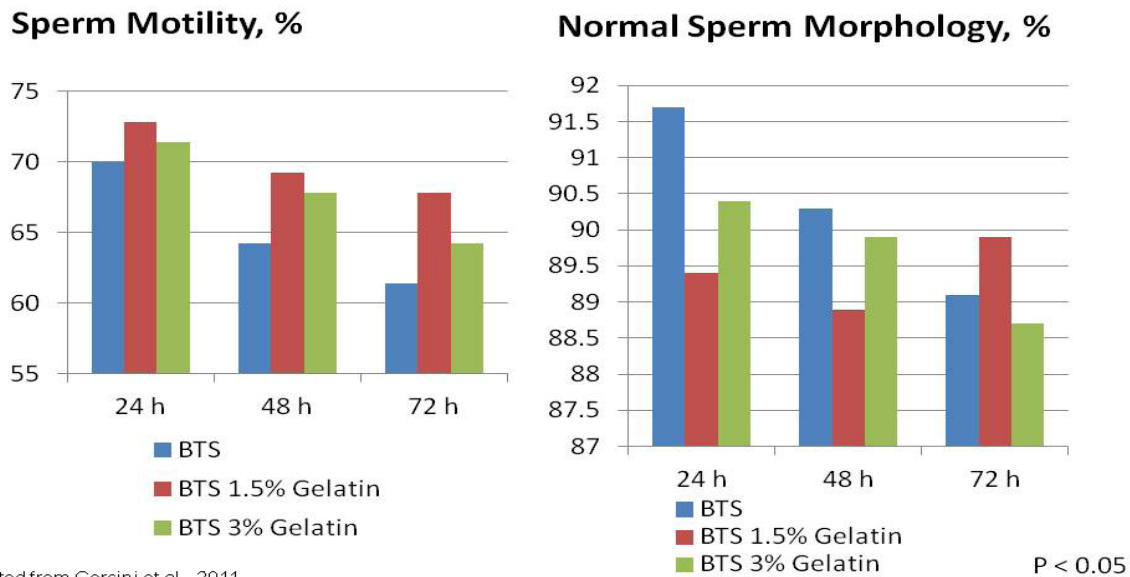
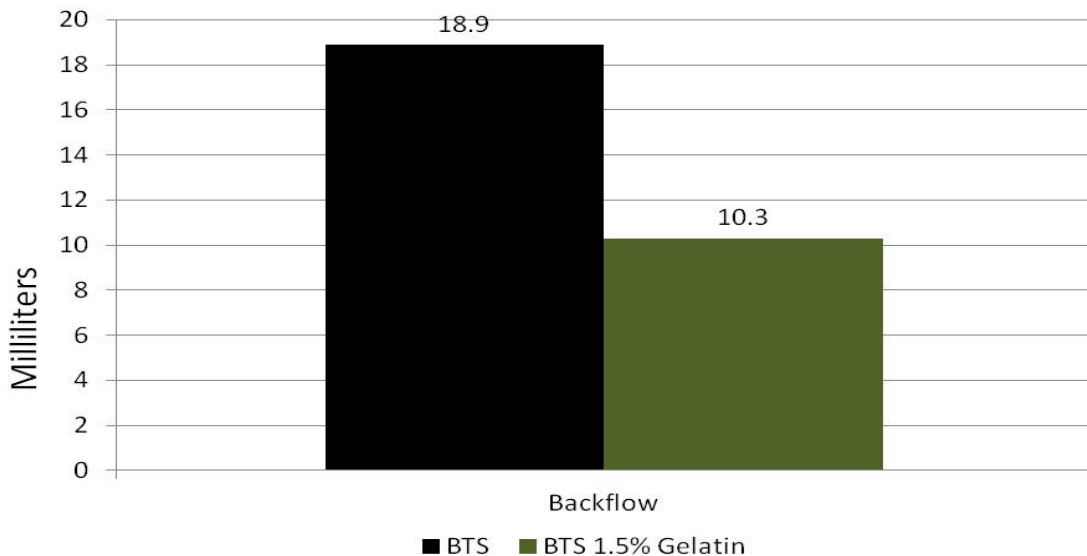
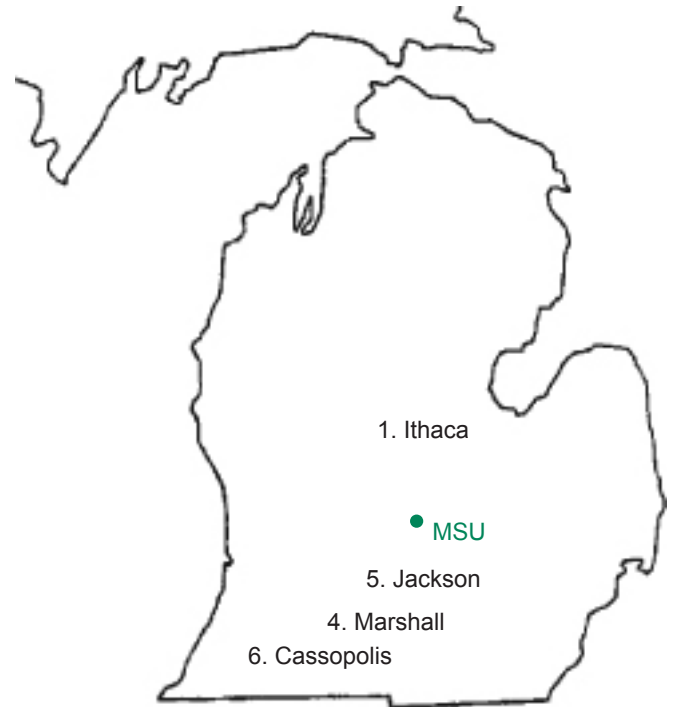


Figure 2. Comparison of Insemination Backflow



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