to growing calves for 118 days. Performance was compared to calves fed the same ingredients mixed daily or a control (C) diet of corn, hay, soybean meal and supplement. Performance did not differ across treatments, except that C calves had higher feed intake ($P < 0.05$). Storage losses were 10.5% for the mixture. In trial 3, 102 tons of WDG and 27 tons of ground fescue hay were mixed into a temporary silo constructed with plastic lined, large round bales with a loader tractor. The mixture was covered in plastic and ground limestone, and fed to 124 Angus heifers from 99 to 250 days after storage. The heifers were fed a diet containing 42-59% of the mixture or a control diet consisting of corn, haylage, soybean meal and a mineral supplement. Heifers fed the WDG-hay diet gained slower ($P < 0.05$) than the control heifers, but there were no statistical differences in pregnancy rate. Storage losses were 9.83% in this study. Feed samples were collected over the course of feeding in trial 2 (n=6) and trial 3 (n=7) to evaluate the effectiveness of mixing with the loader tractor. The coefficient of variation of these samples was 7.1, 10.2, and 3.6 for % DM, % protein and % NDF in trial 3; and 4.4, 3.3, and 6.5 for the same analyses in trial 2.

Key Words: wet distillers grains, storage losses

Extension - Dairy

57 Effect of bedding material on performance, health, and hide contamination of calves reared in hutches. K. D. Gay*[1], S. D. Eicher[2], C. S. Wilcox[1,2], J. A. Bridges[1], M. H. Rastagno[2], S. E. Charley[1], and M. M. Schutz[1], [1]*Purdue University, West Lafayette, IN*, [2]*USDA-ARS Livestock Behavior Research Unit, West Lafayette, IN*.

Dairy calf hutches are often bedded with straw (STR), but sand (SND) and wood shavings (SHV) are becoming more common. This study compared 3 different beddings for growth and health of calves and microbial presence on their hides. Hutches were blocked by location and each of 3 hutches in a block was randomly assigned 1 of 3 treatments; SND, STR, or SHV. Twenty-eight heifer calves in the study were assigned sequentially by birth date to the next available hutch. The study was conducted during a moderate summer (June to September, 2008) at the Purdue Dairy Research and Education Center. Calves were observed twice weekly from birth to weaning at approximately 8.5 wk. Weight (BW), hip height (HH), wither height (WH), and heart girth (HG) were measured weekly. Calves were scored for respiratory (RH) and fecal health (FH), and appearance (APP) twice weekly. At 4 and 8 wk of age, hide bacteria swabs were obtained from a 100 sq. cm area on the right mid-abdomen and used to determine total aerobic and coliform populations. Statistical models considered, block and treatment. Additionally, for measures after d 1 of age, covariates of age and birth BW were included. Block affected only WH rate of growth to 4 wk of age and to weaning ($P < 0.05$). Treatment affected weaning HH ($P < 0.05$). Least squares means (LSMEANS) of HH for SND (92.5 cm) and STR (93.8 cm) were greater than for SHV (90.5). However, over the entire period of time, wk ($P < 0.001$) affected all measures of growth, but treatment and its interaction with wk did not. Treatment differences were not detected for RH, FH, APP or total aerobic and coliform counts ($P > 0.05$) at 4 or 8 wk. It appears there are no clear advantages or disadvantages for SND, STR, or SHV as bedding materials with respect to calf growth, general health and hide contamination during moderate summer conditions in the Midwest.

Key Words: bedding, calf, growth

58 An economic decision–making model for comparing reproductive management programs in dairy herds. J. O. Giordano*, P. M. Fricke, M. C. Wiltbank, and V. E. Cabrera, *University of Wisconsin, Madison*.

A Markov-chain simulation model was developed to compare the net present value (NPV, $/cow/d) generated by different reproductive programs (RP) in a dairy herd. The daily NPV of a specific RP was calculated by adding the discounted expected monetary values (DEMV) of that proportion of cows that become pregnant at each successive services until a maximum predefined DIM plus the DEMV of that proportion of cows not becoming pregnant to the RP. The DEMV for a lactation defined by DIM at pregnancy was calculated based on the value of milk produced, feed cost, expected value of a new born calf, and cost of culling. Economic, productive, and reproductive values were user-defined for each RP evaluated. The model sequentially estimated the percentage of cows eligible for breeding, becoming pregnant, and not becoming pregnant at each service based on the service rate (SR) and conception rate (CR) of each RP. Total service cost including pregnancy diagnosis (PD) was applied to all cows until pregnancy or culling for reproductive failure. For synchronized services, total cost was calculated by adding the individual cost of: treatments, labor, AI, and PD. Total cost for estrous services was calculated by adding the individual cost of heat detection, AI, and PD. A decision tree then compares the NPV for different RPs. A comparison among commonly used programs with typical reproductive values (Table 1) indicated that a Presynch–Ovsynch protocol with 100% TAI (A) for 1st service generated the highest NPV. The greatest difference between RPs (A vs. C) resulted in a NPV advantage of $29 cow/year ($0.08/d × 365 d). To reach maximum NPV RPs (B) and (C) would require an increase in CR to estrous services of 7% and 13% respectively. Utilization of this model by commercial dairy herds may facilitate selection of economically-optimal RP based on farm–specific parameters.

Table 1. Net present value difference among three commonly used reproductive programs.

	ES before 1st service TAI		1st Service TAI	NPV difference from maximum	CR[2] to Maximum
Reproductive Program	AI (%)	CR (%)	CR (%)	($/cow/d)	CR (%)
(A) 100% TAI Presynch-Ovsynch & day 32 Resynch	0	0	37	Maximum	-
(B) ES[1] + TAI Presynch-Ovsynch & day 32 Resynch	40	33	33	−0.03	40
(C) ES + TAI Presynch-Ovsynch & day 32 Resynch	60	25	33	−0.08	38

[1]ES = estrous service.
[2]CR = CR needed at ES to reach maximum NPV.

Key Words: economics, reproductive program, dairy herd