Proceedings 5th World Rabbit Congress, 25-30 July 1992, Corvallis – USA, 661-665.

A METHOD FOR WEANING RABBIT KITS AT 14 DAYS

J. I. McNitt and G. L. Moody Jr.

Center for Small Farm Research, Box 11170
Southern University and A&M College
Baton Rouge, LA USA 70813

ABSTRACT

Weaning kits at 14-d could increase the efficiency of the current meat rabbit production system but, at that age, kits normally only nurse and do not know how to eat or drink. Placing kits weaned at 14-d in a brooder at 35 - 40°C for 36 to 48 hours during which the kits were disturbed frequently and shown food and water was an effective means of teaching eating and drinking. Mortality was higher for kits weaned at 14-d than for kits weaned at 28-d and growth rates were slower ($P<.01$). The latter was primarily a result of the set-back suffered immediately after weaning. It was concluded that heat and frequent disturbances were suitable methods for weaning at 14-d but that further dietary modifications are necessary to increase the post-weaning gain and to reduce mortality.

Key Words: Rabbits, Kits, Early Weaning

INTRODUCTION

One of the inefficiencies of the current meat rabbit production systems is that does which are capable of producing 80 or more kits in a year seldom have 40 that are actually marketed. There are numerous reasons for this inefficiency but one of the more important is the number of kits born. Preliminary results indicate that if suckling time is reduced, does will produce greater numbers of live kits (McNitt, J.I. unpublished data). Thus, if kits are weaned earlier than four weeks, the does will produce more kits so there will be more for sale. The obvious weakness in this schema is that kits under about 21 days of age subsist entirely on a milk diet (Lebas, 1970). They do not know how to eat solid food or to use automatic waterers. They also derive antimicrobial protection from the fatty acids in the milk (Canas-Rodriguez and Smith, 1966). Thus, early weaning systems must involve teaching the kits to eat and drink as well as providing some measure of microbial protection. For this to be commercially viable, it cannot be highly labor intensive and must be economically competitive with current production practices.

Prud'hon and Bel (1968) described a technique for weaning at two weeks using powdered milk which, though successful, may have been too labor intensive for the commercial producer. In any case, no follow-up research was reported.

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As a part of a broader research program to develop methods for increasing doe productivity and neonatal kit growth and survival, techniques have been developed to wean kits at 14-d. This paper describes a method used to induce kits weaned at two weeks to drink water and begin eating solid food within a short period after being separated from the doe. Some comparative growth and survival data are also presented.

WEANING PROCEDURE

During a prolonged period of hot weather with temperatures ranging from 35° - 40°C it was noted that kits seemed to learn to drink more readily than at cooler times. This was attributed to a stress response because of the high temperatures. To imitate this, kits weaned at 14-d were placed in a portable poultry brooder unit (91 x 71 x 23 cm, LWH) maintained at 35 - 40°C. The unit had solid sides and top and a wire mesh floor over a dropping pan. A water bottle was provided but water and feed were also supplied in shallow dishes constructed by gluing plastic Petri dishes to small plywood blocks. Kits were provided a pelleted diet containing 66.9% of a commercial, alfalfa-based diet containing 18% crude protein and 17% crude fiber. To this was added 22.3% dried milk powder, 8.9% of a 1:2 molasses:water mix, 1.83% bentonite, and .07% hog diet sweetener. The last ingredient imparted a caramel aroma to the feed which seemed to attract the kits.

Rabbits normally nurse only once daily (Zarrow, et al. 1965) and spend the remainder of the day sleeping (Hudson and Distel, 1982). This behavioral pattern is less rigid at 14 days than at younger ages, but in the high temperatures in the brooder there was little movement unless the kits were disturbed. To facilitate the kits learning to eat solid foods and drink from dishes, they were awakened three or four times during the first 24 hours and shown the food and water. Each time, fresh feed was provided. The most effective time for doing this seemed to be the morning after weaning when the kits were expecting to nurse and were hungry and thirsty.

After 36 to 48 hours at least one kit was usually observed to drink and eat. Because of the mimicking behavior of the kits, it was reasonably safe to assume that if one was seen to drink and eat, the others would soon do so and they could be removed from the elevated temperature. If the kits were left in the brooder too long, they seemed to dehydrate severely and were unable to recover. It is therefore important that the kits be moved from the brooder as quickly as possible yet they must be held there long enough to create the urge to drink.

When kits were seen to eat and drink, they were moved to an open, commercial style rabbitry at ambient temperature where they were housed in 76 x 76 cm all wire quonset style cages. Water was provided from automatic waterers, in water bottles

with dew drop style drinkers, and in the Petri dishes described above. As the kits learned to drink, the dishes were removed. The water bottles were removed at 28-d by which time all the kits were drinking from the automatic waterers. Feed was provided in J-feeders with screened bottoms and in the shallow feeders. For the first few days in the rabbitry, fresh feed was provided twice daily and the kits were shown the feed dishes at each feeding time. After that time, the kits were fed once daily.

The kits were weighed daily from 14 to 28 days of age after which they were weighed each Tuesday.

EVALUATION OF THE WEANING METHOD

Materials and Methods

To evaluate the success of the weaning technique, 14 litters of early kits weaned at 14-d which had been kindled between July and October 1991 were paired with 14 litters of kits weaned at 28-d. Paired litters were selected to have been kindled within three days of each other to reduce the sample variation due to environment. Variables assessed included mortality and growth rate. Growth rates were available from time of weaning for both the 14-d and 28-d kits. A 28 day weight was available for all kits. Age at which a market weight of 1600 g was first noted was also used as a measure of growth rate.

Using the weekly weights, a regression mean growth rate (g/d) was computed for each kit. For the 14-d group, growth rates were computed from 14-d and from 28-d. Statistical comparisons were made using least squares analysis of variance procedures (SAS Institute, 1985).

Results and Discussion

Mortality

The effects of early weaning on mortality are shown in Table 1. The death losses prior to 28 d were higher for the early weaned kits although the 7.2 and 2.7% death losses for the two treatments were within the limits frequently seen in normal production. Interestingly, none of the deaths seen prior to 28 days were noted to be associated with enteritis. This probably is an indication that the deaths were due to inanition as a consequence of competition for milk among the 28-d weaned kits. Among the kits weaned at 14-d, this could be a result of not learning to eat and drink.

After 28 days the majority of the deaths were associated with enteritis for both groups. The death losses were much higher for the 14-d weaned kits although it should be noted that 7 of the 14 kits that died in this group were from a

single litter. Throughout the studies with 14-d weaning, it has been noted that some litters seem more prone to mortality than others. In some cases, of two contemporary litters, all of one litter would die whereas none other the other litter would die. In some cases this was related to weight. It does appear that heavier kits are better able to withstand weaning, so kits from large litters (which tend to have smaller individual weights) are at a disadvantage for early weaning. This differential mortality may also be related to the health status of the doe and the exposure of the litters to Pasteurella and other pathogens. The 14-d kits might also be more susceptible to enteritis than the 28-d due to removal of the antimicrobial benefit of the milk.

Growth Rate

After 28-d, there was no difference in the growth rate of the kits weaned at 14-d or at 28-d (Table 2.) The kits weaned at 28-d were heavier ($P<.01$) at 28-d however, and, when the growth data prior to 28 days were included for the 14-d weaned kits, the 28-d weaned kits were superior ($P<.01$). The 28-d weaned kits reached market weight 7 days sooner than the 14-d kits. This approximates the one week set-back suffered by the early weaned kits (Figure 1). The 14-d weaned kits grew rapidly once they began eating but did not fully compensate for the weight loss suffered immediately after weaning.

Conclusions

These results indicate that the use of heating combined with frequent disturbance as method of teaching kits to drink and eat when weaned at 14-d can be successful, but further refinement of the technique is needed. This is indicated by the loss of weight during the first week after weaning, the slow gain prior to 28 d and the high losses to enteritis in the post-28 day period. All of these may be related to dietary insufficiencies.

LITERATURE CITED

Canas-Rodriguez, A. and H. Williams Smith. 1966. The identification of the antimicrobial factors of the stomach contents of sucking rabbits. Biochem. J. 100:79-82.

Hudson, R. and H. Distel. 1982. The pattern of behaviour of rabbit pups in the nest. Behaviour, 79:255-271.

Lebas, F. 1970. Alimentation et croissance du Lapereau sous la mere. Rec. Med. Vet. 146:1065-1070.

McNitt, J.I. and G.L. Moody, Jr. 1987. Nestbox behavior of the domestic rabbit. J. Appl. Rabbit Res. 10:159-162.

Prud'hon, M. and I. Bel. 1968. Le sevrage precoce des lapereaux et la reproduction des lepines. Ann. Zootech. 17:23-30.

SAS Institute Inc., 1985. SAS Procedures Guide for Personal Computers, Version 6 Edition. SAS Institute, Cary, NC

Zarrow, M.X, V.M. Denenberg, and C.O. Anderson. 1965. Rabbit: frequency of suckling in the pup. Science, 150:1835-1836.

Table 1. Effect of age at weaning on mortality

			Age at weaning 14-d	28-d
Number weaned			69	75
Mortality	14-28 d	(n)	5	2
		(%)	7.2	2.7
	Due to enteritis	(n)	0	0
Mortality	After 28 d	(n)	14	4
		(%)	20.3	5.3
	Due to enteritis	(n)	13	3
		(%)	92.9	75.0

Table 2. Effects of age at weaning on growth characteristics[1]

			Age at weaning 14-d	28-d
Growth rate	All data	(g/d)	34.5 [a]	40.2 [b]
	After 28 d	(g/d)	38.2	40.2
	28 d weight	(g)	553 [a]	676 [b]
Mean age at 1600 g		(d)	63.8	56.4

[1] Values in the same row followed by different superscripts are different (P<.01)