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Abstract

Seventy-five litters of newborn pigs from gilts were given either 20 cc of bovine colostrum or 20 cc of milk replacer through a stomach tube, and their weaning weight, scouring, and survival were compared with those of newborn pigs that were not treated. Results were broken down by birth weight groups: small-less than 2.3 lb.; medium-2.3 to 2.9 lbs.; large-3.0 lbs. and over. No significant differences in weaning weights were observed from treatment. Nontreated pigs tended to scour more than pigs treated with bovine colostrum but this difference was not statistically significant, partly because of the variation in the incidence of scouring in the farrowing groups. Overall, the most severe scouring occurred from days 9 to 14 after birth. Survival rates increased within each treatment with increasing birth weight. Survival rate by treatment was 91.05% for colostrum-treated, 89.11% for milk replacer treated and 88.32% for nontreated pigs; thus, the colostrum-treated pigs had 2.8% lower death loss than control pigs. This improvement in survival rate was similar for each weight group.; Swine Day, Manhattan, KS, November 20, 1986

Keywords

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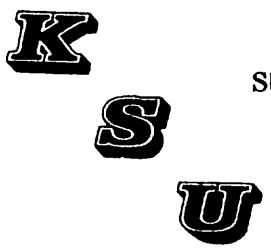

SUPPLEMENTING DAY-OLD PIGS WITH BOVINE COLOSTRUM OR MILK REPLACER

C. Bandyk and R. H. Hines

Summary

Seventy-five litters of newborn pigs from gilts were given either 20 cc of bovine colostrum or 20 cc of milk replacer through a stomach tube, and their weaning weight, scouring, and survival were compared with those of newborn pigs that were not treated. Results were broken down by birth weight groups: small-less than 2.3 lb.; medium-2.3 to 2.9 lbs.; large-3.0 lbs. and over.

No significant differences in weaning weights were observed from treatment. Nontreated pigs tended to scour more than pigs treated with bovine colostrum but this difference was not statistically significant, partly because of the variation in the incidence of scouring in the farrowing groups. Overall, the most severe scouring occurred from days 9 to 14 after birth.

Survival rates increased within each treatment with increasing birth weight. Survival rate by treatment was 91.05% for colostrum-treated, 89.11% for milk replacer treated and 88.32% for nontreated pigs; thus, the colostrum-treated pigs had 2.8% lower death loss than control pigs. This improvement in survival rate was similar for each weight group.

Introduction

Swine producers continue to strive for increased survival rate of newborn pigs by reducing losses that are due to either nutrition or disease problems. Management practices that bolster energy intake and the immune system may result in a higher weaning average.

Sow's colostrum provides the newborn pig with nutrients and immune factors necessary for growth and development. Problems such as sows with impaired milk flow, small pigs, competition within large litters, births late in the farrowing order, and cold stress all contribute to reduced survival rate of newborn pigs. The pig producer noticing any or all of these problems must find an additional source of energy and/or immunoglobulins, if he wishes to minimize deaths and optimize growth. Alternate energy sources might be bovine colostrum or milk replacer, which could be administered to the newborn pig as a part of day-one care and husbandry.

Procedures

Seven hundred and fifty-one pigs from three farrowing groups of crossbred gilts were stomach tubed as part of their day-one processing, and received one of three treatments: (1) 20 cc bovine colostrum, (2) 20 cc milk replacer, or (3) nonsupplemented control.

The colostrum used was from the first milking of a second calf Holstein cow and had been stored frozen in plastic containers. The milk replacer was mixed at a rate of 45 g in 250 cc of water. This is approximately twice the recommended concentration for the milk replacer, and yielded a product isocaloric to the colostrum, with approximately 122.6 cal/cc of solution.

Pigs were assigned to treatment randomly by weight. Pigs weighing less than 2.3 lbs. were labeled "small", those weighing 2.3 lbs. to 2.9 lbs. were classed "medium", and pigs 3.0 lbs. and over were considered "large."

Pigs were weighed at weaning and these values were adjusted to account for variability in age. The adjusted 21-day weight was calculated by multiplying the weaning weight times age at weaning +6 and then dividing by 27. All deaths occurring before day 21 were recorded by day of age. Scour scores were taken from day 2 until weaning.

Scouring and death loss data were grouped in the following manner: (1) critical first two days, (2) days 3-5, (3) days 6-8, (4) days 9-11, (5) days 12-14, and (6) third week (15-21 days).

Results and Discussion

Average birth weight for pigs used in the study was 2.53 lbs. and ranged from 1.0 to 4.1 lbs. Seventy-five litters were used, with the average number of live pigs born being 9.98. The average litter size at weaning was 8.00. Table 1 presents the survival rate of the newborn pigs until weaning at day 21 by treatment and weight class. Weaning weights were slightly higher for pigs treated with colostrum, but the differences were not statistically significant. Survival rates increased within each treatment with increasing birth weight. In addition, pigs treated with colostrum displayed the highest survivability and the control (nontreated) pigs the lowest.

Death losses in the colostrum-treated pigs tended to occur earlier in life, whereas those of pigs treated with milk replacer or not treated centered more around days 8 to 14, when scouring was more prevalent. The age-at-death dates were analyzed in a frequency table. Losses were highest on days 2 and 3 and peaked again at days 9 to 11 when scouring occurred. Control pigs tended to scour more than those pigs receiving bovine colostrum. The pigs scoured most from days 9 to 14.

The largest discrepancies in scour scores were found between farrowings, rather than treatments or weight classes. In the first farrowing, scours affected most litters, whereas in the third farrowing group, scours were almost nonexistent.

It is not known what specifically caused the scours, or if the scouring in every farrowing was from the same cause. If some of the scours was due to coccidia, then the colostrum treatment would not have been expected to improve resistance, as it would have for E. coli scouring.

The most consistent results were found in small pigs, during the high scouring period. On days 6-8, small, colostrum-treated pigs showed no death loss, whereas, replacer-treated pigs lost 2.1% and control pigs 1.6%. On days 9-11, death losses were 0.0% with colostrum, 4.9% with replacer, and 2.8% for control. On days 12 to 14, an additional 2% of the replacer pigs were lost and 3.3% of the controls, still without a small/colostrum-pig death.

It should be noted that in the 22 colostrum-treated pigs that died, only three (13.6%) had shown any scouring. In contrast, 37% (10 of 27) of the dead milk replacer-treated pigs and 31% (9 of 29) of the controls had scoured.

An economic analysis of the costs of administering colostrum to newborn pigs was conducted. Input costs for milk, labor, syringe, and stomach tube were weighed against the value gained from reduced death loss. Break-even figures were calculated for a range of mortality reductions and weaned pig values. It appeared that the cost per pig would be between 5 and 10¢; if that were the case, survival rate increases of just 1 to 1.5% would make colostrum supplementation economically sound. As stated above, survival in this trial was improved by 2.8%, well above this break-even level.

Table 1. Weaning Weight and Percent Survival by Treatment and Weight Class.

Treatment	No. born live	No. deaths	Percent survival	No. wean	Weaning wgt., lbs
Colostrum	246	22	91.1	224	10.7
Large	67	2	97.0	65	11.4
Medium	85	6	92.9	79	10.8
Small	94	14	85.1	80	9.7
Milk replacer	248	27	89.1	221	10.5
Large	62	1	98.4	61	11.0
Medium	88	8	90.9	80	10.8
Small	98	18	81.6	80	9.8
Control	256	29	88.3	227	10.5
Large	67	4	94.0	63	11.2
Medium	88	8	89.9	80	10.9
Small	101	17	83.2	84	9.5