EFFECTS OF MILK REPLACER AND DIFFERENT AMBIENT TEMPERATURES ON GROWTH PERFORMANCE OF 14-DAY-OLD, EARLY-WEANED PIGS

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Introduction

Growth rate of suckling piglets becomes impaired two to three weeks post-farrowing because daily milk yield of sows becomes insufficient (1). Thus, in order to maintain piglet growth near its genetic potential, alternative rearing strategies are sorely needed. Management schemes (i.e., SEW) have been developed in recent years to improve performance of early weaned piglets. However, these systems, utilizing liquid milk-replacer diets, were less successful under practical conditions. New techniques to distribute milk replacer to piglets have been developed in recent years (2, Intensive Care Nursery, Inc., personal communication) and one of these systems was utilized in the study. An experiment was conducted to establish the optimal ambient temperature for a novel nursery building (Nursery-14 Bldg., ICN, Colfax, IL 61728) designed to feed liquid diets to early-weaned pigs.

Materials and Methods

A total of 165 PIC genotype pigs were weaned at 14 ± 1 d and allotted to one of two treatments in three trials based on weight and litter origin. Each trial consisted of control pigs fed a dry diet (DD) within a conventional hot (30 °C) nursery and pigs fed liquid milk replacer (MR) within the specialized nursery building, but exposed to one of the 3 ambient temperatures for 7 d. Within this specialized nursery, one half of each pen (.95 X 1.3 m, hover) had a solid top cover with a 250-W radiant heat lamp, and was maintained above the critical temperature (32 °C), while the ambient (outside) temperature was varied (17 °C, 24 °C, vs 32 °C). Pigs had ad libitum access to milk replacer by a nipple feeding system in the open half of the pen. Milk replacer powder was mixed with heated (37 °C) water in a mixing compartment (.5 L) equipped with electronic controls. Following the treatment period, all pigs were fed DD within a conventional hot nursery environment until 49 d of age. Pigs were weighed weekly from d 14 to d 49. Feed intake of dry diets was measured weekly in each pen. Total overall milk replacer powder usage and total N-14 starter diet usage were measured also.

Results and Discussion

All pigs fed MR within the specialized nursery, regardless of temperature, showed increased ADG from 214% to 228% over control pigs during the treatment period (i.e., from d 14 to d 21;
P<.001, Figure 1). The improvement in ADG and feed intake of MR-fed pigs increased with ambient temperature, while gain/feed decreased. As temperature increased, the incidence of diarrhea also tended to increase. Growth performance over 21-49 d was unaffected (P>.05). Over the entire period (14-49 d), ADG was 15% greater (P<.05) for MR-fed pigs housed at 24°C than for littermates fed DD within the conventional hot nursery (Figure 2). These results indicate that MR feeding during the early postweaning period can greatly accelerate pig growth performance. Furthermore, the segregated-temperature environment within the specialized nursery may influence piglet behavior, feed intake, and thus growth performance.

**Figure 1.** Effect of milk replacer and different ambient temperatures on ADG and d14-21 of age.

SEM is symbolized as error bars. * Differs for dry diet, P < .001.
Figure 2. Mean weekly body weight (kg) from d 14 to 49 of pigs, either fed liquid diet at 24º C ambient temperature, or fed dry diet.

SEM is symbolized as error bars. * Differs from dry diet, P < .01. ** Differs from dry diet, P < .05.

References
