Sieben Live Stock— A Resource Base Balancing Act

by Jim Howell

Nature—it is chaotic and incomprehensibly complex. Or is it harmonious and elegant in its simplicity, where nothing is wasted? I would say it's all of the above. We strive to mimic nature in the management of our land and livestock, but how can we hope to imitate something that's harmoniously complex?

I think the answer lies in balance. When the predators (or prey, or perennial grasses, or locally adapted humans, etc.) are removed from a natural whole, balance is lost and deterioration ensues. We all know this principle—tweak with one element of the whole, and the effects cascade throughout. An intact whole is indeed chaotic and complex, but if it is in balance, its tendency to self-organize results in harmony.

I just finished my third session at Adel Ranch, owned by the Hibbard Family of Sieben Live Stock, near Cascade, Montana. In November of 2006, when I was first introduced to this incredible place, I learned that this ranch had successfully survived for 100 years under the same family's management (beginning with founder Henry Sieben in 1907). Beautiful Black Angus cattle, framed by a backdrop of some of the West's most stunning scenery, looked to be the epitome of harmony and abundance. But, as with most things in life, a little digging reveals more than meets the eye.

On that first visit, managing owner Chase Hibbard (along with wife Emily and the rest of the Adel Ranch crew) bombarded me with an onslaught of issues that set my head to spinning: "When is the best time to calve at this high latitude? If we calve late, can we wean late? What are we going to do about our calving pastures that are tending to get abused in the spring? How should we plan to harvest the abundant grass at the top of our summer pastures where our cattle never go?

"Can we graze cows in the winter in Montana? If so, how do we plan for that one year in thirty when the grass is buried in snow for four months straight? How do we deal with fall snowstorms if we've used all our potentially good snow-free fall country back during spring calving?

"If we start changing our grazing patterns, how will we still honor the rest-rotation grazing principles we've adhered to for so long, or do we even have to? If we keep making hay, but are grazing in the winter, how much hay do we still need to make, how much do we need to store for emergencies, and where and how will we store it? If we keep making at least some hay, where do we do that? On the best hay ground, of course, but those old wheel lines needed replacing 15 years ago. What should we replace them with?"

And that's just the tip of the iceberg (well, maybe half of the iceberg).

Don't get me wrong—Adel Ranch is and always has been a top outfit. The current generation of the original Sieben Family has developed a modus operandi that has been working for a long time, and recent tweaks to their model (within the previous decade) have led to even greater efficiency. But, everyone recognizes that the ranch has room for improvement, and that its economic, social, and ecological status can be far more resilient.

The Elements of Balance

As we wracked our brains trying to make sense of it all, I started to think about balance. I sure didn't have any straight answers, but I began to get an inkling that we needed to step back and take a broader perspective. We couldn't see the forest for the trees.

First, we laid out a simplified holisticgoal, which the ranch crew dubbed their "key drivers." Resilience, in all its aspects—healthy land, healthy profits, and satisfied people—was the aim.

The harmonious complexity of Nature is the essence of resilience—all the elements are balanced and humming. A holistically balanced ranch is the same. So, if resilience means balance, I reasoned that we needed to start with a resource base "balance" inventory.

Adel Ranch is blessed with a rich grazing resource. This is the type of country the cattle drop into around Oct. 15--the fall shoulder. With the right livestock production model, it is well balanced with both the winter and summer country.

At its core, a ranch is simple, or should be. The land, rain, and sunshine grow forage **(energy supply)**, and the forage grows animals (with their corresponding **energy demand**). On a resilient and balanced ranch, energy supply and energy demand are balanced, just as the energy dynamics of a functional natural whole are in balance. This balance teeters on an equilibrium point that changes constantly—it is a balanced, yet dynamic equilibrium, and management must shift as the point of equilibrium shifts. If it can do so, the result is balance.

So, on Adel Ranch, what did the energy balance sheet reveal? The following is a summary, the emergence of which happened over the course of a year, in three meetings spanning ten days.

Summer Supply

We began with energy supply—sunlight captured as forage, in the form of stock days per acre. And we added another layer of information—seasonality of supply. If winter comes late to Montana, high mountain grasses can remain accessible into January. But, most years bring brutal fall snow storms that transform the bucolic beauty of the summer high country

into a white, frozen hell—that is, if you're a cow trying to fill your belly and nurse a calf. The ranch crew unanimously agreed that, in an ideal world, the cows would be out of the summer country by mid-October, but this has seldom been the case in reality. The problem is that the ideal fall country is also the most ideal spring country. It is also where lots of the haying has historically been done, and a favorite zone of the hundreds of elk that flow out of the high country onto lush hay meadow regrowth.

This historically resulted in pushing the cows to stay in the summer country as long as possible—frequently beyond the ideal cut-off date of October 15th—and getting caught with having to gather out of the icy uplands in a foot or more of snow. To make matters worse, the cows typically would be pushing the lower stretches of the summer ground in their drive to get to warmer climes. This habit, along with long grazing periods and low stock densities, always resulted in huge swaths of the highest reaches of the mountains going untouched. In the summer country, balance remained elusive.

But, back to supply. If October 15th is the ideal end of the supply window, when is the beginning? June 1st was picked as the ideal entry date. That would give the summer country the opportunity for abundant post-snowmelt green-up (in May) and to build a bank of grass ahead of the cows. And, after close perusal of topo maps by Jeff and Lloyd—the guys on the ground who know this country better than any living human—we decided where to draw this October 15th line on the map, which we colored orange.

Taking out areas of heavy timber and rocky crags, the summer zone (east of the north/south ridgeline divide that splits the ranch) ended up with 12,200 hypothetically grazeable acres (4,880 ha) above the orange line. The location of this line was not guided by existing fencelines, but by altitude, topography, and aspect. Then, based on both experience and a little guesswork, the team concluded that those 12,200 acres, in a typical summer, could produce an average of 40 stock days per acre (SDA) or 16 stock days per hectare (SDH), with one stock day representing the equivalent of 25 pounds (11.25 kg) of choice high country grass. We then took out one third of this area to "rest" in any given year (more on that below). Total supply in the summer zone west of the divide: about 322,000 SD.

The balance of the summer zone, above the orange line but on the far side of the ridge, is dominated by lower production forests and much thinner soils, and, from the point of view of topography and management logistics, needed to be considered as its own grazing zone, or cell. We'll return to it later.

Fall and Winter Supply

We then turned our attention to all the country below the orange line, where all the cattle had to be between October 15th and June 1st. Chase and crew knew that a big component of bringing the ranch into balance had to center around less winter hayfeeding and more winter grazing, so we posed the questions, "When do we ideally want to be in our winter grazing zone, and where exactly is that zone?" We picked January 1st as the start date of our official "winter," and then drew another line on the map—the blue line. Below the blue line, we had our winter country. The altitudinal zone between the blue line and the orange line—too high for winter, but below the summer country—we dubbed the "shoulder country," which we counted as available from October 15th to January 1st, and which could be used in late spring as well, if needed.

The winter zone includes lots of country that has historically been hayed—both dryland and irrigated—but also lots of area outside the hay meadows that, in a typical winter, stays snow free and covered with a dense cover of excellent cool season grasses. In the summer of 2007, much of the formerly hayed ground (primarily dryland) was left to accumulate a standing bank of forage. Based on this growth, plus last winter's grazing experiment with 900 dry cows, we were starting to get a pretty good handle on how many stock days per acre we could expect from this winter zone. Its roughly 10,000 acres (4,000 ha), we estimated, could produce, on average, about 30 SDA/12 SDH, so winter supply worked out to 300,000 SD.

Because this winter zone will have all of the growing season to recover in any given year and will only be grazed in the dormant season (with the exception of a few pastures grazed in May), we didn't take out a third for "rest" or no grazing as in the other zones. But, we will make sure the "timing" of grazing (whether early, mid, or late winter/early spring) changes each year in each pasture (which will ensure pastures grazed in May don't continually receive that treatment). Also, we will strive to graze most plants moderately in an effort to leave an insulating cover intact and to protect fall-initiated lead tillers overwintering at the base of each plant.

So that leaves the troublesome shoulder country. Since going to May 10th calving several years ago, this zone began to receive lots of spring grazing pressure. The ranch headquarters, with its associated infrastructure to work and brand big bunches of cattle, is also situated right in the middle of this zone. By calving in May, calves can't be branded until late June and

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early July. Also, a local Bovine Virus Diarrhea (BVD) issue has dictated that all cows be vaccinated at branding as well. That's a lot of work to accomplish without a good set of corrals, but keeping the ranch's 1,650 lactating mothers within striking distance of the corrals has meant lots of pressure on the shoulder country, and postponing entry into the summer zone by about a month. It also is the most desirable fall country, but due to lots of haying and all that spring demand, coupled with the desire not to come back and regraze the same pastures in the fall, forage availability in the fall has historically been a big hole in the ranch's overall production model.

With minimal haying—we have estimated that only 500 irrigated acres (200 ha) will need to be hayed to meet the "average" hay demand. This assumes 30 days of full feed for 3,000 stock units due to snow cover. The shoulder country, with its roughly 8,400 acres (3,360 ha) producing an estimated 35 SDA (14 SDH) and, as in the summer zone with leaving a third ungrazed in any given year, total supply works out to about 200,000 SD.

So, in summary, the supply side of the equation looks like this: The summer country (east of the divide) produces 322,000 SD, which needs to be used over the course of 136 days (June 1st to October 14th); the shoulder country produces 200,000 SD, which ideally should be saved for 78 days of fall (October 15th to December 31st); and the winter country produces 300,000 SD, which can be rationed out through winter and spring (January 1st to May 31st, or 151 days).

The Production Model is Key

Now, what's demand look like? This has been a tough nut to crack. Before we could nail down demand throughout different stages of the year, we had to agree on a livestock production policy. The current practice of calving in May, keeping cattle in the shoulder country till July 1st, pushing cattle to stay above the orange line as late as possible, weaning in the fall, and making lots of hay in the shoulder and winter zones (which could otherwise be grazed), meant that demand and supply were significantly out of balance. Again, the results were big stretches of unused summer country,

The cattle at Adel Ranch have learned new habits. Instead of waiting for the feeding crew to show up, they climb the hillsides and graze through the snow, and are thriving. This is part of the big herd of 1350 mixed age cows, still happily grazing the Dog Creek pasture in the fall shoulder on January 15.

severe overgrazing of the shoulder country (due to long spring grazing periods), lack of suitable winter grazing country, and tons (literally, as in about 4,000) of haymaking to fill in all the imbalances.

But changing your production model is risky and very uncomfortable. It shouldn't be done without the near certainty that it's being done for all the right reasons. When Chase and team decided to go to May calving back in 2002, they had done their homework and made the jump with confidence. They still had to negotiate a learning curve, but the savings in hay and the reduced labor made it all worth the effort, and now the Adel Ranch crew groans at the idea of March calving (the old way).

Now, it's obvious to everyone that new tweaks to the production model are going to be necessary to bring demand more closely in alignment with supply. We've talked a lot about this, and the plan currently on the table looks like this: Calving will be shifted from May 10th to June 10th, and will happen in the summer country; cows will no longer be vaccinated for BVD in the spring (tests confirm that one vaccination in the fall will suffice), which means that spring works (now only branding/castrating) can happen with portable pens in the summer country; calves will stay on their mothers till February 1st, at which point steer calves will be shipped off the ranch and wintered with contractors before heading to another of Sieben Live Stock's summer properties closer to Helena where steers typically reach September weighing close to 900 lbs (405 kg); heifer calves will stay on the ranch and be fed hay till the following spring; all dry cattle, including coming 2-year-old heifers, will be grazed through the winter.

Herd numbers will look like the following: from calving at June 10th, one big herd of 1,350 mixed age cows will be grazed together until October 15th, the end of the summer season. The first calf heifers—another herd of 300-350 head—will be grazed separately from calving until October 15th on a separate summer grazing cell (known as the Taylor Place), which lies several miles southeast of the remainder of the ranch, and which is just the right size to handle this herd of young cows (i.e. supply matches demand). The third herd, which includes up to 700 yearlings, will summer on the lower production country west of the north/south divide that splits the ranch (referred to above).

On or about October 15th, the first calf heifers will come out of the Taylor Place and join the big herd of 1,350 cows to create one big herd of 1,650-1,700 pairs. Calves will be weaned the first of February and cull cows sold (bringing the mixed cow herd size back down to the 1,350 level). The yearling heifers (which are now bred coming 2-year-old first calf heifers) will continue to be wintered as a second herd. At weaning, steer calves will be shipped off the ranch to be wintered by a third party, and then will head to another summer pasture owned by the Hibbards closer to Helena. Weaned heifer calves will be fed hay until heading to their summer grazing cell in early June.

Balancing Forage Demand

With this production model, forage demand looks like this: From June 1st to October 15th, the first calf heifer herd and yearling herds have their respective grazing cells (Taylor Place and west of the divide). The first calf heifers are well balanced with the Taylor, but there is a lot of slack in the country west of the divide, and the option remains to buy in additional yearlings to add to their own production. We haven't specifically settled on what to do there yet, but now we know there's an opportunity to bump up demand to match supply (in Holistic Management lingo, there is a product conversion weak link on that part of the ranch).

The third herd—the great big bunch of 1,350 pairs—will be allocated the 12,200 acres east of the divide, producing 322,000 SD, from June 1st to October 15th. Demand from the big cow herd works out to just under 300,000 stock days, so things are pretty balanced, overall, for the cows

during the summer.

On October 15th, when the big herd and the first calf heifers are combined, we move into the fall shoulder country till January 1st, and total demand works out to just over 200,000 SD. Total supply: 200,000 SD. Balanced. The north edge of the ranch has a long ridge called the Jones Hills, which is also good fall shoulder country (and not counted in the above 200,000 SD), and that will be the home of the yearling heifers (now bred replacement heifers in a herd totaling 350 head) from October 15th to January 1st. The balance of the yearlings will be sold at the end of summer.

That gets us to January 1st, the start of winter, and we have a long way to go until June 1st, when we can head back up above the orange line and into the summer country. Luckily, Adel Ranch has one of the West's most idyllic winter grazing resources. Temperatures tend to be mild, and warm Chinook winds keep the snow blown off. In any given year, most of this winter ground will not be touched throughout the entire growing season (except for the final pastures used in May), so have the chance to accumulate a beautiful cover of cool season grasses. Under the above production model (two herds grazing in the winter, and one herd of weaned calves on hay), grazing demand works out to (incredibly) 300,000 SD, which exactly matches the typical forage supply. Old Henry Sieben, Chase's great grandfather, knew a good ranch when he saw it.

So, on a broad scale—looking at major zones of the ranch and their corresponding productivity, and matching that forage supply with forage demand—the ranch is very balanced under this production model. We still have the excess capacity in the summer country west of the divide, and (oh yeah, almost forgot) there remains a 200-cow forest permit to the west of the Taylor Place that we still haven't used. So, we have excess supply (product weak link) that we can use there as well, and the current thinking is to stock this permit with bought-in thin cows for four months in the summer.

From Forest Back to Trees

But within each zone, we still have to look at balance and logistics. Gus Hormay (of rest-rotation grazing fame) had a big influence on Chase and the management of Adel Ranch back in the 1980s. Up until that time, very low stock densities and season long grazing, particularly in the summer and fall country, had resulted in the typical pattern of lots of overgrazing and lots of overrest. Under Hormay's guidance, the ranch began to manage the summer and fall with three-pasture cells. In a given year, one pasture would be grazed through the growing season until seed ripe—about the end of July. A second pasture would be grazed through the balance of the summer and fall, and the third pasture would be rested. The next year, the rested pasture would be grazed first (during the growing season), the pasture grazed early would be grazed post-seed ripe, and the post-seed ripe pasture would be rested.

This change led to excellent results, and Chase is adamant that we strive to continue this basic grazing strategy, but now within the context of holistic planned grazing. I agree with him wholeheartedly. My experience in high altitude Colorado tells me that periodic season long (as in the whole year) rests are critical to build litter-making material and develop deep root systems and highly vigorous plants. I also am a big believer in changing up the timing (season of use) of grazing from one year to the next, and this pattern will honor that as well.

But now, with one big herd of mature cows, we have a lot more flexibility, much higher stock densities, and much greater grazing efficiency. Hormay's changes were great, but stock densities remained very low, and extensive overgrazing and overrest were still occurring, albeit on a lesser scale. Now, instead of just three huge pastures per herd, we have one big herd and, if we want (through the use of portable electric fence), an unlimited number of pastures.

Grazing Units

But, in both the summer and fall shoulder zones, we again want to be able to carefully control timing of use. This means we had to identify three "units" within each zone—summer and fall shoulder—that would be alternately grazed early, late, or not at all. For the 12,200 acres (4,880 ha) of summer country allocated to the mixed age cows for 136 days, we need three of these units, each capable of producing about 150,000 stock days. Again, two of these units would be grazed in any given year—one during the heart of the growing season, one post seed ripe—and the third rested. We did the same for the fall shoulder country, with one grazed early fall, one late fall till January 1st, and one rested.

So, we took out our maps and figured out which areas would work best together to form our "units." Each unit ended up with several existing pastures or parts of existing pastures, and each of these—especially the big ones—can be further subdivided with portable hot wires. Last summer, the Adel Ranch crew did a great job of splitting up formerly huge summer pastures with one strand of polywire, and the much greater stock density (resulting from both the polywire and herd amalgamation) pushed cattle up into areas that had been overrested for decades. I asked these guys how they were coping with these long polywires (often climbing pretty steep mountainsides) and they didn't deny that it was tough, but the reward of seeing it all work, with big bunches of cattle in spots they'd never been in, cleaning up wolfy old bunchgrasses, made it all worth the effort.

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Then, with our units sorted out, we had to go through a three year scenario to see how the logistics would all work. Since season of use changes on each unit each year, the order of moves changes also. And, these are big rugged mountains, not flat easy prairie, so the flow from one unit to the next has to be kept as simple as possible. After hashing through various scenarios, we sorted out how it could all work, not only from pasture to pasture and unit to unit within both the summer and fall zones, but during the transition from the summer country to the fall shoulder country as well.

The result is a land plan that is based on balancing the seasonality of the ranch's forage supply with the right livestock production model (and corresponding forage demand). Working through it all has been an exercise rooted in complexity, but with the focus on achieving balance, the result is harmony. No doubt the actual implementation of this plan will entail bumps and setbacks and will need some tweaking. Constant monitoring (including professional third party ecological monitoring, which the ranch has committed to) will be essential. But, Chase and crew have made great strides over the past year, and Adel Ranch is on the path to ever-greater resilience and abundance. I think old Henry Sieben would be proud.

To learn more about Sieben Live Stock see "Grass Wintering, Montana-style—Sieben Live Stock" in IN PRACTICE # 114.