

Cowboys and Computers ...

What's the world coming to?

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Background

I'm going to give you some personal background that may seem irrelevant to herd management software, but I do so to help you understand the roots of Cow Sense. This software tool was born not of a need to manage pedigrees, registrations, and breed association work; not of an academic desire to gather herd performance data and compare Joe's herd to Sally's; not even with intent to sell a tool that would help others manage their own beef herds. Cow Sense was born of my own need and interest in having a tool that would help me evaluate and develop my herd so that I could survive the times and create a quality herd as quickly as possible.

Launching a Sandhills ranching operation in 1980 was a big change in my life. From a business standpoint, our timing was incredibly bad: skyrocketing interest rates, plummeting land values, and volatile cattle prices forced us to exercise all our management skills and develop new ones. The environment was completely new to me (though my Dad and Granddad had both spent time in the Sandhills), and practices that worked well in rich Minnesota soils had to be discarded and quickly replaced with ones appropriate for the fragile Sandhills. I had spent some time in college, then worked in applied social research, and skills I had learned during that period seemed to have no direct application in my new life. At the time, I had no vision of how it might all come together down the road. I was too busy learning and applying what I needed to make that ranch work.

When I came to the Sandhills, I had never been involved with a cow/calf enterprise, and had no preconceptions about how to do it. I wasn't a cowboy, but I was building a cow herd from scratch. I depended heavily on ideas and advice from others, but all that got mixed with my own background and analytic interests. I did things a little bit differently on our ranch than most. Part of that difference was tracking the individual performance of each cow on a personal computer, analyzing the data with various tools, then culling and selecting replacements based on that information. In 1984 I did

not find software tools to help me do that, so I began building them. That was the inception of Cow Sense.

Since my first release of a commercial software product in September, 1993, I have devoted a lot of time to Cow Sense and developing a package that I could distribute reliably and widely. My commitment to Cow Sense has since led me to sell the ranch and devote myself to advancing the product and building our software business. With a stable and well-received product, we are now turning our attention to enhancements, new features, and better performance. (I say "we" because I now have associates in this enterprise.) So, let me first tell you what Cow Sense does now, and then I will describe some of our plans for the future.

Cow Sense Today

The software I show you today is the core product, the hub of existing or future modules and enhancements. The modular approach is in line with our thinking that our customers should pay only for what they need and use in their own operations. If Sam doesn't have a registered herd, then he probably doesn't need pedigrees and he doesn't need that capability in his software. If Sarah gathers her calves in the fall and loads them out without ever putting them through the chute, then she won't be taking individual weights. She doesn't need that capability in her software. Neither Sam nor Sarah, I believe, should have to pick through a clutter of fields and reports and screens that have nothing to do with their operations. They shouldn't have to pay for that inconvenience, either!

Modes

The operating mode of Cow Sense is determined when a customer buys the program, but if it becomes necessary or desirable to upgrade, that is very easy to do. The four modes are Lite, Commercial, Purebred, and Reporting Mode.

Lite

Cow Sense Lite is for Sarah's operation. She wants

to track the reproductive performance of her cows, but she is not able to weigh calves individually on her ranch. She gathers in the fall, loads 'em up, and ships 'em out. However, Sarah does believe in tracking the individual reproductive performance of her cows. She wants to know the calving history of each cow, average calving intervals, and to make individual notes. She also wants calving percentage, weaning percentage, and calving distribution. Cow Sense Lite does this for her, and more.

Commercial

Sam, on the other hand, weighs his calves individually at weaning and wants to use those weaning weights as one measure of cow performance in his culling program. Cow Sense Commercial is his tool.

Cow Sense Commercial provides for individual weights at birth, weaning, and yearling, and calculates adjusted weights and ratios for each. It then compiles these performance measures for each cow (and bull if known) on a lifetime basis and computes an MPPA for the cow. (MPPA means "Most Probable Producing Ability," and is a cumulative weaning ratio for the cow that takes into account the number of calves she has had.)

Cow Sense Commercial uses BIF (Beef Improvement Federation) standards for these calculations, but also allows Sam to tweak the BIF standards if he wants. Canadian standards are also available. Of course, Sam has all of the reproductive performance measures that Sarah has in her Lite program.

Purebred

Cow Sense Purebred puts another layer on Commercial, and that is the pedigrees, registration numbers, tattoos, and cow EPDs that are important to a registered cow operation. Purebred also has twenty-eight breed standards available, so that it calculates adjusted weights and ratios according to the specific breed or breeds in an operation.

Reporting Mode

The fourth mode overlays Lite, Commercial, and Purebred. We call this the "Reporting Mode," and it is appropriate for an operation where multiple installations of the software are needed, or for clients of a record keeping service bureau.

Reporting Mode has data entry functions shut off, but will generate all reports for a Cow Sense herd. This allows for access to the records from multiple sites, while preventing the herd data from getting out of sync. Only one site enters data, and it can then spawn herd files that may be read at any of the other sites operating in Reporting Mode.

Multiple Herds

Often a cow operation will have more than one herd. There may be a spring herd and a fall herd, North

Ranch and South Ranch, or Angus herd, Hereford herd, and Baldy herd. Cow Sense allows all the herds within an operation to be managed with a single program installed on one computer. Cow Sense does not limit the number of herds that may be run with that installation, and changing from one herd to another is very simple.

This feature makes Cow Sense a good choice for those who provide record keeping services for others on a fee basis. Veterinarians, universities, and even enterprising ranchers do. Typically, these services are purchased by cow operations that either do not have a computer, do not have the time or inclination to sit down and enter data into the computer, or desire comparative analysis and other services. Veterinarians have an excellent opportunity to integrate record keeping services with health practices and deliver a comprehensive herd management package to their clients.

Cow Sense is excellent for veterinarians because of its easy multi-herd capability, the portability of herd files, comparative analysis, field forms, and the Reporting Mode. The Reporting Mode is particularly helpful to clients who want to get the most out of their records. You can generate printed reports for your clients, but clients get far more benefit by using the Reporting Mode at home. The full power of the query and sorting tools are at their disposal in the Cow Sense Reporting Mode, and they can run the analysis however they like. That is one of the real joys in record keeping!

Cow Moover is another helpful tool for multi-herd situations. This optional utility will move cows or bulls from one herd to another, along with all their production history. Setup options allow the user to select appropriate actions, and Cow Moover validates the transfers to ensure that the integrity of the destination herd is preserved.

Production Cycle

Figure 1 illustrates the principal events and their sequence in a Cow Sense production cycle. Each time you Run New Cycle, Cow Sense initializes the calf file with necessary information from the cows. New Cycle is an automated procedure that copies information already known about each cow so the user does not have to enter it again. Calf data entry, then, is a matter of adding information about each calf as it becomes available. Updates are processing programs that run within each cycle. The Calving, Weaning, and Yearling Updates calculate calf ratios and move information back to the cows and bulls.

In a Cow Sense production cycle, we track the outcome of a breeding event that occurred in the previous cycle. We account for each cow that was exposed to a bull, and assign an outcome to that cow called the "Calf History." Using the Calf History, we calculate calving

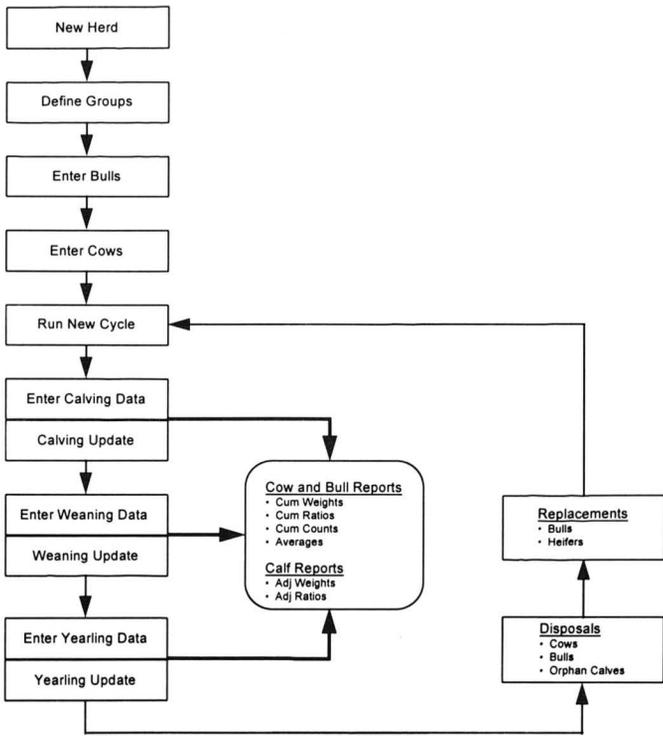


Figure 1. Cow Sense Information Flow.

and weaning percentages relative to the number of cows exposed and intended to calve. This method permits us to account for attrition that occurs before the calving season starts and is a normal cost to the cow business. Cow Sense affords a lot of flexibility within a production cycle. You can fix data errors at any time, even if you have already run the Update for that data entry phase. Simply fix the calf error and re-run the Update. New Cycle, on the other hand, makes irreversible database changes. Cow Sense presents a checklist before running New Cycle and prompts you to make a backup of your herd data.

Analysis

My purpose in designing a cow herd record keeping system back in 1984 was analysis. I viewed my herd as a factory, and each cow was a worker in that factory. As workers will be, some were more productive than others. I wanted to know how each individual performed, so that I could issue pink slips to those who were not working adequately.

I also wanted to evaluate groups within my herd. In particular, since I purchased replacements, I wanted to track performance by origin. That way, I could identify the best sources for my replacement cattle.

As a result, Cow Sense has a powerful set of analytic tools, which are summarized in Table 1. Taking advantage of the Windows environment, you can drill down from a list of animals to the individual detail, and then on to detail for selected progeny from some years

back. The query and sorting tools give ready means of selecting cattle by a wide range of criteria, or combination of criteria, even remarks. These tools are constructed so that they are fast and easy to use, allowing up to six combined search criteria and three levels of sorting.

Table 1. Cow Sense Features.

Current	Planned
<ul style="list-style-type: none"> • Cow Moover • Drill-down analysis • Field forms • Flexible error correction • Individual detail with lifetime progeny listings for cows and bulls • Internal validation • Multiple herds • Operating modes: Lite, Commercial, Purebred, or Reporting Mode • Powerful search and sort tools • Single entry system • Standard and custom reports • Support for service bureaus • Windows or Macintosh operating systems 	<ul style="list-style-type: none"> • Analysis package • ET tool • Linkage with bookkeeping • Quality measures • Sale Manager • Telecommunications

We have a set of standard reports in Cow Sense that are either lists or tables. The list reports show performance averages for the cattle on the report, which are all recomputed in response to a query. Each record on the list is linked to a detailed individual summary by a hot button. These individual views of the data allow the user to page through the file, viewing all the detail on each cow, bull, or calf, their respective progeny, and their pedigrees. Tables include annual production summary, calving distribution, and weight tabulations, and are all subject to queries. If the standard reports don't capture a desired view of the data, then custom layouts are readily available.

Other analytic features are the ability to export data in native formats for Excel, Lotus, Quattro Pro, Word, WordPerfect, or text. To compare across herds, you can append exported records in a file along with a herd identifier. Cow Sense records cattle sales, and applies the same analytic tools to them. Lifetime individual treatments and herd treatments are also available.

Future Developments

One of the neat things about software, especially for those of us who tend to be a little compulsive, is that it can always be improved. I stretch the point only slightly in saying that successful software is never finished. Indeed, we have a roster of planned enhancements for Cow Sense. Most of these are modular components that may be selected or passed according to need.

Analysis Package. Charts are terrific aids for analysis, but existing software tools are not suited to

our needs for herd management. Typically, they are either high-end statistical packages that exceed our needs in cost and functionality, or they are spreadsheet applications that just don't have the right parts. We will offer a package that ties directly into a Cow Sense herd and presents the data in pertinent charts and cross-tabulations.

ET Tool. Embryo transplant is an activity that runs independently of the normal herd production cycle, and does not fit well in the mainstream record keeping system. Yet ET is playing an ever-increasing role in breed development. We will be offering a tool designed specifically to handle the record keeping needs for embryo transplant.

Sale Manager. Marketing is crucial in any cow business, but in the seed stock industry, marketing takes on a whole new dimension. It is a production in itself. The Cow Sense Sale Manager is designed to help the purebred operator market cattle and maintain lasting relationships with customers. It prepares a sale catalog and data sheets for sale day. It clerks the sale, whether an auction or private treaty, and ties the sale back to the parent cow and bull. Finally, the Sale Manager keeps a database of customers and tracks customers' lifetime purchases.

Carcass Quality. There is growing recognition in the beef industry that we have a problem with inconsistency in our product. The frequency of unsatisfactory beef eating experiences is simply too high. We are committed to addressing quality issues in Cow Sense. Right now, we have measures of reproduction and gross output. We will be adding carcass quality measures that are tied back to the cow and the bull on a lifetime basis. All three measures can then be used together in selecting the most desirable animals within the herd.

Breed Associations. Record keeping is a big job for breed associations, but that is changing. Telecommunications and the growing base of computerization on farms and ranches bring new possibilities for automating the record keeping chores back at the association office. Some breed associations have already spent considerable sums to develop software intended primarily

to handle their registrations, reducing the time required and increasing the accuracy. We are working from the other direction with Cow Sense. Our first priority is within-herd management for the producer, but we also intend to support the associations' needs by offering telecommunications from within Cow Sense and other means of automating the registration process. Another benefit to the producer will be automated updates to their own EPDs and ready access to sire summaries.

Financial Analysis. Although Cow Sense has a very simple cost of production calculator, we recognize that more capability is needed. Our approach will be to provide a linkage from Cow Sense to financial records in popular bookkeeping programs. When merged with production data, Cow Sense will then be able to provide more sophisticated cost and break-even analysis.

Conclusion

The beef industry is changing right along with every other industry in our society. Computerization and data processing, which create information, are having a tremendous impact. Even the cowboys are feeling it. Electronic identification, tag readers, scales with memory, laptops chute-side, and palm-tops in the calving lot are taking their place beside bits and spurs.

The industry requires it. Beef is, after all, big business. It began with market information, and now extends to production information. "It" is an emerging system of production and product delivery that responds to the market, a system where that response is rewarded. Call it "value-based marketing" if you will. That concept has been around a long time, but has been hampered by a lack of information about the product itself. Instrument grading, in whatever form it becomes most prevalent, will finally close that gap.

If information is going to play a key role in the success of family cattle operations, as I believe it will, then my objective with Cow Sense is to help ensure that these operations have access to the information and the ability to use it. Without such a tool, producers in the emerging beef industry are at risk of selling to buyers who know more about their cattle than they do. That is a position I would not want to be in.