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Evaluating and Documenting Animal Welfare and Herd Health Standard Operating Procedures Project Report

As a part of the Animal Welfare and Herd Health Standard Operating Procedures grant, The Center for Dairy Excellence utilized farm press and other media avenues to encourage Pennsylvania dairy farmers to apply for $1,000 grant funding that would help them to address a dairy cow care improvement area on their farm. The end result of this project would provide case studies for the entire industry to reference in pursuing optimal dairy animal care and welfare.

There were 13 applications received from dairy farms throughout Pennsylvania. After careful consideration by the Center staff along with the Penn State Extension Veterinarian team, nine farms with the most pertinent dairy animal care enhancement opportunities were selected to create "Herd Health and Cow Care (HHCC)" teams. The participating farms were notified that they had been selected as an HHCC team with further details of the project that would accompany after herd veterinarians were formally contacted to discuss the project. The herds, farm locations and herd veterinarians are provided in the table below:

Farm	County	Herd Veterinarian	Animal Welfare Focus
Neil Baxter	Erie	Dr. Christy Rynd	Milk Quality
Art and Betsy Cole	Susquehanna	Dr. Mike Kowalewski	Calf Health
Rick and Dana Empet	Susquehanna	Dr. Mike Kowalewski	Transition Cow Health
Jimmy Harris	Bucks	Dr. Dale Streams	Transition Cow Health
Tom Herr	Lebanon	Dr. Gary Brummel	Cow Comfort
Thomas Mellott	Franklin	Cory Meyers	Culled Cows/Locomotion
Ralph Moyer	Berks	Dr. Teri Coon	Milk Quality
Daniel Smith	Lebanon	Dr. Bruce Keck	Locomotion
Dale Weiler	Lancaster	Dr. Gary VanDyke	Locomotion

Communication with the individual herd veterinarians was completed through a series of conference calls, to convey the overall objectives and the expected involvement of both the farm and the herd veterinarian in the project. All calls to herd veterinarians included a Center staff member and the PSU Extension Veterinarian team. These calls were all completed prior to January 1st, 2012.

On February 1, 2012, each farm and veterinarian received a packet of information further outlining the objectives, goals and expectations. Within this packet of information, four standard forms were developed for farm owners and managers to complete throughout the extent of the grant (see forms attached). Forms A and B were to be completed during the initial

herd visit. The on farm evaluation team included the farm owner or manager, the herd veterinarian and a PSU Extension Veterinarian. These two forms outline the identified bottleneck, dairy animal care areas to address and the Standard Operating Procedures (SOPs) the farm and herd veterinarian will implement on the farm in the future to address the bottleneck.

By April 30, 2012, all initial herd visits were completed and SOP development forms were completed and submitted back to the Center. Upon receipt of these forms, the Center for Dairy Excellence staff compiled the information and has begun to develop case study formats for each farm. The SOPs developed from these visits are the initial results that will be applied to the greater industry from this project. During the initial farm visits, the group identified the bottleneck, and then further determined the three key more specific areas of focus. From these areas, the unit of professionals then developed a list of SOPs and the steps needed to complete each individual SOP.

Throughout the remainder of 2012, the herd veterinarians monitored progress of the SOPs and the farm provided measurable progress and outcomes. Participating farms and herd veterinarians provided a full synopsis of procedures implemented, measurable indicators of improvement in the area of animal welfare along with any costs associated with addressing the area of animal welfare. The summary reports will be housed electronically as case studies for the dairy industry to reference in animal welfare improvement efforts and in the development of future HHCC teams on the Center for Dairy Excellence's website.

Please find below the SOPs developed for each of the nine participating farms in relation to their animal welfare bottleneck.

In conclusion, these farms have improved animal care and subsequent welfare in their operations by creating and implementing these SOPs. These nine farms will now serve as case studies for the Pennsylvania dairy industry to study and replicate. Improving dairy animal care and welfare will support the ongoing goals of optimal animal care and stewardship already in place within the industry. Improving cow comfort and animal health is an area on the farm where hidden profits can be realized. Therefore, the improved profitability of these farms will allow them to be sustainable over time. Secondly, improved on farm animal welfare will help to further demonstrate the commitment of the Pennsylvania dairy industry to consumer groups largely unfamiliar with modern practices on dairy farms. This cow care and herd health case study project has and will continue to help dairy farmers to make necessary improvements regarding herd health and cow comfort in order to remain a part of a long term viable industry.

Neil Baxter

Bottleneck

After aggressive culling and treatment of cows, herd still experienced high Somatic Cell Counts throughout the herd.

GOAL: Have a consistent Somatic Cell Count (SCC) of 175,000 – 200,000 in entire herd

Standard Operating Procedures (SOPs) that will address the Cow Care and Herd Health Bottleneck

1. Milking procedure
    a. Increase prep time from 60 to 90 seconds before milker is applied
    b. Observe milk filter cleanliness
    c. Use cloth towels for wiping teats (during preparation) instead of paper towels
2. Monitoring udder health
    a. Teat end scoring – record lactation number and stage of lactation
    b. Pre strip protocol – if there are chunks/flakes present, take a sample
        i. If milk appearance begins to improve
            1. Assess further with the use California Mastitis Test (CMT) and record the SCC
        ii. If milk appearance does not improve
            1. Culture a milk sample
            2. Follow with veterinarian recommended treatment
            3. Follow up treatment with a CMT test and SCC count
    c. Utilize a lactometer to monitor milk let down rates
3. Monitoring Somatic Cell Count
    a. Test the SCC count on all fresh cows, and perform a CMT test so to better identify the cows for culture and treatment
    b. Implement CMT protocol to all cows at their dry off point and monitor dry period cure rates after freshening
    c. If 3 cultures are negative, that determine the infection cure rate

Art and Betsy Cole

Bottleneck

Weaned calves experience reduced growth rates and general health status when taken from hutches and moved to group housing.

GOAL: Reduce morbidity/mortality of grouped calves

Standard Operating Procedures (SOPs) that will address the Cow Care and Herd Health Bottleneck

1. Monitor number of animals in group housing
    a. Do NOT allow more than 15 calves per group
    b. Keep notes on calendar when calves are moved
    c. Monitor growth (height) parameters in group
2. Move 6 calves into larger, super-hutch after moved from individual hutches
    a. Allow super-hutch to be "transition" between individual/group housing
    b. Keep similar-aged calves in a group
3. Monitor total number of heifers on farm
    a. Take monthly inventory of all heifers
    b. Evaluate whether to sell or keep heifers
4. Improve ventilation in group barn
    a. Add windows in the back of the barn
    b. Make replaceable shutters

Rick and Dana Empet

Bottleneck

The herd has had continued issues with fresh cows and transition cow health at the time of calving.

GOAL: Improve the overall health and longevity of this herd demographic and reduce the incidence of metabolic disease.

Standard Operating Procedures (SOPs) that will address the Cow Care and Herd Health Bottleneck

1. Monitor Ketosis after freshening
    a. Test each cow every day for 7 days after calving for Ketosis
    b. Use urine keto-stix for diagnosis
    c. Record findings on all fresh cows
2. Monitor temperatures after freshening
    a. Record daily temperatures every morning-milking
    b. Give appropriate treatment to any cow with a temp. over 103 degrees F
3. Record daily milk weights of cows after 4^{th} milking
    a. Monitor daily milk weight for fresh cows at each milking
4. Any cow that has a milk yield reduction greater than 20% will be monitored through a physical examination and treatment protocol determined Analyze fresh cow data at monthly herd check
    a. Examine peak/summit milk for entire lactating herd
    b. Examine fluids and milk production of the herd and especially recently fresh cows
    c. Analyze any metabolic disease occurrence for that particular month and determine trends

Jimmy Harris

Bottleneck

There was an ever-present issue with lameness in the lactating herd along with some in the heifer population. There seemed to be both infectious and non-infectious causes with no evident connection to a singular reason.

GOAL: Determine the cause of lameness in herd and put in place routine to improve locomotion scores throughout the entire herd.

Standard Operating Procedures (SOPs) that will address the Cow Care and Herd Health Bottleneck

1. Foot Bath and Environmental Improvements
    a. Run foot bath 1x weekly with appropriate solution
    b. Consider alternating footbath solution for enhanced efficacy against hair heel warts
    c. Turn cows out to pasture more often in favorable weather
2. Foot Trimming
    a. Schedule 2 visits per year with 2 days devoted per visit (if necessary)
    b. Record the number of cows with lameness issues and any lesions that are detected
    c. Apply treatments as necessary per lesion
3. Locomotion Scoring of Entire Herd
    a. Score lactating and dry cows at least twice annually
    b. Locomotion scoring sheet for evaluation (score between 1-5)
    c. Divide herd into 2 categories
        i. Locomotion scores of 1-2
        ii. Locomotion scores of 3-5
4. Veterinarian Visits
    a. Trim lame cows that are either 1) sever or 2) lame between hoof trimming visits
        i. Assess the cause and record the lesion type
    b. Review all trimmed lame cows with farmer
        i. Assess lesion incidence with farmer
    c. Assess progress twice annually (spring and fall) with farmer and foot trimmer

Tom Herr

Bottleneck

The dry cow facility was overcrowded which prevented the use of individual calving pens. Additionally, ventilation was an issue due to original barn construction.

GOAL: Improve facility ventilation and usage to accommodate increased number of animals and improve health of transition and dry cows

Standard Operating Procedures (SOPs) that will address the Cow Care and Herd Health Bottleneck

1. Improvement of ventilation causing (cow and calf) pneumonia
    a. Take out existing block wall (side)
    b. Install curtain system on the (torn out) south-side wall
    c. Install overhead doors near calving pen (end wall)
2. Addressing overcrowding and feed competition
    a. Increase space at feed bunk so all cows can eat at the same time
    b. Increase square footage to avoid overcrowding – 20x80 addition to south-side of barn
3. Newborn calf health
    a. Build separate maternity pen
    b. Provide clean, well ventilated place for mothers to give birth
    c. Install water/feeding area for calving cows

Thomas Mellott

Bottleneck

Excessive lameness and poor milk quality secondary to cow comfort facility constraints led to poor hygiene and higher incidence of poor longevity in mature cows resulting in a high cull rate and mortality rate

GOAL: Improve locomotion in order to increase herd longevity

Standard Operating Procedures (SOPs) that will address the Cow Care and Herd Health Bottleneck

1. Identification
    a. Early identification during early stages of disease
        i. Slight arch to back / slight limp & all greater degree lameness
        ii. All personnel, especially milkers, will be tasked with identifying cases
        iii. Examine and treat within 1-2 days of identification
2. Treatment
    a. Foot Rot
        i. Clean & aggressively towel between toes
        ii. Disinfect the area and provide veterinarian recommended pain alleviation
    b. Heel Warts
        i. Clean & dry
        ii. Wrap and treat with veterinarian recommended solution
        iii. Remove in 2-3 days
    c. Ulcers
        i. Pare out
        ii. Wrap and block other toe to provide stability
        iii. Remove wrap in 2-3 days
    d. Abscess
        i. Pare out
        ii. Wrap and treat with veterinarian recommended solution
        iii. Block other toe to provide stability
        iv. Remove wrap in 2-3 days
3. Prevention
    a. Improve hoof and leg hygiene
        i. Manure removed from back of free-stalls at every milking
        ii. Pull sand from front to rear of free-stall

iii. Groom stalls 3x/week
iv. Add sand to stalls 2x/week
v. Foot bath 3x/week
vi. Alley Scraping
    1. Alley Scrapers – at least 4x daily
    2. Skid loader – 2x, while cows are in holding pen

b. Cow Comfort
    i. Get cows off their feet and out of the alleyways
    ii. Free-stall renovations
        1. Higher neck-rail
        2. Open fronts to allow forward lunge
        3. Remove expired mattress
        4. Add bedding retainer
        5. Deeply bed with sand
    iii. Heat Abatement
        1. 52" fans over free-stalls, 30' apart
        2. 36" fans over feed alley, 30' apart
        3. Sprinklers run on timer and thermostat
        4. Fans and sprinklers in holding area

Ralph Moyer

Bottleneck

The herd has a chronically high Somatic Cell Counts (SCC) and an increasing number of clinical cases of mastitis.

GOAL: To improve milk quality by lowering the SCC and clinical and subclinical cases of mastitis and to identify solutions within the robotic milking system and bedding materials.

Standard Operating Procedures (SOPs) that will address the Cow Care and Herd Health Bottleneck

1. Records
    a. Record clinical cases – later able to determine cause of mastitis
        i. Better able to 'track' reinfection/cure/chronic
    b. Record culture results of available treatment results
2. Culture
    a. Culture several clinical cases of lactating cows using on-farm system
    b. Culture high SCC fresh cows using the CMT protocol
    c. Determine causative pathogen and treatment protocols to address that pathogen
3. Re-Check
    a. Evaluate cow 14 days post mastitis case
        i. Determine if there was a cure
    b. Possible cow-side SCC monitor purchase that would be more accurate than CMT
4. Treatment protocols based on culture
    a. Dry off protocol determined based on cows lactation history

Daniel Smith

Bottleneck

The herd has a problem with hoof and hock care. Since buying outside cattle and introducing them into this herd, hoof problems have been occurring more frequently.

GOAL: Reduce the number of hoof and hock issues by obtaining a better assessment of the causes

Standard Operating Procedures (SOPs) that will address the Cow Care and Herd Health Bottleneck

1. Hock Scoring
    a. Hock scoring cows with hock score scale
        i. Utilize hock scoring system on farm
        ii. Work with herd veterinarian to determine the scores of the hocks
        iii. Analyze the number of scores greater than 1
2. Identify lame cows earlier
    a. If cow appears to be lame, treat with standard hoof care product
    b. At next herd visit, have herd veterinarian asses same cow
    c. At next hoof trimming, provide the list of potentially lame cows to hoof trimmer to further asses and treat
3. Locomotion Scoring
    a. Utilize locomotion score sheet to determine the locomotion scores of the herd
    b. Herd veterinarian and farmer will assess cows as they exit the parlor
    c. Scores will be assessed to determine percentage of herd above a score of 1 and veterinarian will recommend further facility or ration changes to improve locomotion
4. Hygiene Scoring
    a. Utilize hygiene scoring system to determine cleanliness of the herd
    b. Herd veterinarian will assess the scores and suggest facility modifications and management practices to improve

Dale Weiler

Bottleneck

The herd has a greater than average number of lameness cases, due most often to foot problems (e.g. abscesses). Cases are NOT evenly distributed over the year. Increased cases late spring and through summer and are between peak and mid-lactation but do not have any particular age or pasture grazing relationship.

GOAL: Identify the causes of the lameness cases and determine the most effective prevention and treatment protocols

Standard Operating Procedures (SOPs) that will address the Cow Care and Herd Health Bottleneck

1. Nutrition
    a. Fiber quality/intake
    b. Protein – soluble/bypass/quality assessment
    c. Monitor bi-carbonate levels in the diet at peak lactation
2. Heat Stress
    a. Water quality, pH, availability
    b. Increased air flow, especially during heat waves
    c. Free choice mineral blocks
    d. Free choice bi-carbonate for high producers
3. Cow densities and traffic flow
    a. Increase paddock areas for dry and lactating cows
    b. Increase stall rest
    c. Manage steep grades, sharp turns, pushing and shoving
4. Claw care
    a. Good mats in appropriate places for good footing
    b. Foot baths
    c. Maintenance trimming 2x/year
    d. Pasture exercise without over eating lush pasture