

Raising Surplus Dairy Goat Kids for the Slaughter Market

by Dr. Frank Pinkerton

Preface

The current U. S. demand for goat meat is near insatiable; imports are furnishing about 45% of supply. Drought and other factors have sharply reduced breeding stock numbers; accordingly, there has been increasing interest in raising dairy goat kids to 50-70 lb to take advantage of increasing demand. Since Canada currently imports at least 60% of its goat meat, and since there are numerous commercial or farmstead dairy goats in Canada, there is potential for this type of enterprise, at least in certain areas of the country.

Introduction

Commercial dairy goat enterprises produce milk for sale as fluid milk or for cheese making. Early weaning of doelings and bucklings is the norm. Some owners sell the surplus males and females in a few days; other kids may be held for some weeks and sold as early weanlings (say, 8-12 weeks of age); some are simply dispatched at birth. In any case, the sale/slaughter of such kids prior to 55-65 lb constitutes a considerable loss to an undersupplied kid market.

Caveat: the economics (cost-benefits ratios) of growing dairy kids to heavier slaughter weights are not well known in the U.S. or Canada. However, certain research findings and verifiable on-farm experiences would seem to supply sufficient 'guidance' to enable cautious exploitation. But, one should proceed with the certain knowledge that technical and economic results will be *site-specific*, i.e., the returns to labor, management, and capital will vary over time, place, and management levels.

Research in kid feeding and management

My earliest dairy goat research interest focused on feeding and management of kids, birth to weaning at 16 sixteen weeks of age. I looked first at *frequency of feeding* by bottle-feeding Alpine and Nubian intact male kids, birth to weaning at 16 weeks, milk-only.

Table 1. Effect of frequency of milk feeding on kid performance

<u>Item and frequency</u>	<u>2X</u>	<u>3X</u>	<u>4X</u>	<u>Ad lib</u>
Total milk intake, lb	347	381	370	426
Milk intake/day, lb	3.1	3.4	3.3	3.8
Weight gain/kid, lb	43.7	45.7	44.8	51.5
Average daily gain, lb	.39	.41	.40	.46
FCE (lb milk/lb gain)	7.9	8.2	8.2	8.1

Kids fed twice daily had lowest milk intake/day and best FCE but lowest ADG. Only total milk intake was significantly different. Accordingly, there is no reason to feed milk to kids more than twice daily. Those who do feed more often are doing it for themselves, not their kids.

I looked secondly at *restricted milk feeding* of Alpine and Nubian intact male kids, birth to weaning at 16 weeks of age, with concentrate offered *ad lib*.

Table 2. Effect of restricted milk intake on kid performance

Item	Targeted milk intake/day, lb				
	1.5	2.0	2.5	3.0	ad lib
Actual milk/day, lb	1.50	2.02	2.49	2.90	4.33
Milk intake/kid, lb	168	226	279	325	485
Concentrate/day, lb	.54	.50	.35	.24	.16
Total concentrate, lb	60.5	56.0	39.2	26.9	17.9
ADG, lb	.29	.33	.30	.27	.30
Total weight gain, lb	32.5	37.0	33.6	30.2	33.6
FCE*	2.51	2.28	2.21	2.57	2.34

*Estimated by adding the amount of milk dry matter (12.5% of liquid weight) to the lb of concentrate and dividing by the total weight gain.

Note the decline in intake of concentrate as milk intake increased. The ADG and the FCE (as estimated) were not significantly difference across levels of milk intake. Accordingly, my recommendation (as substantiated by many owner experiences on-farm) is that one can feed 1 pint of milk (1.1 lb) twice daily plus concentrate *ad lib* for acceptable ADG and FCE of growing kids.

I looked thirdly at *the effect of age at weaning* of Alpine and Nubian intact male kids, birth to weaning at 16 weeks, with concentrate offered *ad lib*.

Table 3. Effect of weaning ages on kid performance

Item	Weaning age, weeks			
	4	6	8	10
Weaning weight, lb	18.9	21.8	26.6	30.6
Final weight, 16 wks, lb	38.3	37.2	42.7	42.9
ADG, birth to weaning, lb	.27	.27	.32	.33
ADG, birth to 16 wks, lb	.34	.33	.38	.38
Total milk intake, lb	86	121	161	199
Concentrate intake, lb	77	66	65	60
Conc. intake/day, lb	.68	.59	.58	.54
FCE*	2.29	2.18	2.00	1.99

*Estimated by adding the amount of milk dry matter (12.5% of liquid weight) to the lb of concentrate and dividing by the total weight gain.

Note again the decline in concentrate intake as milk intake increased. Note also that weaning at 4 and 6 weeks of age reduced ADG and FCE as compared to weaning at 8 and 10 weeks. Early weaning reduced final weights by about 5 lb (about 12%). This data, plus much owner on-farm experience, suggests that there is no nutritional necessity to feed milk to growing kids for more than 8 weeks. (Actual cost-benefit results would depend on the relative prices of concentrate and milk).

I looked fourthly at the effect kid weight at weaning of Alpine and Nubian intact male kids, birth to weaning at 16 weeks, with concentrate offered *ad lib*.

Table 4. The effect of weaning weights on kid performance

Item	Weaning weights, lb			
	17.6	19.8	22.0	24.2
Days on milk	31	35	42	49
Total milk intake, lb	85	108	121	158
Milk/day, lb	2.7	3.1	2.9	3.2
Total concentrate, lb	87	103	83	87
Concentrate/day, lb	.78	.92	.74	.78
Total weight gain, lb	31.4	37.0	33.6	37.0
ADG, lb	.28	.33	.30	.33
FCE*	3.10	3.14	2.92	2.89

*Estimated by adding the amount of milk dry matter (12.5% of liquid weight) to the lb of concentrate and dividing by the total weight gain.

The results of this experiment is in agreement with French research findings and large-scale, on-farm data from French cheese-makers milking Swiss-type dairy goats. Their experience suggests that weaning kids at 22 -24 lb (about 7 weeks) is a satisfactory procedure. Weaning on a weight basis rather than a time basis does much to eliminate the issue of undersized kids at 6-7 weeks of age.

Summation

This, and other, research data plus on-farm experiences suggests strongly that dairy goat kids can be fed milk, or milk replacer, twice daily, a pint in the am and a pint in the pm, for 8 weeks. Thereafter, feed a pint once daily for 7 more days. In the meantime, offer *ad lib* a16% CP concentrate, pelleted or textured, at 15 days. It should contain a coccidiostat and antibiotic for improved health, as the production and merchandizing system permits. Limited hay may be necessary to ensure proper rumen function, or a concentrate with higher fiber may be offered. Proper feeding practices and informed owner observation can lead to growth trajectories of 10 lb/month, or more, birth to sales weights of 55-65 lb.

For those wanting to do more site-specific economic calculations, obtain the local prices of concentrate and the prices of commercial milk replacer with at least 22% CP and 24% fat. While there may be some, I have never seen a commercial milk replacer that would equal whole goat, or cow, milk for kid performance. Perhaps you should adjust expected ADG downward by 5%, or more, to better estimate your feed costs/lb of gain.

Note also that the male kids used in these experiments were out of purebred Alpines and Nubians of decent genetic composition. Doelings commonly have somewhat lower daily feed intake, lower FCE, and thus lower ADG (by 7-9%) than intact males (early castrated wethers will be intermediate)—another reason to estimate expected performance carefully.

Experienced dairy goat owners have proven skills for raising replacement doelings, so raising bucklings to 55-65 lb should not be an issue (except perhaps for managing surging testosterone levels and associated behaviors as their approach 65 lb, or over).

Do understand that, on the average, slaughter dairy males and doelings will not grade (live, or carcass) as high as meat goats at similar weights. Further research is needed, but my guess is that about 65-75%

of well-managed meat goat kids would grade #1 while perhaps 10% of dairy goats would do so (Nubians might well beat that number).

Addendum

During 2011/12, a number of WI farmers bought surplus 'dairy males', mostly Alpine and Saanen but also some LaMancha and Nubian animals, from producers of goat milk for cheese making for about \$5/head. The management programs used varied from farm to farm, as did the composition and cost/lb of milk replacer and /lb of concentrates (mostly 16% CP). The ratio of dry milk replacer to water varied from 1:5 to 1:7, and most fed around a pint/feeding, twice daily. Others fed on nipple pails and noted increases in daily 'milk consumption' with age and size. Most kids were eating enough concentrate to be weaned at 8-9 weeks of age.

Healthy kids gained 9-11 lb/month, some gained more, particularly if they were a bit older at pickup time. As intact kids approached 60 lb or so, at around 5 months, they began to exhibit juvenile rutting behavior, ate erratically, and had lower ADG. Banding or burdizzo-ing will solve that problem but will lower ADG and FCE by some measure.

Some growers offered hay and some did not; results varied, I'm told. In my research trials, I fed no hay to 16 weeks, and the kids functioned as 'non-ruminants'. I believe this 'pig-feeding program' was the reason the kids posted remarkable FCE and ADG) and thus lowered the feed cost/lb of gain.

Death loss was initially high, 15-20%, but declined as growers gained experience and skill. By winter '12/13, losses ranged around 5% or so. Milk producers varied in their health programs for newborns.

Returns to labor and management varied between and within sites, I'm told, but I understand the better operators netted \$20-25/head in the 50-60 lb range. As earlier stated, management levels and returns will vary location. Insofar as I know, there has been no University research on the economics of such a 'dairy billy' program. Growers are functioning as their own 'researchers'; some learn more quickly than others. Slower learners have shorter tenure.

(I earlier used a version of this program to raise Holstein bull calves to just over 600 lb during which time they posted an ADG of 2.3 lb and had a FCE of 3.6 lb feed/lb of gain. They each consumed 25 lb of milk replacer, 300 lb of pig starter, 600 lb of pig grower, and 900 lb pig finisher. At slaughter they hot-dressed 54%, shrunk weight basis, and had .06 inches of back-fat over the loin. At an average of 220 days of age, the meat was very tender even though it lacked marbling). I sold such calves for years to early practitioners of eating 'healthy, lean meat', but the calves were sure as hell not raised **naturally**. They were raised as pigs—no roughage whatsoever).

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