Increasing Productivity of Triplet Lambs

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Introduction

In many commercial flocks in Ontario, producers use a crossbred ewe that is some percentage Rideau as a means to increase prolificacy and therefore the number of lambs they are able to market. Even in flocks that are not a high percentage Rideau, there are often problems with uneven sets of triplets in the less prolific breeds. However, as the number of lambs born per ewe increases, the birthweight decreases, and in accordance with that, the survival rate of the lambs also tends to decrease because the ewe cannot feed them (Huffman *et al*., 1985). Most commonly, triplets are seen as nuisance to producers that tend to cause more work than they are worth. On the opposite extreme, producers are not generally happy with ewes that produce single lambs either because of the waste of the ewe's potential ability to feed and raise two lambs. There are many different management systems available which aim to increase the survival rate of these smaller lambs, all varying in time, labour and cost. This article will focus on three fairly common systems – fostering, supplemental milk via pails or machine and artificial rearing, as well as a novel system being developed in New Zealand – the triplet transfer system.

Fostering

If a ewe has more lambs than she is capable of feeding, the best option in the long run for ewes, lambs, and producers is fostering (Thompson *et al*., 1993). Fostering should be done as soon after birth as possible, to increase the chances of the ewe accepting a foreign lamb (Martin, 2010). When fostering one lamb from a set of triplets to a different ewe, it is always a challenge to decide which lamb to remove. There are many recommendations on the subject, some saying that the smallest triplet should be removed and others which recommend that the largest lamb should be removed (NADIS, 2015; Martin, 2010). Studies which recommend removal of the

smallest lamb suggest that the smaller lamb will not be able to compete with a bigger lamb for the ewe's teat and thus will fail to thrive and may end up starving to death (Thompson *et al.*, 1993). On the other hand, there are also many studies which suggest that the strongest lamb should be fostered as it will be the best able to handle the stress of a new situation and it will have the strength to be persistent at suckling the foster ewe if she is not fully accepting of it. Ideally, whether the shepherd picks the smallest or the biggest lamb to foster, the aim is to end up with two pairs of lambs that are as evenly matched as possible (Thompson *et al.*, 1993).

If a triplet-bearing and a single-bearing ewe lamb at the same time, the most successful method of fostering is wet fostering (Ward *et al.*, 2011). This method involves taking the birthing fluids from the fostering ewe and smearing them onto the foster lamb to make her believe that it is her lamb (Winter and Phythian, 2011). In most situations, producers will not always have triplets and singles being born at the same time, and thus wet fostering is not always an option. The next option for fostering is to use a restraint on the ewe so that she has no choice but to allow both lambs to drink. In this system the ewe is restrained in some form of headlock/stanchion that allows her to get up/down, eat, and drink, but prevents her from seeing behind to her udder to know which lambs are sucking (Alexander and Bradley, 1985). In most cases, the ewe will accept both lambs as her own within a few days, but in some cases a ewe must remain under restraint for a few weeks until she accepts the fostered lamb (Alexander and Bradley, 1985). If possible, fostering should always be the first option taken to increase survival of triplet lambs as it mimics the natural way a lamb is raised, it usually results in the best performance from lambs and it maximizes the productivity of ewes.

Supplemental milk pails/milk machines

Despite the fact that many ewes can provide sufficient milk to feed a set of triplets or quads, there are always some that cannot support extra lambs for one reason or another. If the ewe has enough milk to feed two lambs well but not enough to feed three well, one method to increase the growth and productivity of the lambs is to provide free choice, supplemental milk in the form of milk replacer from either a pail or a milk machine. There are many variations on how milk is made available from a system as simple as pail outfitted with rubber nipples to something as sophisticated as an automatic milk machine. In a situation where milk replacer is not being fed as the sole source of milk for the lambs, it would probably not be economical to be using a milk machine. In such a situation, the general recommendation would be a pail with one or two nipples or a teat bar feeder with many nipples for larger groups of lambs. Feeding free choice milk can increase the risk of bloat, diarrhea and general digestive upsets. In order to reduce this risk, milk replacer in pails should be fed cold (Schoenian, 2014). Some producers will also use formalin or some other product to acidify the milk; this prevents microbial growth and spoilage and also may prevent overfeeding by adding a slightly unpleasant flavour (Martin *et al.*, 2010). There is little scientific research done on this system, but many farmers say that, based on their own experience, this is a fairly simple system which gives the smaller lambs an extra boost and reduces the proportion of triplets that do not thrive.

Artificial rearing

In flocks where fostering is not an option, or in dairy flocks where the ewes are being milked, surplus or orphan lambs may be raised exclusively on milk replacer. If lambs are to be removed from their dam's immediately following birth, it is critical that sufficient colostrum is

received either from the ewe or by using stored colostrum (Martin *et al.*, 2010). Raising lambs on milk replacer is an expensive endeavour, thus weaning should occur as early as possible. Weaning early is constrained because lambs should weigh a minimum of 20lbs before they are weaned (Umberger, 2009). To ease the transition of weaning when milk is removed, high protein creep feed and water should be readily available in addition to milk replacer (Umberger, 2009).

In a dairy flock, all lambs would be raised artificially. However, in a commercial flock producing market lambs, only select lambs will be raised artificially. Unlike with fostering, research shows that highest returns are achieved when the smallest lambs are selected for artificial raising (Umberger, 2009). Young lambs are sensitive to hypothermia, and thus need to be maintained in a warmer, draft-free area, especially in the winter. Temperatures should not be below 1.7°C and in the winter, a room heated up to 15°C improves survival and performance of artificially raised lambs (Umberger, 2009).

Artificial rearing systems may take on a number of forms, depending on the size and scope of the operation. Milk may be presented in numerous pails with a few nipples each, a teat bar feeder that has 6-8 nipples may be used, or an automatic milk machine may be used. These options vary in cost ranging from $30-$70 for the nipple pails, to $75-$150 for a teat bar feeder, all the way up to $5000 -$5500 for an automatic feeding unit (Martin *et al.*, 2010; Schaap, 2015). The labour required for these systems however, is indirectly proportional to their respective costs; nipple pails require the most labour time and an automatic feeder requires the lowest input of labour. Ultimately each producer must use the system that works with their operation, but for an automatic feeder to be economically viable there must be quite a large number of lambs being fed.

Triplet Transfer System

The profitability of a sheep operation is dependent on the number of lambs shipped to market, so it is logical that producers would aim for a higher lambing rate whenever possible. Recent research in New Zealand has shown that if the third lamb had survived in half the triplet-bearing ewes, the bottom line would increase by $30,000 and if the third lamb had survived in 80% of the ewes, the bottom line would be increased by a further $18,000 (Beef and Lamb New Zealand, 2013a). To take advantage of the opportunity provided by triplets, producers have developed the Triplet Transfer System.

This system is built on the idea that every ewe has, at minimum, the potential to raise two lambs well. Therefore, to maximize the productivity of each ewe in the flock, triplet bearing ewes will have one lamb removed and two foreign lambs will be grafted to each single bearing ewe (Beef and Lamb New Zealand, 2013b). Ewes are scanned and separated into groups of singles, twins and triplets. The target group for the triplet transfer is single bearing and at risk triplet bearing ewes. To eliminate a ewe's bias towards her own lamb, all the singles and the removed triplets are mixed up and each ewe is given back two foreign lambs (Freeman and Freeman, 2013). To ensure bonding between foster ewes and lambs, lambs should be fostered before they are 3 days old as the ewe becomes less receptive after this point, and ewes should be restrained somehow to allow the lamb free access to the udder without interference (Freeman and Freeman, 2013). When pairing lambs, it is less critical to get two lambs of the same size than it is to get two lambs that are equally vigorous; this ensures that both will have an even chance at getting milk from the ewe (Freeman and Freeman, 2013). Single ewes and lambs should be separated overnight before transfer; this allows ewes to 'bag up', ensuring there is milk available to suck when new lambs are introduced. Additionally, it is suggested that this makes ewes more

inclined to accept the lambs since they spent the last 12 hours looking for their lambs (Freeman and Freeman, 2013). Ewes and new lambs should be held in bonding pens for a full 24 hours prior to release into a mixing pen to interact with a small group of other ewes and lambs.

Highlighted production statistics recorded from the trial in New Zealand over 3 lambings were a 10% increase in lambing percent, from 146% to 155%, triplet survival increase from 190% to 227% and the triplet lamb weaning weight increasing by 31%, from 26kg to 34kg.

This system has many benefits for the productivity of a flock, however it is not the right system for everyone. The experimental farm where this trial was run used a total of 500 ewes, 250 triplet ewes and 250 single ewes. For producers running large flocks, this system certainly is a viable option, however it requires intensive management as well as the appropriate infrastructure to be able to sort and house different groups of ewes. Pregnancy checking and fetus counting is also a key part of this system, which also requires extra infrastructure and time management. In such a setup, using any performance recording software like GenOvis or BioFlock would be a significant challenge as none of the transfer lambs are being raised by their true dams and keeping records on pedigrees would also be challenging.

Conclusion

There is a wide variety of approaches used by shepherds to try and maximize the productivity and increase the survivability of their triplets. In any operation, the first choice is usually fostering as this is the most natural for the lamb and the ewe and when done properly results in the least work for the producer. Artificial rearing is a very common practice in many large flocks and particularly in dairy sheep flocks. It can be a very effective way of raising lambs, however it can also become very expensive depending on your milk delivery systems (i.e.

pails vs. milk machine). Finally there is the triplet transfer system, which has not been tried in Ontario yet. This is a unique system which takes advantage of triplets and single bearing ewes to even out the workload across the flock. It would be ideal for large flocks focused only on producing market lambs, but because of the infrastructure and management required, it would not be highly compatible with smaller producers or those collecting performance records for each animal. Each system has advantages and disadvantages and there are many more combinations of systems that have not been covered here which work equally well. Ultimately, each producer must do what works in their flock according to their own goals and requirements.

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