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COMPILED BY: Dan Macon

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What to Buy First: Capital Purchases for New Livestock Operations

Placer County 530.889.7385 Nevada County 530.273.4563
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I help to teach a class for aspiring farmers in the Sierra foothills. Invariably, we begin talking about when a new producer should purchase his or her first tractor. This seems to be a "guy" thing – the male of our species can't conceive of a commercial farming enterprise without a tractor! For most start-up crop farms, however, a tractor shouldn't be the first capital expenditure. Things like deer fencing, irrigation systems and hand tools are far more critical to a small-scale vegetable grower – buying a tractor to cultivate an acre of crops just doesn't make economic sense.

Start-up livestock operations face similar decisions relative to capital expenditures. In many ways, squeeze chutes and corral panels (or tilt tables and sheep yards for new sheep producers) are similar to that shiny new tractor – the male of our species must be attracted to shiny paint on steel equipment! Despite my own attraction to shiny things, my commercial sheep operation has always been under-capitalized. I've never had enough money all at once to go out and buy the breeding animals, fencing, equipment and tools I needed in one fell swoop. Consequently, I've been forced to prioritize my capital purchases. For livestock, at least, I think new (and established) producers should ask themselves three key questions regarding capital purchases:

1. Will this purchase increase my production?
2. Will this purchase reduce my overhead?
3. Is there a less expensive alternative to accomplishing the same goal?

Livestock

For our operation, the first priority for capital expenditure was the purchase of breeding animals. We evaluated the economics of buying feeder lambs from other ranchers versus raising our own lambs from our own ewes. For us, at least, it made more sense to raise our own lambs. Once we made our initial purchase of ewes and a ram, we continued to make a capital investment in our business by retaining as many ewe lambs as possible each year. In other words, we kept ewe lambs rather than selling them, which directly reduced our annual revenue.

Our expansion goals were directly related to the economics of our business. We needed to increase our gross margin (total annual production minus direct costs) to the point where we could cover our overhead costs. Unlike direct costs (which increase or decrease based on the number of animals we have), we incur overhead costs whether we raise one ewe or 1,000. Overhead costs are primarily labor and land expenses – breaking these down further, we include irrigation water (land), pasture rental (land), insurance (land), owner salary (labor), guard and herding dogs (labor), telephone (labor) and fuel (labor) in our overhead expenses.

Fencing

Secondly, we needed to keep our animals contained in our pastures. Since we operate almost entirely on land that we don't own (and on which we don't have long-term control), we opted for portable electric fencing. Had we owned our grazing land (or if we had 5+ year leases), we might have considered investing in permanent fencing. The trade-off – the portability and flexibility of portable electric fencing versus the reliability and durability of permanent fencing – also comes with a trade-off in terms of cost. In general, portable electric fencing is a far less expensive option. Portable fencing, however, requires more on-going labor. Our portable fencing allows us to more fully utilize our forage resources because we can place sheep on grass wherever it is – even if it's not enclosed in permanent fencing. We decided that we'd trade labor in moving fences for the labor and added expense involved in feeding hay to our sheep.

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Stock Water

Next, we needed to get water to our sheep. Stock water seems to be the most overlooked resource on many operations. Well-dispersed stock water systems allow us to manage our grazing more effectively. Again, since we've relied almost entirely on leased and free pasture, we didn't want to invest in stock water systems that we couldn't take with us when we lost a lease. We chose to invest in portable water troughs and water tanks that allow us to haul water to our animals. In a more permanent arrangement, I'd still invest in water tanks and a dispersed distribution system, but I'd weigh the options for reducing my labor in hauling water.

Predator Protection

While predators aren't a huge concern for cattle producers, we were worried about coyotes, domestic dogs and mountain lions preying on our sheep. Our electric fences provide some protection, but since we're not able to be with our sheep around the clock (again, a labor expense consideration), we decided to purchase livestock guardian animals. Our options included livestock guardian dogs, llamas and donkeys. After some initial research, we ruled out donkeys – they can be hard to use with herding dogs (more on this later). Llamas seemed like a possibility where the main predators were neighbor dogs and coyotes. Since we also have mountain lions in some areas where we graze, we initially decided on livestock guardian dogs. We've since added llamas to our livestock protection forces.

The question of llamas versus dogs illustrates a few important trade-offs in terms of overhead and effectiveness. Our dogs are the most consistent and effective guardians – we've never lost a sheep where we've had a dog with them. Our dogs deter predation by coyotes, dogs, mountain lions – even aerial predators like owls and eagles. On the other hand, we have to feed them every day. They require more expensive veterinary care on occasion. They can also be a legal liability in more populated settings. Llamas, on the other hand, can eat the same thing that the sheep eat – reducing our labor and feed expense. Their strategy for dealing with a mountain lion, however, is to hide among the sheep!

Transportation

Transportation equipment is perhaps the most expensive equipment purchase a livestock producer can make. We were fortunate to own a 3/4 ton truck and a gooseneck stock trailer before we started our commercial flock. A used truck and trailer combination in good condition would have cost us around $30,000. While this equipment is essential to our operation, it can also represent one of the most expensive contributions to our overhead. We've recently decided to consolidate our operation geographically so that we can limit the use of our hauling equipment to trips to the processor and to the sales yard. For the rest of our stock moves, we use our border collies and walk the sheep!

Stock Handling

Finally, we needed a system for handling our sheep. Specifically, we needed a system for sorting sheep, for dealing with health issues (including vaccinations as well hoof-trimming and foot baths), and for shearing. Looking back, I realize that we had two basic options: we could develop a system that was equipment based (much more expensive) or we could develop a system that was knowledge and skill based. Over time, we evolved a system that is more dependent on our own skills and knowledge and less focused on expensive equipment. By system, I mean a combination of techniques and equipment that allow us to safely and efficiently handle our animals in a variety of settings.

The conventional approach to handling sheep is to purchase pre-fabricated panels and set up a "race" or working alley, holding pens and sorting pens. Commonly, a footbath is placed within the working alley (allowing sheep to be treated for foot rot). A tilt table or some other restraint apparatus might be added to allow a producer to restrain a sheep for hoof trimming, injections, or other activities. A loading alley is constructed to facilitate efficient loading of a trailer or truck. Some producers will add a herding dog or two to help push sheep through the corrals.

This is a very capital intensive approach. The set-up I've described (for a flock of 150 ewes) would cost perhaps $3,000 (or more) to assemble – not including the dog. It is also, in my opinion, a very mechanically-based system. Our approach is more knowledge/skills-based. Let me explain.

One of the reasons I prefer livestock production to crop production is that I am intrigued by animal behavior. Perhaps out of necessity (because of our lack of capital), we had to develop ways to handle our sheep with minimal equipment. Early on, we were drawn to the stockmanship principles developed by Bud Williams. Bud once said that his system was focused on letting the animal do what he wanted them to do. We were also drawn by the shepherding traditions in Great Britain, which largely rely on a partnership with herding dogs for most husbandry chores. Accordingly, we invested in knowledge – we learned how to implement low-stress stock handling techniques and how to use dogs effectively and efficiently.

As a result of this approach, our current handling facilities are VERY basic. We've constructed a working alley and sort gate from lumber – at a total out-of-pocket cost of less than $400. We use our portable electric fencing for holding and sorting pens. I've converted an old equipment trailer to a portable footbath (at a cost of less than $300), which will accommodate about 30 ewes at a time. Using a design developed by Bud Williams, we use the instinctive behavior of our sheep to allow animals to move into and through the working alley at their own pace. With one dog helping me in the corrals, I'm able to sort a group of 250 ewes into three separate groups in less than 60 minutes.

For the more intensive tasks, like vaccinations or hoof trimming, we simply put 10-12 ewes into a holding pen, tip them onto their rear ends, and give an injection or trim feet. I've used a tilt table, and I've found that flipping is easier on me and on the animals.

For less intensive sorting tasks, or for doctoring sheep in our pastures, I rely on my dogs. With the help of 1 or 2 border collies and a leg crook, I can catch and treat a sick animal, or catch and separate rams from ewes, for example. With my dogs, I can also load a group of sheep into my trailer without any holding pen or loading alley.

For many sheep producers, lambing can be the most labor- and facilities-intensive operation of the year. We decided early on to develop a pasture-based lambing system rather than a barn-lambing system. This decision was partly out of necessity; we didn't have access to barns on our leased pastures. More importantly, our decision was based on what fit with the rest of our system – we were pasture-based, so pasture lambing made sense. Rather than invest in lambing pens and barns, we invested in building a flock comprised of ewes who could lamb on their own and who would take care of their lambs without our intervention.

Perhaps it's more useful to compare the cost of each approach side-by-side. Here are the relative costs of our approach and a more conventional, equipment-intensive approach to handling a flock of 250 ewes:

	Equipment-based Approach	**Knowledge-based Approach**
Handling yards (24' alley, 2-way sort gate, holding pen, 2 sort pens)	$2,000	$500
Footbath	In alley – 12 ewe capacity $175	Portable – 30 ewe capacity $1,000
Restraint system	Tilt Table $900	$0
Loading facilities	Alley and ramp $1,000	$0
Herding dog	$500	$2,500
Lambing facilities	$5,000	$0
Fencing (for 10 acres)	Permanent $16,000	Portable Electric $4,000
Stock water System	Permanent $2,000	Portable $500
TOTAL	***$9,575***	***$4,000***

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Finally, another important consideration for any capital purchase is the simple payback period. Each capital purchase should increase profitability, either by increasing production or reducing expenses. If we divide the cost of the purchase by the increased profit, we get the simple payback period. Obviously, the quicker we can pay off a capital purchase, the better.

A skills-based approach to livestock production is not without its costs. We've expended considerable time and expense in learning about pasture management, sheep husbandry and working dogs. As we were building our skills, we were probably less efficient than we would have been had we invested in permanent equipment at the outset. Today, however, I'm more efficient because I'm more flexible. Indeed, flexibility has been the most important benefit of our approach. We can take advantage of new pastures when it makes sense – because we have the skills necessary to build fence, haul water, and move animals safely and efficiently. With most of our assets in breeding stock, we're able to adjust scale without worrying about using our equipment at less than capacity. Similarly, we're able to expand without having to make extensive capital purchases in equipment.

Key Concepts

When considering a farm or ranch related capital purchase, ask the following questions:

1. Will this purchase increase my production?
2. Will this purchase reduce my overhead?
3. Is there a less expensive alternative to accomplishing the same goal?

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