

REAR THOSE EXTRA LAMBS

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Kenneth R. Frederiksen, Donald A. Price, and T. Donald Bell **UNIVERSITY OF IDAHO**

Extra lambs occur in almost all sheep flocks at lambing time. These result from triplets and quadruplets and from twins from ewes with borderline milk production or from ewes that die during and after lambing. If such lambs could be reared artificially economically, sheep producers would realize additional income.

Traditional methods of artificial lamb rearing mostly have involved hand bottle feeding a small quantity of warm cows milk or calf milk replacer several times per day over a long period of time. These methods require considerable labor and result in poor grown lambs. Also costs are usually prohibitive, especially when large numbers of lambs are involved.

Logically, the more milk a lamb consumes, the faster it will grow. However, to consume enough milk to grow at a reasonable rate and remain free from digestive upsets, it must feed often. Thus, what the lamb requires is a supply of milk, available at all times, so that it may satisfy its appetite at will.

Recent research at the U. S. Sheep Experiment Station, Dubois, indicates that lambs can be reared on cold milk replacer using self-feeding methods. The idea of feeding cold milk is to prevent its souring in the feed containers. Also, lambs consume only a small amount of cold milk replacer solution at each nursing, but nurse often. This reduces over-eating and digestive problems. After the lambs learn to nurse, the self-feeding reduces labor demands to once per day attention and allows maximum milk consumption.

MILK REPLACER

The milk replacer powder used in recent studies at Dubois was Nurs-Ette Vealer No. 2 and Nurs-Ette Calf, Pig and Lamb Formula (see NOTE, page 4). Both contain 30 per cent fat. Other milk replacers may work as well for lambs. However, most calf milk replacers do not contain enough fat to be used successfully with lambs. Use of milk replacer powder containing less than 30 per cent fat is not recommended until further research is conducted. Information is not available on a milk replacer formula that could be easily prepared under farm or ranch conditions. The ingredients of milk replacer powder must be carefully homogenized and blended, which requires special equipment.

Milk replacer powder (30 per cent fat) should be mixed with water at the rate of 2 or 2½ pounds per gallon of water. This formula results in a solution similar to ewes milk in total fat and solids. Experience has shown that mixing the powder in warm water and immediately cooling to 33 degrees F. tends to eliminate problems of ingredient separation in storage and feeding containers.

The above milk replacers will mix with greater difficulty in cold tap water and can be fed without further cooling. However, there is a tendency for ingredients to separate in the feeding containers.

In a free choice system, each lamb will consume ½ to ¾ pounds of milk replacer powder in solution daily (2-4 pints of the liquid milk).

EQUIPMENT

The number of lambs to be fed and the degree of automation determines the type and amount of equipment needed.

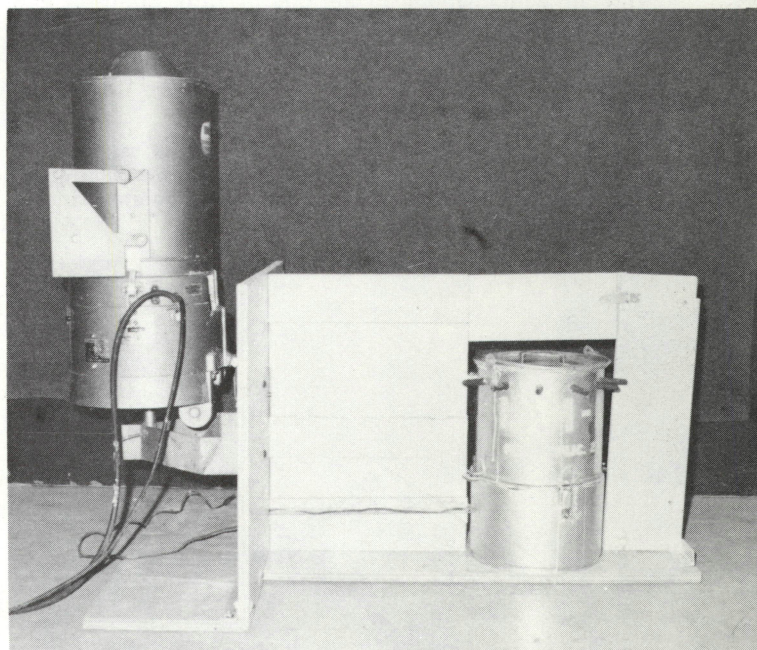


Figure 1. Automatic calf feeder machine connected to a Lam-Bar feeding bucket.

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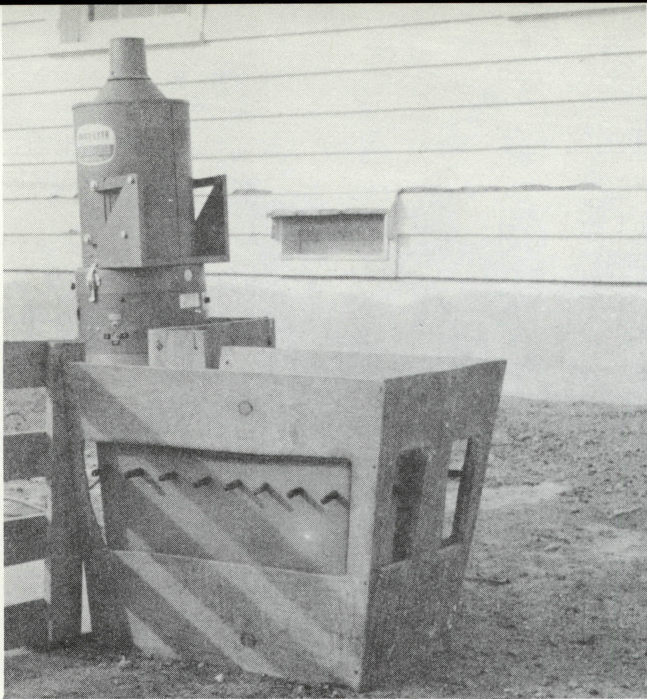


Figure 2. Automatic calf feeder machine connected to a plastic vat with attached Lam-Bar nipples.

Automatic calf feeder machines that mix milk replacer powder with water and dispense resultant liquid to a feeding bucket or vat have been used at Dubois. This equipment is shown in Figures 1 and 2. The automatic calf feeder is designed to mix a warm milk replacer solution. Difficulties were encountered with these machines using a 30% fat milk replacer powder mixed with cold water.

For a small number of lambs the milk replacer powder and water can be mixed together with an egg beater or electric mixer. However, for a large number of lambs, a conventional agitator type washing machine is a satisfactory mixing device in which about 15 gallons of milk solution can be prepared at each mixing. A pump-equipped washing machine provides for easy transfer of the milk to a storage container in a refrigerator (Figure 3).

Figure 3. Conventional type washing machine used to mix warm water with milk replacer powder. Machine pump and hose transfers mixed milk to refrigerator storage container for cooling.



A 24-hr. supply of milk can be prepared once per day and refrigerated until needed.

When hand or washing machine mixing is employed, the feeding vat should be large enough to hold a 12 or 24 hour supply of milk for the lambs being fed. Almost any type container of proper size can be used. Heavy plastic containers have an advantage over those of metal, as these are easier to clean and have greater insulation properties.

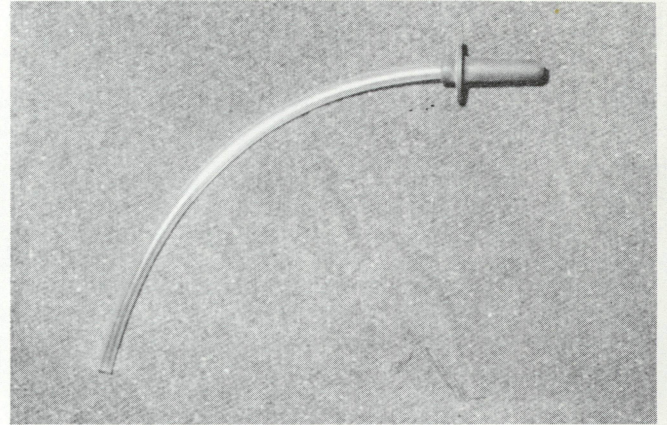
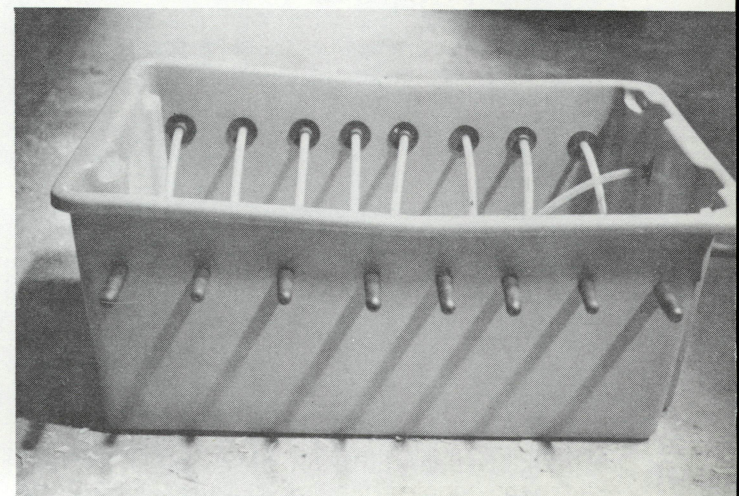


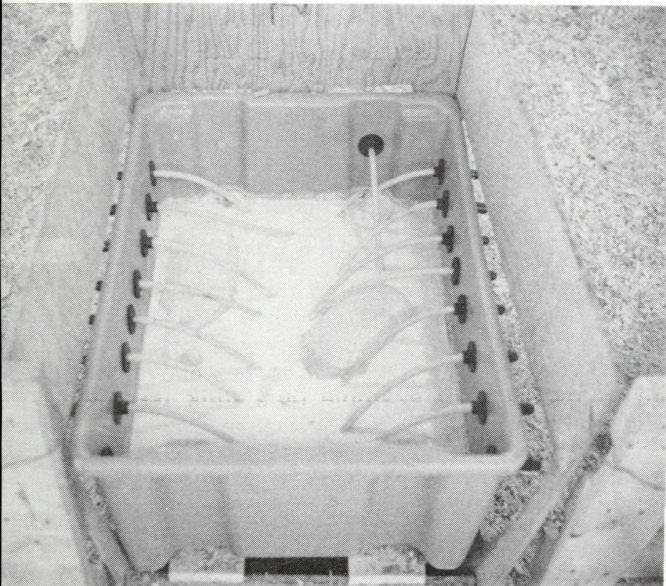
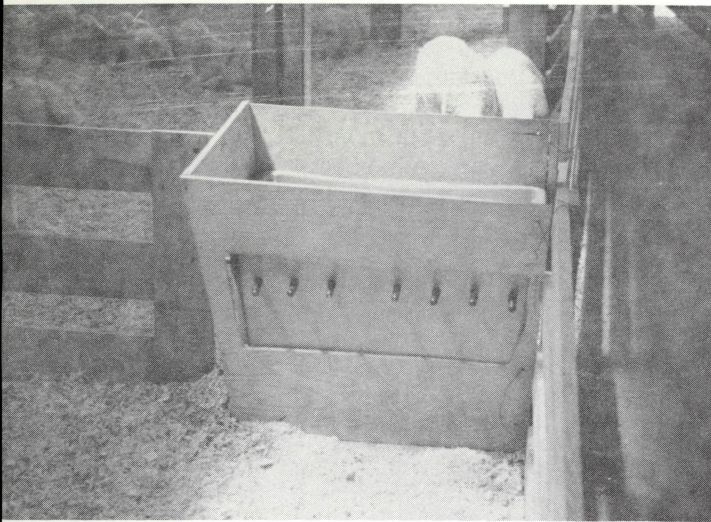
Figure 4. Lam-Bar nipple and tube that attaches to feeding vat.

To prevent nipple leakage, a Lam-Bar (See NOTE, Page 4) nipple connected to a polyethylene tube can be attached to the feed vat (Figure 4). The nipples are mounted by boring proper size holes about 2½ inches apart and 7 or 8 inches above the bottom of the vat. An example of a milk feeding vat with nipples installed is shown in Figure 5. This vat is mounted in a plywood frame (about 24 inches high) and installed in the lamb pens (Figures 6 & 7). A plastic or plywood cover is used over the vat. This size vat (See NOTE, Page 4) (26" long x 18" wide x 10" deep), with 18 nipples, will feed about 50 lambs (25 on each side). An allowance of three to five lambs per nipple seems satisfactory. Milk should be available in feed vats at all times and the lambs allowed to nurse free choice.

Under most late winter and spring conditions,

Figure 5. Plastic vat with Lam-Bar nipples and tubes mounted.





Figures 6 and 7. (Top Picture). Feeding vat mounted in plywood frame installed in lamb pen, and (Bottom Picture) top view of feeding vat showing jugs of ice that keep milk cold. Plywood or plastic cover over vat is used.

milk will not sour over a 24-hour period if transferred directly to the feed vats from the refrigerator at 33°F. In warm weather, plastic jugs filled with water and frozen are placed in the feed vats to keep the milk temperature low (Figure 7).

Due to season of lambing (April), artificial lamb rearing trials at Dubois have been conducted indoors. To provide warmth for the lambs in cold weather, infra-red (250 watt) heat lamps are used. These are mounted with reflectors about 24-30 inches above the floor (one lamp for each 12-14 lambs). Pens are bedded with straw or wood shavings. An allowance of seven or eight square feet of barn space per lamb during the milk feeding period seems sufficient.

Provide creep feeders and water buckets in each lamb pen. To reduce incidence of coccidiosis, place all creep feed and water so lambs cannot get their feet into them (Figure 8). Keep pens clean.

The milk feeding vats, storage containers, mixing equipment, nipples and tubes should be cleaned

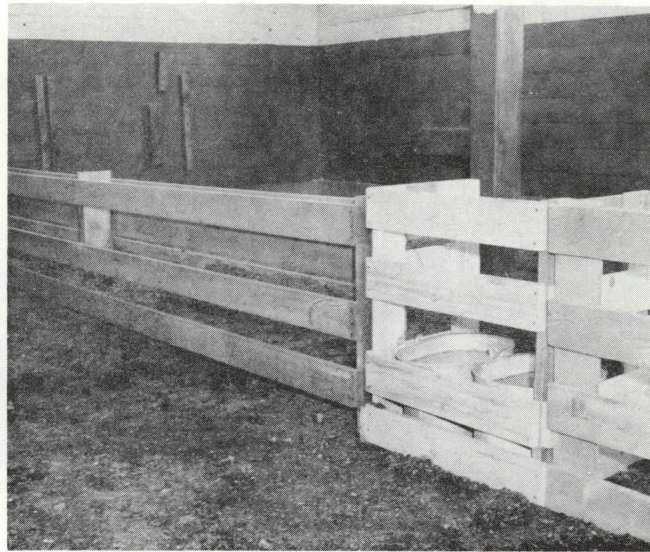


Figure 8. Reach-through creep feeder and waterer used in lamb pens during milk feeding period.

once daily in hot soapy water, rinsed and disinfected with "chlorox" or similar solution. Using two sets of feeding vats and nipples for each feeding location allows cleaning and washing without restricting lambs from milk.

NURSING PERIOD MANAGEMENT

Newborn lambs must receive colostrum milk at first. When they cannot obtain this from the ewes, cows colostrum milk can be obtained ahead of time, packaged in small plastic bags, or freezer cartons, and frozen. This is thawed out at room temperature as needed (heating destroys milk antibodies), and can be fed without further warming. We feed 4-6 ounces of this per head each 4-6 hours with a bottle and nipple the first 18-24 hours. Then, three or four hours after the last colostrum feeding, the lambs are introduced directly to the cold milk replacer solution supplied via the Lam-Bar nipples. At first a small container with a nipple and tube is used and the milk kept near the nipple level so lambs can obtain milk without having to suck too hard. Lambs must be put to the feeder nipples several times at first until they learn to nurse. Then, they feed independently. Young lambs may shiver momentarily after nursing on the cold milk, but soon become adjusted. The infra-red heat lamps provide the needed warmth.

If a large number of lambs of various ages are to be reared, it is advisable to arrange lamb pens adjacent to milk feeders so that younger lambs can be kept separate from older lambs.

Solid food, in addition to milk, should be offered to the lambs from the end of the first week of rearing. This can be in the form of a small pelleted concentrate feed, or a coarse mix, and good quality alfalfa hay. Also, trace mineral salt and drinking water should be available on a free-choice basis. It is important to keep the creep feed and water clean, as well as the milk feeding equipment.

To protect against overeating disease (enterotoxemia), newborn lambs are vaccinated when started on self-feeding of milk with *Clostridium perfringens*, Types B, C & D, antitoxin, and again

at six weeks or two months of age with *Clostridium perfringens* Type D, toxoid or bacterin.

WEANING

Weaning from milk feeding can be accomplished when lambs reach 25-30 pounds body weight (30-45 days of age) and are consuming dry feed. Lambs weaned either abruptly or gradual from milk at this early age will receive a slight check in growth rate for about a week. There appears to be no advantage to gradual weaning over a one week period, especially when extra labor is considered.

THE POST-WEANING PERIOD

Limited information is available on nutrient requirements of lambs between 25 and 60 pounds body weight, but this problem is being studied. It appears the post-weaning diet, until lambs reach about 60 pounds, should be high in protein (15-20%) and energy, but low in roughage for maximum growth when confined to the drylot. Creep feeds recommended by the livestock extension specialist in your area should be suitable for feeding lambs during the post-weaning period to about 60 pounds. Hopefully, current research will provide additional information on nutrient needs of lambs through this weight range.

After lambs reach about 60 pounds body weight they may be fed to slaughter weight on a standard fattening ration in the drylot. A self-fed diet (1/4 inch size pellets) containing 37 1/2% barley, 62 1/2% alfalfa,

with 40 grams of chlortetracycline added per ton, has been used successfully during the drylot fattening period at the U. S. Sheep Experiment Station.

We have not conducted studies with lambs weaned at this young age on pastures. Artificially reared lambs are very susceptible to internal parasites. Thus, if lambs are grazed during the post-weaning period on pastures, these areas should be as worm free as possible.

COSTS

The total cost of rearing lambs artificially will be different in each sheep operation depending upon individual conditions. Recent trials at Dubois indicate that feeding lambs cold milk, weaning abruptly at 25-27 pounds body weight, and self-feeding during the post-weaning period in the drylot on a 15% crude protein diet to a 60 pound body weight, could be accomplished for about \$8.30 per head. Feeding lambs from 60 to 100 pounds body weight costs about \$7.70 per head. Thus, a total cost of rearing from birth to slaughter is about \$16.00 per head, exclusive of labor.

FUTURE RESEARCH

Additional experiments are being conducted at the U. S. Sheep Experiment Station at Dubois on the problems of artificially rearing lambs. Information about this research will be released as it is obtained.

ABOUT THE AUTHORS — Kenneth R. Frederiksen is associate research professor of animal sciences, University of Idaho, U.S. Sheep Experiment Station; Donald A. Price is director of the U.S. Sheep Experiment Station, Sheep and Fur Animal Research Branch, AHRD, ARS, USDA; and T. Donald Bell is head of the animal science department, University of Idaho.

NOTE — The research reported on in this publication was conducted cooperatively by the University of Idaho and the U.S. Sheep Experiment Station, USDA, ARS, AHRD.

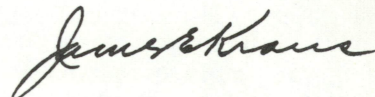
Tradenames are used only to identify products as they are known in the market place. No endorsement by the University of Idaho is implied.

Nurse-Ette is a tradename of K & K Manufacturing, Inc., Rogers, Minn.

Lam-Bar nipples and tubes were purchased from Midwest Wool Marketing Cooperative, 405 E. 14th Ave., North Kansas City, Mo. 64116.

Plastic vats were purchased from United States Plastic Corp., 1550 Elida Rd., Lima, Ohio 45805 (Stock No. 53152).

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JAMES E. KRAUS, Director